HANDBOOK OF INTERNATIONAL ALLOY COMPOSITIONS AND DESIGNATIONS. VOLUME I. TITANIUM

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This handbook was compiled from data collected from many sources in an effort to bridge the nomenclature gap on titanium materials produced and used in various countries of the world. Its primary purpose and emphasis is to conveniently interrelate the alloy designations and standards of one country with the alloy designations, compositions, and standards of other countries for titanium materials.

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In addition to equating chemical compositions of the world's titanium alloys, the handbook relates compositions to product forms, standards, producing companies, alloy types, common names, and applications, and it also lists some basic physical and mechanical properties for the better-known alloys.

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Volume I

HANDBOOK OF INTERNATIONAL ALLOY COMPOSITIONS AND DESIGNATIONS VOLUME I - TITANIUM

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MCIC-HB-09-Vol. I

HANDBOOK OF INTERNATIONAL ALLOY COMPOSITIONS AND DESIGNATIONS

VOLUME I

TITANIUM

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November 1976

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This document was prepared by the Metals and Ceramics Information Center (MCIC), Battelle's Columbus Laboratories, 505 King Avenue, Columbus, Ohio 43201. MCIC's objective is to provide a comprehensive current resource of technical information on the development and utilization of advanced metal- or ceramic- base materials.

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Appreciation is also expressed to personnel at the National Bureau of Standards, U.S. Department of Commerce, Gaithersburg, Maryland, in the Office of Standards Reference Data, Standards Information and Analysis Division and the Standards Library for their valuable help in researching the extensive NBS collection of both U.S. and Non-U.S. Standards and Specifications.

FOREWORD

This handbook is the first of a series intended to cover all metals and alloys that are available internationally.

The overall objective is to provide reference books to establish the chemical composition and similarities of the wide variety of alloy designations for metals and alloys in use throughout the modern world. Through the use of an alphanumeric alloy index, the user may quickly locate a specific alloy composition and other relevant property data for this material, or he may search for a general or particular alloy system.

The handbook is organized in a manner to clearly show the relationship of alloys and standards of one country with similar alloys and standards of other countries. The information presented is for guidance purposes only. This handbook is not intended to be used as a reference in purchase specifications, nor should it be used to supersede any standards or specifications. Under no circumstances should this handbook be taken as an authority to use material in lieu of the designers specifications. It may, however, aid in selecting alternative materials.

The prevalent use of the English units system in the U.S. and the metric units system in Europe necessitates the use of both systems in this edition. It is hoped the the U.S. conversion to the (SI) International System of Units[38] in the metric system will be rapid. The conversion to SI is progressing rapidly in Europe.

TABLE OF CONTENTS

LIST OF TABLES

List of Tables (Continued)

LIST OF APPENDIXES

List of Appendixes (Continued)

HANDBOOK OF INTERNATIONAL ALLOY COMPOSITIONS AND DESIGNATIONS

VOLUME I - TITANIUM

ABSTRACT

This handbook was compiled from data collected from many sources in an effort to bridge the nomenclature gap on titanium materials produced and used in various countries of the world. Its primary purpose and emphasis is to conveniently interrelate the alloy designations and standards of one country with the alloy designations, compositions, and standards of other countries for titanium materials.

In addition to equating chemical compositions of the world's titanium alloys, the handbook relates compositions to product forms, standards, producing companies, alloy types, common names, and applications, and it also lists some basic physical and mechanical properties for the better-known alloys.

INTRODUCTION

Increasing commercial trade, military cooperation, and technical exchange between countries in recent years has made it imperative to be able to use metallic products produced in different countries interchangeably. Unfortunately, it is often extremely difficult to determine which alloys produced in one country are equivalent to or approximately equivalent to alloys produced in another country. This information, where available, is often located in separate documents which are difficult to obtain. Hence, direct alloy comparisons on an international level usually entail a considerable effort. To bridge this information gap, the Metals and Ceramics Information Center (MCIC) plans to prepare and publish a series of international handbooks each devoted to one or more of the world's major metals.

As a starting point for this international alloy handbook series, MCIC selected titanium and titanium alloys as representing a relatively new metal for which relatively few references are available as references to for pertinent compositions, applicable standards, and specifications on an internationl basis.

Another reason for selecting titanium and its alloys was to capitalize on the excellent recent work by the 1975 European Technical Committee on titanium materials. This group, consisting of four leading European titanium producers, was organized to discuss available knowledge and experience among themselves with the aim of formulating joint standardization proposals. The four member companies are: Contimet, Titanium Division of Thyssen Edelstahlwerke AG, Krefeld, Germany; Fried. Krupp GmbH, Krupp Metall-und Schmiedewerke, Essen, Germany; Imperial Metal Industries Ltd. (Kynoch), New Metals Division, Birmingham, England; and Pechiney Ugine Kuhlman (PUG), Ugine Aciers, Paris, France.

The results of the European technical committee work are found in a trilingual publication, "Technical Supply Conditions for Semi-fabricated Products of Titanium and Titanium Alloys".[1] Their report was compiled with the object of providing European producers and users with a generally valid basis and guidelines for everyday work with titanium and its alloys. The report includes product definitions and heat-treatment conditions together with type and frequency of chemical analysis, mechanical property tests, and ultrasonic tests.

To supplement the coordinated start by the European prime titanium producers Technical Committee, MCIC visualized a still broader need for a cross index of worldwide titanium alloy designations with their respective chemical composition and equivalents. A preliminary MCIC feasibility and market study confirmed the need for an alloy composition reference book(s) covering all metals.[56] The result of this effort is this International Titanium Alloy Handbook.

GENERAL CONSIDERATIONS OF TITANIUM AND TITANIUM ALLOYS

Physical and Metallurgical Characteristics

Table A[45] compares some selected physical properties of pure titanium with those of four other pure metals (aluminum, iron, magnesium, and copper).

Titanium is about 40 percent lighter than steel. However, certain titanium alloys can be equated on a strength-to-weight basis to steels having yield-strength levels of about 300 ksi (2,068 MN/m^2). Titanium alloys are 60 percent heavier than aluminum and are much stronger, useful to much higher temperatures, show higher fatigue strengths, and greater hardness than aluminum alloys. A wide range of physical and mechanical properties are available from titanium and its alloys.

Titanium and titanium alloys are used in engineering design primarily for their excellent combination of mechanical properties, corrosion resistance, and low density. Other advantages of titanium for specific applications include low magnetic permeability, good toughness characteristics, and low hardening temperatures in heat treating. Alloying improves the properties of commercially pure titanium, and many titanium alloys can be further strengthened by heat treatment.

Each element that might combine with titanium either intentionally or unintentionally, results in some change in the basic crystal structure. In this sense, even the commercial unalloyed grades of titanium are alloys, since each of the grades contains various quantities of impurity elements. Examples of the impurity or alloying quantities permitted in the various unalloyed grades of titanium per public specifications in the U.S. are shown below.

	Maximum or Range, ppm				
Grade	C	O_2	N_2	H_2	Fe
1	300	1000	120	50	1000
2	500	1000	200	80	2000
3	500	1000-1500	200	80	2000
4	500	1500-2500	200	80	3000

TABLE A. PHYSICAL PROPERTIES OF TITANIUM AND OTHER PURE METALS[45]

Properties	Titanium (99.9%)	Iron (99.9+%)	Aluminum (99.996%)	Magnesium (99.98%)	Copper (99.95%)
Atomic Number	22	26	13	12	29
Atomic Weight (based on Carbon = 12)	47.90	55.85	26.98	24.312	63.54
Density (lb/cu. in) at 68°F (20°C)	0.163	0.284	0.098	0.063	0.323
Liquidus Temperature, °F	3035±18	2797.7±1.8	1220.4	1202	1981.4±0.2
Liquidus Temperature, °C	1668±10	1536.5±1	660.2	650	1083.0±0.1
Transformation Temperature, °F	1625[a]	1670[b]	None	None	None
Magnetic Susceptibility[c]	Para[d]	Ferro	Para	Para	Dia
Tensile Modulus, psi x 10^6	14.7	29.7	10.0	6.25	16.0
Shear Modulus, psi x 10^6	5.0	10.0	3.8	2.4	6.0
Thermal Expansion (10^{-6} in./in./°F at 68°F)	4.67	6.8	13.1	14.0	9.4
Thermal Conductivity (Btu/Hr/ft^2/°F/ft)	9	46	117	56	226
Specific Heat (Btu/lb/°F) at RT	0.126	0.107	0.215	0.246	0.092
Electric Resistivity (microhm–cm at RT)	47.8	10.0	2.824	4.6	1.724
% IACS[e]	3.6	17.2	61.1	38.7	100

Note:

(a) Titanium is hcp at <1625 F and bcc at >1625 F.

(b) Iron is bcc at <1670 F and fcc between 1670 and 2535 F.

(c) Paramagnetic = slightly more permeable than a vacuum and independent of magnetizing force.
Diamagnetic = less permeable than a vacuum and weakly repelled by magnetic force.
Ferromagnetic = strongly magnetic and dependent of magnetizing force.

(d) Susceptibility of titanium is 3.17 x 10^{-6} emu/g. Permeability is 1.00005 at 20 oersteds.

(e) Percent International Annealed Copper Standard at 20°C. (Measure of electrical conductivity)

These impurity levels control the strength of the unalloyed grades which varies from 25 to 70 ksi (172 to 483 MN/m^2) minimum yield strength in Grades 1 to 4. In addition, one U.S. producer (TMCA) makes another grade with higher impurity content and a still higher tensile yield strength.

A second important alloying effect is the change induced in the polymorphous transformation temperature of the crystal structure. For pure titanium, the transformation temperature is about 1625 F (885 C). Below this temperature the metal atoms occupy a hexagonal-close-packed (hcp) structure which is designated as the alpha phase. Above this temperature the alpha phase changes to a body-centered-cubic (bcc) structure which is called the beta phase.

The interstitial elements, carbon, oxygen, and nitrogen, and the metal aluminum, are examples of elements that raise the transformation temperature (so called alpha-phase stabilizers); all other elements lower it in varying amounts (beta stabilizers). Iron, vanadium, chromium, molybdenum, and manganese are elements that markedly lower the transformation temperature. Zirconium and tin lower it only slightly. The amount of the elements added to titanium also affects the extent of change. The ability of elements to distort the crystal structure of titanium to cause strengthening or changes in the phase transformation behavior varies from element to element and is the basis of titanium alloy metallurgy.

The alpha- and beta-phase stabilizing elements for titanium, when added either singly or in any combination, tend to strengthen the base structure and to promote other mechanical, physical, and metallurgical characteristics as well as to control basic microstructure. Alloys may be selected for applications based on the combinations of desired characteristics. For example, an alpha alloy might be selected for its high creep strength at elevated temperatures. One would not choose a beta alloy for this requirement. A beta alloy might be selected for ease of fabricability in manufacturing a part with a complex contour. Generally, alpha + beta alloys are a good choice when combinations of properties are desired.

The mechanical properties of a given alpha + beta alloy are quite dependent on the relative amounts of each of the phases present. This, in turn, is a function of temperature as well as composition. Thus, the properties of titanium alloys in general, and of alpha + beta and beta alloys in particular, are dependent on their thermal history and heat treatments. The interrelationship of mechanical properties with variables in composition and structure is very complex and is regarded as outside the scope of this handbook. Accordingly, no attempt has been made to discuss any details of heat treatment for titanium and its alloys.

Availability and Designations of Titanium Alloys

More than 100 titanium alloys have been offered commercially since the start of the titanium industry. The substitution of modified compositions for some of the earlier alloys, the elimination of a few, and the continual introduction of new alloys has tended to maintain the compositions available to users somewhat lower than 100. For example, about 30 compositions are available commercially from U.S. producers, 40 in the U.S.S.R., about a dozen in the U.K., and 5 or 6 from French, German, and Japanese producers. The totals include various grades of unalloyed titanium and selected alloys. Also, several basic compositions (e.g., Ti-5Al-2.5Sn and Ti-6Al-4V) are common to more than one country. Although a wide variety of alloys is available, some compositions are rarely used even though they are offered.

A few compositions offered constitute the most used titanium alloys and grades. Those most used in the United States for more than a decade are apparent from the following shipments tabulation.

Composition	Percent of Total Shipments in U.S. 1961	1971	1973
Ti-6Al-4V	45	56	57
Unalloyed Ti grades	16	19	22
Ti-5Al-2.5Sn	15	7	6
Ti-6Al-6V-2Sn	2	7	9
Ti-8Mn	10	2	1
Ti-13V-11Cr-3Al	10	1	<1
Ti-8Al-1Mo-1V	1	3	2
Ti-6Al-2Sn-4Zr-2Mo	N/A	3	2
Other	2	3	<1

Foreign use patterns are unknown (shipments), but it is strongly believed that the Ti-6Al-4V alloy would be one of the most used. The dominance of the Ti-6Al-4V alloy in U.S. applications is obvious from the above data. Each of the other producing countries makes the Ti-6Al-4V grade--designated IMI-318 in the U.K.; as VT6 in the U.S.S.R.; T-A6V in France; and Contimet AlV 64, Krupp Tikrutan LT 31, LW 3.7164, and DIN 3.7165 in Germany. This alloy is also widely used in nonproducing countries as well. The continued dominance of the Ti-6Al-4V alloy and the several grades of unalloyed titanium is expected. The Ti-6Al-4V is a versatile and dependable alloy and, perhaps most importantly, a vast data base is available for this composition in a wide variety of conditions and circumstances. These conditions tend to persuade prior users of the material to continue using it, and new users to select it.

The compositions offered commercially are of three basic metallurgical types. Classification of alloys in terms of the predominant crystal structure, alpha, alpha + beta, and beta is commonly used for alloy typing. There are variations of the predominant crystal structures (e.g., alpha-dispersoid structure), but the alpha or the beta forms are found separately or mixed in each commercial titanium base alloy. Generally, each alloy has some unique property or combination of properties to permit its continued offering and application.

The titanium alloys offered by the U.S. producers are listed in Table 1E (page 82) with an alloy-type classification name according to the above system. A common name is also shown for most of the compositions. The product forms available for these alloys are also shown in Table 1E. The company designation for these materials frequently includes a company identification symbol or name; for example, Armco Ti-6Al-4V for the Armco Steel Corporation brand of this alloy or Rm-6Al-4V for the RM Company product, and MMA-9744 for the Martin Marietta Aluminum Company brand of Ti-6Al-2Sn-4Zr-2Mo alloy. Other producers use meaningful symbols for designations; e.g., Crucible uses the prefix A for alpha, B for beta, C for alpha-beta, plus a number representing a minimum tensile yield strength and a suffix for kind of alloy addition; thus, A-110AT for Ti-5Al-2.5Sn and C-120AV for Ti-6Al-4V. The largest U.S. titanium producer, Titanium Metals Corporation of America (TMCA), uses only the nominal composition to designate their products. The scheme of the designation system for U.S. alloys by companies is apparent from the listings of Table 1E.1. This table also reveals which alloys are offered by some of the major companies, although it should be recognized that this is an incomplete listing. Designations for U.S. titanium welding rods and electrodes are shown in Table 1E.2, the welding rod and electrode compositions are specified by the American Welding Society.

The designation systems used by non-U.S. companies for titanium materials seem to be somewhat similar to those used in the U.S., knowledge of alloys and designations from several foreign sources is still incomplete. For example, the IMI prefix to the designations of alloys offered in the U.K. consists of the initials of the producer, Imperial Metal Industries Ltd. Similarly, the designation prefixes of Soviet compositions refer to the institute that developed the alloys. For example, VT 20 refers to VIAM-developed titanium alloy (VIAM is the acronym for the All Union Institute of Aviation Materials). Table 1F.1 gives the U.K. or British designations, Table 1F.2 the French Designations, 1F.3 the German designations, 1F.4 the Soviet designations, 1F.5 the Czechoslovakian designations, 1F.6 the Japanese designations, 1F.7 the Spanish (proposed) designations, and 1F.8 the ISO (International Standards Organization) (proposed) designations.

Less information is available from some of the other countries dealing in titanium products. It is known, however, that the bulk of the Japanese titanium business is in unalloyed titanium grades and that the grade designations reflect their purity and, therefore, strength level. For example, Kobe Steel Company titanium grades are designated KS-50 and KS-70 while Sumitomo Light Metal Industries (later Nippon Stainless Steel Company) grades were ST-40, ST-50, ST-60, ST-70, and ST-80. Numbers in these designations refer to tensile yield strength minimums and, therefore, indirectly to purity level. Japan markets titanium alloys and sponge on a wide international basis.

The French designation system is based on a letter and number coding plan that gives the major constituents and their quantity in the alloys, but ignores quantifying minor elements. For example, T-A5E is the designation for Ti-5Al-2.5Sn. Other French designations are as follows:

Composition	Designation	Composition	Designation
Ti-8Al-1Mo-1V	T-A8DV	Ti-13V-11Cr-3Al	T-V13CA
Ti-4Al-4Mn	T-A4M	Ti-6Al-2Sn-4Zr-2Mo	T-A6Zr4DE
Ti-4Al-3Mo-1V	T-A4D3V	Ti-6Al-5Zr-1W-0.2Si	T-A6AZ5W
Ti-6Al-4V	T-A6V	Ti-6Al-5Zr-0.5Mo-0.2Si	T-A6Zr5D
Ti-7Al-4Mo	T-A7D	Ti-6Al-4V-3Co	T-A6V4K3

Unalloyed titanium grades, e.g., T-35, T-40, T-50, and T-60, indicate yield strength in the same way that several other countries designate unalloyed grades. The Germans and French usually express the nominal compositions with quantity following the element symbol. This is the reverse of the U.S. and U.K. practice where the quantity precedes the element symbol; for example:

U.S. Format	German Format
Ti-6Al-4V	Ti-Al6-V4
Ti-6Al-6V-2Sn	Ti-Al6-V6-Sn2
Ti-4Al-4Mo-2Sn	Ti-Al4-Mo4-Sn2
Ti-8Al-1Mo-1V	Ti-Al8-Mo1-V1
Ti-2Cu	Ti-Cu2
Ti-5Al-2.5Sn	Ti-Al5-Sn2.5

STRUCTURE AND FORMAT OF THE TITANIUM ALLOY HANDBOOK

Data Acquisition

Data for this handbook were obtained from 89 references which are listed on pages 129-138. In addition to the usual publications and standards available in the MCIC files and the Battelle-Columbus library, MCIC relied on personal contacts with selected producers and users, both in the U.S. and Europe to obtain some of the special documents used in this data compilation.

Computerized Format of Nominal Compositions

A computer and a special alphanumeric nomenclature were used as aids in methodically sorting and classifying alloy compositions. To familiarize the user, the computerized alphanumeric format is compared with the more conventional alloy format in Table 1A (page 60).

Note that in the computerized format the elements are arranged in a descending order of their alloying importance in titanium; e.g., Al, V, Mo, Sn, Zr, Mn, Cr, Fe, Cu, Pd, Cb/Nb, and others. The quantity of the element follows the element symbol instead of preceding it. When the quantity of an element is 10 percent or greater a blank space is left after the element symbol so the computer can order it into the 10, 20, or 30 range, etc. This change in nominal composition format permits a methodical approach to bringing all alloys of similar composition together by mechanical computer sorting, and thus provides a common denominator for alloys of any country. For proper sorting it is essential that the nominal formats always be consistent.

To cope with the controversially different names and symbols used for one element, e.g., Cb for columbium and Nb for niobium, the combined symbol (Cb/Nb) is used in the computerized format.

Handbook Structure

The handbook is structured so that the user can readily obtain information about titanium alloys in a number of ways. The various tables and appendixes are shown in the Table of Contents. A synopsis is given in the paragraphs which follow.

Detailed Chemical Composition

Table 1 is the basic table of the handbook wherein the detailed chemical composition of each alloy designation is given. It also indicates company, country, alloy type, forms available, and some alloy applications. Table 1 is arranged so that alloys of similar composition are grouped together.

Alloy Index

The entry or "key" to Table 1 is the Alloy Index found following the Appendixes. This index, arranged alphanumerically, shows the specific line (index number) where the alloy is listed in Table 1.

Physical and Mechanical Properties and Equivalent Alloys Standards

Most of the nominal compositions in the total collection reduce to 112, shown in Tables 1B, 1C, and 1D. The minimum physical properties of some of these 112 alloys are given in Table 1B in English and SI units, and the minimum mechanical properties are given in Table 1C. The same 112 alloys are correlated with pertinent national standards, alloy equivalents, and UNS (Unified Numbering System) designations in Table 1D. Where possible, the U.S., British, French, German and other national standards, and selected applications of the alloy, are shown.

Typical U.S. Titanium Alloys

The typical alloys used in the U.S. are given in Table 1E. The correlation of typical U.S. titanium alloys by company[45,57] are shown in Table 1E.2.

Typical Non-U.S. Titanium Alloys

The typical non-U.S. alloys of commercial interest are shown in Table 1F. The following subtables show the titanium alloys for United Kingdom, France, Germany, U.S.S.R., Czechoslavakia, Japan, Spain, and ISO, International Standards Organization Alloys.

Table 1F.1	United Kingdom alloys
Table 1F.2	French alloys
Table 1F.3	German alloys
Table 1F.4	Soviet alloys
Table 1F.5	Czechoslovakian alloys
Table 1F.6	Japanese alloys
Table 1F.7	Spanish alloys (proposed)
Table 1F.8	ISO alloys (proposed)

Current U.S. Titanium Standards and Specifications

Listing of current U.S. Titanium Standards or specifications, Aerospace Material Specifications, American Society for Testing and Materials Standard Specifications, U.S. Military Standards, and American Welding Society Standards are given in Tables 1G, 1I, 1K, and 1M.

Table 1G	Shows the current AMS standards
Table 1I	Shows the current ASTM standards
Table 1K	Shows the current U.S. Military standards
Table 1M	Shows the American Welding Society standards.

Correlation of U.S. Alloy Standards

Table 1H	Correlation of AMS compositions with AMS product form specifications
Table 1J	Correlation of ASTM standards specifications with titanium alloy compositions
Table 1K	Current U.S. Military specifications covering titanium and titanium alloys
Table 1L	Correlation of U.S. Military specifications, forms with titanium alloy compositions

Titanium Sponge Characteristics

The titanium sponge compositions are shown in Table 1N. Availability, economics, and usage of titanium sponge are discussed in detail in "The Titanium Industry in the Mid-70's"[57].

Foreign Titanium Standards

Foreign Current Titanium Standards numbers and titles of titanium alloys are listed in the following tables:

Table 1O	British standards
Table 1P	French standards and AECMA standards
Table 1Q	German standards
Table 1R	Soviet standards
Table 1S	Czechoslovakian standards
Table 1T	Japanese standards
Table 1U	ISO standards (proposed)
Table 1V	Spanish standards (proposed)
Table 1W	Other current U.S. standards.

The current standards of these various countries are compared by national standards and composition in Appendixes 7 and 8, respectively. Older standards are listed in Appendix 6, names and addresses of organizations generating these standards are shown in Appendix 5.

Company and Country Codes

The Country Code relationships are shown in Appendix 1. The Company Code numerical relationship is shown in Appendix 2, and the Company Code alphabetical order is shown in Appendix 3.

Foreign Current Titanium Standards numbers and titles of titanium alloys are listed in the following

Unified Numbering System

The Unified Numbering System (UNS) is being developed jointly by the U.S. Society of Automotive Engineers (SAE) and the American Society for Testing and Materials (ASTM). Ultimately, UNS is intended to provide a means of "correlating many nationally (North America) used numbering systems currently administered by societies, trade associations, and individual users and producers of metals and alloys"[34]. In its publication, the UNS has established a schematic system for 15 series of numbers representing 15 groups of metals and alloys. Each UNS number consists of a

single letter prefix followed by five digits. For example, the UNS Number AXXXXX designates a group consisting of aluminum and aluminum alloys.

In this initial compilation, titanium and its alloys were not identified as a specific group but rather were included under UNS Number RXXXXX which designates an alloy group consisting of "Reactive and Refractory Metals and Alloys". Subsequently, the Chairman of the UNS Joint Committee has furnished MCIC with the UNS titanium numbers that will be included in the next edition of the Unified Numbering System catalog for metals and alloys. The UNS numbers presently assigned titanium and titanium alloys are shown in Appendix 4. Note that relatively few commercial alloys have been assigned UNS numbers. The titanium alloys and unalloyed titanium selected for numbering are given three numbers depending upon the hydrogen level.

British Titanium Data

Appendixes 9, 9.1, and 9.2 were compiled and furnished by Imperial Metal Industries Ltd., New Metals Division (Kynoch), Birmingham, England.

Appendix 9 correlates the British Standards (Aerospace Series) and DTD (Ministry of Defence) with the respective IMI alloy numbers,[6] with the nominal composition, forms available, and pertinent mechanical properties.

Appendix 9.1 correlates IMI alloy numbers[7] with numerous international standards and specifications. The correlation includes the following standards: British Standards (Aerospace Series) and British Standards (Codes of Practice Series), DTD (Ministry of Defence Specifications); European AEMCA (Association European Constructeurs de Material Aerospace); French AIR (Reglements AIR); German LW, B.W.B. or LN (Luftfahrt Werkstoffe Specifications); DIN (Deutsche Norman); TUV (Vereinigung der Technischer Uberwachungs Vereine EV); United States AMS (Aerospace Material Specifications); US Military Specifications; and ASTM (American Society for Testing and Materials). The forms covered by the specifications are also indicated in this correlation.

Appendix 9.2 summarizes application and usage patterns for various British IMI titanium and titanium alloys in four sections:

Section A relates to the general chemical plant corrosion situations as well as environments, type of plant, and reasons for alloy usage,

Section B relates to general and engineering applications of commercially pure titanium,

Section C indicates some applications for titanium alloys (IMI numbers) and reasons for alloy usage,

Section D indicates various applications for titanium and titanium alloys (IMI numbers) in Aerospace Engineering.

German Titanium Data

The Appendixes 10, 10.1, and 10.2 were compiled and furnished by Fried. Krupp GmbH, Krupp Metall-und Schmiedewerke, Essen, West Germany.

Appendix 10 correlates the Krupp Tikrutan titanium and titanium alloy designations with various international standards and alloy designations including U.S., West Germany, England, France, European, Soviet, and East Germany.[21] The second portion of Appendix 10 relates the Krupp Tikrutan alloy designations with the German brief alloy designations, aircraft material standards, AECMA standards, shaping methods and dimensions.[23]

Appendix 10.1 includes a number of Krupp tables. Table 1 shows the chemical composition of the commercially pure titanium designations; Krupp Table 4 shows the chemical composition of the Tikrutan alloy designations. Table 2 shows the physical properties of commercially pure titanium; Table 5 shows the physical properties of Tikrutan alloys. Table 3 shows the mechanical properties of commercially pure titanium; Table 6 shows the mechanical properties of Tikrutan alloys.[20]

Appendixes 11 and 11.1 were compiled by Contimet Titanium Division of Thyssen Edelstahlwerke AG, Krefeld, West Germany. Appendix 11.1 correlates the Contimet titanium alloy number (Contimet Table 2) with various international standards and alloy numbers including West German standards and specifications, Great Britain standards and specifications, French standards and specifications, European standards, and U.S. standards. Table 1 shows their mill processing and forms available by alloys; Table 3 shows their alloy chemical compositions; Table 4 shows the physical properties of Contimet alloys; and Tables 5, 6, and 7 show the mechanical properties of Contimet brand alloys.[18]

Appendix 12 and its subdivision 12.1 were compiled and furnished by the Otto Fuchs Metallwerke, West Germany. Appendix 12 correlates the Fuchs brand titanium alloy with German, French, and British standards as well as with Contimet, IMI, and Krupp alloy numbers. Appendix 12.1 summarizes physical and mechanical properties of the Fuchs titanium alloys.[25]

Soviet Titanium Data

Appendixes 13 and 13.1, compilations from the 1975 Soviet book, "The Use of Titanium in the National Economy",[85] shows the chemical compositions of 21 wrought titanium and titanium alloys as well as six titanium and titanium alloy casting materials. The book also shows nine designations and compositions of Soviet titanium sponge.

Appendix 13.1 indicates that the Soviet book[85] contains six extensive tables showing the interrelationship of wrought and cast titanium alloys with the various Soviet technical standards. This information has been utilized in preparing Table 1, Table 1D, Table 1F.4, Table 1R, and Appendixes 6, 7, and 8.

TABLE 1. TITANIUM AND TITANIUM ALLOYS

Index No.	Alloy Designation	CHEMICAL COMPOSITION, WEIGHT PERCENT, ≤ (BALANCE TITANIUM)															
		ALLOYING ELEMENTS											Interstitial Elements				
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt.% (ppm)	Nitrogen Wt.% (ppm)	Carbon
Ti-Unalloyed High Purity																		
1	Sandvik Titanium 20	—	—	—	—	—	—	—	—	—	—	—	—	0.30 max	0.20 max	0.015 (150)	0.03 (300)	0.05
Ti-Unalloyed																		
2	AMS 4951C	—	—	—	—	—	—	—	—	—	—	—	Total 0.60	0.20	0.18	0.005 (50)	0.05 (500)	0.08
3	ASTM B381, Grade F-1	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.20	0.18	0.0150 (150)	0.03 (300)	0.10
4	ASTM B381, Grade F-2	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.30	0.25	0.0150 (150)	0.03 (300)	0.10
5	ASTM B381, Grade F-3	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.30	0.35	0.0150 (150)	0.05 (500)	0.10
6	ASTM B381, Grade F-4	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.50	0.40	0.0150 (150)	0.05 (500)	0.10
7	IMI-160	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
8	Eltanit A 1*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Unalloyed-100.0, High Purity																		
9	Ventron Pure Titanium	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Unalloyed—94.0																		
10	CC Type	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
11	Z Type	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12	CS Type	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
13	Titanium Powder Grade CC	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
14	Titanium Powder Grade Z	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Unalloyed—98.4, CP, - ksi YS																		
15	M D 68	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
16	Ti-Loy 99	—	—	—	—	—	—	—	—	0.25	—	—	—	—	0.50 max	—	—	0.10 max
17	Blackwells Titanium	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
18	Hylite 15H*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
19	Hylite 15*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
20	Hylite 10*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.013 (130)	—	—
21	Hylite 1*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Unalloyed—99.0, CP, Powder																		
22	Degussa Ti Powder	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
23	Ti-100A	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.40	0.010 (100)	0.05 (500)	0.08
24	Ti-75A	—	—	—	—	—	—	—	—	—	—	—	—	0.30 max	0.40	0.015 (150)	0.05 (500)	0.08
25	L-7004, Ti-99.0	—	—	—	—	—	—	—	—	—	—	—	—	0.50 max	0.40	0.0125 (125)	0.07 (700)	0.10
26	BS CP 3003 Part 9, Grade 5	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.50	0.010 (100)	0.05 (500)	0.10
27	BS CP 3003 Part 9, Grade 2	—	—	—	—	—	—	—	—	—	—	—	—	0.05	0.50	0.01 (100)	0.05 (500)	0.10
28	HMH 75	—	—	—	—	—	—	—	—	—	—	—	—	0.05	0.50	0.01 (100)	0.05 (500)	0.10
29	Armco Ti-70*	—	—	—	—	—	—	—	—	—	—	—	—	0.50	0.40	0.0125 (125)	—	0.10
30	BS CP 3003 Part 9, Grade 1	—	—	—	—	—	—	—	—	—	—	—	—	0.05	0.50	0.010 (100)	0.05 (500)	0.10
31	BS CP 3003 Part 9, Grade 4	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.50	0.01 (100)	0.05 (500)	0.10
32	Republic RS-70*	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.50	0.01 (100)	0.05 (500)	0.10
33	ASTM B348, Grade 4	—	—	—	—	—	—	—	—	—	—	—	—	0.20	—	—	0.015 (120)	0.10
34	OMC-105 (Cast)	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.50	0.40	0.0125 (125)	0.05 (500)	0.10
35	RMI 70	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.50	0.40	0.015 (150)	0.05 (500)	0.08
36	BS 3531/Part 1/T 11T	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.50	0.010 (100)	0.05 (500)	0.10
37	OMC-70	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
38	T-A4DE2	4.0	—	4.0	2.0	—	—	—	—	—	—	—	—	—	—	—	—	—
39	ASTM B265, Grade 4	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.50	0.40	—	—	—
40	ASTM F67, Grade 3	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.30	0.30	0.0125 (125)	0.07 (700)	0.10
41	ALLVAC 70	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.35	0.015 (150)	0.07 (700)	0.10
42	MIL-T-9046H Type I Comp. B	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
43	MIL-T-9046H Type I Comp. B	—	—	—	—	—	—	—	—	—	—	—	Total 0.80	0.50	0.40	0.015 (150)	0.05 (500)	0.08
44	Crucible A-70	—	—	—	—	—	—	—	—	—	—	—	Total 0.80	0.50	0.40	0.015 (150)	0.05 (500)	0.08
45	BS CP 3003 Part 9, Grade 3	—	—	—	—	—	—	—	—	—	—	—	—	0.05	0.50	0.010 (100)	0.05 (500)	0.10
46	ASTM B265, Grade 4	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.50	0.40	0.015 (150)	0.05 (500)	0.10
47	Carlson 70	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.50	0.40	0.015 (150)	0.05 (500)	0.10
48	ASTM B367, Grade C-4	—	—	—	—	—	—	—	—	—	—	—	Total 0.40	0.50	0.40	0.010 (100)	0.05 (500)	0.10
49	ASTM B367, Grade C-4	—	—	—	—	—	—	—	—	—	—	—	Total 0.40	0.50	0.40	0.0100 (100)	0.05 (500)	0.10
50	AMS 4921C	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.50	0.40	0.0125 (125)	0.05 (500)	0.08

Information on this group of alloys is continued on page below

*Noncurrent standard or alloy designation

Index No.	Alloy Designation	Common Name/ Alloy	Company Code	Ctry Code	Prime Country Standard	Alloy Type	Forms Available	Applications
Ti-Unalloyed High Purity								
1	Sandvik Titanium 20	(CP)	C-0043	SW	—	Alpha		Chemical and paper ind. plat. racks., food ind., heat exchangers.
Ti-Unalloyed								
2	AMS 4951C	(CP)	—	US	AMS 4951C	Alpha	W, Weld.W	Welding wire, primarily for inert arc welding.
3	ASTM B381, Grade F-1	(CP)	—	US	ASTM B381	Alpha	FG	Standard for Ti & Ti-alloy forgings, of this composition.
4	ASTM B381, Grade F-2	(CP)	—	US	ASTM B381	Alpha	FG	Standard for Ti & Ti-alloy forgings, of this composition.
5	ASTM B381, Grade F-3	(CP)	—	US	ASTM B381	Alpha	FG	Standard for Ti & Ti-alloy forgings, of this composition.
6	ASTM B381, Grade F-4	(CP)	—	US	ASTM B381	Alpha	FG	Standard for Ti & Ti-alloy forgings, of this composition.
7	IMI-160	(CP)	C-0013	UK	2TA7,8,9	Alpha	BA,BI,W,E	Corrosion resistant.
8	Eltanit A 1*	(CP)	C-0046	GY		Alpha	*All Forms*	
Ti-Unalloyed—100.0, High Purity								
9	Ventron Pure Titanium	—	C-0052	US	—	Alpha	W,R,Powder,Crystal	
Ti-Unalloyed—94.0								
10	CC Type	—	C-0059	US	—	Alpha	Powder	Scientific applications.
11	Z Type	—	C-0059	US	—	Alpha	Powder	Scientific applications.
12	CS Type	—	C-0059	US	—	Alpha	Powder	Scientific applications.
13	Titanium Powder Grade CC	—	C-0052	US	MIL-T-13405B	Alpha	Powder	Protechnics, powder metallurgy alloys, and getters.
14	Titanium Powder Grade Z	—	C-0052	US	MIL-T-13405B	Alpha	Powder	Protechnics, powder metallurgy alloys, and getters. Scientific applications.
Ti-Unalloyed—98.4, Cp. - ksi YS								
15	M.D. 68	(CP)	C-0060	US	—	Alpha	Powder	For metallurgical additions and melting stock.
16	Ti-Loy 99	(CP)	C-0065	US	—	Alpha	CP Ti Chip Briquette	Scientific applications.
17	Blackwells Titanium	(CP)	C-0017	UK	—	Alpha	—	Chemical industry applications.
18	Hylite 15H*	(CP)	C-0016	UK	—	Alpha	—	Aircraft parts, good form and weldability.
19	Hylite 15*	(CP)	C-0016	UK	—	Alpha	—	Aircraft parts, good form and weldability.
20	Hylite 10*	(CP)	C-0016	UK	—	Alpha	—	Chemical industry applications.
21	Hylite 1*	(CP)	C-0016	UK	—	Alpha	—	
Ti-Unalloyed—99.0, CP. Powder								
22	Degussa Ti Powder	(CP)	C-0047	GY	—	Alpha	Powder	For getter material, PM components, permanent magnets.
23	Ti-100A	(CP)	C-0001	US	ASTM B348	Alpha	BA,BI,E,W	Aircraft engine parts, forgings.
24	Ti-75A	(CP)	C-0001	US	ASTM B265	Alpha	SH,ST,P,BA,BI,W,T,E	*Airframe, chemical, marine, similar applications.*
25	L-7004, Ti-99.0	(CP)	—	SP	—	Alpha	—	
26	BS CP 3003 Part 9, Grade 5	(CP)	—	UK	BS CP 3003	Alpha	All Forms	Tank linings for chemical industry.
27	BS CP 3003 Part 9, Grade 2	(CP)	—	UK	BS CP 3003	Alpha	All Forms	Tank linings for chemical industry.
28	HMH 75	(CP)	C-0056	US	ASTM B-348	Alpha	All Forms	Structural shapes.
29	Armco Ti-70*	(CP)	C-0005	US	AMS 4921	Alpha	BI,BA,W,E	Formability, weldability, corr. resist, marine, aircraft.
30	BS CP 3003 Part 9, Grade 1	(CP)	—	UK	BS CP 3003	Alpha	All Forms	Tank linings for chemical industry.
31	BS CP 3003 Part 9, Grade 4	(CP)	—	UK	BS CP 3003	Alpha	All Forms	Tank linings for chemical industry.
32	Republic RS-70*	(CP)	C-0011	US	—	Alpha	All Forms	For nonstructural aircraft parts, mod. to severe forming.
33	ASTM B348, Grade 4	(CP)	—	US	ASTM B348	Alpha	BA,BI	Standard for bars and billets of this composition.
34	OMC-105 (Cast)	(CP)	C-0009	US	AMS 4901E	Alpha	Cast	For aircraft equipment, marine equipment, brackets.
35	RMI 70	(CP)	C-0003	US	AMS 4901E	Alpha	All Forms	Aircraft and marine comp., chem. ind. corr. resistant.
36	BS 3531/Part 1/T 115	(CP)	—	UK	BS 3t31/1.5	Alpha	All Forms	Implants in bone surgery.
37	OMC-70	(CP)	C-0009	US	AMS 4901E	Alpha	All Forms	Airframe equipment, shroud spacers, ammunition boxes.
38	T-A4DE2	IMI-550	—	FR	AIR	Alpha + beta	FG	
39	ASTM B265, Grade 4	(CP)	—	US	ASTM B265	Alpha	SH,ST,P	Standard for strip, sheet & plate of this composition.
40	ASTM F67, Grade 3	(CP)	—	US	ASTM F67	Alpha	BA,BI,SH,ST	Standard for unalloyed Ti surgical implants.
41	ALLVAC 70	(CP)	C-0008	US	AMS 4901E	Alpha	*All Forms*	
42	MIL-T-9046H Type I Comp. B	(CP)	—	US	MIL-T-9046H	Alpha	SH,ST,P	For strength and corros. resist. to 600 F (316 C).
43	MIL-T-9046H Type I Comp. B	(CP)	—	US	MIL-T-9046H	Alpha	SH,ST,P	For strength and corros. resist. to 600 F (316 C).
44	Crucible A-70	(CP)	C-0004	US	AMS 4901E	Alpha	SH,ST,P,T,BA,W	*Moderately stressed aircraft parts corrosion resistance.*
45	BS CP 3003 Part 9, Grade 3	(CP)	—	UK	BS CP 3003	Alpha	All Forms	Tank linings for chemical industry.
46	ASTM B265, Grade 4	(CP)	—	US	ASTM B265	Alpha	SH,ST,P	Standard for strip, sheet, & plate of this composition.
47	Carleon 70	(CP)	C-0053	US	ASTM B265	Alpha	P,FG	Plate product applications.
48	ASTM B367, Grade C-4	(CP)	—	US	ASTM B367	Alpha	C	Standard for Ti & Ti-alloy castings, of this composition.
49	ASTM B367, grade C-4	(CP)	—	US	ASTM B367	Alpha	Castings	Standard for Ti & Ti-alloy castings, of this composition.
50	AMS 4921C	(CP)	—	US	AMS 4921C	Alpha	BA,FG,W,BI,Rings	For high strength to 400 F (204 C) & oxid. resist. to 600 F (316 C).

BA—bars, BI—billet, C—casting, E—extrusion, F—foil, FG-forging, I—ingot, P—plate, RD—rod, SH—sheet, ST—strip, T—tubing, W—wire, con—condensers, H exch—heat exchanger, S T—seamless tubing, W T—welded tubing.

*Noncurrent standard or alloy designation.

TABLE 1. (Continued)

Index No.	Alloy Designation	CHEMICAL COMPOSITION, WEIGHT PERCENT, ≤ (BALANCE TITANIUM)																
		ALLOYING ELEMENTS											Interstitial Elements					
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt.% (ppm)	Nitrogen Wt.% (ppm)	Carbon
Ti-Unalloyed—99.0, CP, Powder (cont.)																		
51	AMS 4901E	—	—	—	—	—	—	—	—	—	—	—	Total 0.80	0.50	0.40	0.015 (150)	0.05 (500)	0.08
52	BS 3531/Part 1/T 115	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.50	0.01 (100)	0.05 (500)	0.10
53	Titanium-A	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
54	Titanium	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
55	Commercial Purity	—	—	0.02	—	—	—	—	—	—	—	—	Total 0.1	0.25	0.25	—	0.15	0.20
Ti-Unalloyed—99.2, CP, 55 ksi YS																		
56	Crucible A-55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.015 (150)	0.08 (800)	0.20
57	Type A-55	—	—	—	—	—	—	—	—	—	—	—	Total 0.60	0.50	0.30	0.015 (150)	0.05 (500)	0.08
58	Contimet 55	—	—	—	—	—	—	—	—	—	—	—	—	0.35	0.30	0.0125 (125)	0.07 (700)	0.10
59	L-7003, Ti-99.2	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.35	0.0125 (125)	0.06 (600)	0.10
60	Ugine 50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
61	Allvac-50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
62	ASTM F67, Grade 4	—	—	—	—	—	—	—	—	—	—	—	—	0.50	0.45	0.015 (150)	0.07 (700)	0.10
63	ASTM B265, Grade 3	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.30	0.35	0.015 (150)	0.05 (500)	0.10
64	OMC-55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
65	MIL-T-9046H Type I Comp C	—	—	—	—	—	—	—	—	—	—	—	Total 0.60	0.50	0.30	0.015 (150)	0.05 (500)	0.08
66	ASTM B265, Grade 3	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.30	0.35	0.015 (150)	0.05 (500)	0.10
67	ASTM B348, Grade 3	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.30	0.35	0.0125 (125)	0.05 (500)	0.10
68	Carlson 55	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.30	0.35	0.015 (150)		0.10
69	Allvac 55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
70	Ti-65A	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.35	0.015 (150)	0.05 (500)	0.08
71	RMI 55	—	—	—	—	—	—	—	—	—	—	—	—	0.25	—	0.015 (150)	0.03 (300)	0.08
72	ASTM B338, Grade 3	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.35	0.015 (150)	0.05 (500)	0.10
73	Republic RS-55*	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.20		0.012 (120)	0.10
74	MIL-T-9046H Type I Comp C	—	—	—	—	—	—	—	—	—	—	—	Total 0.60	0.50	0.30	0.015 (150)	0.05 (500)	0.08
75	ASTM B337, Grade 3	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.35	0.015 (150)	0.05 (500)	0.10
76	ASTM B338, Grade 3	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.35	0.015 (150)	0.05 (500)	0.10
77	ASTM B337, Grade 3	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.35	0.015 (150)	0.05 (500)	0.10
78	Armco Ti-55*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
79	Fuchs T 6	—	—	—	—	—	—	—	—	—	—	—	—	0.35	0.30	0.0125 (125)	0.07 (700)	0.10
80	TUV 230-1-68 Grade IV	—	—	—	—	—	—	—	—	—	—	—	—	0.35	0.30	0.0125 (125)	0.07 (700)	0.10
81	Contimet 55	—	—	—	—	—	—	—	—	—	—	—	—	0.35	0.30	0.0125 (125)	0.07 (700)	0.10
82	ASTM B367, Grade C-3	—	—	—	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.35	0.0100 (100)	0.05 (500)	0.10
83	AMS 4900D	—	—	—	—	—	—	—	—	—	—	—	Total 0.60	0.50	0.30	0.015 (150)	0.05 (500)	0.08
84	ASTM B367, Grade C-3	—	—	—	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.35	0.0100 (100)	0.05 (500)	0.10
85	Contimet 35D	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.25	0.0125 (125)	0.06 (600)	0.10
86	M.D. 301	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
87	TG-2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
88	Commercial Purity	—	—	0.02	—	—	—	—	—	—	—	—	W 0.25	0.25	—	—	0.10	0.20
Ti-Unalloyed—99.3, CP																		
89	Contimet 35D	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.25	0.0125 (125)	0.06 (600)	0.10
90	L-7002, Ti-99.3	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.25	0.0125 (125)	0.05 (500)	0.10
91	TUV 230-1-68 Grade III	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.25	0.0125 (125)	0.06 (600)	0.10
Ti-Unalloyed—99.4, CP																		
92	Contimet 35	—	—	—	—	—	—	—	—	—	—	—	—	0.25	0.20	0.0125 (125)	0.06 (600)	0.08
93	Contimet 30	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.10	0.0125 (125)	0.05 (500)	0.08
94	TUV 230-1-68 Grade I	—	—	—	—	—	—	—	—	—	—	—	—	0.25	0.20	0.0125 (125)	0.06 (600)	0.08
95	Contimet 35	—	—	—	—	—	—	—	—	—	—	—	—	0.25	0.20	0.0125 (125)	0.06 (600)	0.08
96	Fuchs T 3	—	—	—	—	—	—	—	—	—	—	—	—	0.25	0.20	0.0125 (125)	0.06 (600)	0.08
Ti-Unalloyed—99.5, CP, ~40 ksi YS																		
97	Ti-50A	—	—	—	—	—	—	—	—	—	—	—	—	0.20 max	0.25	0.015 (150)	0.03 (300)	0.08
98	ASTM B348, Grade 2	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.30	0.25	0.0125 (125)	0.03 (300)	0.10
99	ASTM B337, Grade 2	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.25	0.015 (150)	0.03 (300)	0.10
100	ASTM B338, Grade 2	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.25	0.015 (150)	0.03 (300)	0.10

Information on this group of alloys is continued on page below

*Noncurrent standard or alloy designation.

Index No.	Alloy Designation	Common Name/ Alloy	Company Code	Ctry Code	Prime Country Standard	Alloy Type	Forms Available	Applications
Ti-Unalloyed—98.0, CP, Powder (cont.)								
51	AMS 4901E	(CP)	—	US	AMS 4901E	Alpha	SH,ST,P,	For strength to 400 F (204 C) & oxid. resist. to 600 F (316 C)
52	BS 3531/Part 1/T 115	(CP)	—	UK	BS 3531/1.5	Alpha	All Forms	Metal implants and surgical tools
53	Titanium-A	(CP)	C-0057	US	—	Alpha	Powder	Scientific applications
54	Titanium	(CP)	C-0069	US	—	Alpha	Powder	Scientific applications
55	Commercial Purity	(CP)	—	UR	—	Alpha	—	Stock for Ti melting.
Ti-Unalloyed—98.2, CP, 55 ksi YS								
56	Crucible A-55	(CP)	C-0004	US	AMS 4900D	Alpha	SH,ST,P,T,BI,BA,W	Nonstructural aircraft parts, all types corr. resistance
57	Type A-55	(CP)	C-0055	US	AMS 4900	Alpha	All Forms	Aircraft skins, honeycomb, bellows, heat exchanger parts
58	Contimet 55	(CP)	C-0046	GY	DIN 3 7065	Alpha	BA,SH,ST,P,W,FG,E,T	Hardest grade CP Ti, for pumps/fittings, aircraft industry.
59	L-7003, Ti-99.2	(CP)	—	SP	—	Alpha	—	
60	Ugine 50	(CP)	C-0020	FR	—	Alpha	All Forms	
61	ALLVAC-50	(CP)	C-0008	US	—	Alpha	All Forms	
62	ASTM F67, Grade 4	(CP)	—	US	ASTM F67	Alpha	BA,BI,SH,ST	Standard for unalloyed Ti surgical implants
63	ASTM B265, Grade 2	(CP)	—	US	ASTM B265	Alpha	SH,ST,P	Standard for strip, sheet, & plate of this composition
64	OMC-55	(CP)	C-0009	US	AMS 4900D	Alpha	All Forms	Chemical plant equip., anodizing racks, welding rods
65	MIL-T-9046H Type I Comp. C	(CP)	—	US	MIL-T-9046H	Alpha	SH,ST,P	For strength and corros. resist. to 600 F (316 C)
66	ASTM B265, Grade 3	(CP)	—	US	ASTM B265	Alpha	SH,ST,P	Standard for strip, sheet, & plate of this composition
67	ASTM B348, Grade 3	(CP)	—	US	ASTM B348	Alpha	BA,BI	Standard for bars and billets of this composition
68	Carlson 55	(CP)	C-0053	US	ASTM B265-3	Alpha	P,FG	Plate product applications
69	ALLVAC 55	(CP)	C-0008	US	AMS 4900D	Alpha	All Forms	
70	Ti-65A	(CP)	C-0001	US	—	Alpha	All Forms	Aircraft structure components corrosion resistant
71	RMI 55	(CP)	C-0003	US	AMS 4900D	Alpha	All Forms	Aircraft and marine comp., chem. ind. corr. resistant
72	ASTM B338, Grade 3	(CP)	—	US	ASTM B338	Alpha	S,T &W,T-H,Exch,Con	Std. for S,T. & W,T. for heat exchangers & condensers
73	Republic RS-55*	(CP)	C-0011	US	—	Alpha	All Forms	For nonstructural aircraft parts, mod. to severe forming
74	MIL-T-9046H Type I Comp. C	(CP)	—	US	MIL-T-9046H	Alpha	SH,ST,P	For strength and corros. resist. to 600 F (316 C)
75	ASTM B337, Grade 3	(CP)	—	US	ASTM B337	Alpha	Seamless & Weld Pi	Standard for seamless and weld. pipe of this composition
76	ASTM B338, Grade 3	(CP)	—	US	ASTM B338	Alpha	S,T &W,T-H,Exch,Con	Std. for S,T. & W,T. for heat exchangers & condensers
77	ASTM B337, Grade 3	(CP)	—	US	ASTM B337	Alpha	Seamless & Weld Pi	Standard for seamless and weld. pipe, this composition
78	Armco Ti-55*	(CP)	C-0005	US	AMS 4900D	Alpha	BI,BA,W,E	Formability, weldability, corr. resist., marine, aircraft
79	Fuchs T 6	(CP)	C-0054	GY	LN 3 7064	Alpha	FG	Moderate weldability, highest unalloyed strength
80	TUV 230-1-68 Grade IV	(CP)	—	GY	TUV 230 IV	Alpha	SH,BA	
81	Contimet 55	(CP)	C-0046	GY	—	Alpha	All Forms	Hardest grade of CP Ti with reduced form. Aircraft fittings
82	ASTM B367, Grade C-3	(CP)	—	US	ASTM B367	Alpha	C	Standard for Ti & Ti-alloy castings, of this composition
83	AMS 4900D	(CP)	—	US	AMS 4900D	Alpha	SH,ST,P	For strength to 400 F (204 C) & oxid. resist. to 600 F (316 C)
84	ASTM B367, Grade C-3	(CP)	—	US	ASTM B367	Alpha	Castings	Standard for Ti & Ti-alloy castings, this composition
85	Contimet 35D	(CP)	C-0046	GY	—	Alpha	All Forms	Spec. Ti grade for press. vessels. VDTUV authorized
86	M.D. 301	(CP)	C-0060	US	—	Alpha	Powder	Scientific applications
87	TG-2	(Sponge)	—	UR	GOST 5303	Alpha	Sponge	Stock for Ti melting
88	Commercial Purity	(CP)	—	UR	—	Alpha	Iodide Ti	Stock for Ti melting
Ti-Unalloyed—98.3, CP								
89	Contimet 35D	(CP)	C-0046	GY	DIN 3 7055	Alpha	BA,SH,ST,P,W,FG,E,T	Special grade of Ti for pressure vessels, high design
90	L-7002, Ti-99.3	(CP)	—	SP	—	Alpha	—	
91	TUV 230-1-68 Grade III	(CP)	—	GY	TUV 230 III	Alpha	SH,BA	
Ti-Unalloyed—98.4, CP								
92	Contimet 35	(CP)	C-0046	GY	DIN 3 7035	Alpha	BA,SH,ST,P,W,FG,E,T	Most widely used CP Ti. Good tensile strgh & good formability
93	Contimet 30	(CP)	C-0046	GY	DIN 3 7025	Alpha	BA,SH,ST,P,W,FG,E,T	Good deep drawing prop., vessel linings, ductile
94	TUV 230-1-68 Grade II	(CP)	—	GY	TUV 230 II	Alpha	SH,BA	
95	Contimet 35	(CP)	C-0046	GY	—	Alpha	All Forms	Most widely use CP Ti. Medium tensile strgh. Cold formable
96	Fuchs T 3	(CP)	C-0054	GY	LN 3 7034	Alpha	FG	Intermediate strength, high corrosion resistance
Ti-Unalloyed—99.5, CP, ~40 ksi YS								
97	Ti-50A	(CP)	C-0001	US	ASTM B267	Alpha	SH,ST,P,BI,BA,W,T,E	Airframe, chemical, marine, similar applications
98	ASTM B348, Grade 2	(CP)	—	US	ASTM B348	Alpha	BA,BI	Standard for bars and billets of this composition
99	ASTM B337, Grade 2	(CP)	—	US	ASTM B337	Alpha	Seamless & Weld Pi	Standard for seamless and weld. pipe of this composition
100	ASTM B338, Grade 2	(CP)	—	US	ASTM B338	Alpha	S,T &W,T-H,Exch,Con	Std. For S,T. & W,T. for heat exhcangers & condensers

BA—bars, BI—billet, C—casting, E—extrusion, F—foil, FG-forging, I—ingot, P—plate, RD—rod, SH—sheet, ST—strip, T—tubing, W—wire, con—condensers, H exch—heat exchanger, S,T—seamless tubing, W,T—welded tubing.

*Noncurrent standard or alloy designation.

TABLE 1. (Continued)

Index No.	Alloy Designation	CHEMICAL COMPOSITION, WEIGHT PERCENT, ≤ (BALANCE TITANIUM)																
		ALLOYING ELEMENTS											Interstitial Elements				
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt.% (ppm)	Nitrogen Wt.% (ppm)	Carbon
Ti-Unalloyed—99.5, CP, -40 ksi YS																		
101	RMI 40	—	—	—	—	—	—	—	—	—	—	—	—	0.25	0.20	0.015 (150)	0.03 (300)	0.08
102	ALLVAC 40	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
103	OMC Ti-40	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
104	AMS 4942A	—	—	—	—	—	—	—	—	—	—	—	Total 0.15	0.20	0.25	0.015 (150)	0.05 (500)	0.10
105	AMS 4941A	—	—	—	—	—	—	—	—	—	—	—	Total 0.15	0.20	0.25	0.015 (150)	0.05 (500)	0.10
106	ASTM B337, Grade 2	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.25	0.015 (150)	0.03 (300)	0.10
107	Republic RS-40*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.05 (500)	0.10
108	Avesta ATi 35	—	—	—	—	—	—	—	—	—	—	—	—	0.05	0.25	0.012 (120)	0.05 (500)	0.08
109	ASTM B265, Grade 2	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.30	0.25	0.015 (150)	0.03 (300)	0.10
110	ASTM B265, Grade 2	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.30	0.25	0.015 (150)	0.03 (300)	0.10
111	Ugine 40	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
112	Carlson 40	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.30	0.25	0.015 (150)	—	0.10
113	IMI-125	—	—	—	—	—	—	—	—	—	—	—	—	0.20	—	0.0125 (125)	—	—
114	MIL-T-9046H Type I Comp A	—	—	—	—	—	—	—	—	—	—	—	Total 0.60	0.50	0.20	0.015 (150)	0.05 (500)	0.08
115	MIL-T-9046H Type I Comp A	—	—	—	—	—	—	—	—	—	—	—	Total 0.60	0.50	0.20	0.015 (150)	0.05 (500)	0.08
116	ASTM B338, Grade 2	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.25	0.015 (150)	0.03 (300)	0.10
117	Armco Ti-40	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
118	Crucible A-40	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.015 (150)	0.07 (700)	0.10
119	Fuchs T 2	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.10	0.0125 (125)	0.05 (500)	0.08
120	L-7001, Ti-99.5	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.20	0.0125 (125)	0.05 (500)	0.08
121	HMH 55	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.25	0.0125 (125)	—	0.10
122	ASTM B367, Grade C-2	—	—	—	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.25	0.0100 (100)	0.03 (300)	0.10
123	ASTM B367, Grade C-2	—	—	—	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.25	0.0100 (100)	0.03 (300)	0.10
124	*Titanium-AA*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
125	Contimet 30	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.10	0.0125 (125)	0.05 (500)	0.08
126	DIN 3.7065	—	—	—	—	—	—	—	—	—	—	—	—	0.35	0.30	0.013 (130)	0.07 (700)	0.10
127	AMS 4902B	—	—	—	—	—	—	—	—	—	—	—	Total 0.60	0.50	0.20	0.015 (150)	0.05 (500)	0.08
128	Commercial Purity	—	—	—	—	—	—	—	—	—	—	—	Mg 0.01-0.05	0.05-0.20	0.06-0.10	—	0.10	0.01
Ti-Unalloyed—99.6, CP, -25 ksi YS																		
129	ASTM B381, Grade F-11	—	—	—	—	—	—	—	—	—	0.12-0.25	—	Total 0.30	0.20	0.18	0.0150 (150)	0.03 (300)	0.10
130	Ti-35A	—	—	—	—	—	—	—	—	—	—	—	—	0.12 max	0.18	0.015 (150)	0.03 (300)	0.08
131	Koch-Light H Ti 24	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
132	ASTM B338, Grade 1	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.18	0.015 (150)	0.03 (300)	0.10
133	ASTM B265, Grade 1	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.20	0.18	0.015 (150)	0.03 (300)	0.10
134	ASTM B337, Grade 1	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.18	0.015 (150)	0.03 (300)	0.10
135	ASTM B337, Grade 1	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.18	0.015 (150)	0.03 (300)	0.10
136	ASTM B338, Grade 1	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.18	0.015 (150)	0.03 (300)	0.10
137	Avesta ATi 30	—	—	—	—	—	—	—	—	—	—	—	—	0.05	0.20	0.012 (120)	0.03 (300)	0.08
138	ASTM B265, Grade 1	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.20	0.18	0.015 (150)	0.03 (300)	0.10
139	ASTM B348, Grade 1	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.20	0.18	0.0125 (125)	0.03 (300)	0.10
140	TUV 230-1-68 Grade I	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.10	0.0125 (125)	0.05 (500)	0.08
141	EMO Ti 110	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.10	0.0125 (125)	0.05 (500)	0.08
142	ASTM B367, Grade C-1	—	—	—	—	—	—	—	—	—	—	—	Total 0.40	0.20	0.18	0.0100 (100)	0.03 (300)	0.10
143	ASTM B367, Grade C-1	—	—	—	—	—	—	—	—	—	—	—	Total 0.40	0.20	0.18	0.0100 (100)	0.03 (300)	0.10
144	DIN 3.7055	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.25	0.013 (130)	0.06 (600)	0.10
Ti-Unalloyed—99.7, CP, - ksi YS																		
145	*Titanium Gr. NDA*	—	—	—	—	—	—	—	—	—	—	—	—	0.30	—	—	0.20	0.15
146	DTD 5003B*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
147	Carlson 30	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.20	0.18	0.015 (150)	—	0.10
148	DTD 5063A*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
149	DTD 5033B*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
150	DTD 5023B*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Information on this group of alloys is continued on page below

*Noncurrent standard or alloy designation

Index No.	Alloy Designation	Common Name/ Alloy	Company Code	Ctry Code	Prime Country Standard	Alloy Type	Forms Available	Applications
Ti-Unalloyed—99.5, CP, -40 ksi YS (cont.)								
101	RMI 40	(CP)	C-0003	US	AMS 4902	Alpha	All forms	Aircraft structure components corrosion resistant.
102	ALLVAC 40	(CP)	C-0008	US	AMS 4942	Alpha	All forms	
103	OMC Ti-40	(CP)	C-0009	US	AMS 4902B	Alpha	All forms	For valves, heat exchangers, aircraft ducting.
104	AMS 4942	(CP)	—	US	AMS 4942	Alpha	Seamless T	For strength to 400 F (205 C) and oxidation resistance to 400 F (205 C)
105	AMS 4941A	(CP)	—	US	AMS 4941A	Alpha	Welded T	For low-pressure fluid lines and oxidation resistance to 600 F (315 C)
106	ASTM B337, Grade 2	(CP)	—	US	ASTM B337	Alpha	Seamless & Weld.Pl.	Standard for seamless and welded pipe, this composition.
107	Republic RS-40*	(CP)	C-0011	US	—	Alpha	All forms	For nonstructural aircraft parts, moderate to severe forming.
108	Avesta ATi 35	(CP)	C-0021	SW	DIN 3.7055	Alpha	All forms	
109	ASTM B265, Grade 2	(CP)	—	US	ASTM B265	Alpha	SH,ST,P	Standard for strip, sheet, and plate of this composition.
110	ASTM B265, Grade 2	(CP)	—	US	ASTM B265	Alpha	SH,ST,P	Standard for strip, sheet, and plate of this composition.
111	Ugine 40	(CP)	C-0020	FR	—	Alpha	All forms	
112	Carlson 40	(CP)	C-0053	US	ASTM B265	Alpha	P,FG	Plate product applications.
113	IMI-125	(CP)	C-0013	UK	2TA2,3,4,5	Alpha	BA,SH,T,Bl,P	Ductile, formable, corrosion resistant.
114	MIL-T-9046H Type I Comp. A	(CP)	—	US	MIL-T-9046H	Alpha	SH,ST,P	For strength and corrosion resistance to 600 F (315 C).
115	MIL-T-9046H Type I Comp. A	(CP)	—	US	MIL-T-9046H	Alpha	SH,ST,P	For strength and corrosion resistance to 600 F (315 C).
116	ASTM B338, Grade 2	(CP)	—	US	ASTM B338	Alpha	S.T.&W.T-H.Exch.Con	Standard for seamless and welded tubing for heat exchangers and condensers.
117	Armco Ti-40	(CP)	C-0005	US	AMS 4902	Alpha	All forms	For aircraft ducting, corrosion resistance parts chemical industry.
118	Crucible A-40	(CP)	C-0004	US	AMS 4902B	Alpha	SH,ST,P,T,Bl,BA,W	Nonstructural parts, corrosion resistance applications.
119	Fuchs T 2	(CP)	C-0054	GY	LN 3.7024	Alpha	FG	Good weldability, excellent formability, high corrosion resistance.
120	L-7001, Ti-99.5	(CP)	—	SP	—	Alpha	—	
121	HMH 55	(CP)	C-0056	US	ASTM B-348	Alpha	All forms	Fasteners
122	ASTM B367, Grade C-2	(CP)	—	US	ASTM B367	Alpha	C	Standard for titanium and titanium-alloy castings, of this composition.
123	ASTM B367, Grade C-2	(CP)	—	US	ASTM B367	Alpha	C	Standard for titanium and titanium-alloy castings, of this composition.
124	Titanium-AA	(CP)	C-0057	US	—	Alpha	Powder	Scientific applications.
125	Contimet 30	(CP)	C-0046	GY	—	Alpha	All forms	Good formability and deep draw properties ductile linings.
126	DIN 3.7065	(CP)	—	GY	DIN 3.7065	Alpha	All forms	
127	AMS 4902B	(CP)	—	US	AMS 4902B	Alpha	SH,ST,P	For strength to 400 F (204 C) and oxidation resistance to 600 F (316 C)
128	Commercial Purity	(CP)	—	UR	—	Alpha	—	Stock for titanium melting.
Ti-Unalloyed—99.6, CP, -25 ksi YS								
129	ASTM B381, Grade F-11	(CP)	—	US	ASTM B381	Alpha	FG	Standard for forgings of this composition.
130	Ti-35A	(CP)	C-0001	US	ASTM B265	Alpha	SH,ST,P,Bl,BA,W,T,E	Airframe, chemical, marine, similar applications.
131	Koch-Light H Ti 24	(CP)	C-0018	UK	—	Alpha	All forms	
132	ASTM B338, Grade 1	(CP)	—	US	ASTM B338	Alpha	S.T.&W.T-H.Exch,Con	Standard for seamless and welded tubing for heat exchangers and condensers.
133	ASTM B265, Grade 1	(CP)	—	US	ASTM B265	Alpha	SH,ST,P	Standard for strip, sheet, and plate of this composition.
134	ASTM B337, Grade 1	(CP)	—	US	ASTM B337	Alpha	Seamless & Weld.Pl.	Standard for seamless and welded pipe, this composition.
135	ASTM B337, Grade 1	(CP)	—	US	ASTM B337	Alpha	Seamless — Weld.Pl.	Standard for seamless and welded pipe, this composition.
136	ASTM B338, Grade 1	(CP)	—	US	ASTM B338	Alpha	S.T.—W.T.-H.Exch,Con	Standard for seamless and welded tubing for heat exchangers and condensers.
137	Avesta ATi 30	(CP)	C-0021	SW	DIN 3.7035	Alpha	All forms	For lining vessels.
138	ASTM B265, Grade 1	(CP)	—	US	ASTM B265	Alpha	SH,ST,P	Standard for strip, sheet, and plate of this composition.
139	ASTM B348, Grade 1	(CP)	—	US	ASTM B348	Alpha	BA,Bl	Standard for bars and billets of this composition.
140	TUV 230-1-68 Grade I	(CP)	—	GY	TUV 230 I	Alpha	SH,BA	
141	EMO Ti 110	(CP)	—	GE	EMO Ti 110	Alpha	SH,BA	
142	ASTM B367, Grade C-1	(CP)	—	US	ASTM B367	Alpha	C	Standard for titanium and titanium-alloy castings, this composition.
143	ASTM B367, Grade C-1	(CP)	—	US	ASTM B367	Alpha	C	Standard for titanium and titanium-alloy castings, this composition.
144	DIN 3.7055	(CP)	—	GY	DIN 3.7055	Alpha	All forms	
Ti-Unalloyed—99.7, CP, - ksi YS								
145	Titanium Gr. NDA	(CP)	C-0049	US		Alpha	Pellets, Unsintered	Pellets for ladle additions to stainless steel.
146	DTD 5003B*	(CP)	—	UK	DTD 5003B	Alpha	BA	
147	Carlson 30	(CP)	C-0053	US	ASTM B265-1	Alpha	P,FG	Plate product applications.
148	DTD 5063A*	(CP)	—	UK	DTD 5063A	Alpha	SH	
149	DTD 5033B*	(CP)	—	UK	DTD 5033B	Alpha	SH	
150	DTD 5023B*	(CP)	—	UK	DTD 5023B	Alpha	SH	

BA—bars, Bl—billet, C—casting, E—extrusion, F—foil, FG-forging, I—ingot, P—plate, RD—rod, SH—sheet, ST—strip, T—tubing, W—wire, con—condensers, H exch—heat exchanger, S.T.—seamless tubing, W.T.—welded tubing

*Noncurrent standard or alloy designation

TABLE 1. (Continued)

Index No.	Alloy Designation	CHEMICAL COMPOSITION, WEIGHT PERCENT, ≤ (BALANCE TITANIUM)																
		ALLOYING ELEMENTS											Interstitial Elements					
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt.% (ppm)	Nitrogen Wt.% (ppm)	Carbon
Ti-Unalloyed—99.7, CP, - ksi YS (cont.)																		
151	Avesta ATi 24	—	—	—	—	—	—	—	—	—	—	—	—	0.05	0.10	0.012 (120)	0.03 (300)	0.05
152	DIN 3.7035	—	—	—	—	—	—	—	—	—	—	—	—	0.25	0.20	0.013 (130)	0.06 (600)	0.08
153	EMO Ti 140	—	—	—	—	—	—	—	—	—	—	—	—	0.25	0.20	0.013 (130)	0.06 (600)	0.08
Ti-Unalloyed—99.7, Sponge																		
154	TG-00	—	—	—	—	—	—	—	—	0.05	—	—	Cl_2 0.06	0.15	0.10	0.010 (100)	0.03 (300)	0.05
Ti-Unalloyed—99.8, CP, - ksi YS																		
155	BS 2TA.3	—	—	—	—	—	—	—	—	—	—	—	—	0.20	—	0.0125 (125)	—	—
156	BS 2TA.4	—	—	—	—	—	—	—	—	—	—	—	—	0.20	—	0.010 (100)	—	—
157	BS 2TA.2	—	—	—	—	—	—	—	—	—	—	—	—	0.20	—	0.0125 (125)	—	—
158	BS 2TA.1	—	—	—	—	—	—	—	—	—	—	—	—	0.20	—	0.0125 (125)	—	—
159	BS 2TA.5	—	—	—	—	—	—	—	—	—	—	—	—	0.20	—	0.015 (150)	—	—
160	BS 2TA.9	—	—	—	—	—	—	—	—	—	—	—	—	0.20	—	0.015 (150)	—	—
161	BS 2TA.8	—	—	—	—	—	—	—	—	—	—	—	—	0.20	—	0.010 (100)	—	—
162	BS 2TA.6	—	—	—	—	—	—	—	—	—	—	—	—	0.20	—	0.0125 (125)	—	—
163	BS 2TA.7	—	—	—	—	—	—	—	—	—	—	—	—	0.20	—	0.0125 (125)	—	—
164	DIN 3.7025	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.10	0.013 (130)	0.05 (500)	0.08
165	BS TA.1*	—	—	—	—	—	—	—	—	—	—	—	—	*0.20*	—	0.0125 (125)	—	—
Ti-Unalloyed—99.999, High-Purity																		
166	Koch-Light H Ti 72	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Unalloyed—99.9, CP, - ksi YS																		
167	*VT1-0*	—	—	—	—	—	—	—	—	0.10	—	—	Total 0.30	0.30	0.20	0.010 (100)	0.04 (400)	0.07
168	VT1-00	—	—	—	—	—	—	—	—	0.08	—	—	Total 0.10	0.20	0.10	0.008 (80)	0.04 (400)	0.05
Ti-Unalloyed—99.9, Sponge																		
169	Koch-Light H Ti 18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Unalloyed—99.9, Iodide Ti																		
170	Commercial Purity	0.03	—	—	—	—	—	—	—	0.02	—	—	Total 0.10	0.02	0.01	0.04 (400)	0.01 (100)	0.03
Ti-Unalloyed—99. , CP, - ksi																		
171	ASTM B381, Grade F-2	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.30	0.25	0.015 (150)	0.03 (300)	0.10
172	ASTM B381, Grade F-3	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.30	0.35	0.015 (150)	0.05 (500)	0.10
173	ASTM B381, Grade F-4	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.50	0.40	0.015 (150)	0.05 (500)	0.10
174	ASTM B381, Grade F-1	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.20	0.18	0.015 (150)	0.03 (300)	0.10
175	AT1-2SV	—	—	—	—	—	—	—	—	0.15	—	—	—	0.30	0.15	0.008 (80)	0.04 (400)	0.10
176	AT1-1SV	—	—	—	—	—	—	—	—	0.10	—	—	—	0.12	0.12	0.006 (60)	0.04 (400)	0.08
177	Type A-35	—	—	—	—	—	—	—	—	—	—	—	Total 0.60	0.50	0.20	0.015 (150)	0.05 (500)	0.08
178	DIN 17864, 4 CP Grades	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
179	DIN 17862, 4 CP Grades	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
180	DIN 17863, 4 CP Grades	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
181	DIN 17850, 4 CP Grades	—	—	—	—	—	—	—	—	—	—	—	—	0.20-0.35	0.10-0.30	0.013 (130)	0.05-0.07	0.08-0.10
182	Type A-75	—	—	—	—	—	—	—	—	—	—	—	Total 0.80	0.50	0.40	0.015 (150)	0.05 (500)	0.08
183	W 65A	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.30	0.015 (150)	0.05 (500)	0.08
184	W 80A	—	—	—	—	—	—	—	—	—	—	—	—	0.50	0.40	0.015 (150)	0.05 (500)	0.08
185	W 50A	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.20	0.015 (150)	0.03 (300)	0.08
186	W 35A	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.18	0.010 (100)	0.03 (300)	0.08
187	VT1-2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
188	VT1D-1	—	—	—	—	—	—	—	—	0.15	—	—	—	0.30	0.15	0.010 (100)	0.04 (400)	0.05
189	VT1-1	—	—	—	—	—	—	—	—	0.12	—	—	—	0.11-0.15	—	—	—	0.07
190	ATi 45	—	—	—	—	—	—	—	—	—	—	—	—	0.05	0.35	0.012 (120)	0.07 (700)	0.10
191	TTC 20B Casting	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
192	DTD 5013B*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.013 (130)	—	—
193	Sandvik Titanium 9	—	—	—	—	—	—	—	—	—	—	—	—	0.15 max	0.09 max	0.005 (50)	0.01 (100)	0.035
194	Allvac 30	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
195	IMI-115	—	—	—	—	—	—	—	—	—	—	—	—	0.20	—	0.0125 (125)	—	—
196	Atlas 30	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
197	UT35	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.20	0.0125 (125)	0.05 (500)	0.08
198	Ugine 35	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
199	UT40	—	—	—	—	—	—	—	—	—	—	—	—	0.25	0.25	0.0125 (125)	0.06 (600)	0.08
200	TiL 100 Grade 2	—	—	—	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.25	0.010 (100)	0.03 (300)	0.10

Information on this group of alloys is continued on page below

*Noncurrent standard or alloy designation

Index No.	Alloy Designation	Common Name/ Alloy	Company Code	Ctry Code	Prime Country Standard	Alloy Type	Forms Available	Applications
Ti-Unalloyed—99.7, CP, - ksi YS (cont.)								
151	Avesta ATi 24	(CP)	C-0021	SW	DIN 3.7025	Alpha	All forms	For deep drawing operations.
152	DIN 3.7035	(CP)	—	GY	DIN 3.7035	Alpha	All forms	
153	EMO Ti 140	(CP)	—	GE	EMO Ti 140	Alpha	All forms	
Ti-Unalloyed—99.7, Sponge								
154	TG-00	(Sponge)	—	UR	GOST 5303	Alpha	Sponge	Stock for titanium melting
Ti-Unalloyed—99.6, CP, - ksi YS								
155	BS 2TA.3	(CP)	—	UK	BS 2TA.3	Alpha	BA, Sections/mach.	
156	BS 2TA.4	(CP)	—	UK	BS 2TA.4	Alpha	FG Stock	Forgings and forging stock
157	BS 2TA.2	(CP)	—	UK	BS 2TA.2	Alpha	SH,ST	
158	BS 2TA.1	(CP)	—	UK	BS 2TA.1	Alpha	SH,ST	
159	BS 2TA.5	(CP)	—	UK	BS 2TA.5	Alpha	FG	Forgings
160	BS 2TA.9	(CP)	—	UK	BS 2TA.9	Alpha	FG	Forgings
161	BS 2TA.8	(CP)	—	UK	BS 2TA.8	Alpha	FG Stock	Forgings and forging stock
162	BS 2TA.6	(CP)	—	UK	BS 2TA.6	Alpha	SH,ST	
163	BS 2TA.7	(CP)	—	UK	BS 2TA.7	Alpha	BA, Sections/mach.	
164	DIN 3.7025	(CP)	—	GY	DIN 3.7025	Alpha	All forms	
165	BS TA.1*	(CP)	—	UK	BS TA.1*	Alpha	SH,ST	
Ti-Unalloyed—99.999, High-Purity								
166	Koch-Light H Ti 72	(High-purity, Ti)	C-0018	UK	—	Alpha	High-purity crystal	High purity single crystals 3 x 6 centimeters
Ti-Unalloyed—99.9, CP, - ksi YS								
167	VT1-0	(CP)	—	UR	—	Alpha	All forms	
168	VT1-00	(CP)	—	UR	—	Alpha	All forms	
Ti-Unalloyed—99.9, Sponge								
169	Koch-Light H Ti 18	(CP)	C-0018	UK	—	Alpha	All forms	Stock for titanium melting
Ti-Unalloyed—99.9, Iodide Ti								
170	Commercial Purity	(Iodide), (CP)	—	UR	—	Alpha	—	Stock for titanium melting
Ti-Unalloyed—99. , CP, - ksi YS								
171	ASTM B381, Grade F-2	(CP)	—	US	ASTM B381	Alpha	FG	Standard for titanium and titanium-alloy forging of this composition
172	ASTM B381, Grade F-3	(CP)	—	US	ASTM B381	Alpha	FG	Standard for titanium and titanium-alloy forging of this composition
173	ASTM B381, Grade F-4	(CP)	—	US	ASTM B381	Alpha	FG	Standard for titanium and titanium-alloy forging of this composition
174	ASTM B381, Grade F-1	(CP)	—	US	ASTM B381	Alpha	FG	Standard for titanium and titanium-alloy forging of this composition
175	AT1-2SV	(CP)	—	UR	—	Alpha	Welding Rod	Welding electrode
176	AT1-1SV	(CP)	—	UR	—	Alpha	Welding Rod	Welding electrode
177	Type A-35	(CP)	C-0055	US	AMS 4902	Alpha	All forms	Aircraft skins, honeycomb, bellows, heat exchanger parts
178	DIN 17864, 4 CP Grades	(CP)	—	GY	DIN 17864	Alpha	Covers 4 compositions	
179	DIN 17862, 4 CP Grades	(CP)	—	GY	DIN 17862	Alpha	Covers 4 compositions	
180	DIN 17863, 4 CP Grades	(CP)	—	GY	DIN 17863	Alpha	Covers 4 compositions	
181	DIN 17850, 4 CP Grades	(CP)	—	GY	DIN 17850	Alpha	Covers 4 compositions	
182	Type A-75	(CP)	C-0055	US	AMS 4901	Alpha	All forms	Aircraft skins, honeycomb, bellows, heat exchanger parts
183	W 65A	(CP)	C-0066	US	—	Alpha	All forms	
184	W 80A	(CP)	C-0066	US	—	Alpha	All forms	
185	W 50A	(CP)	C-0066	US	—	Alpha	All forms	
186	W 35A	(CP)	C-0066	US	—	Alpha	All forms	
187	VT1-2	(CP)	—	UR	—	Alpha	All forms	
188	VT1D-1	(CP)	—	UR	—	Alpha	All forms	
189	VT1-1	(CP)	—	UR	—			
190	ATi 45	(CP)	C-0021	SW	DIN 3.7065	Alpha	—	Used where severe mechanical stresses are involved
191	TTC 20B Casting	(CP)	C-0006	US	ASTM B-367-C	Alpha	C	Commercial titanium castings
192	DTD 5013B*	(CP)	—	UK	DTD-5013B	Alpha	BA	
193	Sandvik Titanium 9	(CP)	C-0043	SW	—	Alpha	—	Very-high purity titanium, sea water, nuclear reactors
194	Allvac 30	(CP)	C-0008	US	—	Alpha	All forms	
195	IMI-115	(CP)	C-0013	UK	2TA1	Alpha	BA,SH,ST,W,E	Ductile, formable, corrosion resistant
196	Atlas 30	(CP)	—	—	—	Alpha	All forms	
197	UT35	(CP)	C-0020	FR	AECMA	Alpha	BA,SH,P,W,FG	Cold formable and easily weldable
198	Ugine 35	(CP)	C-0020	FR	—	Alpha	All forms	
199	UT40	(CP)	C-0020	FR	AECMA	Alpha	BA,SH,P,W,FG	Cold formable and easily weldable
200	TIL 100 Grade 2	(CP)	C-0025	US	ASTM B367-69	Alpha	C	Graphite rammed castings

BA—bars, Bi—billet, C—casting, E—extrusion, F—foil, FG-forging, I—ingot, P—plate, RD—rod, SH—sheet, ST—strip, T—tubing, W—wire, con—condensers, H exch—heat exchanger, S T—seamless tubing, W T—welded tubing

*Noncurrent standard or alloy designation

TABLE 1. (Continued)

Index No.	Alloy Designation	CHEMICAL COMPOSITION, WEIGHT PERCENT, ≈ (BALANCE TITANIUM)																
		ALLOYING ELEMENTS												Interstitial Elements				
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt.% (ppm)	Nitrogen Wt.% (ppm)	Carbon
Ti-Unalloyed—98., CP, -50 ksi YS																		
201	IMI-155	—	—	—	—	—	—	—	—	—	—	—	—	0.20	—	0.0125 (125)	—	—
Ti-Unalloyed—98., CP, -55 ksi YS																		
202	TIL 100 Grade 3	—	—	—	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.35	0.010 (100)	0.05 (300)	0.10
203	TIL 100 Grade 2A	—	—	—	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.25	0.010 (100)	0.03 (300)	0.10
Ti-Unalloyed—98., CP, -60 ksi YS																		
204	UT60	—	—	—	—	—	—	—	—	—	—	—	—	0.35	0.40	0.0125 (125)	0.07 (700)	0.10
Ti-Unalloyed—98., CP, -80 ksi YS																		
205	Crucible A-70	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.07 (700)	0.05-0.15
Ti-Unalloyed—98., CP, - ksi YS																		
206	VT-1D	—	—	—	—	—	—	—	—	0.15	—	—	—	0.30	0.15	0.010 (100)	0.04 (400)	0.05
207	VT-1D-2	—	—	—	—	—	—	—	—	0.15	—	—	—	0.30	0.15	0.010 (100)	0.04 (400)	0.05
208	Ti-45-A*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.05 (500)	0.10
209	Avesta ATi 45	—	—	—	—	—	—	—	—	—	—	—	—	0.05	0.25	0.012 (120)	0.07 (700)	0.10
210	Resilient Ti	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
211	Tikrutan RT 20	—	—	—	—	—	—	—	—	—	—	—	—	0.35	0.30	0.013 (130)	0.07 (700)	0.10
212	Ductile Ti	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
213	VT1L	—	—	—	—	—	—	—	—	0.15	—	W 0.20	Total 0.30	0.30	0.20	0.015 (150)	0.05 (500)	0.15
214	VT1	—	—	—	—	—	—	—	—	0.15	—	—	—	0.30	0.15	0.015 (150)	0.04 (400)	0.10
215	IMI-130	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.20	0.013 (130)	0.03 (300)	0.17
216	Dynaplat 30	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.10	0.0125 (125)	0.05 (500)	0.08
217	Ti-Brush 40	—	—	—	—	—	0.10	—	—	—	—	—	—	0.20	0.20	—	—	0.10
218	Ti-55-A*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.015 (150)	—	0.20
219	Krupp 12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
220	AIR 9182 (T50)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
221	AIR 9182 (T40)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
222	AIR 9182 (T35)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
223	UT40R (special rivet grade)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
224	Krupp 18S	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
225	T-35	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
226	T-60	—	—	—	—	—	—	—	—	—	—	—	—	0.20	—	—	—	—
227	T-50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
228	T-40	—	—	—	—	—	—	—	—	—	—	—	—	0.20	—	—	—	—
229	MMA-1970	—	—	—	—	—	—	—	—	—	—	—	Total 0.10	0.50	0.40	0.015 (150)	0.02 (200)	0.05
230	MMA-1950	—	—	—	—	—	—	—	—	—	—	—	Total 0.10	0.30	0.25	0.015 (150)	0.02 (200)	0.05
231	MMA-1940	—	—	—	—	—	—	—	—	—	—	—	Total 0.10	0.30	0.15	0.015 (150)	0.02 (200)	0.05
232	UT50	—	—	—	—	—	—	—	—	—	—	—	—	0.25	0.35	0.0125 (125)	0.07 (700)	0.08
233	Ti P.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
234	Ti P.04	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
235	L.W. 3.7024 Werkstoff	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
236	L.W. 3.7064 Werkstoff	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
237	L.W. 3.7034 Werkstoff	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
238	Ti P.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
239	DTD 5193*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
240	DTD 5183*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
241	DTD 5073*	—	—	—	—	—	—	—	—	—	—	—	—	0.20	—	—	—	0.10
242	AIR 9182 (T60)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
243	Krupp 15	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
244	ST-80	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
245	ST-70	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
246	ST-60	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
247	ST-50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
248	ST-40	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
249	KS-70	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
250	KS-50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Information on this group of alloys is continued on page below

*Noncurrent standard or alloy designation

Index No.	Alloy Designation	Common Name/ Alloy	Company Code	Ctry Code	Prime Country Standard	Alloy Type	Forms Available	Applications
Ti-Unalloyed—99. , CP, -50 ksi YS								
201	IMI-155	(CP)	C-0013	UK	2TA6	Alpha	SH,ST	Corrosion resistant. Slight forming only
Ti-Unalloyed—99. , CP, - 55 ksi YS								
202	TIL 100 Grade 3	(CP)	C-0025	US	ASTM B367-69			Graphite rammed castings
203	TIL 100 Grade 2A	(CP)	C-0025	US	ASTM B367-69	Alpha	C	Graphite rammed castings
Ti-Unalloyed—99. , CP, -60 ksi YS						Alpha	C	
204	UT60	(CP)	C-0020	FR	AIR-9182			Cold formable and easily weldable
Ti-Unalloyed—99. , CP, -80 ksi YS						Alpha	BA,SH,P,W,FG	
205	Crucible A-70	(CP)	C-0004	US	—			Aircraft parts and commercial titanium applications
Ti-Unalloyed—99. , CP, - ksi YS						Alpha	All forms	
206	VT-1D	—	—	UR	—			
207	VT-1D-2	—	—	UR	—	Alpha	—	
208	Ti-45-A*	(CP)	C-0001	US	—	Alpha	—	Fasteners, nonstructural members, corrosion resistant
209	Avesta ATi 45	(CP)	C-0021	SW	—	Alpha	All forms	
210	Resilient Ti	(IMI-155-160),C	—	XX	ISO Draft	Alpha	All forms	Surgical implant alloy
211	Tikrutan RT 20	(CP)	C-0019	GY	DIN 3.7065	Alpha	—	
212	Ductile Ti	(IMI-115), (CP)	—	XX	ISO Draft	Alpha	All forms	Surgical implant alloy
213	VT1L	(CP)	—	UR	—	Alpha	—	Unalloyed titanium for castings
214	VT1	(CP)	—	UR	—	Alpha	I,C	
215	IMI-130	(CP)	C-0013	UK	DTD 5273.83	Alpha	All forms	Ductile, formable, corrosion resistant
216	Dynaplat 30	(P)	C-0050	GY	—	Alpha	BA,BI,W,P,SH,T	Cladding with explosion-bonded technique
217	Ti-Brush 40	(CP)	C-0010	US	—	Alpha	Explosion-bond. clad	For aircraft and missile components. High fatigue strength
218	Ti-55-A*	(CP)	C-0001	US	—	Alpha	All forms	Fasteners, nonstructural members. Corrosion resistant
219	Krupp 12	(CP)	C-0019	GY	—	Alpha	All forms	
220	AIR 9182 (T50)	(IMI-130),(CP)	—	FR	AIR-9182	Alpha	All forms	
221	AIR 9182 (T40)	(IMI-125),(CP)	—	FR	AIR-9182	Alpha	SH	
222	AIR-9182 (T35)	(IMI-115),(CP)	—	FR	AIR-9182	Alpha	SH	
223	UT40R (Special Rivet Gr.)	(CP)	C-0020	FR	—	Alpha	SH	Wire made into rivets for aeronautical industry
224	Krupp 185	(CP)	C-0019	GY	—	Alpha	W,rivets	
225	T-35	(CP)	—	FR	AIR-9182	Alpha	All forms	
226	T-60	(CP)	—	FR	AIR-9182	Alpha	—	
227	T-50	(CP)	—	FR	AIR-9182	Alpha	—	
228	T-40	(CP)	—	FR	AIR-9182	Alpha	—	
229	MMA-1970	(CP)	C-0002	US	—	Alpha	—	
230	MMA-1950	(CP)	C-0002	US	—	Alpha	All forms	
231	MMA-1940	(CP)	C-0002	US	—	Alpha	All forms	
232	UT50	(CP)	C-0020	FR	—	Alpha	All forms	Still utilized for certain aeronautical applications
233	Ti P.02	(CP)	—	FR	AECMA P.02	Alpha	BA,SH,P,FG,W	
234	Ti P.04	(CP)	—	FR	AECMA P.04	Alpha	—	
235	L.W. 3.7024 Werkstoff	(CP)	—	GY	L.W. 3.7024	Alpha	—	
236	L.W. 3.7064 Werkstoff	(CP)	—	GY	L.W. 3.7064	Alpha	—	
237	L.W. 3.7034 Werkstoff	(CP)	—	GY	L.W. 3.7024	Alpha	—	
238	Ti P.01	(CP)	—	FR	AECMA P.01	Alpha	—	
239	DTD 5193*	(CP)	—	UK	DTD 5193	Alpha	—	
240	DTD 5183*	(CP)	—	UK	DTD 5183	Alpha	SH,ST	
241	DTD 5073*	(CP)	—	UK	DTD 5073	Alpha	SH,ST	
242	AIR 9182 (T60)	(IMI-160),(CP)	—	FR	AIR 9182	Alpha	T	
243	Krupp 15	(CP)	C-0019	GY	—	Alpha	SH	
244	ST-80	(CP)	C-0045	JA	—	Alpha	All forms	
245	ST-70	(CP)	C-0045	JA	—	Alpha	All forms	
246	ST-60	(CP)	C-0045	JA	—	Alpha	All forms	
247	ST-50	(CP)	C-0045	JA	—	Alpha	All forms	
248	ST-40	(CP)	C-0045	JA	—	Alpha	All forms	
249	KS-70	(CP)	C-0044	JA	—	Alpha	All forms	
250	KS-50	(CP)	C-0044	JA	—	Alpha	All forms	
						Alpha	All forms	

BA—bars, BI—billet, C—casting, E—extrusion, F—foil, FG-forging, I—ingot, P—plate, RD—rod, SH—sheet, ST—strip, T—tubing, W—wire, con—condensers, H.exch—heat exchanger, S.T.—seamless tubing, W.T.—welded tubing

*Noncurrent standard or alloy designation

TABLE 1. (Continued)

Index No.	Alloy Designation	CHEMICAL COMPOSITION, WEIGHT PERCENT, ≤ (BALANCE TITANIUM)																
		ALLOYING ELEMENTS											Interstitial Elements					
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt.% (ppm)	Nitrogen Wt.% (ppm)	Carbon
Ti-Unalloyed—99. , CP. - ksi YS (cont.)																		
251	DIN 17862, 4 CP Grades	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
252	DIN 17860, 4 CP Grades	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
253	T 993	—	—	—	—	—	—	—	—	—	—	—	—	0.30	0.25	0.013 (130)	0.06 (600)	0.10
254	T 992	—	—	—	—	—	—	—	—	—	—	—	—	0.35	0.30	0.013 (130)	0.07 (700)	0.10
255	T 994	—	—	—	—	—	—	—	—	—	—	—	—	0.25	0.20	0.013 (130)	0.06 (600)	0.08
256	T 995	—	—	—	—	—	—	—	—	—	—	—	—	0.20	0.10	0.013 (130)	0.05 (500)	0.08
257	Ti P 05	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Unalloyed—99. , Sponge																		
258	TG-140	—	—	—	—	—	—	—	—	0.05	—	—	Cl_2 0.08	0.45	0.11	—	0.03 (300)	0.05
259	TG-155	—	—	—	—	—	—	—	—	0.08	—	—	Cl_2 0.10	0.25	0.13	—	0.04 (400)	0.06
260	TP99	—	—	—	—	—	—	—	—	0.10	—	—	Cl_2 0.0014	0.35	Ca 0.08	0.04 (400)	0.07 (700)	0.05
261	TG-190	—	—	—	—	—	—	—	—	0.10	—	—	Cl_2 0.12	0.03	—	—	0.06 (600)	0.06
262	TG-170	—	—	—	—	—	—	—	—	0.08	—	—	Cl_2 0.10	0.25	—	—	0.05 (500)	0.06
263	Commercial Purity	—	—	—	—	—	—	—	—	0.02-0.04	—	—	W 0.02	0.20	0.20	0.02-0.05	0.10	0.07
Ti-Unalloyed																		
264	ASTM B363, Grade WPT2	Pl-B337 Gr 2	T-B338 Gr 2	P-B265 Gr 2	B-B348 Gr 2	C-B367 Gr 2	—	—	—	—	—	—	—	—	—	—	—	—
265	ASTM B363, Grade WPT1	Pl-B337 Gr 1	T-B338 Gr 1	P-B265 Gr 1	B-B348 Gr 1	C-B367 Gr 1	—	—	—	—	—	—	—	—	—	—	—	—
266	ASTM B363, Grade WPT3	Pl-B337 Gr 3	T-B338 Gr 3	P-B265 Gr 3	B-B348 Gr 3	C-B367 Gr 3	—	—	—	—	—	—	—	—	—	—	—	—
267	ASTM B363, Grade WPT1	Pl-B337 Gr 1	T-B338 Gr 1	P-B265 Gr 1	B-B367 Gr 1	C-B367 Gr 1	—	—	—	—	—	—	—	—	—	—	—	—
268	ASTM B363, Grade WPT2	Pl-B337 Gr 2	T-B338 Gr 2	P-B265 Gr 2	B-B367 Gr 2	C-B367 Gr 2	—	—	—	—	—	—	—	—	—	—	—	—
269	ASTM B363, Grade WPT3	Pl-B337 Gr 3	T-B338 Gr 3	P-B265 Gr 3	B-B367 Gr 3	C-B367 Gr 3	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Unalloyed—CP, - ksi YS																		
270	DTD 5283	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
271	DTD 5273	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Unalloyed—99. , Powder, Sponge																		
272	TG-1-3	—	—	—	—	—	—	—	—	0.15	—	—	Cl_2 0.10	0.30	0.20	0.01 (100)	0.05 (500)	0.06
273	TG-130	—	—	—	—	—	—	—	—	0.04	—	—	Cl_2 0.10	0.13	0.08	—	0.03 (300)	0.04
274	Pl	—	—	—	—	—	—	—	0.08	—	—	—	Cl_2 0.005	—	—	0.35	0.07 (700)	—
275	TG-118	—	—	—	—	—	—	—	—	0.05	—	—	Cl_2 0.06	0.12	0.07	—	0.03 (300)	0.04
276	TG-130P	—	—	—	—	—	—	—	—	0.05	—	—	Cl_2 0.06	0.12	0.07	—	0.03 (300)	0.03
277	PKHM3 TG	—	—	—	—	—	—	—	—	0.03	—	—	Cl_2 0.04	0.02	0.09	0.003 (30)	—	—
278	TG-110	—	—	—	—	—	—	—	—	0.03	—	—	Cl_2 0.08	0.09	0.05	—	0.02 (200)	0.03
279	TG-1050P	—	—	—	—	—	—	—	—	0.05	—	—	Cl_2 0.08	0.08	0.05	—	0.025 (250)	0.03
280	TG-0	—	—	—	—	—	—	—	—	0.05	—	—	Cl_2 0.05	0.15	0.10	0.01 (100)	0.03 (300)	0.05
281	TG-1000P	—	—	—	—	—	—	—	—	0.05	—	—	Cl_2 0.08	0.08	0.05	—	0.025 (250)	0.03
282	ASTM B299, Ti Sponge	—	—	Cl_2 0.20	—	—	—	—	—	0.04	—	—	Total 0.05	0.25	0.15	0.03 (300)	0.02 (200)	0.025
283	ASTM B299, GP-1	—	—	Cl_2 0.20	—	—	—	—	—	0.04	—	—	Total 0.05	0.25	0.15	0.03 (300)	0.02 (200)	0.025
284	ASTM B299, ML-120	Mg 0.50	—	Cl_2 0.20	—	—	—	—	—	0.04	—	—	Total 0.05	0.15	0.10	0.03 (300)	0.015 (150)	0.025
285	ASTM B299, MD-120	Mg 0.08	—	Cl_2 0.12	—	—	—	—	—	0.04	—	—	Total 0.05	0.12	0.10	0.01 (100)	0.015 (150)	0.020
286	ASTM B299, SL-120	—	Na 0.19	Cl_2 0.20	—	—	—	—	—	0.04	—	—	Total 0.05	0.05	0.10	0.05 (500)	0.015 (150)	0.020
TiH_2 Powder																		
287	Titanium Hydride Powder	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Pd 0.15-0.20																		
288	RMI 0.2 Pd	—	—	—	—	—	—	—	—	—	0.20	—	—	0.30	—	0.015 (150)	0.03 (300)	0.08
Ti—Al 0-Mo 0-Sn 11-Si 0																		
289	DTD M160*	Al	—	Mo	11.0	—	—	—	—	Si	—	—	—	—	—	—	—	—
290	DTD M159*	Al	—	Mo	11.0	—	—	—	—	Si	—	—	—	—	—	—	—	—
Ti—Al 0-V 0-Cr 0																		
291	VT7	Al	V	—	—	—	—	Cr	—	—	—	—	—	—	—	—	—	—
Ti—Al 0-Zr 0-Si 0																		
292	IMI-EX-68*	Al	—	—	—	Zr	—	—	—	Si	—	—	—	—	—	—	—	—
Ti—Al 1-Mo 1.5																		
293	OT4-0	0.2-1.4	—	—	—	0.30	0.2-1.3	—	—	0.15	—	—	Total 0.30	0.30	0.15	0.012 (120)	0.05 (500)	0.10
Ti—Al 1-V 8-Fe 5																		
294	ALLVAC 1-8-5*	1.0	8.0	—	—	—	—	—	—	—	—	—	—	5.0	—	—	—	—
295	RMI 1Al-8V-5Fe	0.8-1.8	7.5-8.5	—	—	—	—	—	—	—	—	—	—	4.0-6.0	0.30-0.50	0.0125 (125)	0.05 (500)	0.08
296	OMC-Ti-1Al-8V-5Fe*	1.0	8.0	—	—	—	—	—	—	—	—	—	—	5.0	—	—	—	—

Information on this group of alloys is continued on page below

Pl = pipe

*Noncurrent standard or alloy designation

Index No.	Alloy Designation	Common Name/ Alloy	Company Code	Ctry Code	Prime Country Standard	Alloy Type	Forms Available	Applications
Ti-Unalloyed-99. , CP, - ksi (cont.)								
251	DIN 17862, 4 CP Grades	(CP)	—	GY	DIN 17862	Alpha	All forms	
252	DIN 17860, 4 CP Grades	(CP)	—	GY	DIN 17860	Alpha	All forms	
253	T 993	(CP)	C-0063	GY	—	Alpha	—	
254	T 992	(CP)	C-0063	GY	—	Alpha	—	
255	T 994	(CP)	C-0063	GY	—	Alpha	—	
256	T 995	(CP)	C-0063	GY	—	Alpha	—	
257	Ti P 05	(IMI-130)	—	FR	AECMA P 05	Alpha	Rivet wire	Corrosion resistant, formable
Ti-Unalloyed—99. , Sponge								
258	TG-140	(Sponge)	—	UR	GOST 5303	Alpha	Sponge Ti	Stock for Ti melting
259	TG-155	(Sponge)	—	UR	GOST 5303	Alpha	Sponge Ti	Stock for Ti melting
260	TP99	(Sponge)	—	UR	—	Alpha	Sponge Ti	Stock for Ti melting
261	TG-190	(Sponge)	—	UR	GOST 5303	Alpha	Sponge Ti	Stock for Ti melting
262	TG-170	(Sponge)	—	UR	GOST 5303	Alpha	Sponge Ti	Stock for Ti melting
263	Commercial Purity	(CP)	—	UR	—	Alpha	—	Stock for Ti melting
Ti-Unalloyed								
264	ASTM B363, Grade WPT2	—	—	US	ASTM B363	Alpha	—	Standard for seamless and welded unalloyed Ti welding fittings.
265	ASTM B363, Grade WPT1	—	—	US	ASTM B363	Alpha	—	Standard for seamless and welded unalloyed Ti welding fittings.
266	ASTM B363, Grade WPT3	—	—	US	ASTM B363	Alpha	—	Standard for seamless and welded unalloyed Ti welding fittings.
267	ASTM B363, Grade WPT1	—	—	US	ASTM B363	Alpha	—	Standard for seamless and welded unalloyed Ti welding fittings.
268	ASTM B363, Grade WPT2	—	—	US	ASTM B363	Alpha	—	Standard for seamless and welded unalloyed Ti welding fittings.
269	ASTM B363, Grade WPT3	—	—	US	ASTM B363	Alpha	—	Standard for seamless and welded unalloyed Ti welding fittings.
Ti-Unalloyed—CP, - ksi YS								
270	DTD 5283	(CP),(IMI-130)	—	UK	DTD 5283	Alpha	FG stock	Forging stock
271	DTD 5273	(CP),(IMI-130)	—	UK	DTD 5273	Alpha	BA for machining	
Ti-Unalloyed—99. , Powder, Sponge								
272	TG-1-3	—	—	UR	—	Alpha	Sponge	Stock for Ti melting
273	TG-130	—	—	UR	—	Alpha	Sponge	Stock for Ti melting
274	PI	—	—	UR	—	Alpha	Reduced Ti powder	Stock for Ti melting
275	TG-118	—	—	UR	—	Alpha	Sponge	Stock for Ti melting
276	TG-1130P	—	—	UR	—	Alpha	Sponge	Stock for Ti melting
277	PKHM3 TG	—	—	UR	—	Alpha	Sponge Ti	Stock for Ti melting
278	TG-110	—	—	UR	—	Alpha	Sponge	Stock for Ti melting
279	TG-1050P	—	—	UR	—	Alpha	Sponge	Stock for Ti melting
280	TG-0	—	—	UR	—	Alpha	Sponge	Stock for Ti melting
281	TG-1000P	—	—	UR	—	Alpha	Sponge	Stock for Ti melting
282	ASTM B299	—	—	US	ASTM B299	Alpha	Sponge	Sponge for melting
283	ASTM B299, GP-1	—	—	US	ASTM B299	Alpha	Sponge	Sponge for melting
284	ASTM B299, ML-120	—	—	US	ASTM B299	Alpha	Sponge	Sponge for melting
285	ASTM B299, MD-120	—	—	US	ASTM B299	Alpha	Sponge	Sponge for melting
286	ASTM B299, SL-120	—	—	US	ASTM B299	Alpha	Sponge	Sponge for melting
TiH_2 Powder								
287	Titanium Hydride Powder	—	C-0052	US	—		Powder	Getters, powder metallurgy alloys, A purity hydrogen
Ti—Pd 0.14-0.20								
288	RMI 0.2 Pd	(Pd alloy)	C-0053	US	ASTM B348	Alpha	All forms	Chemical industry, for oxidizing and reducing media
Ti—Al 0-Mo 0-Sn 11-Si 0								
289	DTD M160*	(IMI 680)	—	UK	DTD M160*	Alpha + beta	—	
290	DTD M159*	(IMI 680)	—	UK	DTD M159*	Alpha + beta	—	
Ti—Al 0-V 0-Cr 0								
291	VT7	—	—	UR	—	Near-alpha	—	
Ti—Al 0-Zr 0-Si 0								
292	IMI-EX-68*	—	C-0013	UK	—	Beta	BA,FG	Beta stabilized
Ti—Al 1-Mo 1.5								
293	OT4-0	—	—	UR	—	Near-alpha	I,BI,BA,P,SH,ST,E,T	
Ti—Al 1-V 8-Fe 5								
294	ALLVAC 1-8-5*	(185)	C-0008	US	—	Alpha + beta	I,BI,BA,W	
295	RMI 1Al-8V-5Fe	(185)	C-0003	US	—	Near-beta	I,BI,BA,P	High-strength fasteners
296	OMC-Ti-1Al-8V-5Fe*	(185)	C-0009	US	—	Near-beta	I,BI,BA,W	High-strength fasteners

BA—bars, BI—billet, C—casting, E—extrusion, F—foil, FG-forging, I—ingot, P—plate, RD—rod, SH—sheet, ST—strip, T—tubing, W—wire, con—condensers, Hexch—heat exchanger, S T—seamless tubing, W T—welded tubing, Pi—pipe

*Noncurrent standard or alloy designation

TABLE 1. (Continued)

Index No.	Alloy Designation	CHEMICAL COMPOSITION, WEIGHT PERCENT, ≤ (BALANCE TITANIUM)																
		ALLOYING ELEMENTS												Interstitial Elements				
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt.% (ppm)	Nitrogen Wt.% (ppm)	Carbon
Ti—Al 1.2-Mo 0.8-Cr 7.7-Fe 3																		
297	5T*	1.20	—	0.70	—	—	—	7.7	0.08	—	—	—	Cl_2 0.005	—	—	—	—	—
Ti—Al 1.5-Cr 2.5-Fe 0.5																		
298	VT2	1.0-2.0	—	—	—	—	—	2.0-3.0	—	—	—	—	—	0.50	—	—	—	—
Ti—Al 1.5-Mn 3																		
299	Republic RS-100*	1.5	—	—	—	—	3.0	—	—	—	—	—	—	—	—	—	—	0.20
Ti—Al 1.5-Mo 0.5-Cr 3																		
300	4T	1.33	—	0.50	—	—	—	3.14	—	—	—	—	—	—	—	—	—	—
Ti—Al 1.7-Mn 1.5																		
301	OT4-1	1.0-2.5	—	—	—	0.30	0.7-2.0	—	—	0.15	—	—	Total 0.30	0.30	0.15	0.012 (120)	0.05 (500)	0.10
Ti—Al 1.9-Mo 1.3-Cr 4.5-Fe 3.5																		
302	3T	1.9	—	1.33	—	—	—	4.57	—	—	—	—	—	—	—	—	—	—
Ti—Al 2																		
303	Ti-Brush 65A	1.9-2.0	—	—	—	—	—	—	—	—	—	—	—	—	0.20	—	0.02 (200)	0.10
Ti—Al 2-Cr 0.3-B																		
304	ATN	1.50-2.50	—	—	—	—	—	0.20-0.50	—	0.20-0.40	—	—	B 0.001	0.20-0.40	0.15	0.055	0.05	0.10
Ti—Al 2-Cr 1.5-Fe 1.5-Si 1.5																		
305	AT2	2.0	—	—	—	—	—	1.5	—	1.5	—	—	—	1.5	—	—	—	—
Ti—Al 2-Mn 1.5																		
306	OT4-1	1.0-2.5	—	—	—	0.30	0.8-2.0	—	—	0.15	—	—	Total 0.30	0.40	0.15	0.015 (150)	0.05 (500)	0.10
Ti—Al 2-Mn 1.5-Pd 0.2																		
307	OT4-K	2.0	—	—	—	—	1.5	—	—	—	0.20	—	—	—	—	—	—	—
Ti—Al 2-Mn 2																		
308	IMI-315	2.0	—	—	—	—	2.0	—	—	—	—	—	—	—	—	—	—	—
309	Hylite 30*	2.0	—	—	—	—	2.0	—	—	—	—	—	—	—	—	0.013	—	—
310	DTD 5043B*	2.0	—	—	—	—	2.0	—	—	—	—	—	—	—	—	—	—	—
311	T-A2M	2.0	—	—	—	—	2.0	—	—	—	—	—	—	—	—	—	—	—
Ti—Al 2-Mo 4-Sn 11-Si 0.3																		
312	T713*	2.2	—	4.0	11.0	—	—	—	—	0.3	—	—	—	—	—	—	—	—
Ti—Al 2-Mo 7																		
313	VT14-1	1.90	—	6.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti—Al 2-V 11-Sn 2-Zr 1																		
314	Transage 129 (Experiment)	2.0	11.0	—	2.0	11.0	—	—	—	—	—	—	—	—	—	—	—	—
315	OMC-Ti-2Al-11V-2SN-11Zr	2.0	11.0	—	2.0	11.0	—	—	—	—	—	—	—	—	—	—	—	—
Ti8Al 2-Zr 2.5																		
316	AK-3	2.0	—	—	—	2.0-3.0	—	—	—	—	—	—	—	—	0.30-0.45	—	—	—
Ti—Al 2-Zr 3.5																		
317	48T7*	2.0	—	—	—	3.5	—	—	—	—	—	—	—	—	—	—	—	—
Ti—Al 2.25-Mo 1-Sn 1-Zr 5-Si 0.20																		
318	Ti-679	2.0-2.5	—	0.8-1.2	10.5-11.5	4.0-6.0	—	—	—	0.15-0.27	—	—	—	0.12 max	0.17	0.008 (80)	0.04 (400)	0.04
319	IMI-679	2.0-2.5	—	0.8-1.2	10.5-11.5	4.0-6.0	—	—	—	0.1-0.5	—	—	—	0.20	—	0.0125 (125)	—	—
320	BS TA 26**	2.0-2.5	—	0.8-1.2	10.5-11.5	4.0-6.0	—	—	—	0.10-0.50	—	—	—	0.20	—	0.0125 (125)	—	—
321	BS TA 25**	2.0-2.5	—	0.8-1.2	10.5-11.5	4.0-6.0	—	—	—	0.10-0.50	—	—	—	0.20	—	0.0125 (125)	—	—
322	BS TA 27**	2.0-2.5	—	0.8-1.2	10.5-11.5	4.0-6.0	—	—	—	0.10-0.50	—	—	—	0.20	—	0.015 (150)	—	—
323	BS TA 20**	2.0-2.5	—	0.8-1.2	10.5-11.5	4.0-6.0	—	—	—	0.10-0.50	—	—	—	0.20	—	0.015 (150)	—	—
324	BS TA 19**	2.0-2.5	—	0.8-1.2	10.5-11.5	4.0-6.0	—	—	—	0.10-0.50	—	—	—	0.20	—	0.0125 (125)	—	—
325	BS TA 18**	2.0-2.5	—	0.8-1.2	10.5-11.5	4.0-6.0	—	—	—	0.10-0.50	—	—	—	0.20	—	0.0125 (125)	—	—
Ti—Al 2.25-Mo 4-Sn 11-Si 0.2																		
326	Hylite 48*	2.25	—	4.0	11.0	—	—	—	—	0.2	—	—	—	—	—	—	—	—
Ti—Al 2.2-Mo 1-Sn 11-Zr 5-Si 0.20																		
327	AMS 4974	2.0-2.5	—	0.8-1.2	10.5-11.5	4.0-6.0	—	—	—	0.15-0.27	—	—	Total 0.40	0.12	0.15	0.0125 (125)	0.04 (400)	0.04
328	DTD 5113	2.2	—	1.0	11.0	5.0	—	—	—	0.4	—	—	—	—	—	—	—	—
Ti—Al 2.5																		
329	48-T2*	2.0-3.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
330	OT5	2.50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti—Al 2.5-Cr 1																		
331	AT3N	2.68	—	—	—	—	—	0.87	—	—	—	—	—	—	—	—	—	—

Information on this group of alloys is continued on page below

*Noncurrent standard or alloy designation

Index No.	Alloy Designation	Common Name/ Alloy	Company Code	Ctry Code	Prime Country Standard	Alloy Type	Forms Available	Applications
Ti-Al 1.2-Mo 0.8-Cr 7.7-Fe 3								
297	5T*	—	—	UR	—	Alpha	—	Early Ti alloy
Ti—Al 1.5-Cr 2.5-Fe 0.5								
298	VT2	—	—	UR	—	Alpha + beta	FG, E	
Ti—Al 1.5-Mn 3								
299	Republic RS-100*	—	C-0011	US	—	Alpha + beta	—	For aircraft and jet engine components heat resistant to 1000 F
Ti—Al 1.5-Mo 0.5-Cr 3								
300	4T	—	—	UR	—	Alpha	—	
Ti—Al 1.7-Mn 1.5								
301	OT4-1	—	—	UR	—	Alpha + beta	—	
Ti—Al 1.9-Mo 1.3-Cr 4.5-Fe 3.5								
302	3T	—	—	UR	—	Alpha	—	
Ti—Al 2								
303	Ti-Brush 65A	—	C-0010	US	—	Alpha	—	Low density, aircraft and missile components, weldability
Ti—Al 2-Cr 0.3-B								
304	ATN	—	—	UR	—	Alpha + beta	—	
Ti—Al 2-Cr 1.5-Fe 1.5-Si 1.5								
305	AT2	—	—	UR	—	Alpha + beta	—	
Ti—Al 2-Mn 1.5								
306	OT4-1	—	—	UR	—	Alpha + beta	I,BI,BA,W,P,SH,E,T	
Ti—Al 2-Mn 1.5-Pd 0.2								
307	OT4-K	(OT4-1+Pd)	—	UR	—	Alpha + beta	—	
Ti—Al 2-Mn 2								
308	IMI-315	—	C-0013	UK	DTD 5043B	Alpha + beta	BA	
309	*Hylite 30**	—	*C-0016*	UK	*DTD 5043A*	*Alpha + beta*	*FG,BI*	*Jet engine and guided missile compressor*
310	DTD 5043B*	—	—	UK	DTD 5043B*	Alpha + beta	BA	
311	T-A2M	—	—	FR	AIR	Alpha + beta	—	
Ti—Al 2-Mo 4-Sn 11-Si 0.3								
312	T71S*	—	C-0016	UK	—	—	—	
Ti—Al 2-Mo 7								
313	VT14-1	—	—	UR	—	—	—	
Ti—Al 2-V 11-Sn 2-Zr 11								
314	*Transage 129 (Experiment)*	*(Transage 129)*	*C-0001*	US	—	*Beta*	—	
315	OMC-Ti-2Al-11V-2SN-11Zr	(Transage 129)	C-0009	US	—	—	—	
Ti—Al 2-Zr 2.5								
316	AK-3	—	—	UR	—	—	—	
Ti—Al 2-Zr 3.5								
317	48T7*	—	—	UR	—	Alpha + beta	—	Early Ti alloy
Ti—Al 2.25-Mo 1-Sn 11-Zr 5-Si 0.20								
318	Ti-679	(679)	C-0001	US	—	Near-alpha	—	Jet engine compressor wheels, blades, fasteners
319	*IMI-679*	(679)	*C-0013*	UK	*TA18, 19, 20*	*Near-alpha*	*BI,BA*	*Jet engine compressor wheels, blades, high creep resistance*
320	BS TA 26**	(679)	—	UK	BS TA 26**	Near-alpha***	FG stock	Forgings and forging stock
321	BS TA 25**	(679)	—	UK	BS TA 25**	Near-alpha***	BA for machining	
322	BS TA 27**	(679)	—	UK	BS TA 27**	Near-alpha***	FG	
323	BS TA 20**	(679)	—	UK	BS TA 20**	Near-alpha***	FG	Forgings
324	BS TA 19**	(679)	—	UK	BS TA 19**	Near-alpha***	FG stock	Forgings and forging stock
325	BS TA 18**	(679)	—	UK	BS TA 18**	Near-alpha***	BA for machining	
Ti—Al 2.25-Mo 4-Sn 11-Si 0.2								
326	*Hylite 48**	*(IMI-680)*	*C-0016*	UK	*DTD 5213*	—	—	
Ti—Al 2.2-Mo 1-Sn 11-Zr 5-Si 0.2								
327	AMS 4974	—	—	US	AMS 4974	Near-alpha	BA,FG,BI	For high strength to 900 F (482 C)
328	DTD 5113	(IMI-679)	—	UK	DTD 5113	Near-alpha	BI,BA	
Ti—Al 2.5								
329	48-T2*	—	—	UR	—	Alpha	—	Early alpha Ti alloy
330	OT5	—	—	UR	—	Alpha+beta+comp	—	
Ti—Al 2.5-Cr 1								
331	AT3N	—	—	UR	—	—	—	

BA—bars, BI—billet, C—casting, E—extrusion, F—foil, FG-forging, I—ingot, P—plate, RD—rod, SH—sheet, ST—strip, T—tubing, W—wire, con—condensers, H.exch—heat exchanger, S.T.—seamless tubing, W.T.—welded tubing

*Noncurrent standard or alloy designation
**Current standard or alloy designation, not to be used on new designs.
***These alloys also known as alpha-dispersoid types

TABLE 1. (Continued)

Index No.	Alloy Designation	CHEMICAL COMPOSITION, WEIGHT PERCENT, ≤ (BALANCE TITANIUM)															
		ALLOYING ELEMENTS											Interstitial Elements				
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt.% (ppm)	Nitrogen Wt.% (ppm)	Carbon
Ti—Al 2.5-Cr 5.3-Fe 2.9																		
332	1T	2.53	—	—	—	—	—	5.35	—	—	—	—	—	2.9	—	—	0.25	0.20
Ti—Al 2.5-Mn 3																		
333	Republic RS-110B*	2.5	—	—	—	—	3.0	—	—	—	—	—	—	—	—	—	—	0.10
Ti—Al 2.5-Mo 1-Sn 11-Zr 5-Si 0.2																		
334	OMC-TI-679	2.5	—	1.0	11.0	5.0	—	—	—	0.25	—	—	—	—	—	—	—	—
Ti—al 2.5-Mo 1.4-Cr 3.5																		
335	2T	2.6	—	1.39	—	—	—	3.5	—	—	—	—	—	—	—	—	—	—
TiBAl 2.5-Mo 4-Sn 11-Si 0.25																		
336	DTD 5213*	2.25	—	4.0	11.0		—	—	—	0.25	—	—	—	—	—	—	—	—
337	T-E11DA	2.5	—	4.0	11.0	—	—	—	—	0.2	—	—	—	—	—	—	—	—
338	IMI-680	2.25	—	4.0	11.0	—	—	—	—	0.2	—	—	—	—	—	—	—	—
Ti—Al 2.5-Mo 7.5-Cr 10																		
339	VT15M	2.6	—	7.5	—	—	—	9.8	—	—	—	—	—	—	—	—	—	—
Ti—Al 2.5-V 4.5-Mo 4																		
340	VT16	1.6-3.0	4.0-5.0	4.5-5.5	—	0.30	—	—	—	—	—	—	Total 0.30	0.25	0.15	0.015 (150)	0.05 (500)	0.10
Ti—Al 2.75-Mn 1.5																		
341	OT4	3.5-5.0	—	—	—	0.30	0.8-2.0	—	—	0.15	—	—	Total 0.30	0.30	0.15	0.012 (120)	0.05 (500)	0.10
Ti—Al 37.5																		
342	Ti-Al	35.0-40.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.25
Ti—Al 3-Cr 1																		
343	AT-3-2	2.80	—	—	—	—	—	0.79	—	0.30	—	—	B 0.01	0.44	—	—	—	—
344	AT-3-1	2.70	—	—	—	—	—	0.60	—	0.36	—	—	B 0.01	0.30	—	—	—	—
Ti—Al 3-Cr 5																		
345	AMS 4927*	2.5-3.5	—	—	—	—	—	4.5-5.5	—	—	—	—	Total 0.40	—	0.20	0.0125 (125)	0.05 (500)	0.10
Ti—Al 3-Cr 5-Fe 3																		
346	IMP-6-2	3.0	—	—	—	—	—	5.0	—	—	—	—	—	3.0	—	—	—	—
Ti—Al 3-Mn 1.5																		
347	OT4	3.5-5.0	—	—	—	0.30	0.8-2.0	—	—	0.15	—	—	Total 0.30	0.30	0.15	0.012 (120)	0.05 (500)	0.10
Ti—Al 3-Mo 0.5-Sn 6-Zr 5-Si 0.5																		
348	Hylite 65*	3.0	—	0.5	6.0	5.0	—	—	—	0.5	—	—	—	—	—	—	—	—
Ti—Al 3-Mo 0.5-Sn 6-Zr 5-Si 0.5																		
349	Hylite 60*	3.0	—	2.0	6.0	5.0	—	—	—	0.5	—	—	—	—	—	—	—	—
Ti—Al 3-Mo 7-Cr 5.5-Fe 3																		
350	IVT-1	3.0	—	7.0	—	—	—	5.5	—	—	—	—	—	3.0	—	—	—	—
Ti—Al 3-Mo 7.5-Cr 11																		
351	VT15	2.3-3.6	—	6.8-8.0	—	—	—	9.5-11.0	—	0.15	—	—	Total 0.30	0.30	0.12	0.012 (120)	0.05 (500)	0.10
Ti—Al 3-Sn 6-Zr 5-Si 0.5																		
352	Hylite 55*	3.0	—	—	6.0	5.0	—	—	—	0.5	—	—	—	—	—	—	—	—
Ti—Al 3-Sn 11																		
353	TS1	3.0	—	—	11.0	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti—Al 3-V 13-Cr 11																		
354	Ti-13V-11Cr-3Al	2.5-3.5	12.5-14.5	—	—	—	—	10.0-12.0	—	—	—	—	—	—	—	(250)	0.08	0.05
Ti—Al 3-V 1-Mo 1.5-Zr 1																		
355	AT3-SV	3.0	1.1	1.5	—	1.0	—	—	—	—	—	—	—	—	—	—	—	—
Ti—Al 3-V 2.5																		
356	IMP-7	3.0	2.0	—	—	—	—	—	—	0.60	—	—	—	0.30	0.16	0.01 (100)	0.03 (300)	—
357	RMI 3Al-2.5V	2.5-3.5	2.0-3.0	—	—	—	—	—	—	—	—	—	—	0.30	0.12	0.0125 (125)	0.02 (200)	0.05
358	T-A3V2.5	3.0	2.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
359	OMC Ti-3Al-2.5V	3.0	2.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
360	ASTM B337, Grade 9	2.5-3.5	2.0-3.0	—	—	—	—	—	—	—	—	—	—	0.25	0.12	0.013 (130)	0.02 (200)	0.05
361	UTA3V	2.5-3.5	2.0-3.0	—	—	—	—	—	—	—	—	—	—	0.25	0.25	0.0125 (125)	0.02 (200)	0.05
362	Crucible 3Al-2.5V	3.0	2.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
363	ASTM B338, Grade 9	2.5-3.5	2.0-3.0	—	—	—	—	—	—	—	—	—	—	0.25	0.25	0.013 (130)	0.02 (200)	0.10
364	ASTM B338, Grade 9	2.5-3.5	2.0-3.0				—	—	—	—	—	—	—	0.25	0.12	0.013 (130)	0.02 (200)	0.10
365	ASTM B337, Grade 9	2.5-3.5	2.0-3.0	—	—	—	—	—	—	—	—	—	—	0.25	0.12	0.013 (130)	0.02 (200)	0.05

Information on this group of alloys is continued on page below

*Noncurrent standard or alloy designation

Index No.	Alloy Designation	Common Name/ Alloy	Company Code	Ctry Code	Prime Country Standard	Alloy Type	Forms Available	Applications
	Ti—Al 2.5-Cr 5.3-Fe 2.9							
332	1T	—	—	UR	—	—	—	
	Ti—Al 2.5-Mn 3							
333	Republic RS-110B*	—	C-0011	US	—	—	—	Low density for aircraft and jet engine components
	Ti—Al 2.5-Mo 1-Sn 11-Zr 5-Si 0.2							
334	OMC-TI-679	(679)	C-0009	US	AMS 4974	Near-alpha	I,BI,BA,P,SH	
	Ti—Al 2.5-Mo 1.4-Cr 3.5							
335	2T	—	—	UR	—	Alpha	—	
	Ti—Al 2.5-Mo 4-Sn 11-Si 0.25							
336	DTD 5213*	(IMI-680)	—	UK	DTD 5213*	Alpha + beta	BI,B	
337	T-E11DA	—	—	FR	AIR	Alpha + beta	—	
338	IMI-680	—	C-0013	UK	DTD 5213	Alpha + beta	BI,BA	High strength alloy
	Ti—Al 2.5-Mo 7.5-Cr 10							
339	VT15M	—	—	UR	—	—	—	
	Ti—Al 2.5-V 4.5-Mo 4							
340	VT 16	—	—	UR	—	—	Alpha + beta	
	Ti—Al 2.75-Mn 1.5							
341	OT4	—	—	UR	—	Alpha + best	—	
	Ti—Al 37.5							
342	Ti-Al	—	C-0058	US	—	Powder		Welding applications
	Ti—Al 3-Cr 1							
343	AT-3-2	—	—	UR	—	—	—	
344	AT-3-1	—	—	UR	—	Alpha + beta	—	
	Ti—Al 3-Cr 5							
345	AMS 4927*	—	—	US	AMS 4927*	—	BA,BI,FG	For strength to 700 F (371 C) and oxidation resistance to 800 F (427 C)
	Ti—Al 3-Cr 5-Fe 3							
346	IMP-6-2	—	—	UR	—	Alpha + beta	Powder metal. alloy	Powder metallurgy alloy
	Ti—Al 3-Mn 1.5							
347	OT4	—	—	UR	—	Alpha + beta	I,BI,BA W,P,SH,E,T	
	Ti—Al 3-Mo 0.5-Sn 6-Zr 5-Si 0.5							
348	Hylite 65*	—	C-0016	UK	Development	—	—	Jet engine compressor blades, spacers, and discs
	Ti—Al 3-Mo 2-Sn 6-Zr 5-Si 0.5							
349	Hylite 60*	—	C-0016	UK	Development	Alpha + beta	—	Turbine compressor blades and discs to 932 F (500 C)
	Ti—Al 3-Mo 7-Cr 5.5-Fe 3							
350	IVT-1	—	—	UR	—	Beta	—	
	Ti—Al 3-Mo 7.5-Cr 1							
351	VT15	—	—	UR	—	Beta	I,BA	
	Ti—Al 3-Sn 6-Zr 5-Si 0.5							
352	Hylite 55*	—	C-0016	UK	Development	Alpha	—	Turbine compressor blades and discs to 932 F (500 C)
	Ti—Al 3-Sn 11							
353	TS1	—	—	UR	—	Alpha	—	
	Ti—Al 3-V 13-Cr 11							
354	Ti-13V-11Cr-3Al	(13-11-3)	C-0001	—	AMS 4917B	Beta	BI,SH,ST,P	Rocket motor cases, W. pressure ves, fasteners, honeycomb sheet
	Ti—Al 3-V 1-Mo 1.5-Zr 1							
355	AT3-SV	—	—	UR	—	Alpha + beta	Welding rod	Welding electrode
	Ti—Al 3-V 2.5							
356	IMP-7	—	—	UR	—	Alpha + beta	Powder metal. alloy	Powder metallurgy alloy
357	RMI 3Al-2.5V	(3-2.5)	C-0003	US	AMS 4943	Alpha + beta	SH,ST,F,T	Aircraft hydraulic tubing and fittings
358	T-A3V2.5	(3-2.5)	—	FR	AIR	Alpha + beta	—	
359	OMC Ti-3Al-2.5V	(3-2.5)	C-0009	US	AMS 4943	Alpha + beta	SH,ST,F,T	For welded titanium tubing or seamless tubing. Weldable
360	ASTM B337, Grade 9	(3-2.5)	—	US	ASTM B337	Alpha + beta	Seamless & weld. pipe	Standard for seamless and welded pipe, this compositon
361	UTA3V	(3-2.5)	C-0020	FR	—	Alpha + beta	BA,FG,SH,P	Good ductility and weldability for tubing, sheet, plate, and wire
362	Crucible 3Al-2.5V	(3-2.5)	C-0004	US	—	Alpha + beta	SH,ST,F,T	
363	ASTM B338, Grade 9	(3-2.5)	—	US	ASTM B338	Alpha + beta	S,T &W,T -H.exch., cond	Standard for seamless and welded tubing for heat exchangers and condensers
364	ASTM B338, Grade 9	(3-2.5)	—	US	ASTM B338	Alpha + beta	S,T &W,T -H.exch., cond	Standard for seamless and welded tubing for heat exchangers and condensers
365	ASTM B337, Grade 9	(3-2.5)	—	US	ASTM B337	Alpha + beta	Seamless & weld. pipe	Standard for seamless and welded pipe of this composition

BA—bars, BI—billet, C—casting, E—extrusion, F—foil, FG-forging, I—ingot, P—plate, RD—rod, SH—sheet, ST—strip, T—tubing, W—wire, con—condensers, H.exch—heat exchanger, S,T—seamless tubing, W,T—welded tubing

*Noncurrent standard or alloy designation

TABLE 1. (Continued)

Index No.	Alloy Designation	CHEMICAL COMPOSITION, WEIGHT PERCENT, ≤ (BALANCE TITANIUM)																
		ALLOYING ELEMENTS											Interstitial Elements					
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt.% (ppm)	Nitrogen Wt.% (ppm)	Carbon
Ti-Al 3-V 2.5 (cont.)																		
366	ALLVAC 3-2 5	3.0	2.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
367	MMA-3138	2.5-3.5	2.0-3.0	—	—	—	—	—	—	—	—	—	Total 0.10	0.25	0.10	0.010 (100)	0.015 (150)	0.05
368	AMS 4944	2.5-3.5	2.0-3.0	—	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.12	0.015 (150)	0.02 (200)	0.05
369	Ti-3Al-2.5V	3.0	2.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
370	AMS 4943	2.5-3.5	2.0-3.0	—	—	—	—	—	—	0.05	—	—	Total 0.40	0.30	0.12	0.015 (150)	0.015 (150)	0.05
371	T A3V2 5	3.0	2.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Al 3-V 7-Mo 3.5-Cr 10																		
372	TS6	3.2	6.2	4.0	—	—	—	10.2	—	0.07	—	—	—	0.13	0.10	—	0.04	0.12
Ti-Al 3-V 8-Mo 4-Zr 4-Cr 6																		
373	ALLVAC Ti-3-8-6-4-4	3.0	8.0	4.0	—	4.0	—	6.0	—	—	—	—	—	—	—	—	—	—
374	RMI 38-6-44	3.0-4.0	7.5-8.5	3.5-4.5	—	3.5-4.5	—	5.5-6.5	—	—	—	—	—	0.30	0.12	—	0.05 (500)	0.08
375	Ti-D8C6DZrA	3.0	8.0	4.0	—	4.0	—	6.0	—	—	—	—	—	—	—	—	—	—
376	MIL-T-9046H Type IV Comp. C	3.0-4.0	7.5-8.5	3.5-4.5	—	3.5-4.5	—	5.5-6.5	—	—	—	—	Total 0.40	0.30	0.12	0.020 (200)	0.03 (300)	0.05
377	MIL-T-9046H Type IV Comp. C	3.0-4.0	7.5-8.5	3.5-4.5	—	3.5-4.5	—	5.5-6.5	—	—	—	—	Total 0.40	0.30	0.12	0.020 (200)	0.03 (300)	0.05
378	Ti-3Al-8V-6Cr-4Mo-4Z	3.0	8.0	4.0	—	4.0	—	6.0	—	—	—	—	—	—	—	—	—	—
Ti-Al 3-V 8-Mo 8-Fe 2																		
379	OMC-Ti-8Mo-8V-2Fe-3Al*	3.0	8.0	8.0	—	—	—	—	—	—	—	—	—	2.0	—	—	—	—
380	MIL-T-9046H Type IV Comp. D	2.6-3.4	7.5-8.5	7.5-8.5	—	—	—	—	—	—	—	—	Total 0.40	1.6-2.4	0.016	0.015 (150)	0.05 (500)	0.05
381	MIL-T-9046H Type IV Comp. D	2.6-3.4	7.5-8.5	7.5-8.5	—	—	—	—	—	—	—	—	Total 0.40	1.6-2.4	0.016	0.015 (150)	0.05 (500)	0.05
382	Ti-8Mo-8V-2Fe-3Al	2.6-3.4	7.5-8.5	7.5-8.5	—	—	—	—	—	—	—	—	—	1.6-2.4	0.16	0.015-0.020	0.05 (500)	0.05
Ti-Al 3-V 13-Cr 11																		
383	RMI 13V-11Cr-3Al	2.5-4.0	12.5-14.5	—	—	—	—	10.0-12.0	—	—	—	—	—	0.35	0.16	0.0175 (175)	0.05 (500)	0.08
384	AMS 4917B	2.5-3.5	12.5-14.5	—	—	—	—	10.0-12.0	—	—	—	—	Total 0.40	0.35	0.17	0.025 (250)	0.05 (500)	0.05
385	T-V13CA	3.0	13.0	—	—	—	—	11.0	—	—	—	—	—	—	—	—	—	—
386	OMC-VCA	3.0	13.0				—	11.0	—	—	—	—	—	—	—	—	—	—
387	Crucible B-120VCA	2.0-4.0	12.5-14.5	—	—	—	—	10.0-12.0	—	—	—	—	—	—	—	—	—	—
388	ALLVAC 13-11-3	3.0	13.0	—	—	—	—	11.0	—	—	—	—	—	—	—	—	—	—
389	Ti-13V-11Cr-3Al	2.5-3.5	12.5-14.5	—	—	—	—	10.0-11.0	—	—	—	—	—	—	—	0.025 (250)	0.08 (800)	0.05
390	OMC-Ti-13V-11Cr-3Al	3.0	13.0	—	—	—	—	11.0	—	—	—	—	—	—	—	—	—	—
391	MIL-T-9046H Type IV Comp. A	2.5-3.5	12.5-14.5	—	—	—	—	10.0-12.0	—	—	—	—	Total 0.40	0.15-0.30	0.20	0.025 (250)	0.05 (500)	0.05
392	MIL-R-81588 Type IV Comp. A	2.5-3.5	12.5-14.5	—	—	—	—	10.0-12.0	—	—	—	—	Total 0.40	0.15-0.30	0.20	0.025 (250)	0.05 (500)	0.05
393	Tikrutan LT 41	2.5-3.5	12.5-14.5	—	—	—	—	10.0-12.0	—	—	—	—	—	0.30	0.20	0.025 (250)	0.05 (500)	0.05
394	T-V13-C11A	3.0	13.0	—	—	—	—	11.0	—	—	—	—	—	—	—	—	—	—
395	T443*	3.0	13.0	—	—	—	—	11.0	—	—	—	—	—	—	—	—	—	—
396	Contimet VCrAl 13-11-3	2.5-3.5	12.5-14.5	—	—	—	—	10.0-12.0	—	—	—	—	—	0.30	0.20	0.025 (250)	0.08 (800)	0.05
397	L-7701, Ti-3Al-13V-11Cr	3.0	13.0	—	—	—	—	11.0	—	—	—	—	—	—	—	—	—	—
Ti-Al 3-V 13-Mo 11																		
398	IMP-10	3.0	13.0	11.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Al 3-(Fe,Cr,Si,B) 1.5																		
399	AT3	2.0-3.5	—	—	—	—	—	0.20-0.50	—	0.25-0.40	—	—	—	0.25-0.50	—	0.01 (100)	0.30	—
Ti-Al 3.5																		
400	48-T3*	3.0-4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
401	AT3V	3.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Al 3.5-Cr 1-B																		
402	AT3-V	3.42	—	—	—	—	—	0.82	—	0.56	—	—	B 0.01	0.90	0.15	0.007	0.04	—
Ti-Al 3.5-Fe 0.1-Si 0.1																		
403	48-OT3	3.65	—	—	—	—	—	—	—	0.10	—	—	—	0.10	—	0.002 (20)	—	0.04
Ti-Al 3.5-Mo 3																		
404	IRM4	3.0-4.0	—	3.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti-Al 4-CB/NB 4																		
405	IRM1	3.0-5.0	—	—	—	—	—	—	—	—	—	4.0	—	—	—	—	—	—

Information on this group of alloys is continued on page below

*Noncurrent standard or alloy designation

Index No.	Alloy Designation	Common Name/ Alloy	Company Code	Ctry Code	Prime Country Standard	Alloy Type	Forms Available	Applications
Ti—Al 3-V 2.5								
366	ALLVAC 3-2.5	(3-2.5)	C-0008	US	—	Alpha + beta	SH,ST,F,T	
367	MMA-3138	(3-2.5)	C-0002	US	—	Alpha + beta	I,SH,ST	Strong seamless tubing for hydraulic lines.
368	AMS 4944	(3-2.5)	—	US	AMS 4944	Alpha + beta	Seamless hydraulic tubing	Seamless tubing
369	Ti-3Al-2.5V	(3-2.5)	C-0001	US	AMS 4943	Alpha + beta	I,SH,ST	High-strength, ductility, fabricability. Aerospace components
370	AMS 4943	(3-2.5)	—	US	AMS 4943	Alpha + beta	Seamless tubing	*Strong hydraulic lines and oxidation resistant to 600 F (316 C)*
371	T-A3V2.5	—	—	FR	AIR	—	—	
Ti—Al 3-V 7-Mo 3.5-Cr 10								
372	TS6	—	—	UR	—	Beta	—	
Ti—Al 3-V 8-MO 4-Zr 4-Cr 6								
373	ALLVAC Ti-3-8-6-4-4	(Beta C)	C-0008	US	—	Beta	BI,BA,W,P,SH,ST,F,T	
374	RMI 38-6-44	(Beta C)	C-0003	US	—	Beta	BA,BI,W,P,SH,ST,F,T	High-strength fr. fasteners, heavy-section parts
375	T-D8C6DZRA	(Beta C)	—	FR	—	Beta	—	
376	MIL-T-9046H Type IV Comp. C	(Beta C)	—	US	MIL-T-9046H	Beta	BI,BA,W,P,SH,ST,F,T	
377	MIL-T-9046H Type IV Comp. C	(Beta C)	—	US	MIL-T-9046H	Beta	BI,BA,W,P,SH,ST,F,T	
378	Ti-3Al-8V-6Cr-4Mo-4Zr*	(Beta C)	C-0009	US	—	Beta	BI,BA,W,P,SH,ST,F,T	
Ti—Al 3-V 8-Mo 8-Fe 2								
379	OMC-Ti-8Mo-8V-2Fe-3Al*	(8-8-2-3)	C-0009	US	—	Beta	I,BI,BA,W,P,SH,ST,F	
380	MIL-T-9046H Type IV Comp. D	(8-8-2-3)	—	US	MIL-T-81556	Beta	I,BA,BI,W,P,SH,ST,T	
381	MIL-T-9046H Type IV Comp. D	(8-8-2-3)	—	US	MIL-T-9046H	Beta	I,BA,BI,W,P,SH,ST,T	
382	Ti-8Mo-8V-2Fe-3Al	(8-8-2-3)	C-0001	US	—	Beta	I,BI,BA,SH,ST,P,W	Aircraft fasteners, springs, structural components, chemical processing
Ti—Al 3-V 13-Cr 11								
383	RMI 13V-11Cr-3Al	(13-11-3)	C-0003	US	AMS 4917B	Beta	I,BI,BA,W,P,SH,ST,T	*For high strength aircraft structures*
384	AMS 4917B	(13-11-3)	—	US	AMS 4917B	Beta	SH,ST,P	For forming in S.T. cond. and then precip. hard. vessels
385	T-V13CA	(13-11-3)	—	FR	AIR	Beta	—	
386	OMC-VCA	(3-11-13)	C-0009	US	AMS 4917B	Beta	BI,BA,P,SH,S	For missile cases, fasteners, weld press vessels—65 F to 600 F
387	Crucible B-120VCA	(B-120)(13-11-3)	C-0004	US	AMS 4917B	Beta	BI,BA,SH,ST,P,W	Missile and supersonic aircraft components, fasteners, press
388	ALLVAC 13-11-3	(13-11-3)	C-0008	US	—	Beta	*I,BI,BA,W,P,SH,ST,T*	
389	Ti-13V-11Cr-3Al	(13-11-3)	C-0001	US	—	Beta	BI,BA,SH,ST,P,W	Weld pressure vessels, honeycomb airframe skins, airframe components
390	OMC-Ti-13V-11Cr-3Al	(13-11-3)	C-0009	US	AMS 4917B	Beta	I,BI,BA,W,P,SH,F,T	For high strength aircraft structures
391	MIL-T-9046H Type IV Comp. A	(B-120)	—	US	MIL-T-9046H	Beta	I,BI,BA,W,P,SH,ST,T	
392	MIL-R-81588 Type IV Comp. A	(13-11-3)	—	US	MIL-T-81588	Beta	I,BI,BA,W,P,SH,ST,T	
393	Tikrutan LT 41	(Beta)	C-0019	GY	—	Beta	—	
394	T-V13-C11A	(13-11-3)	—	FR	AIR	Beta	—	
395	T443*	—	C-0016	UK	—	Beta	—	
396	Contimet VCrAl 13-11-3	(13-11-3)	C-0046	GY	AMS 4917	Beta	BA,SH,ST,P,W,FG,E,T	Missiles, can be cold formed in aged condition
397	L-7701, Ti-3Al-13V-11Cr	(13-11-3)	—	SP	—	Beta	—	
Ti—Al 3-V 13-Mo 11								
398	IMP-10	—	—	UR	—	Beta	Powder metal. alloy	Powder metallurgy alloy
Ti—Al 3-(Fe,Cr,Si,B) 1.5								
399	AT3	—	—	UR	—	Alpha + beta	SH	Fasteners, aircraft structures
Ti—Al 3.5								
400	48-T3*	—	—	UR	—	—		Early Ti alloy
401	AT3V	—	—	UR	—	Alpha + beta	—	
Ti—Al 3.5-Cr 1-B								
402	AT3-V	—	—	UR	—	—	—	
Ti—Al 3.5-Fe 0.1-Si 0.1								
403	48-OT3	—	—	UR	—	Alpha	SH,P,BA	
Ti—Al 3.5-Mo 3								
404	IRM4	—	—	UR	—	Alpha + beta	SH,W,W	Early ... nium alloy
Ti—Al 4-CB/NB 4								
405	IRM1	—	—	UR	—	Alpha + beta	SH,W,W	Early titanium alloy

BA—bars, BI—billet, C—casting, E—extrusion, F—foil, FG-forging, I—ingot, P—plate, RD—rod, SH—sheet, ST—strip, T—tubing, W—wire, con—condensers, H.exch—heat exchanger, S.T—seamless tubing, W.T—welded tubing

*Noncurrent standard or alloy designation

TABLE 1. (Continued)

Index No.	Alloy Designation	CHEMICAL COMPOSITION, WEIGHT PERCENT, ≤ (BALANCE TITANIUM)																
		ALLOYING ELEMENTS												Interstitial Elements				
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt.% (ppm)	Nitrogen Wt.% (ppm)	Carbon
Ti—Al 4-CB/NB 4-Fe 0.1																		
406	IRM2	3.0-5.0	—	—	—	—	—	—	—	—	—	4.5	Re 0.1	—	—	—	—	—
Ti—Al 4-Cr 0.25-Fe 0.25																		
407	AT-4-N	4.0	—	—	—	—	—	0.21	—	0.20	—	—	B 0.01	0.22	0.14	0.007 (70)	0.03 (300)	—
Ti—Al 4-Cr 0.5																		
408	AT-4-S	4.32	—	—	—	—	—	0.55		0.28	—	—	B 0.01	—	0.14	0.007 (70)	0.03 (300)	—
Ti—Al 4-Mn 1.5																		
409	VT4	4.0-5.2	—	—	—	—	1.0-2.0	—	—	0.15	—	—	—	0.30	0.15	0.015 (150)	0.05 (500)	0.05
410	IRM5*	3.0-5.0	—	—	—	—	1.5-2.0	—	—	—	—	—	—	—	—	—	—	—
Ti—Al 4-Mn 4																		
411	AIR-9184 (TA4M)	4.0	—	—	—	—	4.0	—	—	—	—	—	—	—	—	—	—	—
412	AIR-9183 (TA4M)	4.0	—	—	—	—	4.0	—	—	—	—	—	—	—	—	—	—	—
413	Ti-Brush 120-AM	3.5-4.5	—	—	—	—	3.5-4.5	—	—	—	—	—	—	—	—	—	—	—
414	T-A4M	4.0	—	—	—	—	4.0	—	—	—	—	—	—	—	—	—	—	—
415	Crucible C-130AM	3.0-5.0	—	—	—	—	3.0-5.0	—	—	—	—	—	—	—	—	—	—	0.20
416	IMI-314A*	3.0-5.0	—	—	—	—	3.0-5.0	—	—	—	—	—	—	—	—	—	—	—
417	Hylite 40*	3.0-5.0	—	—	—	—	3.0-5.0	—	—	—	—	—	—	—	—	0.013 (130)	—	—
418	Republic RS-130*	4.0	—	—	—	—	4.0	—	—	—	—	—	—	0.30	—	0.0125 (125)	0.018 (180)	0.10
419	DTD 5143*	4.0	—	—	—	—	4.0	—	—	—	—	—	—	—	—	—	—	—
420	DTD 5053*	4.0	—	—	—	—	4.0	—	—	—	—	—	—	—	—	—	—	—
421	Ti P 62	4.0	—	—	—	—	4.0	—	—	—	—	—	—	—	—	—	—	—
422	AMS 4925B*	3.0-5.0	—	—	—	—	3.0-5.0	—	—	—	—	—	Total 0.40	0.50	0.20	0.0125 (125)	0.07 (700)	0.15
423	Eltanit AB 207*	4.0	—	—	—	—	4.0	—	—	—	—	—	—	—	0.50	0.015 (150)	0.10	0.10
Ti—Al 4-Fe 4.5																		
424	IRM6*	3.0-5.0	—	—	—	—	—	—	—	—	—	—	—	4.0-5.0	—	—	—	—
Ti—Al 4-Mo 0.8-Sn 1.5-Zr 2.5																		
425	VT13	4.5	—	—	1.5	—	—	1.0	—	0.15	—	—	—	0.30	0.15	0.015 (150)	0.05 (500)	0.05
Ti—Al 4-Mo 0.8-Sn 3-Zr 2.5																		
426	VT12	4.0	—	0.8	3.0	2.5	—	—	—	—	—	—	—	—	—	—	—	—
Ti—Al 4-Mo 3.5																		
427	IRM3	3.0-4.0	—	3.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti—Al 4-Mo 4-Sn 2																		
428	Fuchs TA 44	3.0-5.0	—	3.0-5.0	1.5-2.5	—	—	—	—	0.3-0.7	—	—	—	0.20	—	0.015 (150)	—	—
429	L W 3.7184	3.0-5.0	—	3.0-5.0	1.5-2.5	—	—	—	—	0.3-0.7	—	—	—	0.20	—	0.015 (150)	—	0.08
430	Contimet AlMoSn 4-4-2	4.0	—	4.0	2.0	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti—Al 4-Mo 4-Sn 2-Si 0.5																		
431	BS TA 30*	3.0-5.0	—	3.0-5.0	1.5-2.5	—	—	—	—	0.3-0.7	—	—	—	0.20	—	0.0125 (125)	—	—
432	BS TA 31*	3.0-5.0	—	3.0-5.0	1.5-2.5	—	—	—	—	0.3-0.7	—	—	—	0.20	—	0.015 (150)	—	—
433	DTD 5153*	4.0	—	4.0	2.0	—	—	—	—	0.50	—	—	—	—	—	—	—	—
434	BS TA 49	3.0-5.0	—	3.0-5.0	1.5-2.5	—	—	—	—	0.3-0.7	—	—	—	0.20	0.25	0.0125 (125)	0.05 (500)	—
435	BS TA 32*	3.0-5.0	—	3.0-5.0	1.5-2.5	—	—	—	—	0.3-0.7	—	—	—	0.20	—	0.0125 (125)	—	—
436	BS TA 51	3.0-5.0	—	3.0-5.0	1.5-2.5	—	—	—	—	0.3-0.7	—	—	—	0.20	0.25	0.015 (150)	0.05 (500)	—
437	Ti P 62	4.0	—	4.0	2.0	—	—	—	—	0.5	—	—	—	—	—	—	—	—
438	BS TA 48	3.0-5.0	—	3.0-5.0	1.5-2.5	—	—	—	—	0.3-0.7	—	—	—	0.20	0.25	0.015 (150)	0.05 (500)	—
439	BS TA 47	3.0-5.0	—	3.0-5.0	1.5-2.5	—	—	—	—	0.3-0.7	—	—	—	0.20	0.25	0.010 (100)	0.05 (500)	—
440	BS TA 33*	3.0-5.0	—	3.0-5.0	1.5-2.5	—	—	—	—	0.3-0.7	—	—	—	0.20	—	0.0125 (125)	—	—
441	BS TA 46	3.0-5.0	—	3.0-5.0	1.5-2.5	—	—	—	—	0.3-0.7	—	—	—	0.20	0.25	0.0125 (125)	0.05 (500)	—
442	BS TA 37*	3.0-5.0	—	3.0-5.0	1.5-2.5	—	—	—	—	0.3-0.7	—	—	—	0.20	—	0.0150 (150)	—	—
443	BS TA 34*	3.0-5.0	—	3.0-5.0	1.5-2.5	—	—	—	—	0.3-0.7	—	—	—	0.20	—	0.015 (150)	—	—
444	BS TA 35*	3.0-5.0	—	3.0-5.0	1.5-2.5	—	—	—	—	0.3-0.7	—	—	—	0.20	—	0.0125 (125)	—	—
445	BS TA 36*	3.0-5.0	—	3.0-5.0	1.5-2.5	—	—	—	—	0.3-0.7	—	—	—	0.20	—	0.0125 (125)	—	—
446	BS TA 50	3.0-5.0	—	3.0-5.0	1.5-2.5	—	—	—	—	0.3-0.7	—	—	—	0.20	0.25	0.010 (100)	0.05 (500)	—
447	DTD 5353	4.0	—	4.0	2.0	—	—	—	—	0.5	—	—	—	—	—	—	—	—
448	BS TA 57	3.0-5.0	—	3.0-5.0	1.5-2.5	—	—	—	—	0.3-0.7	—	—	—	0.20	0.25	0.0125 (125)	0.05 (500)	—
449	BS TA 45	3.0-5.0	—	3.0-5.0	1.5-2.5	—	—	—	—	0.3-0.7	—	—	—	0.20	0.25	0.0125 (125)	0.05 (500)	—
450	DTD 5333	4.0	—	4.0	2.0	—	—	—	—	0.5	—	—	—	—	—	—	—	—

Information on this group of alloys is continued on page below

*Noncurrent standard or alloy designation

Index No.	Alloy Designation	Common Name/ Alloy	Company Code	Ctry Code	Prime Country Standard	Alloy Type	Forms Available	Applications
Ti—Al 4-Cr/Nb 4-Re 0.1								
406	IRM2	—	—	UR	—	Alpha + beta	SH,W,W	Early titanium alloy
Ti—Al 4-Cr 0.25-Fe 0.25								
407	AT-4-N	—	—	UR	—	—	—	
Ti—Al 4-Cr 0.5								
408	AT-4-S	—	—	UR	—	—	—	
Ti—Al 4-Mn 1.5								
409	VT4	—	—	UR	—	Alpha + beta	I,BI,BA,SH,T	
410	IRM5*	—	—	US	—	Alpha + beta	—	Early titanium alloy
Ti—Al 4-Mn 4								
411	AIR-9184 (TA4M)	(IMI-314)	—	FR	AIR-9184	Alpha + beta	Bolts	Bolts
412	AIR-9183 (TA4M)	(IMI-314)	—	FR	AIR-9184	Alpha + beta	BA,FG,Rod	
413	Ti-Brush 120-AM	—	C-0010	US	—	Alpha + beta	—	Low density, heat resistant jet engine components, fasteners.
414	T-A4M	—	—	FR	AIR-9184	Alpha + beta	—	
415	Crucible C-130AM	—	C-0004	US	—	Alpha + beta	BA,FG,FGBI	Jet engine components, airframe forging fasteners
416	IMI-314A*	—	C-0013	UK	DTD 5053,514	Alpha + beta	—	
417	Hylite 40*	—	C-0016	UK	DTD 5053	Alpha + beta	BA,FG	Jet engine and missile components, compressor discs, blades
418	Republic RS-130*	—	C-0011	US	—	Alpha + beta	BI,BA,FG,D,W	Jet engine components, airframe forging fasteners
419	DTD 5143*	(IMI-314)	—	UK	DTD 5143*	Alpha + beta	FG	
420	DTD 5053*	(IMI-314)	—	UK	DTD 5053*	Alpha + beta	BA	
421	Ti P 62	—	—	FR	AECMA P 62	Alpha + beta	—	
422	AMS 4925B*	(IMI-314)	—	US	AMS 4925B*	Alpha + beta	BA,BI,FG	For high strength to 750 F (399 C)
423	*Eltanit* AB 207*	—	C-0046	GY	—	Alpha + beta	—	
Ti—Al 4-Fe 4.5								
424	IRM6*	(IMI-314)	—	UR	—	Alpha + beta	—	Early titanium alloy
Ti—Al 4-Mo 0.8-Sn 1.5-Zr 2.5								
425	VT13	—	—	UR	—	Near-alpha	—	
Ti—Al 4-Mo 0.8-Sn 3-Zr 2.5								
426	VT12	—	—	UR	—	Near-alpha	—	
Ti—Al 4-Mo 3.5								
427	IRM3	—	—	UR	—	Alpha + beta	SH,W,W	Early titanium alloy
Ti—Al 4-Mo 4-Sn 2								
428	Fuchs TA 44	(IMI-550)	C-0054	GY	BS TA 34	Alpha+beta***	FG	Mainly used for British aircraft projects
429	L.W. 3.7184	—	—	GY	L.W. 3.7184	Alpha + beta	—	
430	Contimet AlMoSn 4-4-2	(4-4-2)	C-0046	GY	—	Alpha + beta	—	
Ti—Al 4-Mo 4-Sn 2-Si 0.5								
431	BS TA 30*	—	—	UK	BS TA 30*	Alpha+beta***	FG stock	Forgings, forging stock
432	BS TA 31*	—	—	UK	BS TA 31*	Alpha+beta***	FG	Forgings
433	DTD 5153*	—	—	UK	DTD 5153*	Alpha + beta	BA	
434	BS TA 49	(IMI-550)	—	UK	BS TA 49	Alpha+beta***	BA, sections mach	
435	BS TA 32*	—	—	UK	BS TA 32*	Alpha+beta***	BA for machining	
436	BS TA 51	(IMI-550)	—	UK	BS TA 51	Alpha+beta***	FG	Forgings
437	Ti P 68	(IMI-550)	—	FR	AICMA	Alpha + beta	BA,FG	High-strength alloy, creep resistant to 400 C
438	BS TA 48	(IMI-550)	—	UK	BS TA 48	Alpha+beta***	FG	Forgings
439	BS TA 47	(IMI-550)	—	UK	BS TA 47	Alpha+beta***	FG stock	Forgings, forging stock
440	BS TA 33*	—	—	UK	BS TA 33*	Alpha+beta***	FG stock	Forgings, forging stock
441	BS TA 46	(IMI-550)	—	UK	BS TA 46	Alpha+beta***	BA, sections mach	
442	BS TA 37*	—	—	UK	BS TA 37*	Alpha+beta***	FG	Forgings
443	BS TA 34*	—	—	UK	BS TA 34*	Alpha+beta***	FG	Forgings
444	BS TA 35*	—	—	UK	BS TA 35*	Alpha+beta***	BA for machining	
445	BS TA 36*	—	—	UK	BS TA 36*	Alpha+beta***	FG stock	Forgings, forging stock
446	BS TA 50	(IMI-550)	—	UK	BS TA 50	Alpha+beta***	FG stock	Forgings, forging stock
447	DTD 5353	(IMI-550)	—	UK	DTD 5353	Alpha+beta***	FG to 100 mm	Forgings
448	BS TA 57	(IMI-550)	—	UK	BS TA 57	Alpha+beta***	P	Plate
449	BS TA 45	(IMI-550)	—	UK	BS TA 45	Alpha+beta***	BA, sections mach	
450	DTD 5333	(IMI-550)	—	UK	DTD 5333	Alpha+beta***	BA mach. to 100 mm	

BA—bars, BI—billet, C—casting, E—extrusion, F—foil, FG-forging, I—ingot, P—plate, RD—rod, SH—sheet, ST—strip, T—tubing, W—wire, con—condensers, H exch—heat exchanger, S T—seamless tubing, *W T—welded tubing*

*Noncurrent standard or alloy designation

***These alloys also known as alpha-dispersoid types

TABLE 1. (Continued)

Index No.	Alloy Designation	CHEMICAL COMPOSITION, WEIGHT PERCENT, ≤ (BALANCE TITANIUM)																
		ALLOYING ELEMENTS												Interstitial Elements				
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt.% (ppm)	Nitrogen Wt.% (ppm)	Carbon
Ti—Al 4-Mo 4-Sn 2-Si 0.5 (cont.)																		
451	Tikrutan LT 34	3.0-5.0	—	3.0-5.0	1.5-2.5	—	—	—	—	0.3-0.7	—	—	—	0.20	—	0.015 (150)	—	0.08
452	BS TA 29*	3.0-5.0	—	3.0-5.0	1.5-2.5	—	—	—	—	0.3-0.7	—	—	—	0.20	—	0.0125 (125)	—	—
453	DTD 5343	4.0	—	4.0	2.0	—	—	—	—	0.5	—	—	—	—	—	—	—	—
454	IMI-550	3.0-5.0	—	3.0-5.0	1.5-2.5	—	—	—	—	0.3-0.7	—	—	—	0.20	0.25	0.015 (150)	0.05 (500)	—
455	Hylite 50*	4.0	—	4.0	2.0	—	—	—	—	0.5	—	—	—	—	—	0.013 (130)	—	—
456	DTD 5103	4.0	—	4.0	2.0	—	—	—	—	0.5	—	—	—	—	—	—	—	—
457	T-A4DE	4.0	—	4.0	2.0	—	—	—	—	0.5	—	—	—	—	—	—	—	—
458	DTD 5203*	4.0	—	4.0	2.0	—	—	—	—	0.5	—	—	—	—	—	—	—	—
Ti—Al 4-Mo 4-Sn 4-Si 0.5																		
459	DTD 5223*	4.0	—	4.0	4.0	—	—	—	—	0.5	—	—	—	—	—	—	—	—
460	Hylite 51*	4.0	—	4.0	4.0	—	—	—	—	0.5	—	—	—	—	—	—	—	—
461	IMI-551	4.0	—	4.0	4.0	—	—	—	—	0.5	—	—	—	—	—	—	—	—
Ti—Al 4-Sn 6-Cu 2																		
462	TS2	4.0	—	—	6.0	—	—	—	2.0	—	—	—	—	—	—	—	—	—
Ti—Al 4-V 1-Mo 3																		
463	Republic RS-115*	4.0	1.0	3.0	—	—	—	—	—	—	—	—	—	—	—	Low hydrogen	Low nitrogen	0.10
464	VT14(A)	4.0	1.16	3.23	—	—	—	—	—	0.11	—	—	—	0.055	0.12	0.009 (90)	0.03 (300)	—
465	OMC-Ti-4Al-2Mo-1V*	4.0	1.0	3.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—
466	VT14(B)	4.05	0.88	2.8	—	—	—	—	—	0.12	—	—	—	0.14	0.11	0.006 (60)	0.03 (300)	—
467	VT14	3.5-6.3	0.9-1.9	2.5-3.8	—	0.3	—	—	—	0.15	—	—	Total 0.30	0.30	0.15	0.015 (150)	0.05 (500)	0.10
468	VT14	3.5-6.3	0.9-1.9	2.5-3.8	—	0.3	—	—	—	0.15	—	—	Total 0.30	0.30	0.15	0.015 (150)	0.05 (500)	0.10
469	T-A4D3V	4.0	1.0	3.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—
470	AMS 4913A	3.75-4.75	0.75-1.25	2.5-3.5	—	—	—	—	—	—	—	—	Total 0.40	0.35	0.20	0.015 (150)	0.05 (500)	0.08
471	AMS 4912A	3.75-4.75	0.75-1.25	2.5-3.5	—	—	—	—	—	—	—	—	Total 0.40	0.35	0.20	0.015 (150)	0.05 (500)	0.08
472	RMI 4Al-3Mo-1V	3.75-4.75	0.75-1.25	3.75-4.75	—	—	—	—	—	—	—	—	—	0.35	—	0.015 (150)	0.05 (500)	0.08
473	VT14L	4.3-6.3	0.9-1.9	2.5-3.8	—	—	—	—	—	0.2	—	—	Total 0.30	0.60	0.15	0.015 (150)	0.05 (500)	0.12
474	Ti-4Al-3Mo-1V	3.75-4.75	0.5-1.5	2.5-3.5	—	—	—	—	—	—	—	—	—	0.25 max	—	0.15 (150)	0.05 (500)	0.08
Ti—Al 4-V 2																		
475	IMP-9	4.0	2.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti—Al 4.5																		
476	48-T4*	4.0-5.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti—Al 4.5-Cr 1																		
477	AT	4.67	—	—	—	—	—	0.86	—	0.27	—	—	B 0.001	0.31	—	0.007 (70)	0.24	0.05
Ti—Al 4.5-Cr 2.5																		
478	48-T5*	4.0-5.0	—	—	—	—	—	2.0-3.0	—	—	—	—	—	—	—	—	—	—
Ti—Al 4.5-Sn 2.5																		
479	Republic RS-110C*	4.25-5.25	—	—	2.0-3.0	—	—	—	—	—	—	—	—	0.20	0.20	0.015-0.017	0.05 (500)	0.05
Ti—Al 4.5-V 3.5																		
480	VT14M	4.5	3.5	—	—	—	—	—	—	0.1	—	—	—	0.08	0.14	0.011 (110)	0.045 (450)	—
Ti—Al 4.5-(Fe,Cr, Si) 1.5																		
481	AT4	3.5-5.0	—	—	—	—	—	0.4-0.9	—	0.25-0.60	—	—	—	0.25-0.60	—	0.01 (100)	0.30	—
Ti—Al 4.6-Cr 2.5-Fe 0.3																		
482	VT3	4.0-5.2	—	—	—	—	—	2.0-3.0	—	0.20	—	—	—	0.30	0.20	0.015 (150)	0.05 (500)	0.10
Ti—Al 5																		
483	VT5	4.3-6.2	—	—	—	0.3	—	—	—	0.15	—	—	Total 0.30	0.30	0.30	0.015 (150)	0.05 (500)	0.10
484	VT5L	4.1-6.2	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.35	0.20	0.015 (150)	0.05 (500)	0.20
485	VT5D	5.0	—	—	—	—	—	—	—	0.15	—	—	—	0.30	0.15	0.015 (150)	0.04 (400)	0.05
486	VTL-1	5.0	—	—	—	—	—	—	—	1.0	—	—	—	—	—	—	—	—
Ti—Al 5-CrFe 4																		
487	Ti-5Al-4FeCr	4.75-5.75	—	—	—	—	—	2.25-3.25	—	—	—	—	—	0.75-1.75	—	0.015 (150)	0.05 (500)	0.10
Ti—Al 5-Cr 0.9-Fe 1																		
488	AT-4-V	5.22	—	—	—	—	—	0.87	—	0.67	—	—	B 0.01	1.20	0.14	0.007 (70)	0.03 (300)	—

Information on this group of alloys is continued on page below

*Noncurrent standard or alloy designation

Index No.	Alloy Designation	Common Name/ Alloy	Company Code	Ctry Code	Prime Country Standard	Alloy Type	Forms Available	Applications
Ti—Al 4-Mo 4-Sn 2-Si 0.5 (cont.)								
451	Tikrutan LT 34	—	C-0019	GY	DIN 3.7184	Alpha + beta	—	
452	BS TA 29*	—	—	UK	BS TA.29*	Alpha + beta***	BA for machining	
453	DTD 5343	(IMI-550)	—	UK	DTD 5346	Alpha + beta***	FG stock to 100 mm.	Forging stock.
454	IMI-550	(Hylite 50)	C-0013	UK	DTD 5103	Alpha + beta	BI,BA	High strength alloy creep resistant to 752 F (400 C).
455	Hylite 50*	(IMI-550)	C-0016	UK	IMI-550	Alpha + beta	BA,FG,E	Compressor discs, blades. Fasteners, fuel systems, structures.
456	DTD 5103	(IMI-550)	—	UK	DTD 5103	Alpha + beta	BI,BA	
457	T-A4DE	—	—	FR	AIR	Alpha + beta	—	
458	DTD 5203*	—	—	UK	DTD 5203*	Alpha + beta	BI,6	
Ti—Al 4-Mo 4-Sn 4-Si 0.5								
459	DTD 5223*	—	—	UK	DTD 5223*	Alpha + beta	FG	
460	Hylite 51*	(IMI-551)	C-0016	UK	IMI-551	Alpha + beta	—	Good creep resistant aircraft structure heavy duty.
461	IMI-551	(Hylite 51)	C-0013	UK	TA38,39,40,41	Alpha + beta	BI,BA,FG	Very high strength titanium alloy. Creep resistant to 400 C.
Ti—Al 4-Sn 6-Cu 2								
462	TS2	—	—	UR	—	Near-alpha	—	
Ti—Al 4-V 1-Mo 3								
463	Republic RS-115*	(4-3-1)	C-0011	US	—	Alpha + beta	—	For aircraft parts of high strength.
464	VT14(A)	(4-3-1)	—	UR	—	Alpha + beta	—	
465	OMC-Ti-4Al-3Mo-1V*	(4-3-1)	C-0009	US	AMS 4912A	Alpha + beta	P,SH,ST	
466	VT14(B)	(4-3-1)	—	UR	—	Alpha + beta	—	
467	VT14	(4-3-1)	—	UR	—	Alpha + beta	I,BI,BA,P,SH,E,T	
468	VT14	—	—	UR	—	Alpha + beta	I,BI,BA,P,SH,E,T	
469	T-A4D3V	(4-3-1)	—	FR	AIR	Alpha + beta	—	
470	AMS 4913A	(4-3-1)	—	US	AMS 4913A	Alpha + beta	SH,ST	For strength to 600 F (316 C). Prone to crack propagation.
471	AMS 4912A	(4-3-1)	—	US	AMS 4912A	Alpha + beta	SH,ST	For forming in S.T. cond. and precipitation hard. crack prone.
472	RMI 4Al-3Mo-1V	(4-3-1)	C-0003	US	AMS 4912A	Alpha + beta	P,SH,ST	For aircraft parts requiring high-strength-temperature stabilization.
473	VT14L	(4-3-1+Si)	—	UR	—	Alpha + beta	I,C	
474	Ti-4Al-3Mo-1V	(4-3-1)	C-0001	US	AMS 4912A	Alpha + beta	SH,ST,P	Airframe skins, stiffeners, internal structures.
Ti—Al 4-V 2								
475	IMP-9	—	—	UR	—	Alpha + beta	Powder metal alloy	Powder metallurgy alloy
Ti—Al 4.5								
476	48-T4*	—	—	UR	—	Alpha	—	Early titanium alloy
Ti—Al 4.5-Cr 1								
477	AT	—	—	UR	—	Alpha + beta	—	
Ti—Al 4.5-Cr 2.5								
478	48-T5*	—	—	UR	—	Alpha + beta	—	Early titanium alloy
Ti—Al 4.5-Sn 2.5								
479	Republic RS-110C*	—	C-0011	US	AMS 4926	—	SH,ST,P	Jet engine welded rings, aircraft skins, structural parts.
Ti—Al 4.5-V 3.5								
480	VT15M	—	—	UR	—	—	—	
Ti—Al 4.5-(Fe,Cr,Si) 1.5								
481	AT4	—	—	UR	—	Alpha + beta	SH	Fasteners, aircraft structures.
Ti—Al 4.6-Cr 2.5-Fe 0.3								
482	VT3	—	—	UR	—	Alpha + beta	FG,E	
Ti—Al 5								
483	VT5	—	—	UR	—	Alpha	I,BI,BA,E	
484	VT5L	—	—	UR	—	Alpha dispersoid	I,C	Ti-Al5 alloy for casting
485	VT5D	—	—	UR	—	Alpha	—	
486	VTL-1	—	—	UR	—	—	—	
Ti—Al 5-Cr 1e 4								
487	Ti-5Al-4FeCr	(5-4)	C-0001	US	—	Alpha + beta	SH,BI,BA,P	Airframe components.
Ti—Al 5-Cr 0.9-Fe 1								
488	AT-4V	—	—	UR	—	Alpha + beta	—	

BA—bars, BI—billets, C—casting, E—extrusion, F—foil, FG—forging, I—ingot, P—plate, RD—rod, SH—sheet, ST—strip, T—tubing, W—wire

*Noncurrent standard or alloy designation

***These alloys also known as alpha-dispersoid types

TABLE 1. (Continued)

Index No.	Alloy Designation	CHEMICAL COMPOSITION, WEIGHT PERCENT, ≤ (BALANCE TITANIUM)															
		ALLOYING ELEMENTS											Interstitial Elements				
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt.% (ppm)	Nitrogen Wt.% (ppm)	Carbon
Ti—Al 5-Cr 2.75-Fe 1.25																		
489	Republic RS-140X*	4.0-6.0	—	—	—	—	—	2.1-3.5	—	—	—	—	—	1.0-2.0	—	—	—	0.08
490	OMC-Ti-5Al-2.75Cr-1.25Fe	5.0	—	—	—	—	—	2.75	—	—	—	—	—	1.25	—	—	—	—
491	Republic RS-140X*	4.0-6.0	—	—	—	—	—	2.1-3.5	—	—	—	—	—	1.0-2.0	—	—	—	0.20
Ti—Al 5-Cr 3-Fe 1																		
492	VT3	4.0-5.2	—	—	—	—	—	2.0-3.0	—	0.20	—	—	—	0.30	0.20	0.015 (150)	0.05 (500)	0.10
Ti—Al 5-Mo 1-Cr 1.5-Fe 1.5																		
493	Ti-5Al-1.5Cr-1.5Fe-1Mo*	5.0	1.0	—	—	—	—	1.5	—	—	—	—	—	1.5	—	—	—	—
Ti—Al 5-Mo 1-Sn 6-Zr 2																		
494	Ti-5Al-6Sn-2Zr-1Mo	5.0	—	1.0	6.0	2.0	—	—	—	—	—	—	—	—	—	—	—	—
Ti—Al 5-Mo 1-Sn 6-Zr 2-Si 0.25																		
495	Ti-5Al-6Sn-2Zr-1Mo-Si 0.25	5.0	—	1.0	6.0	2.0	—	—	—	—	—	—	—	—	—	—	—	—
Ti—Al 5-Mo 2-Sn 5-Zr 2-Si 0.25																		
496	RMI 5Al-5Sn-2Zr-2Mo-0.25Si	4.5-5.5	—	1.75-2.25	4.5-5.5	1.75-2.25	—	—	—	0.2-0.3	—	—	—	0.15	0.13	0.0125 (125)	0.03 (300)	0.05
Ti—Al 5-Mo 4-Sn 2-Zr 2-Cr 4																		
497	Ti-17	5.0	—	3.8	2.0	1.8	—	4.0	—	—	—	—	—	—	—	—	—	—
498	OMC-Ti-17	5.0	—	4.0	2.0	2.0	—	4.0	—	—	—	—	—	—	—	—	—	—
Ti—Al 5-Sn 2-Zr 5																		
499	AMS 4968A*	4.5-5.5	—	—	—	4.7-5.7	—	—	—	—	—	—	Total 0.40	0.15	0.12	0.013 (130)	0.03 (300)	0.04
Ti—Al 5-Sn 2.5 ELI																		
500	MIL-T-81556 Type II Comp B	4.5-7.5	—	—	2.0-3.0	—	—	—	—	—	—	—	Total 0.30	0.25	0.12	0.0125 (125)	0.035 (350)	0.05
501	Ti-5Al-2.5Sn ELI	4.7-5.6	—	—	2.0-3.0	—	—	—	—	—	—	—	—	0.25	0.12	0.0125 (125)	0.05 (500)	0.08
Ti—Al 5-Sn 2.5																		
502	L-7101, Ti-5Al-2.5Sn	5.0	—	—	2.5	—	—	—	—	—	—	—	—	—	—	—	—	—
503	Fuchs TA 52	4.0-6.0	—	—	2.0-3.0	—	—	—	—	—	—	—	—	0.25	0.25	0.020 (200)	0.07 (700)	0.08
504	Contimet AlSn 52	4.5-5.75	—	—	2.0-3.0	—	—	—	—	—	—	—	—	0.50	0.30	0.0200 (200)	0.05 (500)	0.08
505	Ti P 65	5.0	—	—	2.5	—	—	—	—	—	—	—	—	—	—	—	—	—
506	DIN 17851, TiAl5Sn2	4.0-6.0	2.0-3.0	—	—	—	—	—	—	—	—	—	—	0.50	0.20	0.020 (200)	0.05 (500)	0.08
507	ASTM B381, Grade F-6	4.0-6.0	—	—	2.0-3.0	—	—	—	—	—	—	—	Total 0.30	0.50	0.30	0.020 (200)	0.05 (500)	0.10
508	OMC-166A (Cast)	5.0	—	—	2.5	—	—	—	—	—	—	—	—	—	—	—	—	—
509	Contimet AlSn 52 ELI	4.7-5.6	—	—	2.0-3.0	—	—	—	—	—	—	—	—	0.15	0.12	0.0125 (125)	0.05 (500)	0.08
510	UTA5E	4.5-5.5	—	—	2.0-3.0	—	—	—	—	—	—	—	—	0.50	0.20	0.020 (200)	0.07 (700)	0.15
511	UTA5E L Grade	4.5-5.75	—	—	2.0-3.0	—	—	—	—	—	—	—	—	0.25	0.12	0.0125 (125)	0.035 (350)	0.05
512	Contimet AlSn 52	4.5-5.75	—	—	2.0-3.0	—	—	—	—	—	—	—	—	0.50	0.30	0.0200 (200)	0.05 (500)	0.08
513	Tikrutan LT 21	4.0-6.0	—	—	1.5-3.0	—	—	—	—	—	—	—	—	0.25	0.20	0.020 (200)	0.07 (700)	0.08
514	TI-LOY 92	5.0	2.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
515	ASTM B381, Grade F-6	4.0-6.0	—	—	2.0-3.0	—	—	—	—	—	—	—	Total 0.30	0.50	0.30	0.0200 (200)	0.05 (500)	0.10
516	OMC Ti-5Al-2.5V	5.0	2.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
517	ASTM B265, Grade 6	4.0-6.0	—	—	2.0-3.0	—	—	—	—	—	—	—	Total 0.30	0.50	0.20	0.020 (200)	0.05 (500)	0.10
518	BS TA 15*	4.0-6.0	—	—	2.0-3.0	—	—	—	—	—	—	—	—	0.50	—	0.0125 (125)	—	—
519	BS TA 14*	4.0-6.0	—	—	2.0-3.0	—	—	—	—	—	—	—	—	0.50	—	0.0125 (125)	—	—
520	DIN 17864, TiAl5Sn2	4.0-6.0	2.0-3.0	—	—	—	—	—	—	—	—	—	—	0.50	0.20	0.20 (200)	0.05 (500)	0.08
521	Armco Ti-5Al-2.5Sn*	5.0	—	—	2.5	—	—	—	—	—	—	—	—	—	—	—	—	—
522	Eltanit A 18*	5.0	—	—	2.5	—	—	—	—	—	—	—	—	—	0.50	0.015 (150)	0.10	0.10
523	BS TA 16*	4.0-6.0	—	—	2.0-3.0	—	—	—	—	—	—	—	—	0.50	—	0.0125 (125)	—	—
524	TA 17*	4.0-6.0	—	—	2.0-3.0	—	—	—	—	—	—	—	—	0.50	—	0.015 (150)	—	—
525	MMA-5137	4.0-5.25	—	—	2.0-3.0	—	—	—	—	—	—	—	Total 0.10	0.50	0.20	0.0175 (175)	0.02 (200)	0.05
526	TIL 110 Grade 6	4.0-6.0	—	—	2.0-3.0	—	—	—	—	—	—	—	Total 0.40	0.50	0.20	0.01 (100)	0.05 (500)	0.10
527	DIN 17862, TiAl5Sn2	4.0-6.0	2.0-3.0	—	—	—	—	—	—	—	—	—	—	0.50	0.20	0.020 (200)	0.05 (500)	0.08
528	DIN 17860, TiAl5Sn2	4.0-6.0	2.0-3.0	—	—	—	—	—	—	—	—	—	—	0.50	0.20	0.020 (200)	0.05 (500)	0.08
529	DIN 3.7115	4.0-6.0	—	—	1.5-3.0	—	—	—	—	—	—	—	—	0.25	0.20	0.020 (200)	0.07 (700)	0.08
530	L W 3.7114	4.0-6.0	—	—	1.5-3.0	—	—	—	—	—	—	—	—	0.25	0.20	0.20	0.07 (700)	0.08
531	MIL-T-81556 Type II Comp A	4.5-5.75	—	—	2.0-3.0	—	—	—	—	—	—	—	Total 0.40	0.50	0.20	0.015 (150)	0.05 (500)	0.08
532	VT5-1	4.0-6.0	—	—	2.0-3.0	0.30	—	—	—	0.15	—	—	Total 0.30	0.30	0.15	0.015 (150)	0.05 (500)	0.10
533	ASTM B265, Grade 6	4.0-6.0	—	—	2.0-3.0	—	—	—	—	—	—	—	Total 0.30	0.50	0.20	0.020 (200)	0.05 (500)	0.10
534	ASTM B381, Grade F-6	4.0-6.0	—	—	2.0-3.0	—	—	—	—	—	—	—	Total 0.30	0.50	0.30	0.0200 (200)	0.05 (500)	0.10
535	Hylite 20*	4.5-5.5	—	—	2.0-3.0	—	—	—	—	—	—	—	—	—	—	130-150 ppm	—	—

Information on this group of alloys is continued on page below

*Noncurrent standard or alloy designation

Index No.	Alloy Designation	Common Name/ Alloy	Company Code	Ctry Code	Prime Country Standard	Alloy Type	Forms Available	Applications
Ti—Al 5-Cr 2.75-Fe 1.25								
489	Republic RS-140X*	—	C-0011	US	—	—	BI,BA,W,P,FG	For jet engine components. Heat resistant to 1000 F (538 C).
490	OMC-Ti-5Al-2.75Cr-1.25Fe	—	C-0009	US	—	—	—	
491	Republic RS-140X*	—	C-0011	US	—	—	BI,BA,W,P,FG	Jet engine and turbo-supercharger components, fasteners, landing gear
Ti—Al 5-Cr 3-Fe 1								
492	VT3	—	—	UR	—	Alpha + beta	—	
Ti—Al 5-Mo 1-Cr 1.5-Fe 1.5								
493	Ti-5Al-1.5Cr-1.5Fe-1Mo	—	C-0009	US	—	—	—	
Ti—Al 5-Mo 1-Sn 6-Zr 2								
494	Ti-5Al-6Sn-2Zr-1Mo	(5621S)	C-0009	US	—	Near-alpha	I,BI,BA,P,SH	
Ti—Al 5-Mo 1-Sn 6-Zr 2-Si 0.25								
495	Ti-5Al-6Sn-2Zr-1Mo-0.25Si	(5621S)	C-0001	US	—	Near-alpha	—	Forged engine discs, high-strength, corrosion resistant
Ti—Al 5-Mo 2-Sn 5-Zr 2-Si 0.25								
496	RMI 5Al-5Sn-2Zr-2Mo-0.25Si	(5621S)	C-0003	US	—	Near-alpha	I,BI,BA,P,S	Jet engine components, high-temperature and high-creep strength
Ti—Al 5-Mo 4-Sn 2-Zr 2-Cr 4								
497	Ti-17	(Ti-17)	C-0001	US	—	Alpha + beta	I,BI,BA	
498	OMC-Ti-17	—	C-0009	US	—	Alpha + beta	I,BI,BA	
Ti—Al 5-Sn 2-Zr 5								
499	AMS 4968A*	—	—	US	AMS 4968A*	—	BA,FG	*For strength to 900 F (482 C), bolts, compressor blades*
Ti—Al 5-Sn 2.5 ELI								
500	MIL-T-81556 Type II Comp B	(A-110 ELI)	—	US	MIL-T-81556	Alpha	I,BI,BA,P,SH,E,C	
501	Ti-5Al-2.5Sn ELI	(A-110)	C-0001	US	—	Alpha	I,BI,BA,P,SH,E,W	Liquid hydrogen tankage high-pressure vessels to -320 F (-196 C).
Ti—Al 5-Sn 2.5								
502	L-7101, Ti-5Al-2.5Sn	(A-110)	—	SP	—	Alpha	—	
503	Fuchs TA 52	(A-110)	C-0054	GY	LN 3.7114	Alpha	FG	Weldable, moderate formability, medium strength
504	Contimet AlSn 52	(A-110)	C-0046	GY	DIN 3.7115	Alpha	BA,SH,ST,P,W,FG,E,T	For aircraft engine, frames and spacecraft to 840 F (450 C).
505	Ti P 65	(IMI-317)	—	FR	AECMA P.65	Alpha	All forms	Weldable, high-strength
506	DIN 17851, TiAl5Sn2	(A-110)	—	GY	DIN 17851	Alpha	—	
507	ASTM B381 Grade F-6	(A-110)	—	US	ASTM B381	Alpha	FG	Standard for forgings of this composition
508	OMC-166A (Cast)	(A-110)	C-0009	US	—	Alpha	Cast	Aircraft tailcones, cryogenic tankage, stiffeners
509	Contimet AlSn 52 ELI	(A-110)	C-0046	GY	AMS 4909	Alpha	BA,SH,ST,P,W,FG,E,T	For aircraft engines and spacecraft weldable stable
510	UTASE	(A-110)	C-0020	FR	—	Alpha	BA,SH,P,FG	*Has good ductility and toughness to -425 F (-253 C)*
511	TUASE L Grade	(A-110)	C-0020	FR	—	Alpha	BA,SH,P,FG	This L grade is a cryogenic grade. Creep resistant to 450 F (232 C).
512	Contimet AlSn 52	(A-110)	C-0046	GY	—	Alpha	I,BI,BA,P,SH,E,C	Easily welded titanium alloy with medium tensile strength
513	Tikrutan LT 21	(A-110)	C-0019	GY	DIN 3.7114	Alpha	—	
514	Ti-LOY 92	(A-110)	C-0065	US	—	Alpha	Briquette	For metallurgical additions
515	ASTM B381 Grade F-6	(A-110)	—	US	ASTM B381	Alpha	FG	Standard for titanium and titanium-alloy forgings of this composition
516	OMC Ti-5Al-2.5V	(A-110)	C-0009	US	AMS 4910	Alpha	I,BI,BA,P,SH,E,C	For aircraft tailcones, cryogenic tankage, compressors
517	ASTM B265, Grade 6	(A-110)	—	US	ASTM B265	Alpha	SH,ST,P	Standard for strip, sheet, and plate of this composition
518	BS TA 15*	(A-110)(IMI-317)	—	UK	BS TA 15*	Alpha	BA for machining	
519	BS TA 14*	(A-110)(IMI-317)	—	UK	BS TA 14*	Alpha	SH	
520	DIN 17864, TiAl5Sn2	(A-110)	—	GY	DIN 17864	Alpha	—	
521	Armco Ti-5Al-2.5Sn*	(A-110)	C-0005	US	AMS 4926 BA	Alpha	I,BI,BA,P,SH,E	Higher strength than 6-4 alloy. For airframe parts.
522	Eltanit A 18*	(A-110)	C-0046	GY	—	Alpha	—	
523	BS TA 16*	(A-110)(IMI-317)	—	UK	BS TA 16*	Alpha	FG stock	*Forgings, forging stock*
524	TA 17*	(A-110)(IMI-317)	—	UK	BS TA 17*	Alpha	FG stock	Forgings
525	MMA-5137	(A-110)	C-0002	US	—	Alpha	All forms	Aircraft and missile compressor, fasteners, discs, tank linings
526	TIL 110 Grade 6	(A-110)	C-0025	US	ASTM B367-69	Alpha	C	Graphite rammed castings
527	DIN 17862, TiAl5Sn2	(A-110)	—	GY	DIN 17862	Alpha	—	
528	DIN 17860, TiAl5Sn2	(A-110)	—	GY	DIN 17860	Alpha	—	
529	DIN 3.7115	(A-110)	—	GY	DIN 3.7115	Alpha	I,BI,BA,P,SH,E,C	
530	L.W. 3.7114	(A-110)	—	GY	L.W. 3.7114	Alpha	I,BI,BA,P,SH,E,C	
531	MIL-T-81556 Type II Comp A	(A-110)	—	US	MIL-T-81556	Alpha	SH,ST,P	For strength and corrosion resistance to 800 F (427 C), weldable
532	VT5-1	(A-110)	—	UR	—	Alpha	I,BI,BA,P,SH,E,T	Compressor blades, engine cowlings, rings
533	ASTM B265, Grade 6	(A-110)	—	US	ASTM B265	Alpha	SH,ST,P	Standard for strip, sheet, and plate of this composition
534	ASTM B381, Grade F-6	(A-110)	—	US	ASTM B381	Alpha	FG	Standard for titanium and titanium alloy forging of this composition
535	Hylite 20*	(A-110)	C-0016	UK	DTD 5083	Alpha	FG,BI,SH,BA	Aircraft and missile compressor, fasteners, discs, tank linings

BA—bars, BI—billet, C—casting, E—extrusion, F—foil, FG-forging, I—ingot, P—plate, RD—rod, SH—sheet, ST—strip, T—tubing, W—wire, con—condensers, H exch—heat exchanger, S.T.—seamless tubing, W.T.—welded tubing

*Noncurrent standard or alloy designation

TABLE 1. (Continued)

Index No.	Alloy Designation	CHEMICAL COMPOSITION, WEIGHT PERCENT, ≤ (BALANCE TITANIUM)																
		ALLOYING ELEMENTS											Interstitial Elements					
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt.% (ppm)	Nitrogen Wt.% (ppm)	Carbon
Ti—Al 5-Sn 2.5 (cont.)																		
536	IMI-317	5.0	—		2.5	—	—	—	—	—	—	—	—	—	—	—	—	—
537	AMS 4966E	4.0-6.0	—	—	2.0-3.0	—	—	—	—	—	—	—	Total 0.40	0.50	0.20	0.020 (200)	0.05 (500)	0.08
538	Crucible A-110AT	4.0-6.0	—	—	1.5-3.5	—	—	—	—	—	—	—	—	—	—	—	—	—
539	Ti-5Al-2.5Sn	4.0-6.0	—	—	2.0-3.0	—	—	—	—	—	—	—	—	0.5 max	—	0.0175 (175)	0.05 (500)	0.08
540	MIL-T-9046H Type II Comp. A	4.5-5.75	—	—	2.0-3.0	—	—	—	—	—	—	—	Total 0.40	0.50	0.20	0.020 (200)	0.05 (500)	0.08
541	AMS 4953	4.0-6.0	—	—	2.0-3.0	—	0.20	—	—	—	—	—	—	Total	0.175	0.015 (150)	0.07 (700)	0.10
542	RMI 5Al-2.5Sn	4.0-6.0	—	—	2.0-3.0	—	—	—	—	—	—	—	—	0.50	0.20	0.0175 (175)	0.05 (500)	0.08
543	ASTM B348, Grade 6	4.0-6.0	—	—	2.0-3.0	—	—	—	—	—	—	—	Total 0.30	0.50	0.20	0.0125 (125)	0.05 (500)	0.10
544	ALLVAC 5-2.5	5.0	—	—	2.5	—	—	—	—	—	—	—	—	—	—	—	—	—
545	AMS 4910F	4.50-5.75	—	2.0-3.0	—	—	—	—	—	—	—	—	Total 0.40	0.50	0.20	0.020 (200)	0.05 (500)	0.08
546	AMS 4926E	4.0-6.0	—	—	2.0-3.0	—	—	—	—	—	—	—	Total 0.40	0.50	0.20	0.020 (200)	0.05 (500)	0.08
547	T-A5E	5.0	—	—	2.5	—	—	—	—	—	—	—	—	—	—	—	—	—
548	DTD 5083*	5.0	—	—	2.5	—	—	—	—	—	—	—	—	—	—	—	—	—
549	DTD 5093*	5.0	—	—	2.5	—	—	—	—	—	—	—	—	—	—	—	—	—
550	AMS 4924C	4.7-5.6	—	—	2.0-3.0	—	—	0.10	—	—	—	—	Total 0.40	0.25	0.12	0.0125 (125)	0.035 (350)	0.05
551	AMS 4909C	4.50-5.75	—	—	2.0-3.0	—	—	—	—	—	—	—	Total 0.30	0.25	0.12	0.0125 (125)	0.035 (350)	0.05
552	ASTM B367, Grade C-6	4.0-6.0	—	—	2.0-3.0	—	—	—	—	—	—	—	Total 0.40	0.50	0.20	0.0100 (100)	0.05 (500)	0.10
553	ASTM B367, Grade C-6	4.0-6.0	—	—	2.0-3.0	—	—	—	—	—	—	—	Total 0.40	0.50	0.20	0.0100 (100)	0.05 (500)	0.10
Ti—Al 5-Sn 5-Zr 5																		
554	Tikrutan LT 23	4.5-5.5	—	—	4.3-5.3	4.7-5.7	—	—	—	—	—	—	—	0.15	0.12	0.015 (150)	0.03 (300)	0.04
555	OMC-Ti-5Al-5Sn-5Zr*	5.0	—	—	5.0	5.0	—	—	—	—	—	—	—	—	—	—	—	—
556	Ti-5Al-5Sn-5Zr	4.5-5.5	—	—	4.3-5.3	4.7-5.7	—	—	—	—	—	—	—	0.15 max	0.12	0.015 (150)	0.03 (300)	0.04
Ti—Al 5-V 2-Sn 3-Zr 2																		
557	TS5	5.0	2.0	—	3.0	2.0	—	—	—	—	—	—	—	—	—	—	—	—
Ti—Al 5-V 2.5-Sn 2.5-Cb/Nb 1-Ta 1																		
558	Ti-5Al-2.5Sn-2.5V-1Cb-1Ta	5.0	2.5	—	2.5	—	—	—	—	—	—	1.3	Ta 1.3	—	—	—	—	—
Ti—Al 5-V 3-Mo 3-Zr 1																		
559	IRM7*	5.0	3.0	3.0	—	1.0	—	—	—	—	—	—	—	—	—	—	—	—
Ti—Al 5-V 5-Mo 5-Cr 1.3-Fe 1																		
560	VT22	4.4-5.9	4.0-5.5	4.0-5.5	—	0.30	—	0.5-2.0	—	0.15	—	—	Total 0.30	0.5-1.5	0.20	0.015 (150)	0.05 (500)	0.10
Ti—Al 5-Zr 5-W 1-Si 0.3																		
561	T-A6ZW	5.0	—	—	—	5.0	—	—	—	0.30	—	—	W 1.0	—	—	—	—	—
Ti—Al 5.4-Mo 1.25-Cr 1.4-Fe 1.3																		
562	AMS 4929*	4.75-6.00	—	0.08-1.70	—	—	—	0.8-2.0	—	—	—	—	Total 0.40	0.9-1.7	0.20	0.0125 (125)	0.07 (700)	0.10
563	AMS 4969*	4.75-6.00	—	0.80-1.70	—	—	—	0.8-2.0	—	—	—	—	Total 0.40	0.9-1.7	0.20	0.0125 (125)	0.07 (700)	0.10
Ti—Al 5.5																		
564	VT-10	5.0-6.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti—Al 5.5-Mo 1-Cr 1-Fe 1																		
565	Ti-155A*	5.0-6.0	—	0.9-1.5	—	—	—	1.1-1.7	—	—	—	—	—	1.1-1.7	—	0.0125 (125)	0.05 (500)	0.08
Ti—Al 5.5-Mo 1.5-Cr 1.5-Fe 1.5																		
566	Eltanit AB 203*	5.5	—	1.5	—	—	—	1.5	—	—	—	—	—	1.5	0.50	0.015 (150)	0.10	0.10
Ti—Al 5.5-V 5.5-Sn 2-Cu 0.3-Fe 0.3																		
567	Contimet AlVSn 6-6-2	5.0-6.0	5.0-6.0	—	1.5-2.5	—	—	—	0.35-1.00	—	—	—	—	0.35-1.00	0.20	0.0125 (125)	0.04 (400)	0.05
Ti—Al 6-Mo 0.5-Zr 5-Si 0.5																		
568	UT685	5.7-6.3	—	0.25-0.75	—	4.0-6.0	—	—	—	0.1-0.4	—	—	—	0.20	0.20	0.008 (80)	—	0.08
Ti—Al 6-Mo 0.5-Zr 5-Si 0.25																		
569	BS TA 43	5.7-6.3	—	0.25-0.75	—	4.0-6.0	—	—	—	0.1-0.4	—	—	—	0.20	0.20	0.006 (60)	0.05 (500)	—
570	BS TA 44	5.7-6.3	—	0.25-0.75	—	4.0-6.0	—	—	—	0.1-0.4	—	—	—	0.20	0.25	0.010 (100)	0.05 (500)	—
571	Contimet 685	5.7-6.3	—	0.25-0.75	—	4.0-6.0	—	—	—	0.1-0.4	—	—	—	0.20	0.15	0.010 (100)	0.05 (500)	0.08
572	Ti P 67	6.0	—	0.5	—	5.0	—	—	—	0.25	—	—	—	—	—	—	—	—
573	T-A6ZD	6.0	—	0.5	—	5.0	—	—	—	0.2	—	—	—	—	—	—	—	—
574	IMI-685	5.7-6.3	—	0.25-0.75	—	4.0-6.0	—	—	—	0.1-0.4	—	—	—	0.20	0.25	0.010 (100)	0.05 (500)	—
575	Contimet 685	5.7-6.3	—	0.25-0.75	—	4.0-6.0	—	—	—	0.1-0.4	—	—	—	0.20	0.15	0.010 (100)	0.05 (500)	0.08
576	T-A6Zr5D	6.0	—	0.5	—	5.0	—	—	—	0.2	—	—	—	—	—	—	—	—

Information on this group of alloys is continued on page below.

*Noncurrent standard or alloy designation.

Index No.	Alloy Designation	Common Name/ Alloy	Company Code	Ctry Code	Prime Country Standard	Alloy Type	Forms Available	Applications
Ti—Al 5-Sn 2.5 (cont.)								
536	IMI-317	(A-110)	C-0013	UK	TA14,15,16	Alpha	BA,SH,E	High strength weldable alloy
537	AMS 4966E	(3-2 5)	—	US	AMS 4966E	Alpha	FG,BI	For strength and weldability to 800 F (427 C).
538	Crucible A-110AT	(A-110)	C-0004	US	AMS 4910F	Alpha	SH,ST,P,BA,W,FG,BI	Compressor blades, welded rings, high temperature, components.
539	Ti-5Al-2.5Sn	(A-110)	C-0001	US	—	Alpha	BI,BA,SH,ST,P,W	Compressor blades, weldable
540	MIL-T-9046H Type II Comp. A	(A-110)	—	US	MIL-T-9046H	Alpha	SH,ST,P	For strength and corrosion resistance to 800 F (427 C)
541	AMS 4953	(A-110)	—	US	AMS 4953	Alpha	W,welded W	Welding wire, primarily for inert arc welding
542	RMI 5Al-2.5Sn	(A-110)	C-0003	US	AMS 4910F	Alpha	I,BI,BA,P,SH,E,C	Elevated temperature parts, parts requiring welding, oxidation resistant
543	ASTM B348, Grade 6	(A-110)	—	US	ASTM B348	Alpha	BA,BI	Standard for bars and billets of this composition
544	ALLVAC 5-2.5	(A-110)	C-0008	US	AMS 4910F	Alpha	I,BI,BA,P,SH,E,C	For parts needing weldability and oxidation resistance
545	AMS 4910F	(A-110)	—	US	AMS 4910F	Alpha	SH,ST,P	For strength to 800 F (427 C) plus weldability
546	AMS 4926E	(A-110)	—	US	AMS 4926D	Alpha	BA,W,F,W rings	For strength to 800 F (427 C) and good weldability
547	T-A5E	(A-110)	—	FR	AIR	Alpha	—	
548	DTD 5083*	(IMI-317)(A-110)	—	UK	DTD 5083*	Alpha	BA	
549	DTD 5093*	(IMI-317)(A-110)	—	UK	DTD 5093*	Alpha	SH	
550	AMS 4924C	(A-110) ELI	—	US	AMS 4924B	Alpha	BA,FG,W,F W rings	For weldability, high strength/weight ratio to -423 F (-253 C)
551	AMS 4909C	(A-110) ELI	—	US	AMS 4909B	Alpha	SH,ST,P	For good weldability and ductility, good notch toughness to -423 F (-253 C)
552	ASTM B367, Grade C-6	(A-110)	—	US	ASTM B367	Alpha	Castings	Standard for titanium and titanium-alloy castings, this composition
553	ASTM B367, Grade C-6	(A-110)	—	—S	ASTM B367	Alpha	C	Standard for titanium and titanium-alloy castings, this composition
Ti—Al 5-Sn 5-Zr 5								
554	Tikrutan LT 23	(5-5-5)	C-0019	GY	—	Alpha	—	
555	OMC-Ti-5Al-5Zn-5Zr*	(5-5-5)	C-0009	US	—	—	—	
556	Ti-5Al-5Sn-5Zr	(5-5-5)	C-0001	US	—	Alpha	BI,BA,FG,SH,P	Turbine engines, air frame components, high-creep strength
Ti—Al 5-V 2-Sn 3-Zr 2								
557	TS5	—	—	UR	—	—	—	
Ti—Al 5-V 2.5-Sn 2.5-Cb/Nb 1-Ta 1								
558	Ti-5Al-2.5Sn-2.5V-1Cb-1Ta	—	C-0001	US	—	—	—	
Ti—Al 5-V 5-Mo 3-Zr 1								
559	IRM7*	—	—	UR	—	—	—	Early titanium alloy
Ti—Al 5-V 5-MO 5-Cr 1.3-Fe 1								
560	VT22	—	—	UR	—	Alpha + beta	I,BA,E	
Ti—Al 5-Zr 5-W 1-Si 0.3								
561	T-A6ZW	—	—	FR	AIR	Alpha + beta	—	
Ti—Al 5.4-Mo 1.25-Cr 1.4-Fe 1.3								
562	AMS 4929*	—	—	US	AMS 4929*	—	BA	For light weight and good corrosion resistance to 750 F (399 C)
563	AMS 4969*	—	—	US	AMS 4969*	—	FG,BI	For moderate strength to 750 F (399 C), good corrosion resistance
Ti—Al 5.5								
564	VT-10	—	—	UR	—	Alpha+beta+comp	—	
	Ti—Al 5.5-Mo 1-Cr 1-Fe 1							
565	TI-155A*	—	C-0001	US	—	Alpha + beta	FG,BI,BA,E,W	FG for aircraft propeller blades, vanes, jet engine hubs
Ti—Al 5.5-Mo 1.5-Cr 1.5-Fe 1.5								
566	Eltanit AB 203*	—	C-0046	GY	—	—	—	
Ti—Al 5.5-V 5.5-Sn 2-Cu 0.3-Fe 0.3								
567	Contimet AlVSn 6-6-2	(6-6-2)	C-0046	GY	LW 3 7174	Alpha + beta	BA,SH,P,W,FG,E,ST,T	Very high strength-density ratio, deep hardenability
Ti—Al 6-Mo 0.5-Zr 5-Si 0.5								
568	UT685	—	C-0020	FR	—	Alpha + beta	BA,FG	For blades and discs of jet engine compressors
Ti—Al 6-Mo 0.5-Zr 5-Si 0.25								
569	BS TA 43	(IMI-685)	—	UK	BS TA 43	Alpha+beta***	FG stock	Forgings, forging stock
570	BS TA 44	(IMI-685)	—	UK	BS TA 44	Alpha+beta***	FG	Forgings
571	Contimet 685	(IMI-685)	C-0046	GY	LW 3 7154	Alpha + beta	BA,FG	*For HP-compressor for aero-engines. High strength and creep resistance*
572	Ti P 67	(IMI-685)	—	FR	AECMA	Alpha + beta	BA,FG	
573	T-A6ZD	—	—	FR	AIR	—	—	
574	IMI-685	—	C-0013	UK	TA43,44	Alpha + beta	BA	Weldable good strength alloy. Creep resistant to 932 F (500 C)
575	Contimet 685	(685)	C-0046	GY	—	Alpha + beta	—	High strength and creep to 1,014 F (540 C) for H.P. compressors
576	T-A6Zr5D	—	—	FR	AIR	Alpha + beta	—	

BA—bars, BI—billet, C—casting, E—extrusion, F—foil, FG-forging, I—ingot, P—plate, RD—rod, SH—sheet, ST—strip, T—tubing, W—wire, con—condensers, H exch—heat exchanger, S T—seamless tubing, W T—welded tubing

*Noncurrent standard or alloy designation
**Current standard or alloy designation, not to be used on new designs.
***These alloys also known as alpha-dispersoid types.

TABLE 1. (Continued)

Index No.	Alloy Designation	CHEMICAL COMPOSITION, WEIGHT PERCENT, ≤ (BALANCE TITANIUM)															
		ALLOYING ELEMENTS											Interstitial Elements				
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt.% (ppm)	Nitrogen Wt.% (ppm)	Carbon
Ti—Al 5-Mo 0.8-Cb/Nb 2-Ta 1																	
577	RMI-6Al-2Cb-1Ta-1Mo	5.5-6.5	—	0.5-1.0	—	—	—	—	—	—	—	1.5-2.5	Ta 0.5-1.5	0.25	0.10	0.0125 (125)	0.03 (300)	0.05
578	MIL-R-81558 Type II Comp. D	5.5-6.5	—	0.5-1.0	—	—	—	—	—	—	—	1.5-2.5	Ta 0.5-1.5	0.20	0.10	0.0125 (125)	0.03 (300)	0.05
579	RMI 6Al-2Cb-1Ta-0.8Mo	5.5-6.5	—	0.5-1.5	—	—	—	—	—	—	—	1.5-2.5	Ta 0.5-1.5	0.25	0.10	0.0125 (125)	0.05 (500)	0.08
580	ALLVAC 6-2-1-.8	6.0	—	0.8	—	—	—	—	—	—	—	2.0	Ta 1.0	—	—	—	—	—
581	MIL-T-9046H Type II Comp. G	5.5-6.5	—	0.5-1.0	—	—	—	—	—	—	—	1.5-2.5	Ta 0.5-1.5	0.25	0.10	0.0125 (125)	0.03 (300)	0.05
582	OMC-Ti-6Al-2Cb-1Ta-0.8Mo	6.0	—	0.8	—	—	—	—	—	—	—	2.0	Ta 1.0	—	—	—	—	—
583	Ti-6Al-2Cb-1Ta-0.8Mo	6.0	—	0.8	—	—	—	—	—	—	—	2.0	Ta 1.0	—	—	—	—	—
Ti—Al 6-Mo 1-Sn 2-Zr 1.5-Si 0.35-Si 0.1																	
584	OMC-Ti-11	6.0	—	1.0	2.0	1.5	—	—	—	0.10	—	—	Bi 0.35	—	—	—	—	—
585	Ti-11	6.0	—	1.0	2.0	1.5	—	—	—	0.10	—	—	Bi 0.35	—	—	—	—	—
Ti—Al 6-Mo 1-Sn 2-Zr 5-Si 0.25																	
586	UT651A	6.0	—	1.0	2.0	5.0	—	—	—	0.25	—	—	—	—	—	—	—	—
Ti—Al 6-Mo 1-Zr 5-Si 0.25																	
587	T-A6Z5D	6.0	—	1.0	—	5.0	—	—	—	Si	—	—	—	—	—	—	—	—
588	Tikrutan LT 26	5.25-7.25	—	0.25-1.25	—	4.0-6.0	—	—	—	0.1-0.4	—	—	—	0.20	—	0.015 (150)	—	0.08
589	L.W. 3.7154	5.25-7.25	—	0.25-1.25	—	4.0-6.0	—	—	—	0.1-0.4	—	—	—	0.20	—	0.015 (150)	—	0.08
Ti—Al 6-Mo 2-Cr 2-Fe 1-Si 0.25																	
590	VT3-1L	5.3-7.0	—	2.0-3.0	—	0.5	—	0.8-2.3	—	0.15-0.40	—	W 0.20	Total 0.30	0.2-0.7	0.18	0.015 (150)	0.05 (500)	0.15
591	VT3-1	5.5-7.0	—	2.0-3.0	—	0.5	—	0.8-2.3	—	0.15-0.40	—	—	Total 0.30	0.2-0.7	0.18	0.015 (150)	0.05 (500)	0.10
Ti—Al 6-Mo 2-Sn 2-Zr 2-Cr 2-Si 0.25																	
592	Ti-6Al-2Mo-2Sn-2Zr-2Cr-0.25Si	6.0	—	2.0	2.0	2.0	—	2.0	—	0.25	—	—	—	—	—	—	—	—
593	RMI 62222S	5.5-6.5	—	1.75-2.25	1.75-2.25	1.75-2.25	—	1.75-2.25	—	0.18-0.25	—	—	—	0.25	0.14	0.0125 (125)	0.03 (300)	0.05
Ti—Al 6-Mo 2-Sn 2-Zr 4																	
594	RMI 6Al-2Sn-4ZR-2Mo	5.5-6.5	—	1.75-2.25	1.75-2.25	3.5-4.5	—	—	—	0.10 max	—	—	—	0.25	0.12	0.010 (100)	0.05 (500)	0.08
595	AMS 4976	5.5-6.5	—	1.8-2.2	1.8-2.2	3.6-4.4	—	—	—	—	—	—	Total 0.30	0.25	0.15	0.015 (150)	0.05 (500)	0.05
596	T-A6ZDE	6.0	—	2.0	2.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—
597	MIL-T-9046H Type III Comp. G	5.5-6.5	—	1.5-2.5	1.5-2.5	3.6-4.4	—	—	—	—	—	—	Total 0.30	0.35	0.12	0.015 (150)	0.05 (500)	0.08
598	T-A6Zr4DE	6.0	—	2.0	2.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—
599	OMC Ti-6Al-2Sn-4Zr-2Mo	6.0	—	2.0	2.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—
600	ALLVAC 6-2-4-2	6.0	—	2.0	2.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—
601	AMS 4975B	5.5-6.5	—	1.8-2.2	1.8-2.2	3.6-4.4	—	—	—	—	—	—	Total 0.30	0.25	0.15	0.0125 (125)	0.05 (500)	0.05
602	L.W. 3.7144	5.5-6.5	—	1.8-2.2	1.8-2.2	3.6-4.4	—	—	—	—	—	—	—	0.25	0.12	0.015 (150)	0.05 (500)	0.05
603	Crucible 6Al-2Sn-4Zr-2Mo	6.0	—	2.0	2.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—
604	UT6242	5.5-6.5	—	1.8-2.2	1.8-2.2	3.6-4.4	—	—	—	—	—	—	—	0.25	0.12	0.0125 (125)	—	0.05
605	MMA-9744	5.5-6.5	—	1.8-2.2	1.8-2.2	3.6-4.4	—	—	—	—	—	—	Total 0.10	0.25	0.15	0.0125 (125)	0.02 (200)	0.04
606	Tikrutan LT 24	5.5-6.5	—	1.8-2.2	1.8-2.2	3.6-4.4	—	—	—	—	—	—	—	0.25	0.12	0.015 (150)	0.05 (500)	0.05
607	Contimet AlSnZrMo 6-2-4-2	5.5-6.5	—	1.8-2.2	1.8-2.2	3.6-4.4	—	—	—	—	—	—	—	0.25	0.12	0.0125 (125)	0.05 (500)	0.05
608	MIL-T-9046H Type III Comp. G	5.5-6.5	—	1.5-2.5	1.5-2.5	3.6-4.4	—	—	—	—	—	—	Total 0.30	0.35	0.12	0.015 (150)	0.05 (500)	0.08
Ti—Al 6-Mo 2-Sn 2-Zr 4-Si 0.25																	
609	ALLVAC 6-2-4-2+Si*	6.0	—	2.0	2.0	4.0	—	—	—	0.25	—	—	—	—	—	—	—	—
610	OMC-Ti-6Al-2Sn-4Zr-2Mo-0.2Si	6.0	—	2.0	2.0	4.0	—	—	—	0.20	—	—	—	—	—	—	—	—
Ti—Al 6-Mo 2-Zr 4-Sn 2																	
611	Contimet AlSnZrMo 6-2-4-2	5.5-6.5	—	1.8-2.2	1.8-2.2	3.6-4.4	—	—	—	—	—	—	—	0.25	0.12	0.0125 (125)	0.05 (500)	0.05
Ti—Al 6-Mo 6-Zr 5-Cu 1-Si 0.5																	
612	DTD M201*	6.0	—	4.0	—	5.0	—	—	1.0	0.20	—	—	—	—	—	—	—	—
613	IMI-700*	6.0	—	4.0	—	5.0	—	—	1.0	0.20	—	—	—	—	—	—	—	—
Ti—Al 6-Mo 6-Sn 2-Zr 4																	
614	ALLVAC 6-2-4-6	6.0	—	6.0	2.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—
615	AMS 4981	5.5-6.5	—	5.5-6.5	1.75-2.25	3.5-4.5	—	—	—	—	—	—	Total 0.40	0.15	0.15	0.0125 (125)	0.04 (400)	0.04
616	RMI 6Al-2Sn-4Zr-6Mo	5.5-6.5	—	5.5-6.5	1.75-2.25	3.5-4.5	—	—	—	—	—	—	—	0.15	0.15	0.0125 (125)	0.04 (400)	0.04
617	MMA-6246	5.5-6.5	—	5.5-6.5	1.8-2.2	3.6-4.4	—	—	—	—	—	—	Total 0.10	0.15	0.15	0.0125 (125)	0.02 (200)	0.04
618	OMC-Ti-6Al-2Sn-4Zr-6Mo	6.0	—	6.0	2.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—
619	Armco Ti-6Al-2Sn-4Zr-6Mo	6.0	—	6.0	2.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—
620	Ti-6Al-2Sn-4Zr-2Mo	5.5-6.5	—	1.8-2.2	1.8-2.2	3.6-4.4	—	—	—	—	—	—	—	0.25 max	0.12	0.0125 (125)	0.04 (400)	0.04
621	Ti-6Al-2Sn-4Zr-6Mo	5.5-6.5	—	5.5-6.5	1.8-2.2	3.6-4.4	—	—	—	—	—	—	—	0.15 max	0.12	0.0125 (125)	0.04 (400)	0.04

Information on this group of alloys is continued on page below

*Noncurrent standard or alloy designation

Index No.	Alloy Designation	Common Name/ Alloy	Company Code	Ctry Code	Prime Country Standard	Alloy Type	Forms Available	Applications
Ti—Al 6-Mo 0.5-Cb/Nb 2-Ta 1								
577	RMI-6Al-2Cb-1Ta-1Mo	(6-2-1-1)	C-0003	US	—	Near-alpha	I,BI,BA,P,SH,W,E	Marine, hydrospace, deep submergence vehicles, weldable.
578	MIL-R-81558 Type II Comp. D	(6-2-1-1)	—	US	MIL-R-81558	Alpha	I,BI,BA,P	
579	RMI 6Al-2Cb-1Ta-0.8Mo	(6-2-1-1)	C-0003	US	—	Near-alpha	I,BI,BA,P,H,W,E	Marine, hydrospace, submergence vehicles, weldable.
580	ALLVAC 6-2-1-.8	(6-2-1-1)	C-0008	US	—	Near-alpha	I,BI,BA,P	
581	MIL-T-9046H Type II Comp. G	(6-2-1-1)	—	US	MIL-T-9046H	Alpha	I,BI,BA,P	
582	OMC-Ti-6Al-2Cb-1Ta-0.8Mo	(6-2-1-1)	C-0009	US	—	Near-alpha	I,BI,BA	
583	Ti-6Al-2Cb-1Ta-0.8Mo	(6-2-1-1)	C-0001	US	—	Near-alpha	I,BI,BA,P	For pressure hulls, resists salt water cracking, tough.
Ti—Al 6-Mo 1-Sn 2-Zr 1.5-Si 0.35-Si 0.1								
584	OMC-Ti-11	(Ti-11)	C-0009	US	—	Near-alpha	I,BI,BA	
585	Ti-11	(Ti-11)	C-0001	US	—	Near-alpha	BI,BA,F,SH,P	Compressor components for jet engines, gas turbine parts.
Ti—Al 6-Mo 1-Sn 2-Zr 5-Si 0.25								
586	UT651A	—	C-0020	FR	—	—	—	Patented by Ugine Aciers, for high temperature applications.
Ti—Al 6-Mo 1-Zr 5-Si 0.25								
587	T-A6Z5D	—	—	FR	AIR	Alpha + beta	—	
588	Tikrutan LT 26	—	C-0019	GY	DIN 3.7154	Alpha + beta	—	
589	L.W. 3.7154	—	—	GY	L.W. 3.7154	Alpha + beta	—	
Ti—Al 6-Mo 2-Cr 2-Fe 1-Si 0.25								
590	VT3-1L	—	—	UR	—	Alpha + beta	I,C	
591	VT3-1	—	—	UR	—	Alpha + beta	I,BI,BA,P,SH,E,T	
Ti—Al 6-Mo 2-Sn 2-Zr 2-Cr 2-Si 0.25								
592	Ti-6Al-2Mo-2Sn-2Zr-2Cr-Si	(6-2-2-2-2)	C-0009	US	—	Alpha + beta	BI,BA,P	
593	RMI 622225	(6-2-2-2-2)	C-0003	US	—	Alpha + beta	BI,BA,P	
Ti—Al 6-Mo 2-Sn 2-Zr 4								
594	RMI 6Al-2Sn-4Zr-2Mo	(6-2-4-2)	C-0003	US	AMS 4976	Alpha + beta	I,BI,BA,P,SH,E	For jet engine components, good high-temperature creep strength.
595	AMS 4976	(6-2-4-2)	—	US	AMS 4976	Alpha + beta	FG	*For high strength, toughness and creep resistance to 1000 F (538 C).*
596	T-A6ZDE	—	—	FR	AIR	—	—	
597	MIL-T-9046H Type III Comp. G	(6-2-4-2)	—	US	MIL-T-9046H	Alpha + beta	I,BI,BA,P,SH,E	
598	T-A6Zr4DE	(6-2-4-2)	—	FR	AIR	Alpha + beta	—	
599	OMC Ti-6Al-2Sn-4Zr-2Mo	(6-2-4-2)	C-0009	US	AMS 4976	Alpha + beta	I,BI,BA,P,SH,E	Compressor blades and wheels. Good strength to 900 F (482 C).
600	ALLVAC 6-2-4-2	(6-2-4-2)	C-0008	US	AMS 4976	Alpha + beta	I,BI,BA,P,SH,E	
601	AMS 4975B	(6-2-4-2)	—	US	AMS 4975B	Alpha + beta	BA,F,W rings	For high strength, toughness and creep resistance to 1000 F (538 C).
602	L.W. 3.7144	(6-2-4-2)	—	GY	L.W. 3.7144	Alpha + beta	I,BI,BA,P,SH,E	
603	Crucible 6Al-2Sn-4Zr-2Mo	(6-2-4-2)	C-0004	US	—	Alpha + beta	I,BI,BA,P,SH,E	For jet engine components, good high temperature strength.
604	UT6242	(6-2-4-2)	C-0020	FR	—	Alpha + beta	BA,FG	Weldable alloy. For blades and discs of jet engines.
605	MMA-9744	(6-2-4-2)	C-0002	US	—	Alpha + beta	I,BI,BA,P,SH,E	Jet engine compressor parts, blades, discs, wheels.
606	Tikrutan LT 24	—	C-0019	GY	DIN 3.7144	Alpha + beta	—	
607	Contimet AlSnZrMo 6-2-4-2	(6-2-4-2)	C-0046	GY	LW 3.7144	Alpha + beta	BA,SH,ST,P,W,FG,E,T	For aircraft engines, compressor wheels and blades.
608	MIL-T-9046H Type III Comp. G	(6-2-4-2)	—	US	MIL-T-9046H	Alpha + beta	I,BI,BA,P,SH,E	
Ti—Al 6-Mo 2-Sn 2-Zr 4-Si 0.25								
609	ALLVAC 6-2-4-2+Si*	(6-2-4-2+Si)	C-0008	US	—	Alpha + beta	I,BI,BA,P,SH,E	
610	OMC-Ti-6Al-2Sn-4Zr-2Mo-0.2Si	(6-2-4-2+Si)	C-0009	US	AMS 4975B	Alpha + beta	I,BI,BA,P,SH,E	
Ti—Al 6-Mo 2-Zr 4-Sn 2								
611	Contimet AlSnZrMo 6-2-4-2	(6-2-4-2)	C-0046	GY	—	Alpha + beta	I,BI,BA,P,SH,E	High temperature capability. High strength/density ratio.
Ti—Al 6-Mo 4-Zr 5-Cu 1-Si 0.5								
612	DTD M201*	(IMI-700)	—	UK	DTD M201*	Alpha+beta***	—	
613	IMI-700*	—	C-0013	UK	DTD M201*	Alpha + beta	—	Ultra-high-strength alloy. Creep resistant to 752 F (400 C).
Ti—Al 6-Mo 6-Sn 2-Zr 4								
614	ALLVAC 6-2-4-6	(6-2-4-6)	C-0008	US	AMS 4981	Alpha + beta	I,BI,BA,P,SH	
615	AMS 4981	(6-2-4-6)	—	US	AMS 4981	Alpha + beta	BA,FG,W,BI	For high strength to 1000 F (538 C).
616	RMI 6Al-2Sn-4Zr-6Mo	(6-2-4-6)	C-0003	US	AMS 4981	Alpha + beta	I,BI,BA,P,SH	For jet engine components, high strength.
617	MMA-6246	(6-2-4-6)	C-0002	US	—	Alpha + beta	I,BI,BA,P,SH,E	High strength to 1000 F (538 C).
618	OMC-Ti-6Al-2Sn-4Zr-6Mo	(6-2-4-6)	C-0009	US	AMS 4981	Alpha + beta	I,BI,BA,P,SH	
619	Armco Ti-6Al-2Sn-4Zr-6Mo	(6-2-4-6)	C-0005	US	AMS 4975,BA	Alpha + beta	I,BI,BA,P,SH	Aircraft gas turbine applications. High-strength alloy.
620	Ti-6Al-2Sn-4Zr-2Mo	(6-2-4-2)	C-0001	US	AMS 4975B	Alpha + beta	BI,BA,P,E,SH,ST	Jet engine compressor parts, blades, discs, wheels, skin.
621	Ti-6Al-2Sn-4Zr-6Mo	(6-2-4-6)	C-0001	US	AMS 4981	Alpha + beta	BI,BA,FG,SH,P	Disc fan blade of gas turbine components. Airframe components.

BA—bars, BI—billet, C—casting, E—extrusion, F—foil, FG-forging, I—ingot, P—plate, RD—rod, SH—sheet, ST—strip, T—tubing, W—wire, con—condensers, H.exch—heat exchanger, S.T.—seamless tubing, W.T.—welded tubing.

*Noncurrent standard or alloy designation.
**Current standard or alloy designation, not to be used on new designs.
***These alloys also known as alpha-dispersoid types.

TABLE 1. (Continued)

Index No.	Alloy Designation	CHEMICAL COMPOSITION, WEIGHT PERCENT, ≤ (BALANCE TITANIUM)																
		ALLOYING ELEMENTS											Interstitial Elements					
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt.% (ppm)	Nitrogen Wt.% (ppm)	Carbon
Ti—Al 6-Sn 2-Zr 6-Cu 0.5-Si 0.5																		
622	T-A6V6E2Zr	6.0	—	—	2.0	6.0	—	—	0.5	0.5	—	—	—	—	—	—	—	—
Ti—Al 6-Sn 2-Zr 6-Fe 0.5-Cu 0.05																		
623	T-A6VE2Zr6	6.0	—	—	2.0	6.0	—	—	0.5	—	—	—	—	0.5	—	—	—	—
Ti—Al 6-Sn 2.5 ELI																		
624	MIL-T-9046H Type II Comp. B	4.5-5.75	—	—	2.0-3.0	—	—	—	—	—	—	—	Total 0.30	0.25	0.12	0.0125 (125)	0.035 (350)	0.05
Ti—Al 6-V 1-Mo 0.7-Zr 5-Cr 0.3-Si 0.2																		
625	VT21L	5.8-7.2	0.8-1.5	—	—	4.0-6.0	—	0.2-0.5	—	0.20	—	—	—	0.5	0.15	0.015 (150)	0.05 (500)	0.12
Ti—Al 6-V 4 ELI																		
626	ASTM F136	5.5-6.5	3.5-4.5	—	—	—	—	—	—	—	—	—	Total 0.40	0.25	0.13	0.015 (150)	0.05 (500)	0.08
627	MIL-T-81556 Type III Comp. B	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	Total 0.30	0.25	0.13	0.0125 (125)	0.05 (500)	0.08
628	Ti-6Al-4V ELI	5.5-6.5	3.4-4.5	—	—	—	—	—	—	—	—	—	—	0.25 max	0.13	0.010 (100)	0.05 (500)	0.08
629	Ti-6Al-4V ELI	5.5-6.5	3.5-4.5	—	—	—	—	—	—	—	—	—	—	0.25 max	0.13	0.015 (150)	0.05 (500)	0.08
630	MIL-T-9046H Type III Co D, ELI	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	Total 0.30	0.25	0.13	0.0125 (125)	0.05 (500)	0.08
631	ASTM F136	5.5-6.5	3.5-4.5	—	—	—	—	—	—	—	—	—	—	0.25	0.13	0.015 (150)	0.05 (500)	0.08
632	MIL-T-9046H Type III Co H, SPL	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	Total 0.30	0.25	0.13	0.005 (50)	0.05 (500)	0.08
633	MIL-T-9046H Type III Co H, SPL	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	Total 0.30	0.25	0.13	0.005 (50)	0.05 (500)	0.08
634	Contimet ALV 64 ELI	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	—	0.15	0.13	0.0125 (125)	0.05 (500)	0.08
Ti—Al 6-V 4																		
635	TTC 23 Investment Casting	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
636	Ti-Al-V	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
637	BS TA.12*	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	—	0.30	—	0.0125 (125)	—	—
638	BS TA.11*	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	—	0.30	—	0.0125 (125)	—	—
639	BS TA.10*	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	—	0.30	—	0.0125 (125)	—	—
640	BS TA.13*	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	—	0.30	—	0.015 (150)	—	—
641	BS TA.28*	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	—	0.30	0.20	0.0125 (125)	0.05	—
642	TTC 31B Casting	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
643	UTA6V	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	—	0.30	0.20	0.015 (150)	0.07 (700)	0.08
644	TTC 30B Casting	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
645	DTD 5173*	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
646	DTD 5163*	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
647	TTC 34 Casting	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
648	TTC 33A Casting	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
649	DTD 5303	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
650	Eltanit AB 209*	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	0.50	0.015 (150)	0.10	0.10
651	DIN 17864, TiAl6V4	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	—	0.30	0.20	0.015 (150)	0.05 (500)	0.08
652	Ventron 88395, 90:6:4	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
653	Armco Ti-6Al-4V*	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
654	Tikrutan LT 31	5.5-6.5	3.5-4.5	—	—	—	—	—	—	—	—	—	—	0.25	0.20	0.013 (130)	0.07 (700)	0.08
655	DIN 17860, TiAl6V4	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	—	0.30	0.20	0.015 (150)	0.05 (500)	0.08
656	BS 2TA.28	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	—	0.30	0.20	0.0125 (125)	0.05 (500)	—
657	TIL 110 Grade 5	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	Total 0.40	0.40	—	0.010 (100)	0.05 (500)	0.10
658	DIN 17862, TiAl6V4	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	—	0.30	0.20	0.015 (150)	0.05 (500)	0.08
659	DIN 3.7165	5.5-6.5	3.5-4.5	—	—	—	—	—	—	—	—	—	—	0.25	0.25	0.013 (130)	0.07 (700)	0.08
660	Carpenter Titanium 6-4*	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
661	Republic RS-120A*	6.0	4.0	—	—	—	—	—	—	—	—	—	—	0.15	—	—	—	0.10
662	Ti P 63	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
663	DTD 5313	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
664	BS 2TA.13	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	—	0.30	0.20	0.015 (150)	0.05 (500)	—
665	L-7301, Ti-6Al-4V	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
666	BS 2TA.10	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	—	0.30	0.25 (O+N)	0.0125 (125)	0.25 (O+N)	—
667	BS 2TA.12	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	—	0.30	0.20	0.010 (100)	0.05 (500)	—
668	BS 2TA.11	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	—	0.30	0.20	0.0125 (125)	0.05 (500)	—
669	T-A6V4	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
670	AIR-9183 (TA6V)	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Information on this group of alloys is continued on page below.

*Noncurrent standard or alloy designation

ELI—extra low interstitial; SPL—special Ti-6Al-4V alloy with low hydrogen (0.005 percent, 50 ppm) and low oxygen (0.13 percent)

Index No.	Alloy Designation	Common Name/ Alloy	Company Code	Ctry Code	Prime Country Standard	Alloy Type	Forms Available	Applications
Ti—Al 6-Sn 2-Zr 6-Cu 0.5-Si 0.5								
622	T-A6V6E2Zr	—	—	FR	AIR	—	—	Standard for forgings of this composition
Ti—Al 6-Sn 2-Zr 6-Fe 0.5-Cu 0.05								
623	T-A6VE2Zr6	—	—	FR	AIR	—	—	
Ti—Al 6-Sn 2.5 ELI								
624	MIL-T-9046H Type II Comp B	(A-110)	—	US	MIL-T-9046H	Alpha	I,BI,BA,P,SH,E,C	
Ti—Al 6-V 1-Mo 0.7-Zr 5-Cr 0.3-Si 0.2								
625	VT21L	—	—	UR	—	Near-alpha	I,C	
Ti—Al 6-V 4 ELI								
626	ASTM F136	(6-4) ELI	—	US	ASTM F136	Alpha + beta	BA,FG,SH,ST,P	Standard of Ti-6Al-4V ELI alloy for surgical implants
627	MIL-T-81556 Type III Comp B	(6-4) ELI	—	US	MIL-T-81556	Alpha + beta	All forms	
628	Ti-6Al-4V ELI	(6-4) ELI	C-0001	US	AMS 4911C	Alpha + beta	SH,ST,P,BA,BI,W,E	Airframe forging, fasteners, jet engine components
629	Ti-6Al-4V ELI	(6-4) ELI	C-0001	US	AMS 4911C	Alpha + beta	SH,ST,P,BA,BI,W,E	Airframe forging, fasteners, jet engine components
630	MIL-T-9046H, Type III Comp D	(6-4) ELI	—	US	MIL-T-9046H	Alpha + beta	All forms	
631	ASTM F136	(6-4) ELI	—	US	ASTM F136	Alpha + beta	BA,FG,SH,ST,P	Standard of Ti-6Al-4V ELI alloy for surgical implants
632	MIL-T-9046H Type III Comp H	(6-4) SPL	—	US	MIL-T-9046H	Alpha + beta	All forms	
633	MIL-T-9046H Type III Comp H	(6-4) SPL	—	US	MIL-T-9046H	Alpha + beta	All forms	
634	Contimet ALV 64 ELI	(6-4) ELI	C-0046	GY	AMS 4907	Alpha + beta	BA,SH,ST,P,W,FG,E,T	For cryogenic applications. High strength, weldable
Ti—Al 6-V 4								
635	TTC 23 Investment Casting	(6-4)	C-0006	US	—	Alpha + beta	Investment casting	Investment castings for commercial market
636	TI-AL-V	—	C-0009	US	—	Alpha + beta	Powder-100 mesh	Made by hydride-crush-dehydride process
637	BS TA 12*	(6-4)	—	UK	BS TA 12*	Alpha + beta	FG stock	Forgings, forging stock
638	BS TA 11*	(6-4)	—	UK	BS TA 11*	Alpha + beta	BA for machining	
639	BS TA 10*	(6-4)	—	UK	BS TA 10*	Alpha + beta	SH	Sheet
640	BS TA 13*	(6-4),(IMI-318)	—	UK	BS TA 13*	Alpha + beta	FG	Forgings
641	BS TA 28*	(6-4),(IMI-318)	—	UK	BS TA 28*	Alpha + beta	FG stock, W	For fasteners, bolt, studs, and screws
642	TTC 31B Casting	(6-4)	C-0005	US	—	Alpha + beta	C	*Aircraft castings of Ti-Al 6-V 4*
643	UTA6V	(6-4)	C-0020	FR	—	Alpha + beta	BA,FG,SH,P	The standard of the aerospace industry
644	TTC 30B Casting	(6-4)	C-0006	US	ASTM B-367-C	Alpha + beta	C	Commercial Ti-Al 6-V 4 castings
645	DTD 5173	(6-4),(IMI-318)	—	UK	DTD 5173*	Alpha + beta	BA	
646	DTD 5163*	(6-4),(IMI-318)	—	UK	DTD 5163*	Alpha + beta	SH	
647	TTC 34 Casting	(6-4)	C-0006	US	USN Spec	Alpha + beta	C	Castings for naval usage (USN approved specification)
648	TTC 33A Casting	(6-4)	C-0006	US	ASTM B-367-C	Alpha + beta	C	Castings of Ti-Al 6-V 4 for critical applications
649	DTD 5303	(6-4),(IMI-318)	—	UK	DTD 5303	Alpha + beta	BA,mach. to 150 mm	Forgings, forging stock
650	Eltanit AB 209*	(6-4)	C-0046	GY	—	Alpha + beta	All forms	
651	DIN 17864, TiAl6V4	(6-4)	—	GY	DIN 17864	Alpha + beta	—	
652	Ventron 88395, 90 6 4	(6-4)	C-0052	US	—	Alpha + beta	Powder	For scientific applications
653	Armco Ti-6Al-4V*	(6-4)	C-0005	US	AMS 4927 BA	Alpha + beta	All forms	Fasteners and fittings in aerospace, all sizes
654	Tikrutan LT 31	(6-4)	C 0019	GY	DIN 3 7164	Alpha + beta	—	For highly stressed machinery components
655	DIN 17860, TiAl6V4	(6-4)	—	GY	DIN 17860	Alpha + beta	All forms	
656	BS 2TA 28	(6-4)	—	UK	BS 2TA 28	Alpha + beta	W,FG stock	Fasteners complying with the BS A series
657	TIL 110 Grade 5	(6-4)	C-0025	US	ASTM B367-69	Alpha + beta	C	Graphite rammed castings
658	DIN 17862, TiAl6V4	(6-4)	—	GY	DIN 17862	Alpha + beta	All forms	
659	DIN 3 7165	—	—	GY	DIN 3 7165	Alpha + beta	All forms	
660	Carpenter Titanium 6-4*	(6-4)	C-0042	US	AMS 4967 FG	Alpha + beta	All forms	Widely used titanium alloy. Good strength weight ratio
661	Republic RS-120A*	(6-4)	C-0011	US	—	Alpha + beta	All forms	High-notch toughness, fasteners, jet engine components
662	Ti P 63	(IMI-318)	—	FR	AECMA P 63	Alpha + beta	BA,FG	Most popular titanium alloy, weldable, machinable, corrosion resistant
663	DTD 5313	(6-4),(IMI-318)	—	UK	DTD 5313	Alpha + beta	FG stock to 150 mm	
664	BS 2TA 13	(6-4)	—	UK	BS 2TA 13	Alpha + beta	FG	Forgings
665	L-7301, Ti-6Al-4V	(6-4)	—	SP	—	Alpha + beta	—	
666	BS 2TA 10	(6-4)	—	UK	BS 2TA 10	Alpha + beta	SH,ST	
667	BS 2TA 12	(6-4)	—	UK	BS 2TA 12	Alpha + beta	FG stock	Forgings and forgings stock
668	BS 2TA 11	(6-4)	—	UK	BS 2TA 11	Alpha + beta	BA, sections mach	
669	T-A6V4	(6-4)	—	FR	AIR	Alpha + beta	—	
670	AIR-9183 (TA6V)	(IMI-318),(6-4)	—	FR	AIR-9183	Alpha + beta	BA,FG,Rod	

BA—bars, BI—billet, C—casting, E—extrusion, F—foil, FG-forging, I—ingot, P—plate, RD—rod, SH—sheet, ST—strip, T—tubing, W—wire, con—condensers, Hexch—heat exchanger, S.T—seamless tubing, W.T.—welded tubing

*Noncurrent standard or alloy designation

ELI—extra low interstitial, SPL—special Ti-6Al-4V alloy with low hydrogen (0.005 percent, 50 ppm) and low oxygen (0.13 percent)

TABLE 1. (Continued)

Index No.	Alloy Designation	CHEMICAL COMPOSITION, WEIGHT PERCENT, ≤ (BALANCE TITANIUM)																
		ALLOYING ELEMENTS												Interstitial Elements				
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt.% (ppm)	Nitrogen Wt.% (ppm)	Carbon
Ti—Al 6-V 4 (cont.)																		
671	Fuchs TA 64	5.75-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	—	0.25	0.20	0.0125 (125)	0.07 (700)	0.06
672	MMA-6510	6.0-6.75	3.75-4.50	—	—	—	—	—	—	—	—	—	Total 0.10	0.30	0.20	0.010 (100)	0.02 (200)	0.05
673	MIL-T-9046H Type III Comp. C	5.5-6.5	3.5-4.5	—	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.20	0.015 (150)	0.05 (500)	0.08
674	AIR-9184 (TA6V)	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
675	Carlson C-6Al-4V	5.50-6.75	3.5-4.5	—	—	—	0.40	—	—	—	—	—	Total 0.40	0.40	0.20	0.015 (150)	—	0.08
676	BS TA 56	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	—	0.30	0.30 (O_2+N_2)	0.0125 (125)	0.30 (O_2+N_2)	—
677	TI-LOY 90	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
678	Alloy	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
679	Contimet ALV 64	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	—	0.25	0.20	0.015 (150)	0.05 (500)	0.08
680	Contimet ALV 64	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	—	0.25	0.20	0.015 (150)	0.05 (500)	0.08
681	Republic RS-6Al-4V*	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
682	DIN 17851, TiAl6V4	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	—	—	0.20	0.015 (150)	0.05 (500)	0.08
683	L.W. 3.7164	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
684	OMC Ti-6Al-4V	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
685	T-A6V	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
686	AMS 4967D	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.20	0.0125 (125)	0.05 (500)	0.10
687	ASTM B265, Grade 5	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	Total 0.30	0.40	0.20	0.015 (150)	0.05 (500)	0.10
688	RMI 6Al-4V	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	—	0.25	—	0.015 (150)	0.05 (500)	0.08
689	OMC-164B (Casting)	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
690	MIL-T-81556 Type III Comp. A	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.20	0.015 (150)	0.05 (500)	0.08
691	Ti-6Al-4V	5.75-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	—	0.25 max	0.20	0.015 (150)	0.05 (500)	0.08
692	ASTM B348, Grade 5	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	Total 0.30	0.40	0.20	0.015 (150)	0.05 (500)	0.10
693	AMS 4928G	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	Totan 0.40	0.30	0.20	0.0125 (125)	0.05 (500)	0.10
694	AMS 4935C	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.20	0.0125 (125)	0.05 (500)	0.10
695	AMS 4934	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.20	0.0125 (125)	0.05 (500)	0.10
696	AMS 4906	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.20	0.0125 (125)	0.05 (500)	0.08
697	AMS 4911C	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.20	0.015 (150)	0.05 (500)	0.08
698	Hylite 45*	5.5-6.5	3.5-4.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
699	ALLVAC 6-4	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
700	AMS 4954B	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.18	0.015 (150)	0.03 (300)	0.05
701	TEL-Ti-6Al-4V	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
702	Crucible C-120AV	5.5-6.5	3.5-4.5	—	—	—	—	—	—	—	—	—	0.60	—	—	—	0.03 (300)	0.10
703	Carpenter Titanium 6-4	6.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
704	ASTM B381, Grade F-5	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	Total 0.30	0.40	0.20	0.0125 (125)	0.05 (500)	0.10
705	AMS 4965C	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.20	0.0125 (125)	0.05 (500)	0.08
706	VT6S	5.0-6.5	3.5-4.5	—	—	0.3	—	—	—	0.15	—	—	Total 0.30	0.25	0.15	0.015 (150)	0.05 (500)	0.08
707	IMI-318	5.5-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	—	0.30	0.25	0.0125 (125)	—	—
708	ASTM B381, Grade F-5	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	Total 0.30	0.40	0.20	0.0125 (125)	0.05 (500)	0.10
709	VT6	5.5-7.0	4.2-6.0	—	—	—	—	—	—	0.15	—	—	Total 0.30	0.30	0.20	0.015 (150)	0.05 (500)	0.10
710	ASTM B381, Grade F-5	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	Total 0.30	0.40	0.20	0.0125 (125)	0.05 (500)	0.10
711	ASTM B265, Grade 5	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	Total 0.30	0.40	0.20	0.015 (150)	0.05 (500)	0.10
712	ASTM B367, Grade C-5	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	Total 0.40	0.40	0.25	0.010 (100)	0.05 (500)	0.10
713	ASTM B367, Grade C-5	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	Total 0.40	0.40	0.25	0.010 (100)	0.05 (500)	0.10
Ti—Al 6-V 4-Co 3																		
714	ALLVAC 6-4-3*	6.0	4.0	—	—	—	—	—	—	—	—	—	Co 3.0	—	—	—	—	—
715	T-A6V4K3	6.0	4.0	—	—	—	—	—	—	—	—	—	Co 3.0	—	—	—	—	—
716	Ti-6Al-4V-3Co	6.0	4.0	—	—	—	—	—	—	—	—	—	Co 3.0	—	—	—	—	—
Ti—Al 6-V 4-ELI																		
717	AMS 4956	5.50-6.75	3.5-4.5	—	—	—	0.10	—	—	—	—	—	Total 0.10	0.15	0.08	0.005 (50)	0.012 (120)	0.03
718	AMS 4907C	5.5-6.5	3.5-4.5	—	—	—	—	—	—	—	—	—	Total 0.30	0.25	0.13	0.0125 (125)	0.05 (500)	0.08
719	AMS 4930A	5.5-6.5	3.5-4.5	—	—	—	—	—	—	—	—	—	Total 0.40	0.25	0.13	0.0125 (125)	0.05 (500)	0.08

Information on this group of alloys is continued on page below

*Noncurrent standard or alloy designation

Index No.	Alloy Designation	Common Name/ Alloy	Company Code	Ctry Code	Prime Country Standard	Alloy Type	Forms Available	Applications
Ti—Al 6-V 4 (cont.)								
671	Fuchs TA 64	(6-4)	C-0054	GY	LN 3.7164	Alpha + beta	FG	High strength for all applications, limited weldability
672	MMA-6510	(6-4)	C-0002	US	—	Alpha + beta	All forms	
673	MIL-T-9046H Type III Comp. C	(6-4)	—	US	MIL-T-9046H	Alpha + beta	All forms	
674	AIR-9184 (TA6V)	(IMI-318),(6-4)	—	FR	AIR 9184	Alpha + beta	Bolts	Most popular titanium alloy, weldable, machinable, bolts
675	Carlson C-6Al-4V	(6-4)	C-0053	US	ASTM B265-5	Alpha + beta	P,FG	Plate product applications
676	BS TA 56	(6-4)	—	UK	BS TA 56	Alpha + beta	P	Plate
677	TI-LOY 90	(6-4)	C-0065	US	—	Alpha + beta	6-4Ti chip briquette	For metallurgical additions and melting stock
678	Alloy	(IMI-318),(6-4)	—	XX	ISO Draft	Alpha + beta	All forms	Surgical implant alloy
679	Contimet ALV 64	(6-4)	C-0046	GY	DIN 3.7165	Alpha + beta	BA,SH,ST,P,W,FG,E,T	The most versatile titanium alloy. For all construction applications
680	Contimet ALV 64	(6-4)	C-0046	GY	—	Alpha + beta	All forms	Versatile alloy, forgings, excellant toughness and ductility
681	Republic RS-6Al-4V*	(6-4)	C-0011	US	—	Alpha + beta	All forms	Low density, heat resistant, aircraft, jet engine components
682	DIN 17851, TiAl6V4	(6-4)	—	GY	DIN 17851	Alpha + beta	All forms	
683	L.W. 3.7164	(6-4)	—	GY	L.W. 3.7164	Alpha + beta	—	
684	OMC Ti-6Al-4V	(6-4)	C-0009	US	AMS 4911B	Alpha + beta	All forms	For aircraft and engine forgings. Cryogenic equipment
685	T-A6V	(6-4)	—	FR	AIR-9184	Alpha + beta	—	
686	AMS 4967D	(6-4)	—	US	AMS 4967D	Alpha + beta	BA,FG,W,BI	Pressure vessels and aerospace structures for machining prior to HT
687	ASTM B265, Grade 5	(6-4)	—	US	ASTM B265	Alpha + beta	SH,ST,P	Standard for strip, sheet, and plate of this composition
688	RMI 6Al-4V	(6-4)	C-0003	US	AMS 4911B	Alpha + beta	All forms	Jet engine components, ordnance equipment, airframe forgings
689	OMC-164B (Casting)	(6-4)	C-0009	US	—	Alpha + beta	Cast	Compressor blades and wheels, cryogenic equipment
690	MIL-T-81556 Type III Comp. A	(6-4)	—	US	MIL-T-81556	Alpha + beta	All forms	
691	Ti-6Al-4V	(6-4)	C-0001	US	AMS 4911C	Alpha + beta	SH,ST,BI,BA,W,E	Tanks, pressure vessels, cryogenic storage vessels
692	ASTM B348, Grade 5	(6-4)	—	US	ASTM B348	Alpha + beta	BA,BI	Standard for bars and billets of this composition
693	AMS 4928G	(6-4)	—	US	AMS 4928G	Alpha + beta	BA,BI,W,F,W rings	For strength to 750 F (399 C). H.T. not required.
694	AMS 4953C	(6-4)	—	US	AMS 4935C	Alpha + beta	E,BA,T,SH,F,W rings	For high mechanical properties in ann. condition. High strgh/wt ratio to 750 F.
695	AMS 4934	(6-4)	—	US	AMS 4934	Alpha + beta	E,BA,T,F,W rings	For high mechanical properties in ann. condition. High strgh/wt ratio to 750 F.
696	AMS 4906	(6-4)	—	US	AMS 4906	Alpha + beta	SH,ST	For strength to 750 F (399 C).
697	AMS 4911C	(6-4)	—	US	AMS 4911C	Alpha + beta	SH,ST,P	For strength to 750 F (399 C). Prone to stress corrosion cracking.
698	Hylite 45*	(6-4)	C-0016	UK	ASTM B265	Alpha + beta	BA,FG,SH	Jet engine components, fasteners, airframe structures, forgings
699	ALLVAC 6-4	(6-4)	C-0008	US	AMS 4911B	Alpha + beta	All forms	
700	AMS 4954B	(6-4)	—	US	AMS 4954B	Alpha + beta	W,weld W	Welding wire, primarily for inert arc welding, gas shield
701	TEL-Ti-6Al-4V	(6-4)	C-0007	US	AMS 4911B	Alpha + beta	All forms	Compressor components for jet engines, pressure vessels
702	Crucible C-120AV	(6-4)	C-0004	US	AMS 4911C	Alpha + beta	BI,BA,FG,P,W	Jet engine components, ordnance equipment, airframe forging
703	Carpenter Titanium 6-4	(6-4)	C-0042	US	AMS 4967A	Alpha + beta	C,I,BI,BA,W	Jet engine components, airframe forgings, fasteners
704	ASTM B381, Grade F-5	(6-4)	—	US	ASTM B381	Alpha + beta	FG	Standard for forgings of this composition
705	AMS 4965C	(6-4)	—	US	AMS 4965C	Alpha + beta	BA,FG,F,W rings	Pressure vessels and aerospace structures for machining after heat treatment
706	VT6S	(6-4)	—	UR	—	Alpha + beta	I,BI,BA,P,SH,T,C	
707	IMI-318	(6-4)	C-0013	UK	2TA10,11,12	Alpha + beta	BA,SH,W,E,Rod	Most popular titanium alloy, weldable, machinable, corrosion resistant
708	ASTM B381, Grade F-5	(6-4)	—	US	ASTM B381	Alpha + beta	FG	Standard for titanium and titanium-alloy forging of this composition
709	VT6	(6-4)	—	UR	—	Alpha + beta	I,BI,BA,SH,E,T	Jet engine components, fasteners, airframe
710	ASTM B381, Grade F-5	(6-4)	—	US	ASTM B381	Alpha + beta	FG	Standard for titanium and titanium-alloy forgings of this composition
711	ASTM B265, Grade 5	(6-4)	—	US	ASTM B265	Alpha + beta	SH,ST,P	Standard for strip, sheet, and plate of this composition
712	ASTM B367, Grade C-5	(6-4)	—	US	ASTM B367	Alpha + beta	C	Standard for titanium and titanium-alloy castings of this composition
713	ASTM B367, Grade C-5	(6-4)	—	US	ASTM B367	Alpha + beta	Castings	Standard for titanium and titanium-alloy castings of this composition
Ti—Al 6-V 4-Co 3								
714	ALLVAC 6-4-3*	(6-4-3)	C-0008	US	—	—	—	
715	T-A6V4K3	—	—	FR	AIR	—	—	
716	Ti-6Al-4V-3Co	—	C-0001	US	—	Alpha + beta	BI,BA,P	
Ti—Al 6-V 4-ELI								
717	AMS 4956	(6-4) ELI	—	US	AMS 4956	Alpha + beta	W,weld W	Quality gas tungsten-arc welding wire for cryogenic applications
718	AMS 4907C	(6-4) ELI	—	US	AMS 4907C	Alpha + beta	SH,ST,P	For weldability, ductility, and good notch hardness to -423 F (-253 C)
719	AMS 4930A	(6-4) ELI	—	US	AMS 4930A	Alpha + beta	BA,W,FG,BI,F,W ring	For weldability, ductility, and notch toughness to -320 F (-196 C)

BA—bars, BI—billet, C—casting, E—extrusion, F—foil, FG-forging, I—ingot, P—plate, RD—rod, SH—sheet, ST—strip, T—tubing, W—wire, con—condensers, H exch—heat exchanger, S T—seamless tubing, W T—welded tubing

*Noncurrent standard or alloy designation

TABLE 1. (Continued)

Index No.	Alloy Designation	CHEMICAL COMPOSITION, WEIGHT PERCENT, ≤ (BALANCE TITANIUM)															
		ALLOYING ELEMENTS											Interstitial Elements				
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt.% (ppm)	Nitrogen Wt.% (ppm)	Carbon
Ti—Al 6-V 4-Si 0.2																		
720	VT6L	5.0-6.5	3.5-4.5	—	—	0.30	—	—	—	0.15	—	W 0.20	Total 0.30	0.30	0.15	0.015 (150)	0.05 (500)	0.10
Ti—Al 6-V 6-Sn 2																		
721	AMS 4971A	5.0-6.0	5.0-6.0	—	1.5-2.5	—	—	—	0.35-1.00	—	—	—	Total 0.40	0.35-1.00	0.20	0.015 (150)	0.04 (400)	0.05
722	AMS 4979	5.0-6.0	5.0-6.0	—	1.5-2.5	—	—	—	0.35-1.00	—	—	—	Total 0.40	0.35-1.00	0.20	0.015 (150)	0.04 (400)	0.05
723	Carpenter Titanium 6-6-2	5.5	5.5	—	2.0	—	—	—	0.5	—	—	—	—	0.50	—	—	—	—
724	MIL-T-81556, Type III Comp. C	5.0-6.0	5.0-6.0	—	1.5-2.5	—	—	—	0.35-1.00	—	—	—	Total 0.30	0.35-1.00	0.20	0.015 (150)	0.05 (500)	0.05
725	OMC Ti-6Al-6V-2Sn	6.0	6.0	—	2.0	—	—	—	—	—	—	—	—	—	—	—	—	—
726	AMS 4936	5.0-6.0	5.0-6.0	—	1.5-2.5	—	—	—	0.35-1.00	—	—	—	Total 0.40	0.35-1.00	0.20	0.015 (150)	0.04 (400)	0.05
727	AMS 4918D	5.0-6.0	5.0-6.0	—	1.5-2.5	—	—	—	0.35-1.00	—	—	—	Total 0.40	0.35-1.00	0.20	0.015 (150)	0.04 (400)	0.05
728	MIL-T-9046H, Type III Comp. E	5.0-6.0	5.0-6.0	—	1.5-2.5	—	—	—	0.35-1.00	—	—	—	Total 0.30	0.35-1.00	0.20	0.015 (150)	0.05 (500)	0.05
729	Ti-6Al-6V-2Sn	5.0-6.0	5.0-6.0	—	1.5-2.5	—	—	—	0.35-1.00	—	—	—	—	0.35-1.00	0.20	0.015 (150)	0.04 (400)	0.05
730	RMI 6Al-6V-2Sn	5.0-6.0	5.0-6.0	—	1.5-2.5	—	—	—	0.35-1.00	—	—	—	—	0.35-1.00	0.20	0.0125 (125)	0.04 (400)	0.08
731	AMS 4978A	5.0-6.0	5.0-6.0	—	1.5-2.5	—	—	—	0.35-1.00	—	—	—	Total 0.40	0.35-1.00	0.20	0.015 (150)	0.04 (400)	0.05
732	Carpenter Titanium 6-6-2	5.5	5.5	—	2.0	—	—	—	0.5	—	—	—	—	0.50	—	—	—	—
733	Tikrutan LT 33	5.0-6.0	5.0-6.0	—	1.5-2.5	—	—	—	—	—	—	—	—	0.35-1.00	0.20	0.015 (150)	0.04 (400)	0.08
734	Fuchs TA 66	5.0-6.0	5.0-6.0	—	1.5-2.5	—	—	—	0.35-1.00	—	—	—	—	0.35-1.00	0.20	0.015 (150)	0.04 (400)	0.05
735	Armco Ti-6Al-6V-2Sn*	6.0	6.0	—	2.0	—	—	—	—	—	—	—	—	—	—	—	—	—
736	UT662	5.0-6.0	5.0-6.0	—	1.5-2.5	—	—	—	0.35-1.00	—	—	—	—	0.35-1.00	0.20	0.015 (150)	0.04 (400)	—
737	MMA-5158	5.0-6.0	5.0-6.0	—	1.5-2.5	—	—	—	0.35-1.00	—	—	—	Total 0.10	0.35-1.00	0.20	0.0125 (125)	0.02 (200)	0.04
738	Ti P 64	6.0	6.0	—	2.0	—	—	—	—	—	—	—	—	—	—	—	—	—
739	ALLVAC 6-6-2	6.0	6.0	—	2.0	—	—	—	—	—	—	—	—	—	—	—	—	—
‡ 740	L.W. 3.7174	5.0-6.0	5.0-6.0	—	1.5-2.5	—	—	—	—	—	—	—	—	0.35-1.00	0.20	0015 (150)	0.04 (400)	0.05
741	T-A6VE	6.0	6.0	—	2.0	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti—Al 6-V 6-Sn 2-Zr 6																		
742	UTA6V6SN2	6.0	6.0	—	2.0	6.0	—	—	—	—	—	—	—	—	—	—	—	—
Ti—Al 6-Zr 1.5-Mn 1.5																		
743	OT4-2 (Note)	6.0	—	—	—	1.5 (Note)	—	—	—	—	—	—	—	—	—	—	—	—
Ti—Al 6-Zr 5-W 1-Si 0.2																		
744	IMI-684	6.0	—	—	—	5.0	—	—	—	0.3	—	—	W 1.0	—	—	—	—	—
745	T-A6Z5W	6.0	—	—	—	5.0	—	—	—	0.2	—	—	W 1.0	—	—	—	—	—
746	DTD M200*	6.0	—	—	—	5.0	—	—	—	0.3	—	—	W 1.0	—	—	—	—	—
Ti—Al 6-(Fe,Cr,Si,B) 1.5																		
747	AT6	5.0-6.5	—	—	—	—	—	0.3-0.9	—	0.2-0.4	—	—	—	0.25-0.60	—	0.010 (100)	0.30	—
Ti—Al 6.5-Mo 1.2-Cb/Nb 2-Ta 1																		
748	Ti-6.5Al-2Cb-1Ta	6.5	—	1.2	—	—	—	—	—	—	—	2.0	Ta 1.0	—	—	—	—	—
Ti—Al 6.5-Mo 3.5-Zr 2 (or Sn)-Si 0.25																		
749	VT9L	5.6-7.0	—	2.8-3.8	—	0.8-2.0	—	—	—	0.20-0.35	—	W 0.20	Total 0.30	0.30	0.15	0.015 (150)	0.05 (500)	0.15
750	VT9	5.8-7.0	—	2.8-3.8	—	0.8-2.0	—	—	—	0.20-0.35	—	—	Total 0.30	0.25	0.15	0.015 (150)	0.05 (500)	0.10
Ti—Al 6.5-V 1-Mo 1-Zr 2																		
751	VT20	5.5-7.5	0.8-1.8	0.5-2.0	—	1.5-2.5	—	—	—	0.15	—	—	Total 0.30	0.30	0.15	0.015 (150)	0.05 (500)	0.10
Ti—Al 7-Cb/Nb 2-Ta 1																		
752	Ti-7Al-2Cb-1Ta	7.0	—	—	—	—	—	—	—	—	—	2.0	Ta 1.0	—	—	—	—	—
Ti—Al 7-Cr 0.3-S																		
753	AT-8-N	7.07	—	—	—	—	—	0.28	—	0.20	—	—	B 0.01	0.25	0.12	0.005 (50)	0.03 (300)	—
Ti—Al 7-Cr 0.6-S																		
754	AT-6-V	6.49	—	—	—	—	—	0.59	—	0.59	—	—	—	0.43	0.15	0.007 (70)	0.04 (400)	—
755	AT-6-S	7.18	—	—	—	—	—	0.59	—	0.28	—	—	B 0.005	0.51	0.12	0.005 (50)	0.03 (300)	—
Ti—Al 7-Mo 0.5-Sn 2-Si 0.5																		
756	T-A7DE	7.0	—	0.5	2.0	—	—	—	—	0.50	—	—	—	—	—	—	—	—
Ti—Al 7-Mo 3																		
757	Eltanit AB 210*	7.0	—	3.0	—	—	—	—	—	—	—	—	—	—	0.50	0.015 (150)	0.10	0.10

Information on this group of alloys is continued on page below

*Noncurrent standard or alloy designation

NOTE: OT4-2 alloy is listed with and without Zr

Index No.	Alloy Designation	Common Name/ Alloy	Company Code	Ctry Code	Prime Country Standard	Alloy Type	Forms Available	Applications
Ti—Al 6-V 4-Si 0.2								
720	VT6L	(6-4)+Si	—	UR	—	Alpha + beta	I,C	6-4 titanium alloy for castings
Ti—Al 6-V 6-Sn 2								
721	AMS 4971A	(6-6-2)	—	US	AMS 4971A	Alpha + beta	BA,FG,F,W rings	For high strength/weight ratio to 750 F (399 C)
722	AMS 4979	(6-6-2)	—	US	AMS 4979	Alpha + beta	BA,FG,W,F,W rings	For high strength/weight ratio to 750 F (399 C)
723	Carpenter Titanium 6-6-2	(6-6-2)	C-0042	US	AMS 9971	Alpha + beta	FG,BI,BA,P,SH	Pressure vessels, ordnance components, airborne equipment
724	MIL-T-81556 Type III Comp C	(6-6-2)	—	US	MIL-T-81556	Alpha + beta	I,BI,BA,P,SH,E	
725	OMC Ti-6Al-6V-2Sn	(6-6-2)	C-0009	US	MIL-T-46035	Alpha + beta	I,BI,BA,P,SH,E	Pressure vessels, rocket motor cases, ordnance equipment
726	AMS 4936	(6-6-2)	—	US	AMS 4936	Alpha + beta	E,BA,T,SH,F,W rings	High mechanical properties with no H.T., good strength/weight ratio to 750 F (399 C)
727	AMS 4918D	(6-6-2)	—	US	AMS 4918D	Alpha + beta	SH,ST,P	For high strength in annealed condition. High strength/weight ratio to 750 F (399 C)
728	Mil-T-9046H Type III Comp E	(6-6-2)	—	US	MIL-T-9046H	Alpha + beta	I,BI,BA,P,SH,E	
729	Ti-6Al-6V-2Sn	(6-6-2)	C-0001	US	AMS 4918C	Alpha + beta	BI,BA,FG,P,E,SH,W	Pressure vessels, ordnance components, airborne equipment, rocket motor case
730	RMI 6Al-6V-2Sn	(6-6-2)	C-0003	US	AMS 4978A	Alpha + beta	I,BI,BA,P,SH,E	Rocket engine cases, ordnance components, aircraft components
731	AMS 4978A	(6-6-2)	—	US	AMS 4978A	Alpha + beta	BA,FG,W,F,W rings	For high mechanical properties in annealed condition. High strgh/wt ratio to 750 F.
732	Carpenter Titanium 6-6-2	(6-6-2)	C-0042	US	AMS 4971 BA	Alpha + beta	I,BI,BA,P,SH,ST,E	Corrosion resistant high-strength alloy
733	Tikrutan LT 33	—	C-0019	GY	DIN 3.7174	Alpha + beta	—	
734	Fuchs TA 66	(6-6-2)	C-0054	GY	LN 3.7174	Alpha + beta	FG	Premium strength alloy, good heat treatment response, forgable
735	Armco Ti-6Al-6V-2Sn*	(6-6-2)	C-0005	US	AMS 4918 SH	Alpha + beta	I,BI,BA,P,SH,E	Aircraft structural parts. Intricate quality forgings
736	UT662	(6-6-2)	C-0020	FR	—	Alpha + beta	BA,FG,SH,P	Rocket engine cases, ordnance and aircraft components
737	MMA-5158	(6-6-2)	C-0002	US	ASTM B381	Alpha + beta	I,BI,BA,P,E,W,FG	Pressure vessels, ordnance components, airborne equipment
738	Ti P 64	(6-6-2)	—	FR	AECMA	Alpha + beta	BA,FG	Aircraft and engine forgings, cryogenic equipment
739	ALLVAC 6-6-2	(6-6-2)	C-0008	US	—	Alpha + beta	I,BI,BA,P,SH,E	
740	L.W. 3.7174	(6-6-2)	—	GY	L.W. 3.7174	Alpha + beta	I,BI,BA,P,SH,E	
741	T-A6VE	(6-6-2)	—	FR	AIR	Alpha + beta	—	
Ti—Al 6-V 6-Sn 2-Zr 6								
742	UTA6V6SN2	—	C-0020	FR	—	Alpha + beta	—	
Ti—Al 6-Zr 1.5-Mn 1.5								
743	OT4-2 (Note)	—	—	UR	—	Alpha + beta	I,BI,BA,SH,T	
Ti—Al 6-Zr 5-W 1-Si 0.2								
744	IMI-684	(IMI-684)	C-0013	UK	DTD M200	Alpha + beta	BA	Weldable good strength alloy. Creep resistant to 932 F (500 C)
745	T-A6Z5W	(IMI-684)	—	FR	AIR	Alpha + beta	—	
746	DTD M200*	(IMI-684)	—	UK	DTD M200*	Alpha + beta***	—	
Ti—Al 6-(Fe,Cr,Si,B) 1.5								
747	AT6	—	—	UR	—	Alpha + beta	SH	Fasteners, aircraft structures
Ti-Al 6.5-Mo 1.2-Cb/Nb 2-Ta 1								
748	Ti-6.5Al-2Cb-1Ta	—	C-0001	US	—	—	BI,BA,P	For pressure hulls, tough, shock resistant
Ti—Al 6.5-Mo 3.5-Zr 2 (or Sn)-Si 0.25								
749	VT9L	—	—	UR	—	Alpha + beta	I,C	
750	VT9	—	—	UR	—	Alpha + beta	I,BI,BA	
Ti—Al 6.5-V 1-Mo 1-Zr 2								
751	VT20	—	—	UR	—	Near-alpha	I,BI,P,SH,E	
Ti—Al 7-Cb/Nb 2-Ta 1								
752	Ti-7Al-2Cb-1Ta	—	C-0001	US	—	—	—	For submarine hulls, tough, high strength, corrosion resistant
Ti—Al 7-Cr 0.3-B								
753	AT-8-N	—	—	UR	—	Alpha + beta	—	
Ti—Al 7-Cr 0.6-B								
754	AT-6-V	—	—	UR	—	Alpha + beta	—	
755	AT-8-S	—	—	UR	—	Alpha + beta	—	
Ti—Al 7-Mo 0.5-Sn 2-Si 0.5								
756	T-A7DE	(CP)	—	FR	AIR	—	—	Standard for forgings of this composition
Ti—Al 7-Mo 3								
757	Eltanit AB 210*	—	C-0046	GY	—	Alpha + beta	—	

BA—bars, BI—billet, C—casting, E—extrusion, F—foil, FG-forging, I—ingot, P—plate, RD—rod, SH—sheet, ST—strip, T—tubing, W—wire, con—condensers, H.exch—heat exchanger, S.T.—seamless tubing, W.T.—welded tubing

*Noncurrent standard or alloy designation
**Current standard or alloy designation, not to be used on new designs
***These alloys also known as alpha-dispersoid types
NOTE: OT4-2 alloy is listed with and without Zr

TABLE 1. (Continued)

Index No.	Alloy Designation	CHEMICAL COMPOSITION, WEIGHT PERCENT, ≤ (BALANCE TITANIUM)																
		ALLOYING ELEMENTS												Interstitial Elements				
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt.% (ppm)	Nitrogen Wt.% (ppm)	Carbon
Ti—Al 7-Mo 4																		
758	Contimet AlMo 74	6.5-7.3	—	3.5-4.5	—	—	—	—	—	—	—	—	—	0.25	0.30	0.0125 (125)	0.05 (500)	0.08
759	UTA7D	6.5-7.3	—	3.5-4.5	—	—	—	—	—	—	—	—	—	0.25	0.20	0.0125 (125)	0.05 (500)	0.08
760	Republic RS-135*	6.3-7.3	—	3.5-4.5	—	—	—	—	—	—	—	—	—	0.10-0.20	—	0.015 (150)	0.05 (500)	0.10
761	Contimet AlMo 74	6.5-7.3	—	3.5-4.5	—	—	—	—	—	—	—	—	—	0.25	0.30	0.0125 (125)	0.05 (500)	0.08
762	MMA-7146	6.5-7.3	—	3.5-4.5	—	—	—	—	—	—	—	—	Total 0.10	0.30	0.20	0.0125 (125)	0.02 (200)	0.05
763	Fuchs TA 74	6.5-7.3	—	3.5-4.5	—	—	—	—	—	—	—	—	—	0.25	0.20	0.0125 (125)	0.07 (700)	0.08
764	RMI 7Al-4Mo	6.5-7.5	—	3.5-4.5	—	—	—	—	—	—	—	—	—	0.25	—	0.010 (100)	0.05 (500)	0.08
765	Ti-7Al-4Mo	6.5-7.3	—	3.4-4.5	—	—	—	—	—	—	—	—	—	0.25 max	—	0.0125 (125)	0.05 (500)	0.08
766	T-A7	7.0	—	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—
767	OMC Ti-7Al-4Mo	7.0	—	4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—
768	Tikrutan LT 32	6.5-7.3	—	3.5-4.5	—	—	—	—	—	—	—	—	—	0.25	0.20	0.013 (130)	0.07 (700)	0.08
769	AMS 4970C	6.5-7.3	—	3.5-4.5	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.20	0.013 (130)	0.05 (500)	0.10
770	Crucible C-135AMO	6.3-7.3	—	3.5-4.5	—	—	—	—	—	—	—	—	—	—	—	0.0125 (125)	0.07 (700)	0.15
771	Republic RS-135*	6.3-7.3	—	3.5-4.5	—	—	—	—	—	—	—	—	—	0.10-0.20	—	0.015 (150)	0.05 (500)	0.10
Ti—Al 7-Mo 4-Si 0.25																		
772	VT8	6.0-7.3	—	2.8-3.8	—	0.5	—	—	—	0.2-0.4	—	—	Total 0.30	0.40	0.20	0.015 (150)	0.05 (500)	0.10
Ti—Al 7-Zr 12																		
773	RMI 7Al-12Zr	7.0	—	—	—	12.0	—	—	—	—	—	—	—	—	—	—	—	0.04
774	Ti-7Al-12Zr	6.5-7.5	—	—	—	11.5-12.5	—	—	—	—	—	—	—	0.015	0.10	0.010 (100)	0.03 (300)	0.04
775	OMC-Ti-7Al-12Zr*	7.0	—	—	—	12.0	—	—	—	—	—	—	—	—	—	—	—	—
Ti—Al 7-(Cr,Fe,Si,Cb) 1.5																		
776	AT8	6.5-8.0	—	—	—	—	—	0.4-0.9	—	0.25-0.60	—	—	—	0.25-0.60	—	0.010 (100)	0.30	—
Ti—Al 7.5-Mo 0.5-Zr 11-Cb/Nb 1-Si 0.15																		
777	VT18	7.2-8.2	—	0.2-1.0	—	10.0-12.0	—	—	—	0.18-0.50	—	0.05-1.50	—	—	—	—	—	—
Ti—Al 8-Cb/Nb 2-Ta 1																		
778	OMC-Ti-8Al-2Cb-1Ta*	8.0	—	—	—	—	—	—	—	—	—	2.0	Ta 1	—	—	—	—	—
779	Ti-8Al-2Cb-1Ta	8.0	—	—	—	—	—	—	—	—	—	2.0	Ta 1	—	—	—	—	—
Ti—Al 8-V 1-Mo 1																		
780	Republic RS-811X*	8.0	1.0	1.0	—	—	—	—	—	—	—	—	—	—	—	—	—	0.08
781	UTA8DV	7.3-8.5	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	—	—	0.30	0.12	0.006 (60)	0.05 (500)	0.08
782	MMA-8116	7.5-8.5	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	—	Total 0.10	0.30	0.20	0.010 (100)	0.02 (200)	0.05
783	Contimet AlMoV 8-1-1	7.5-8.5	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	—	—	0.30	0.12	0.015 (150)	0.05 (500)	0.08
784	Ti P 66	8.0	1.0	1.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—
785	L W 3 7134	7.5-8.5	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	—	—	0.30	0.15	0.015 (150)	0.05 (500)	0.08
786	Crucible 8Al-1Mo-1V	8.0	1.0	1.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—
787	Armco Ti-8Al-1Mo-1V*	8.0	1.0	1.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—
788	T-A8DV	8.0	1.0	1.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—
789	Tikrutan LT 22	7.5-8.5	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	—	—	0.30	0.15	0.015 (150)	0.05 (500)	0.08
790	AMS 4915C	7.35-8.35	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.12	0.015 (150)	0.05 (500)	0.08
791	AMS 4972A	7.35-8.35	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.12	0.015 (150)	0.05 (500)	0.08
792	MIL-T-9046H Type II Comp F	7.3-8.3	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.15	0.015 (150)	0.05 (500)	0.08
793	ALLVAC 8-1-1	8.0	1.0	1.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—
794	RMI 8Al-1Mo-1V	7.5-8.5	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	—	—	—	—	0.0125 (125)	0.05 (500)	0.08
795	AMS 4916C	7.35-8.35	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.12	0.015 (150)	0.05 (500)	0.08
796	MIL-T-81556 Type II Comp C	7.3-8.3	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.15	0.015 (150)	0.05 (500)	0.08
797	AMS 4973A	7.35-8.35	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.12	0.015 (150)	0.05 (500)	0.08
798	UTA8DV	7.3-8.5	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	—	—	0.30	0.12	0.015 (150)	0.05 (500)	0.08
799	AMS 4955	7.35-8.35	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.12	0.010 (100)	0.05 (500)	0.08
800	OMC Ti-8Al-1Mo-1V	8.0	1.0	1.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—
801	Ti-8Al-1Mo-1V	7.35-8.35	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	—	—	0.30 max	—	0.0125 (125)	0.05 (500)	0.08
Ti—Al 8-V 10																		
802	Ti-8Al-10V	8.0	10.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti—Al 8-V 1-Mo 1																		
803	Contimet AlMoV 8-1-1	7.5-8.5	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	—	—	0.30	0.12	0.015 (150)	0.05 (500)	0.08
Ti—Al 8-Zr 8-Cb/Nb 1																		
804	MST 881	7.5-8.5	—	—	—	7.5-8.5	—	—	—	—	—	0.60-1.40	Ta+Cb 1.40	—	—	—	—	—

Information on this group of alloys is continued on page below

*Noncurrent standard or alloy designation

Index No.	Alloy Designation	Common Name/ Alloy	Company Code	Ctry Code	Prime Country Standard	Alloy Type	Forms Available	Applications
Ti—Al 7-Mo 4								
758	Contimet AlMo 74	(7-4)	C-0046	GY	—	Alpha + beta	I,BI,BA,P	For forgings, good stability to 1700 F (500 C), deep hardening
759	UTA7D	(7-4)	C-0020	FR	—	Alpha + beta	BA,FG	Mediocre weldability. High mechanical properties for forgings
760	Republic RS-135*	(7-4)	C-0011	US	—	Alpha + beta	BA,FG	For jet engine and missile components, heat resistant to 1000 F (538 C)
761	Contimet AlMo 74	(7-4)	C-0046	GY	AMS 4970	Alpha + beta	BA,P,FG,E	For forgings. Has high strength and deep hardening properties.
762	MMA-7146	(7-4)	C-0002	US	—	Alpha + beta	I,BI,BA,P,T,E,FG	Compressor wheels and blades, aircraft gas turbine engines
763	Fuchs TA 74	(7-4)	C-0054	GY	AMS	Alpha + beta	FG	Rather large sections can be heat treated
764	RMI 7Al-4Mo	(7-4)	C-0003	US	AMS 4970C	Alpha + beta	I,BI,BA,P	For aircraft and jet engine components
765	Ti-7Al-4Mo	(7-4)	C-0001	US	AMS 4970C	Alpha + beta	BI,BA,P,W,E	Turbine engine and airframe applications
766	T-A7	(7-4)	—	FR	AIR	Alpha + beta	—	
767	OMC Ti-7Al-4Mo	(7-4)	C-0009	US	AMS 4970C	Alpha + beta	I,BI,BA,P	For aircraft turbines, compressor blades and wheels
768	Tikrutan LT 32	(7-4)	C-0019	GY	—	Alpha + beta	—	
769	AMS 4970C	(7-4)	—	US	AMS 4970C	Alpha + beta	FG,BA,W,BI	*For strength to 900 F (482 C)*
770	Crucible C-135AMO	(7-4)	C-0004	US	AMS 4970C	Alpha + beta	BA,BI,R,FG	Jet engine discs and blades, airframe forging, fastener, ordnance
771	Republic RS-135*	(7-4)	C-0011	US	—	Alpha + beta	BA,FG	Jet engine and missile components, aircraft structures, corrosion resistant
Ti—Al 7-Mo 4-Si 0.25								
772	VT8	(7-4) (+Si)	—	UR	—	Alpha + beta	I,BI,BA,E	
Ti—Al 7-Zr 12								
773	RMI 7Al-12Zr	(7-12)	C-0003	US	AMS 4942	—	—	
774	Ti-7Al-12Zr	(7-12)	C-0001	US	—	Alpha	BI,BA,FG,SH,ST	Turbine jet engines, airframe components. High creep strength
775	OMC-Ti-7Al-12Zr*	(7-12)	C-0009	US	—	Alpha	—	
Ti—Al 7-(Cr,Fe,Si,B) 1.5								
776	AT8	—	—	UR	—	Alpha + beta	SH	Fasteners, aircraft structures. Experimental alloy
Ti—Al 7.5-Mo 0.5-Zr 11-Cb/Nb 1-Si 0.15								
777	VT18	—	—	UR	—	Near-alpha	I,BA	
Ti—Al 8-Cb/Nb 2-Ta 1								
778	OMC-Ti-8Al-2Cb-1Ta*	—	C-0009	US	—	—	—	
779	Ti-8Al-2Cb-1Ta	—	C-0001	US	—	—	—	High-impact strength, deep-diving vehicles
Ti—Al 8-V 1-Mo 1								
780	Republic RS-811X*	(8-1-1)	C-0011	US	—	—	—	For jet engine components, blades, discs, spacers
781	UTA8DV	(8-1-1)	C-0020	FR	—	Near-alpha	BA,FG	Forgings used in aeronautical industry
782	MMA-8116	(8-1-1)	C-0002	US	—	Near-alpha	I,BI,BA,P,SH,E	Jet engine and missile components, discs and blades
783	Contimet AlMoV 8-1-1	(8-1-1)	C-0046	GY	AMS 4915	Near-alpha	BA,SH,ST,P,W,FG,E,T	*Low density and high modulus. Important in aircraft industry*
784	Ti-P 66	(8-1-1)	—	FR	AECMA	Near-alpha	All forms	
785	L.W. 3.7134	(8-1-1)	—	GY	L.W. 3.7134	Alpha + beta	I,BI,BA,P,SH,E	
786	Crucible 8Al-1Mo-1V	(8-1-1)	C-0004	US	—	Near-alpha	I,BI,BA,P,SH,E	
787	Armco Ti-8Al-1Mo-1V*	(8-1-1)	C-0005	US	AMS 4972,BA	Near-alpha	I,BI,BA,P,SH,E	Gas turbine engines at elevated temperatures high-stiffness
788	T-A8DV	(8-1-1)	—	FR	AIR	Near alpha	—	
789	Tikrutan LT 22	(8-1-1)	C-0019	GY	—	Alpha + beta	—	
790	AMS 4915C	(8-1-1)	—	US	AMS 4915B	Near-alpha	SH,ST,P	For high strength to 800 F (427 C), limited fracture toughness
791	AMS 4972A	(8-1-1)	—	US	AMS 4972A	Near-alpha	BA,W,F,W, rings	For high strength to 800 F (427 C), limited fracture toughness
792	MIL-T-9046H Type II Comp. F	(8-1-1)	—	US	MIL-T-9046H	Alpha	I,BI,BA,P,SH,E	
793	ALLVAC 8-1-1	(8-1-1)	C-0008	US	AMS 4915B	Near-alpha	I,BI,BA,P,SH,E	
794	RMI 8Al-1Mo-1V	(8-1-1)	C-0003	US	AMS 4916B	Alpha + beta	I,BI,BA,P,SH,E	Jet engine and aircraft parts. Good creep properties
795	AMS 4916C	(8-1-1)	—	US	AMS 4916B	Near-alpha	SH,ST,P	For high strength and fracture toughness to 800 F (427 C)
796	*MIL-T-81556 Type II Comp. C*	(8-1-1)	—	US	MIL-T-81556	Alpha	I,BI,BA,P,SH,E	
797	AMS 4973A	(8-1-1)	—	US	AMS 4973A	Near-alpha	FG,BI	For high strength to 800 F (427 C)
798	UTA8DV	(8-1-1)	C-0020	FR	AIR	Near-alpha	—	
799	AMS 4955	(8-1-1)	—	US	AMS 4955	Near-alpha	—	Welding wire, primarily for inert arc welding
800	OMC Ti-8Al-1Mo-1V	(8-1-1)	C-0009	US	AMS 4915B	Near-alpha	I,BI,BA,P,SH,E	High temperature jet engine forging alloy, turbine parts
801	Ti-8Al-1Mo-1V	(8-1-1)	C-0001	US	AMS 4912A	Near-alpha	BA,FG,SH,P,ST	Jet engine components, discs, spacers, blades
Ti—Al 8-V 10								
802	Ti-8Al-10V	—	C-0011	US	—	—	—	*Rocket motor cases. Corrosion resistant applications*
Ti—Al 8-V 1-Mo 1								
803	Contimet AlMoV 8-1-1	(8-1-1)	C-0046	GY	—	Near-alpha	I,BI,BA,P,SH,E	Has no age hardening capability. High modulus and low density.
Ti—Al 8-Zr 8-Cb/Nb 1								
804	MST 881	—	C-0003	US	—	—	BI,BA,FG,P	Jet engine and guided missile components, high temperature

BA—bars, BI—billet, C—casting, E—extrusion, F—foil, FG-forging, I—ingot, P—plate, RD—rod, SH—sheet, ST—strip, T—tubing, W—wire, con—condensers, H exch—heat exchanger, S.T.—seamless tubing, W.T.—welded tubing

Noncurrent standard or alloy designation

TABLE 1. (Continued)

Index No.	Alloy Designation	CHEMICAL COMPOSITION, WEIGHT PERCENT, ≤ (BALANCE TITANIUM)																
		ALLOYING ELEMENTS												Interstitial Elements				
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt.% (ppm)	Nitrogen Wt.% (ppm)	Carbon
Ti—Al 20-V 2																		
805	Titanium EP 20-2	20.0	2.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti—Al 30-Cb/Nb 10																		
806	Ventron 88394, 60 30 10	30.0	—	—	—	—	—	—	—	—	—	10.0	—	—	—	—	—	—
Ti—Al 35																		
807	Ventron 88393, 65 35	35.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti—Al 66-Zr 34																		
808	Ti-Zr	—	—	—	—	34.0	—	—	—	—	—	—	—	—	—	—	—	—
Ti—Al .9																		
809	Ti-Brush 50	0.8-1.0	—	—	—	—	—	—	—	—	—	—	—	—	0.20	—	0.02 (200)	0.10
Ti—Cb/Nb 20-Ta 10																		
810	Ventron 88398, 70 20 10	—	—	—	—	—	—	—	—	—	—	20.0	Ta 10	—	—	—	—	—
Ti—Cb/Nb 45																		
811	AMS 4982	—	—	—	—	—	0.01	0.02	—	0.04	—	42.0-47.0	Total 0.40	0.03	0.20	0.0035 (35)	0.03 (300)	0.04
Ti—Co 6																		
812	Ventron 88397, 94 6	—	—	—	—	—	—	—	—	—	—	—	Co 6.0	—	—	—	—	—
813	Ti-Co	—	—	—	—	—	—	—	—	—	—	—	Co 6.0	—	—	—	—	—
Ti—Cr 2.7-Fe 1.8																		
814	Eltanit AB 102*	—	—	—	—	—	—	2.70	—	—	—	—	—	1.80	0.50	0.015 (150)	0.10	0.10
Ti—Cr 3-Fe 1.5																		
815	Ti-150A	—	—	—	—	—	—	2.4-3.1	—	—	—	—	W 0.2 max	1.2 1.8	0.35	—	0.10	0.07
Ti—Cr 3.5-Fe 1.5																		
816	Republic RS-110*	—	—	—	—	—	—	3.0-4.0	—	—	—	—	—	1.0 2.0	—	—	—	0.10
Ti—Cr 10																		
817	Titanium EP 90-10	—	—	—	—	—	—	9.8-10.2	—	—	—	—	—	0.005 0.05	—	—	—	—
Ti—Cr 20																		
818	Ventron 88396, 80 20	—	—	—	—	—	—	20.0	—	—	—	—	—	—	—	—	—	—
Ti—Cu 2.5																		
819	Contimet Cu 2	—	—	—	—	—	—	—	2.0-3.0	—	—	—	—	0.20	0.20	0.010 (100)	0.05 (500)	0.10
820	Fuchs TC 2	—	—	—	—	—	—	—	2.0-3.0	—	—	—	—	0.20	0.20	0.010 (100)	0.05 (500)	0.10
821	OMC-Ti-2Cu*	—	—	—	—	—	—	—	2.0	—	—	—	—	—	—	—	—	—
822	RMI 2Cu	—	—	—	—	—	—	—	2.0	—	—	—	—	—	—	—	—	—
823	T-U2	—	—	—	—	—	—	—	2.5	—	—	—	—	—	—	—	—	—
824	UTC	—	—	—	—	—	—	—	2.0-3.0	—	—	—	—	0.20	0.20	0.010 (100)	0.05 (500)	0.10
825	Tikrutan LT 25	—	—	—	—	—	—	—	2.0-3.0	—	—	—	—	0.20	0.20	0.010 (100)	0.05 (500)	0.10
826	DTD 5263*	—	—	—	—	—	—	—	2.5	—	—	—	—	—	—	—	—	—
827	DTD 5233*	—	—	—	—	—	—	—	2.5	—	—	—	—	—	—	—	—	—
828	DTD 5253*	—	—	—	—	—	—	—	2.5	—	—	—	—	—	—	—	—	—
829	DTD 5243*	—	—	—	—	—	—	—	2.5	—	—	—	—	—	—	—	—	—
830	DTD 5133*	—	—	—	—	—	—	—	2.5	—	—	—	—	—	—	—	—	—
831	DTD 5123*	—	—	—	—	—	—	—	2.5	—	—	—	—	—	—	—	—	—
832	Hylite 25*	—	—	—	—	—	—	—	2.5	—	—	—	—	—	—	—	—	—
833	IMI-230	—	—	—	—	—	—	—	2.0-3.0	—	—	—	—	0.20	—	0.015 (150)	—	—
834	L W 3.7124	—	—	—	—	—	—	—	2.0-3.0	—	—	—	—	0.20	0.20	0.010 (100)	0.05 (500)	0.10
835	BS 2TA 24	—	—	—	—	—	—	—	2.0-3.0	—	—	—	—	0.20	—	0.015 (150)	—	—
836	BS TA 52	—	—	—	—	—	—	—	2.0-3.0	—	—	—	—	0.20	—	0.010 (100)	—	—
837	BS 2TA 22	—	—	—	—	—	—	—	2.0-3.0	—	—	—	—	0.20	—	0.010 (100)	—	—
838	BS 2TA 23	—	—	—	—	—	—	—	2.0-3.0	—	—	—	—	0.20	—	0.010 (100)	—	—
839	BS TA 53	—	—	—	—	—	—	—	2.0-3.0	—	—	—	—	0.20	—	0.010 (100)	—	—
840	BS 2TA 21	—	—	—	—	—	—	—	2.0-3.0	—	—	—	—	0.20	—	0.010 (100)	—	—
841	Ti P 11	—	—	—	—	—	—	—	2.5	—	—	—	—	—	—	—	—	—
842	BS TA 58	—	—	—	—	—	—	—	2.0-3.0	—	—	—	—	0.20	—	0.010 (100)	—	—
843	BS TA 54	—	—	—	—	—	—	—	2.0-3.0	—	—	—	—	0.20	—	0.010 (100)	—	—
844	Contimet Cu 2	—	—	—	—	—	—	—	2.0-3.0	—	—	—	—	0.20	0.20	0.010 (100)	0.05 (500)	0.10
845	L-7501, Ti-2.5Cu	—	—	—	—	—	—	—	2.5	—	—	—	—	—	—	—	—	—
846	BS TA 55	—	—	—	—	—	—	—	2.0-3.0	—	—	—	—	0.20	—	0.015 (150)	—	—

Information on this group of alloys is continued on page below

*Noncurrent standard or alloy designation

Index No.	Alloy Designation	Common Name/ Alloy	Company Code	Ctry Code	Prime Country Standard	Alloy Type	Forms Available	Applications
Ti—Al 20-V 2								
805	Titanium EP 20-2	—	C-0049	US	—	—	Electrolytic titanium	Aircraft and missile components, high temperature applications
Ti—Al 30-Cb/Nb 10								
806	Ventron 88394, 60 30 10	—	C-0052	US	—	—	Powder	For scientific applications
Ti—Al . 5								
807	Ve tron 88393, 65 35	—	C-0052	US	—	—	Powder	For scientific applications
Ti—Al 6t -Zr 34								
808	Ti-2	—	C-0009	US	—	—	Powder-100 mesh	Made by hydride-crush-dehydride process
Ti—Al .9								
809	Ti-Brush 50	—	C-0010	US	—	Alpha	—	Low density, aircraft and missile components, weldability
Ti—Cb/Nb 20-Ta 10								
810	Ventron 88398, 70 20 10	—	C-0052	US	—	—	Powder	For scientific applications
Ti—Cb/Nb 45								
811	AMS 4982	—	—	US	AMS 4982	—	BA,W	For high strength/weight ratio to 800 F (427 C). Fasteners, cold form
Ti—Co 6								
812	Ventron 88397, 94 6	—	C-0052	US	—	—	Powder	For scientific applications
813	Ti-Co	—	C-0057	US	—	—	Powder-325 mesh	
Ti—Cr 2.7-Fe 1.8								
814	Eltanit AB 102*	—	C-0046	GY	—	—	—	
Ti—Cr 3-Fe 1.5								
815	Ti-150A	—	C-0001	US	—	—	FG,BI,BA,P	Discs, blades for jet engines, high temperature forgings
Ti—Cr 3.5-Fe 1.5								
816	Republic R5-110*	—	C-0011	US	—	—	—	For jet engine components. Corrosion and heat resistant
Ti—Cr 10								
817	Titanium SP 90-10	—	C-0049	US	—	—	Electrolytic titanium	Pressure vessels, aircraft skins, fasteners
Ti—Cr 20								
818	Ventron 88396, 80 20	—	C-0052	US	—	—	Powder	For scientific applications
Ti—Cu 2.5								
819	Contimet Cu 2	—	C-0046	GY	L W 3.7124	Alpha dispersoid	BA,SH,ST,P,W,FG,T	Combines ductility and weldability of CP titanium with high temperature strength
820	Fuchs TC 2	—	C-0054	GY	BS 2TA 24	Alpha dispersoid	FG	Weldable, excellent forgability, heat treatable
821	OMC-Ti-2Cu*	—	C-0009	US	—	Alpha dispersoid	—	
822	RMI 2Cu	—	C-0003	US	—	Alpha dispersoid	BI,BA,P,S	
823	T-U2	—	—	FR	AIR	Alpha dispersoid	—	
824	UTC	—	C-0020	FR		Alpha dispersoid	BA,FG,SH,P,W	Weldable and formable in quenched condition to 662 F (350 C)
825	Tikrutan LT 25	—	C-0019	GY	DIN 3.7124	Alpha dispersoid	—	
826	DTD 5263*	(IMI-230)	—	UK	DTD 5263*	Alpha dispersoid	BI,BA,W,P,SH	
827	DTD 5233*	(IMI-230)	—	UK	DTD 5233*	Alpha dispersoid	BI,BA,W,P,SH	
828	DTD 5253*	(IMI-230)	—	UK	DTD 5253*	Alpha dispersoid	BI,BA,W,P,SH	
829	DTD 5243*	(IMI-230)	—	UK	DTD 5243*	Alpha dispersoid	BI,BA,W,P,SH	
830	DTD 5133*	(IMI-230)	—	UK	DTD 5133*	Alpha dispersoid	SH	
831	DTD 5123*	(IMI-230)	—	UK	DTD 5123*	Alpha dispersoid	BA	
832	Hylite 25*	—	C-0016	UK	—	Alpha eutectic	—	Chemical industry application, ductile, weldable
833	IMI-230	—	C-0013	UK	2TA21,22,23	Alpha dispersoid	BA,BI,W,P,SH,E	Corrosion resistant. Formable
834	L W 3.7124	—	—	GY	L W 3.7124	Alpha dispersoid	BI,BA,P,SH	
835	BS 2TA 24	(IMI-230)	—	UK	BS 2TA 24	Alpha dispersoid	FG	Forgings
836	BS TA 52	(IMI-230)	—	UK	BS TA 52	Alpha dispersoid	SH,ST	
837	BS 2TA 22	(IMI-230)	—	UK	BS 2TA 22	Alpha dispersoid	BA,sections/mach	
838	BS 2TA 23	(IMI-230)	—	UK	BS 2TA 23	Alpha dispersoid	FG stock	Forgings and forging stock
839	BS TA 53	(IMI-230)	—	UK	BS TA 53	Alpha dispersoid	BA,sections/mach	
840	BS 2TA 21	(IMI-230)	—	UK	BS 2TA 21	Alpha dispersoid	SH,ST	
841	Ti P 11	(IMI-230)	—	FR	AECMA P 11	Alpha dispersoid	All forms	Corrosion resistant, formable
842	BS TA 58	(IMI-230)	—	UK	BS TA 58	Alpha dispersoid	P	Plate
843	BS TA 54	(IMI-230)	—	UK	BS TA 54	Alpha dispersoid	FG stock	Forgings, forging stock
844	Contimet Cu 2	—	C-0046	GY	—	Alpha dispersoid	BI,BA,P,SH	Combines good ductility and weldability. Strength to 662 F (350 C)
845	L-7501, Ti-2.5Cu	—	—	SP	—	Alpha dispersoid	—	
846	BS TA 55	(IMI-230)	—	UK	BS TA 55	Alpha dispersoid	FG	Forgings

BA—bars, BI—billet, C—casting, E—extrusion, F—foil, FG-forging, I—ingot, P—plate, RD—rod, SH—sheet, ST—strip, T—tubing, W—wire, con—condensers, H exch—heat exchanger, S T—seamless tubing, W T.—welded tubing

*Noncurrent standard or alloy designation

TABLE 1. (Continued)

Index No.	Alloy Designation	CHEMICAL COMPOSITION, WEIGHT PERCENT, ≤ (BALANCE TITANIUM)																
		ALLOYING ELEMENTS												Interstitial Elements				
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt.% (ppm)	Nitrogen Wt.% (ppm)	Carbon
Ti—Mn 3-Cr 3-Fe 3																		
847	IMP-6-1	—	—	—	—	—	3.0	3.0	—	—	—	—	—	3.0	—	—	—	—
Ti—Mn 8																		
848	OMC-Ti-8Mn*	—	—	—	—	—	8.0	—	—	—	—	—	—	—	—	—	—	—
849	Eltanit AB 106*	—	—	—	—	—	8.0	—	—	—	—	—	—	—	0.50	0.015 (150)	0.10	0.10
850	Republic RS-120*	—	—	—	—	—	6.0-8.0	—	—	—	—	—	Total 0.7	—	—	—	—	0.20
851	Republic RS-110A*	—	—	—	—	—	8.0	—	—	—	—	—	—	—	—	0.05 (500)	0.05 (500)	0.10
852	Crucible C-110M	—	—	—	—	—	7.0-9.0	—	—	—	—	—	—	—	—	—	—	—
853	RMI 8Mn	—	—	—	—	—	6.5-9.0	—	—	—	—	—	—	—	0.20	0.015 (150)	0.05 (500)	0.08
854	Ti-8Mn	—	—	—	—	—	8.0	—	—	—	—	—	—	—	—	0.015 (150)	0.07 (700)	0.20
855	AMS 4908C	—	—	—	—	—	6.5-9.0	—	—	—	—	—	Total 0.40	0.50	0.20	0.015 (150)	0.05 (500)	0.08
Ti—Mn 10																		
856	MGMTS	—	—	—	—	—	10.0	—	—	—	—	—	—	—	—	—	—	—
Ti—Mo 0-Cr 0-Cb/Nb 0																		
857	AN5	—	—	Mo	—	—	—	Cr	—	—	—	Cb/Nb	Ti: 52	—	—	—	—	—
Ti—Mo 1.5-Zr 2.5																		
858	AT2-2	—	—	1.5	—	2.5	—	—	—	—	—	—	—	—	—	—	—	—
Ti—Mo 1.8-Cr 2-Fe 2																		
859	Ti-140A*	—	—	1.5-2.5	—	—	—	1.5-2.5	—	—	—	—	W: 0.1 max	1.5-2.5	0.20	—	0.10	0.10
Ti—Mo 2-Cr 2-Fe 2																		
860	AMS 4923A*	—	—	1.5-3.0	—	—	—	1.5-3.0	—	—	—	—	Total 0.40	1.5-3.0	0.20	0.0125 (125)	0.10	0.10
861	Eltanit AB 104*	—	—	2.0	—	—	—	2.0	—	—	—	—	—	2.00	0.50	0.015 (150)	0.10	0.10
Ti—Mo 2.5																		
862	T3M*	—	—	2.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti—Mo 8-Zr 4-Fe 26																		
863	Ti-Zr-Fe-Mo	—	—	8.0	—	4.0	—	—	—	—	—	—	—	26.0	—	—	—	—
Ti—Mo 10																		
864	Ti-Mo	—	—	10.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti—Mo 11.5-Sn 4.5-Zr 6																		
865	OMC-Ti-11.5Mo-6Zr-4.5Sn	—	—	11.5	4.5	6.0	—	—	—	—	—	—	—	—	—	—	—	—
866	Armco Beta 3*	—	—	11.5	4.5	6.0	—	—	—	—	—	—	—	—	—	—	—	—
867	MIL-T-9046H Type IV Comp. B	—	—	10.0-13.0	3.75-5.25	4.5-7.5	—	—	—	—	—	—	Total 0.40	0.35	0.18	0.015 (150)	0.05 (500)	0.10
868	ASTM B338, Grade 10	—	—	10.0-13.0	3.75-5.25	4.5-7.0	—	—	—	—	—	—	—	0.35	0.18	0.020 (200)	0.05 (500)	0.10
869	ASTM B265, Grade 10	—	—	10.0-13.0	3.75-5.25	4.5-7.5	—	—	—	—	—	—	Total 0.30	0.35	0.18	0.020 (200)	0.05 (500)	0.10
870	MIL-T-9046H Type IV Comp. B	—	—	10.0-13.0	3.75-5.25	4.5-7.5	—	—	—	—	—	—	Total 0.40	0.35	0.18	0.015 (150)	0.05 (500)	0.10
871	ASTM B337, Grade 10	—	—	10.0-13.0	3.75-5.25	4.5-7.5	—	—	—	—	—	—	—	0.35	0.18	0.020 (200)	0.05 (500)	0.10
872	AMS 4980A	—	—	10.0-13.0	3.75-5.25	4.5-7.5	—	—	—	—	—	—	Total 0.40	0.35	0.18	0.020 (200)	0.05 (500)	0.10
873	TD12ZRE	—	—	11.5	4.5	6.0	—	—	—	—	—	—	—	—	—	—	—	—
874	ASTM B337, Grade 10	—	—	10.0-13.0	3.75-5.25	4.5-7.5	—	—	—	—	—	—	—	0.35	0.18	0.020 (200)	0.05 (500)	0.10
875	AMS 4977A	—	—	10.0-13.0	3.75-5.25	4.5-7.5	—	—	—	—	—	—	Total 0.40	0.35	0.10	0.020 (200)	0.05 (500)	0.10
876	T-D11ZR6E4	—	—	11.5	4.5	6.0	—	—	—	—	—	—	—	—	—	—	—	—
877	ASTM B348, Grade 10	—	—	10.0-13.0	3.75-5.25	4.5-7.5	—	—	—	—	—	—	Total 0.30	0.35	0.18	0.020 (200)	0.05 (500)	0.10
878	Crucible Beta III	—	—	11.5	4.5	6.0	—	—	—	—	—	—	—	—	—	—	—	—
879	ASTM B265, Grade 10	—	—	10.0-13.0	3.75-5.25	4.5-7.5	—	—	—	—	—	—	Total 0.30	0.35	0.18	0.020 (200)	0.05 (500)	0.10
880	ASTM B338, Grade 10	—	—	10.0-13.0	3.75-5.25	4.5-7.0	—	—	—	—	—	—	—	0.35	0.18	0.020 (200)	0.05 (500)	0.10
Ti—Mo 15																		
881	IMI-205*	—	—	15.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti—Mo 32-Cb/Nb 1.5																		
882	4203	—	—	32.0	—	—	—	—	—	—	—	1.5	—	—	—	—	—	—
Ti—Mo 32																		
883	4201	—	—	31.0-33.0	—	0.30	—	—	—	0.10	—	—	—	0.25	0.12	0.012 (120)	0.04 (400)	0.10
Ti—Ni 0.2																		
884	IMP-1	—	—	—	—	—	—	—	—	—	—	—	Ni: 0.22	—	0.47	0.15	0.08	0.05
Ti—Ni 1--2																		
885	Ti-2Ni	—	—	—	—	—	—	—	—	—	—	—	Ni: 2.0	—	—	—	—	—
Ti—Ni 50																		
886	Ti-Ni	—	—	—	—	—	—	—	—	—	—	—	Ni: 50.0	—	—	—	—	—

Information on this group of alloys is continued on page below

*Noncurrent standard or alloy designation

Index No.	Alloy Designation	Common Name/ Alloy	Company Code	Ctry Code	Prime Country Standard	Alloy Type	Forms Available	Applications
Ti—Mn 3-Cr 3-Fe 3								
847	IMP-6-1	—	—	UR	—	Alpha + beta	Powder metal alloy	Powder metallurgy alloy
Ti—Mn 8								
848	OMC-Ti-8Mn*	(8Mn)	C-0009	US	AMS 4908B	Alpha + beta	I,SH,ST	Aircraft skin and aircraft structural components
849	Eltanit AB 106*	(8Mn)	C-0046	GY	—	Alpha + beta	I,SH,ST	
850	Republic RS-120*	(8Mn)	C-0011	US	AMS 4908B	Alpha + beta	BA,FG,P,SH,I,W,RS	Aircraft skins, jet engine components, aircraft forging, shrouds
851	Republic RS-110A*	(8Mn)	C-0011	US	AMS 4908A	Alpha + beta	SH,ST,P	Aircraft skins, structural braces, shrouds, ducts
852	Crucible C-110M	(8Mn)	C-0004	US	AMS 4908B	Alpha + beta	SH,ST	Skins, primary structural airframe members, stiffeners
853	RMI 8Mn	(8Mn)	C-0003	US	AMS 4908B	Alpha + beta	I,SH,ST	Aircraft skin and aircraft structural components
854	Ti-8Mn	(8Mn)	C-0001	US	AMS 4908B	Alpha + beta	I,SH,ST,P	Aircraft skins, aircraft structural members
855	AMS 4908C	(8Mn)	—	US	AMS 4908C	Alpha + beta	SH,ST	For good formability and strength to 600 F (316 C).
Ti—Mn 10								
856	MGMTS	—	—	UR	—	—	—	Master alloy of titanium
Ti—Mo 0-Cr 0-Cb/Nb 0								
857	AN5	—	—	UR	—	Beta	—	
Ti—Mo 1.5-Zr 2.5								
858	AT2-2	—	—	UR	—	Alpha	SH	
Ti—Mo 1.8-Cr 2-Fe 2								
859	Ti-140A*	—	C-0001	US	—	—	FG,BA,P	Jet engine compressor components
Ti—Mo 2-Cr 2-Fe 2								
860	AMS 4923A*	—	—	US	AMS 4923A*	—	BA,BI,FG	For high strength to 450 F (232 C) and oxidation resistance to 600 F (316 C).
861	Eltanit AB 104*	—	C-0046	GY	—	—	—	
Ti—Mo 2.5								
862	T3M*	—	—	UR	—	Alpha + beta	—	Early experimental titanium alloy
Ti—Mo 6-Zr 4-Fe 26								
863	Ti-Zr-Fe-Mo	—	C-0009	US	—	—	Powder-28+100 mesh	Made by hydride-crush-dehydride process
Ti—Mo 10								
864	Ti-Mo	—	C-0057	US	—	—	Powder-325 mesh	
Ti—Mo 11.5-Sn 4.5-Zr 6								
865	OMC-Ti-11.5Mo-6Zr-4.5Sn	(Beta III)	C-0009	US	AMS 4977A	Beta	BI,B,W,P,SH,ST,F,T	
866	Armco Beta 3*	(Beta III)	C-0005	US	AMS 4977,BA	Beta	BI,BA,W,E	Age hardenable to 135 ksi ts. Good cold formability
867	MIL-T-9046H Type IV Comp. B	(Beta III)	—	US	MIL-T-9046H	Beta	BI,BA,W,P,SH,ST,F,T	
868	ASTM B338, Grade 10	(Beta III)	—	US	ASTM B338	Beta	S T +W T-H exch .con	Standard for seamless and welded tubing for heat exchangers and condensers
869	ASTM B265, Grade 10	(Beta III)	—	US	ASTM B265	Beta	SH,ST,P	Standard for strip, sheet, and plate of this composition
870	MIL-T-9046H Type IV Comp. B	(Beta III)	—	US	MIL-T-9046H	Beta	BI,BA,W,P,SH,ST,F,T	
871	ASTM B337, Grade 10	(Beta III)	—	US	ASTM B337	Beta	Seamless and welded pipe	Standard for seamless and welded pipe of this composition
872	AMS 4980A	(Beta III)	—	US	AMS 4980A	Beta	BA,W	For high strength/weight ratio to 700 F (371 C) after precipitation heat treatment
873	TD12ZRE	(Beta III)	C-0020	FR	AIR	Beta	—	Good salt water and hot salting corrosion resistance. Cold formable
874	ASTM B337, Grade 10	(Beta III)	—	US	ASTM B337	Beta	Seamless and welded pipe	Standard for seamless and welded pipe of this composition
875	AMS 4977A	(Beta III)	—	US	AMS 4977A	Beta	BA,W	For high strength/weight ratio to 700 F (371 C). Fasteners. Deep hardening
876	TD11ZR6E4	(Beta III)	—	FR	AIR	Beta	—	
877	ASTM B348, Grade 10	(Beta III)	—	US	ASTM B348	Beta	BA,BI	Standard for bars and billets of this composition
878	Crucible Beta III	(Beta III)	C-0004	US	AMS	Beta	SH,ST,FO,T,P,W	Aircraft parts and fasteners
879	ASTM B265, Grade 10	(Beta III)	—	US	ASTM B265	Beta	SH,ST,P	Standard for strip, sheet, and plate of this composition
880	ASTM B338, Grade 10	(Beta III)	—	US	ASTM B338	Beta	S T +W T-H exch,con	Standard for seamless and welded tubing for heat exchangers and condensers
Ti—Mo 15								
881	IMI-205*	—	C-0013	UK	—	Beta	—	
Ti—Mo 32-Cb/Nb 1.5								
882	4203	—	—	UR	—	Beta	—	
Ti—Mo 32								
883	4201	—	—	UR	—	Beta	—	
Ti—Ni 0.2								
884	IMP-1	—	—	UR	—	Alpha	—	Early alpha alloy
Ti—Ni 1--2								
885	Ti-2Ni	—	C-0001	US	—	Alpha dispersoid	—	
Ti—Ni 50								
886	Ti-Ni	—	C-0064	US	—	—	Powder (degassed)	Scientific applications. Also composition of Nitinol type alloys

BA—bars, BI—billet, C—casting, E—extrusion, F—foil, FG-forging, I—ingot, P—plate, RD—rod, SH—sheet, ST—strip, T—tubing, W—wire, con—condensers, H exch—heat exchanger, S T—seamless tubing, W T—welded tubing

*Noncurrent standard or alloy designation

TABLE 1. (Continued)

Index No.	Alloy Designation	CHEMICAL COMPOSITION, WEIGHT PERCENT, ≤ (BALANCE TITANIUM)																
		ALLOYING ELEMENTS											Interstitial Elements					
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt.% (ppm)	Nitrogen Wt.% (ppm)	Carbon
Ti—Pd 0.15–0.20																		
887	ASTM B337, Grade 11	—	—	—	—	—	—	—	—	—	0.12–0.25	—	Total 0.30	0.20	0.18	0.015 (150)	0.03 (300)	0.10
888	ASTM B265, Grade 11	—	—	—	—	—	—	—	—	—	0.12–0.25	—	Total 0.30	0.30	0.18	0.015 (150)	0.03 (300)	0.10
889	ASTM B337, Grade 11	—	—	—	—	—	—	—	—	—	0.12–0.25	—	Total 0.30	0.20	0.18	0.015 (150)	0.03 (300)	0.10
890	ASTM B265, Grade 11	—	—	—	—	—	—	—	—	—	0.12–0.25	—	Total 0.30	0.20	0.18	0.015 (150)	0.03 (300)	0.10
891	L-7021 Ti-99.3 Pd	—	—	—	—	—	—	—	—	—	0.12–0.25	—	Total 0.30	0.30	0.25	0.0125 (125)	0.05 (500)	0.10
892	RMI 02Pd	—	—	—	—	—	—	—	—	—	0.15–0.20	—	—	0.30	0.20	0.015 (150)	0.03 (300)	0.08
893	ASTM B265, Grade 7	—	—	—	—	—	—	—	—	—	0.12–0.25	—	Total 0.30	0.30	0.25	0.015 (150)	0.03 (300)	0.10
894	ASTM B338, Grade 11	—	—	—	—	—	—	—	—	—	0.12–0.25	—	—	0.20	0.18	0.015 (150)	0.03 (300)	0.10
895	Ti-0.2Pd	—	—	—	—	—	—	—	—	—	0.15–0.25	—	—	0.20	—	0.015 (150)	0.03 (300)	0.08
896	TTC 22B Casting	—	—	—	—	—	—	—	—	—	Pd	—	—	—	—	—	—	—
897	ASTM B348, Grade 11	—	—	—	—	—	—	—	—	—	0.12–0.25	—	Total 0.30	0.20	0.18	0.0125 (125)	0.03 (300)	0.10
898	ASTM B338, Grade 7	—	—	—	—	—	—	—	—	—	0.12–0.25	—	—	0.25	0.30	0.015 (150)	0.03 (300)	0.10
899	HA-1940PD*	—	—	—	—	—	—	—	—	—	0.20	—	—	0.20	—	—	—	0.08
900	HA-Ti-0.15Pd*	—	—	—	—	—	—	—	—	—	0.15–0.20	—	—	0.20	—	—	—	0.08
901	ASTM B348, Grade 7	—	—	—	—	—	—	—	—	—	0.12–0.25	—	Total 0.30		0.25	0.0125 (125)	0.03 (300)	0.10
902	ASTM B337, Grade 7	—	—	—	—	—	—	—	—	—	0.12–0.25	—	—	0.30	0.25	0.015 (150)	0.03 (300)	0.10
903	ASTM B338, Grade 7	—	—	—	—	—	—	—	—	—	0.12–0.25	—	—	0.25	0.30	0.015 (150)	0.03 (300)	0.10
904	MMA-1942	—	—	—	—	—	—	—	—	—	0.15	—	Total 0.10	0.20	0.16	0.015 (150)	0.02 (200)	0.05
905	ASTM B337, Grade 7	—	—	—	—	—	—	—	—	—	0.12–0.25	—	—	0.30	0.25	0.015 (150)	0.03 (300)	0.10
906	Crucible Ti-0.15Pd	—	—	—	—	—	—	—	—	—	0.15+	—	—	—	—	—	—	—
907	Contimet Pd 02/30	—	—	—	—	—	—	—	—	—	0.15+	—	—	0.20	0.10	0.0125 (125)	0.05 (500)	0.08
908	Contimet Pd 02/35	—	—	—	—	—	—	—	—	—	0.15+	—	—	0.25	0.20	0.0125 (125)	0.06 (600)	0.08
909	Contimet Pd 02/35 D	—	—	—	—	—	—	—	—	—	0.15+	—	—	0.30	0.25	0.0125 (125)	0.06 (600)	0.10
910	ASTM B381, Grade F-7	—	—	—	—	—	—	—	—	—	0.15–0.25	—	Total 0.30	0.30	0.30	0.015 (150)	0.03 (300)	0.10
911	ASTM B265, Grade 7	—	—	—	—	—	—	—	—	—	0.12–0.25	—	Total 0.30	0.30	0.25	0.015 (150)	0.03 (300)	0.10
912	TITECH 0.2Pd	—	—	—	—	—	—	—	—	—	0.20	—	—	—	—	—	—	—
913	ASTM B338, Grade 11	—	—	—	—	—	—	—	—	—	0.12–0.25	—	—	0.20	0.18	0.015 (150)	0.03 (300)	0.10
914	DYNAPLAT Pd 02/03	—	—	—	—	—	—	—	—	—	0.15	—	—	0.20	0.20	0.0125 (125)	0.05 (500)	0.08
915	ASTM B381, Grade F-7	—	—	—	—	—	—	—	—	—	0.15–0.25	—	Total 0.30	0.30	0.25	0.015 (150)	0.03 (300)	0.10
916	UT35-02	—	—	—	—	—	—	—	—	—	0.20	—	—	0.20	0.20	0.015 (150)	0.05 (500)	0.08
917	4200	—	—	—	—	—	—	—	—	—	0.15–0.30	—	Total 0.30	0.18	0.12	0.010 (100)	0.05 (500)	0.07
918	ASTM B381, Grade F-7	—	—	—	—	—	—	—	—	—	0.12–0.25	—	Total 0.30	0.30	0.25	0.015 (150)	0.03 (300)	0.10
919	BS CP 3003 Part 9, TP 1	—	—	—	—	—	—	—	—	—	0.15 min	—	—	0.05	0.50	0.010 (100)	0.05 (500)	0.10
920	Contimet Pd 02/35D	—	—	—	—	—	—	—	—	—	0.15+	—	—	0.30	0.25	0.0125 (125)	0.06 (600)	0.10
921	Avesta Ati 24 Pd	—	—	—	—	—	—	—	—	—	0.20	—	—	0.05	0.10	0.012 (120)	0.03 (300)	0.05
922	Contimet Pd 02/35	—	—	—	—	—	—	—	—	—	0.15+	—	—	0.25	0.20	0.0125 (125)	0.06 (600)	0.08
923	Contimet Pd 02/30	—	—	—	—	—	—	—	—	—	0.15+	—	—	0.20	0.10	0.0125 (125)	0.05 (500)	0.08
924	ALLVAC 40+Pd	—	—	—	—	—	—	—	—	—	0.20	—	—	—	—	—	—	—
925	ASTM B367, Grade C-7A	—	—	—	—	—	—	—	—	—	0.12 min	—	Total 0.40	0.20	0.18	0.010 (100)	0.03 (300)	0.10
926	ASTM B367, Grade C-7B	—	—	—	—	—	—	—	—	—	0.12 min	—	Total 0.40	0.30	0.25	0.010 (100)	0.03 (300)	0.10
927	ASTM B367, Grade C-8A	—	—	—	—	—	—	—	—	—	0.12 min	—	Total 0.40	0.30	0.35	0.010 (100)	0.05 (500)	0.10
928	ASTM B367, Grade C-8B	—	—	—	—	—	—	—	—	—	0.12 min	—	Total 0.40	0.50	0.40	0.010 (100)	0.05 (500)	0.10
929	ASTM B367, Grade C-8A	—	—	—	—	—	—	—	—	—	0.12 min	—	Total 0.40	0.30	0.35	0.010 (100)	0.05 (500)	0.10
930	ASTM B367, Grade C-7B	—	—	—	—	—	—	—	—	—	0.12 min	—	Total 0.40	0.30	0.25	0.010 (100)	0.03 (200)	0.10
931	ASTM B367, Grade C-7A	—	—	—	—	—	—	—	—	—	0.12 min	—	Total 0.40	0.20	0.18	0.010 (100)	0.03 (300)	0.10
932	ASTM B367, Grade C-8B	—	—	—	—	—	—	—	—	—	0.12 min	—	Total 0.40	0.50	0.40	0.010 (100)	0.05 (500)	0.10
933	OMC-PD	—	—	—	—	—	—	—	—	—	0.20	—	—	—	—	—	—	0.20
934	Avesta ATi Pd	—	—	—	—	—	—	—	—	—	0.20	—	—	0.05	0.10	0.012 (120)	0.03 (300)	0.05
935	OMC-103 (Cast)	—	—	—	—	—	—	—	—	—	0.20	—	—	—	—	—	—	0.20
936	Tikrutan RT 18(Pd)	—	—	—	—	—	—	—	—	—	0.15–0.25	—	—	0.30	0.25	0.013 (130)	0.06 (600)	0.10
937	Carlson C-55/Pd	—	—	—	—	—	—	—	—	—	0.12–0.25	—	Total 0.30	0.30	0.35	0.015 (150)	—	0.10
938	TIL 120 Grade 8	—	—	—	—	—	—	—	—	—	0.12	—	Total 0.40	0.30	0.35	0.010 (100)	0.05 (500)	0.10
939	Tikrutan RT 15(Pd)	—	—	—	—	—	—	—	—	—	0.15–0.25	—	—	0.25	0.20	0.013 (130)	0.06 (600)	0.08
940	Tikrutan RT 12(Pd)	—	—	—	—	—	—	—	—	—	0.15–0.25	—	—	0.20	0.10	0.013 (130)	0.05 (500)	0.08

Information on this group of alloys is continued on page below

*Noncurrent standard or alloy designation

Index No.	Alloy Designation	Common Name/ Alloy	Company Code	Ctry Code	Prime Country Standard	Alloy Type	Forms Available	Applications
Ti—Pd 0.15-0.20								
887	ASTM B337, Grade 11	(Pd alloy)	—	US	ASTM B337	Alpha	Seamless and welded pipe	Standard for seamless and welded pipe of this composition.
888	ASTM B265, Grade 11	(Pd alloy)	—	US	ASTM B265	Alpha	SH,ST,P	Standard for strip, sheet, and plate of this composition.
889	ASTM B337, Grade 11	(Pd alloy)	—	US	ASTM B337	Alpha	Seamless and welded pipe	Standard for seamless and welded pipe of this composition.
890	ASTM B265, Grade 11	(Pd alloy)	—	US	ASTM B265	Alpha	SH,ST,P	Standard for strip, sheet, and plate of this composition.
891	L-7021, Ti-99.3 Pd	(Pd alloy)	—	SP	—	Alpha	—	Corrosion resistant
892	RMI 02Pd	(Pd alloy)	C-0003	US	ASTM B265	Alpha	All forms	Chemical industry equipment, special corrosion applications.
893	ASTM B265, Grade 7	(Pd alloy)	—	US	ASTM B265	Alpha	SH,ST,P	Standard for strip, sheet, and plate of this composition.
894	ASTM B338, Grade 11	(Pd alloy)	—	US	ASTM B338	Alpha	S T &W T -H exch ,con	Standard for seamless and welded tubine for heat exchangers and condensers.
895	Ti-0.20Pd	(Pd alloy)	C-0001	US	—	Alpha	SH,ST,P,BA,BI,W,T,E	Chemical industry equipment, special corrosion resistant applications.
896	TTC 22B Casting	(Pd alloy)	C-0006	US	ASTM B367-C	Alpha	C	Castings with improved corrosion resistance, commercial market
897	ASTM B348, Grade 11	(Pd alloy)	—	US	ASTM B348	Alpha	BA,BI	Standard for bars and billets of this composition.
898	ASTM B338, Grade 7	(Pd alloy)	—	US	ASTM B338	Alpha	S T &W T -H exch ,con	Standard for seamless and welded tubing for heat exchangers and condensers
899	HA-1940Pd*	(Pd alloy)	C-0011	US	—	Alpha	SH,ST,P,BA,BI,W,T,E	Special corrosion applications. Chemical industry
900	HA-Ti-0.15Pd*	(Pd alloy)	C-0012	US	—	Alpha	SH,ST,P,BA,BI,W,T,E	Special corrosion applications. Chemical industry
901	ASTM B348, Grade 7	(Pd alloy)	—	US	ASTM B348	Alpha	BA,BI	Standard for bars and billets of this composition.
902	ASTM B337, Grade 7	(Pd alloy)	—	US	ASTM B337	Alpha	Seamless & welded pipe	Standard for seamless and welded pipe of this composition.
903	ASTM B338, Grade 7	(Pd alloy)	—	US	ASTM B338	Alpha	S T &W T -H exch ,con	Standard for seamless and welded tubing for heat exchangers and condensers
904	MMA-1942	(Pd alloy)	C-0002	US	—	Alpha	All forms	Chemical corrosion resistant, good in reducing media
905	ASTM B337, Grade 7	(Pd alloy)	—	US	ASTM B337	Alpha	Seamless & welded pipe	Standard for seamless and welded pipe of this composition.
906	Crucible Ti-0.15Pd	(Pd alloy)	C-0004	US	—	Alpha	SH,ST,P,BA,BI,W,T,E	Chemical industry equipment, special corrosion resistant applications
907	Contimet Pd 02/30	(Pd alloy)	C-0046	GY	—	Alpha	BA,SH,ST,P,W,FG,E,T	For increased corrosion resistance in reducing conditions
908	Contimet Pd 02/35	(Pd alloy)	C-0046	GY	—	Alpha	Code weld tube only	For increased corrosion resistance in reducing conditions
909	Contimet Pd 02/35D	(Pd alloy)	C-0046	GY	—	Alpha	BA,SH,ST,P,W,FG,E,T	For increased corrosion resistance in reducing conditions
910	ASTM B381, Grade F-7	(Pd alloy)	US		ASTM B381	Alpha	FG	Standard for forgings of this composition
911	ASTM B265, Grade 7	(Pd alloy)	—	US	ASTM B265	Alpha	SH,ST,P	Standard for strip, sheet, and plate of this composition
912	TITECH 0.2Pd	(Pd alloy)	C-0006	US	ASTM B348	Alpha	All forms	Chemical industry for oxidizing and reducing media
913	ASTM B338, Grade 11	(Pd alloy)	—	US	ASTM B338	Alpha	S T &W T -H exch ,con	Standard for seamless and welded tubing for heat exchangers and condensers
914	DYNAPLAT Pd 02/03	(Pd alloy)	C-0050	GY	—	Alpha	Explosion-bond clad	Cladding with explosion-bonded technique
915	ASTM B381, Grade F-7	(Pd alloy)	—	US	ASTM B381	Alpha	FG	Standard for titanium and titanium-alloy forgings of this composition
916	UT35-02	(Pd alloy)	C-0020	FR	—	Alpha	BA,SH,P,W,FG	Corrosion resistant in acids and reducing media
917	4200	(Pd alloy)	—	UR	—	Alpha	—	Corrosion resistant
918	ASTM B381, Grade F-7	(Pd alloy)	—	US	ASTM B381	Alpha	FG	Standard for titanium and titanium-alloy forgings of this composition
919	BS CP 3003 Part 9, TP 1	(Pd alloy)	—	UK	CP 3003 P 9	Alpha	All forms	Tank linings in chemical industry. Palladium gives increased protection
920	Contimet Pd 02/35D	(Pd alloy)	C-0046	GY	—	Alpha	All forms	Palladium containing to improve corrosion resistance. Tubes
921	Avesta ATi 24 Pd	(Pd alloy)	C-0021	SW	—	Alpha	All forms	Chemical industry uses
922	Contimet Pd 02/35	(Pd alloy)	C-0046	GY	—	Alpha	All forms	Palladium containing to improve corrosion resistance
923	Contimet Pd 02/30	(Pd alloy)	C-0046	GY	—	Alpha	All forms	Palladium containing to improve corrosion resistance
924	ALLVAC 40+Pd	(Pd alloy)	C-0008	US	ASTM B348	Alpha	All forms	Corrosion resistant material for chemical industry
925	ASTM B367, Grade C-7A	(Pd alloy)	—	US	ASTM B367	Alpha	C	Standard for titanium and titanium-alloy castings of this composition
926	ASTM B367, Grade C-7B	(Pd alloy)	—	US	ASTM B367	Alpha	C	Standard for titanium and titanium-alloy castings of this composition
927	ASTM B367, Grade C-8A	(Pd alloy)	—	US	ASTM B367	Alpha	C	Standard for titanium and titanium-alloy castings of this composition
928	ASTM B367, Grade C-8B	(Pd alloy)	—	US	ASTM B367	Alpha	C	Standard for titanium and titanium-alloy castings of this composition
929	ASTM B367, Grade C-8A	(Pd alloy)	—	US	ASTM B367	Alpha	C	Standard for titanium and titanium-alloy castings of this composition
930	ASTM B367, Grade C-7B	(Pd alloy)	—	US	ASTM B367	Alpha	C	Standard for titanium and titanium-alloy castings of this composition
931	ASTM B367, Grade C-7A	(Pd alloy)	—	US	ASTM B367	Alpha	C	Standard for titanium and titanium-alloy castings of this composition
932	ASTM B367, Grade C-8B	(Pd alloy)	—	US	ASTM B367	Alpha	C	Standard for titanium and titanium-alloy castings of this composition
933	OMC-PD	(Pd alloy)	C-0009	US	—	Alpha	All forms	For chemical processing equipment, oxidation or reduction media
934	Avesta ATi Pd	(Pd alloy)	C-0021	SW	—	Alpha	All forms	For use with dilute acids
935	OMC-103 (Cast)	(Pd alloy)	C-0009	US	—	Alpha	C	For chemical processing equipment, oxidation or reduction media
936	Tikrutan RT 18 (Pd)	(Pd alloy)	C-0019	GY	DIN 3.7055	Alpha	All forms	Improved resistance to corrosion, especially reducing
937	Carlson C-55/Pd	(Pd alloy)	C-0053	US	ASTM B265-3	Alpha	P,FG	Plate product applications
938	TIL 120 Grade 8	(Pd alloy)	C-0025	US	ASTM B367-69	Alpha	C	Graphite rammed castings
939	Tikrutan RT 15 (Pd)	(Pd alloy)	C-0019	GY	DIN 3.7035	Alpha	All forms	Improved resistance to corrosion, especially in a reducing medium
940	Tikrutan RT 12 (Pd)	(Pd alloy)	C-0019	GY	DIN 3.7025	Alpha	All forms	Improved resistance to corrosion, especially in a reducing medium

BA—bars, BI—billet, C—casting, E—extrusion, F—foil, FG-forging, I—ingot, P—plate, RD—rod, SH—sheet, ST—strip, T—tubing, W—wire, con—condensers, H exch—heat exchanger, S T —seamless tubing, W T —welded tubing

*Noncurrent standard or alloy designation

TABLE 1. (Continued)

Index No.	Alloy Designation	CHEMICAL COMPOSITION, WEIGHT PERCENT, ≤ (BALANCE TITANIUM)															
		ALLOYING ELEMENTS											Interstitial Elements				
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt.% (ppm)	Nitrogen Wt.% (ppm)	Carbon
Ti—Pd 0.15-0.25 (cont.)																		
941	Carlson C-40/Pd	—	—	—	—	—	—	—	—	—	0.12-0.25	—	Total 0.30	0.30	0.25	0.015 (150)	—	0.10
942	Carlson C-30/Pd	—	—	—	—	—	—	—	—	—	0.12-0.25	—	Total 0.30	0.20	0.18	0.015 (150)	—	0.10
943	Fuchs TP 02	—	—	—	—	—	—	—	—	—	0.20	—	—	0.25	0.20	0.0125 (125)	0.06 (600)	0.08
944	IMI-260	—	—	—	—	—	—	—	—	—	0.015	—	—	—	—	—	—	—
945	IMI-261	—	—	—	—	—	—	—	—	—	0.15-0.25	—	—	0.25	—	—	—	—
946	DIN 3.7040 (proposed)	—	—	—	—	—	—	—	—	—	0.15-0.25	—	—	0.35	0.20	0.013 (130)	0.06 (600)	0.08
947	DIN 3.7070 (proposed)	—	—	—	—	—	—	—	—	—	0.15-0.25	—	—	0.30	0.30	0.013 (130)	0.07 (700)	0.10
948	DIN 2.7056 (proposed)	—	—	—	—	—	—	—	—	—	0.15-0.25	—	—	0.20	0.25	0.013 (130)	0.06 (600)	0.10
949	DIN 3.7030 (proposed)	—	—	—	—	—	—	—	—	—	0.15-0.20	—	—	0.20	0.10	0.013 (130)	0.05 (500)	0.08
950	Ti-0.15Pd	—	—	—	—	—					0.15-0.20			0.20	—	0.015 (150)	0.05 (500)	0.08
Ti—Pt 1																		
951	Ti-P7	—	—	—	—	—	—	—	—	—	—	—	Pt 1.0	—	—	—	—	—
Ti—Si 8																		
952	Ventron 88399, 92.8	—	—	—	—	—	—	—	—	8.0	—	—	—	—	—	—	—	—
Ti—Ta 5																		
953	4204	—	—	—	—	—	—	—	—	—	—	—	Ta 5.0	—	0.09	0.014 (140)	0.004 (40)	—
Ti—V 1-Mo 1-Mn 2.5-Cr 1-Fe 1.5																		
954	48-T6*	—	0.7-1.1	0.7-1.1	—	—	2.0-3.0	0.7-1.1	—	—	—	—	—	1.2-1.7	—	—	—	—
Ti—V 1-Mo 1-Mn 3-Cr 1-Fe 1																		
955	Eltanit AB 105*	—	1.0	1.0	—	—	3.0	1.0	—	—	—	—	—	1.0	0.50	0.015 (150)	0.10	0.10
Ti—V 1.5-Mo 1.5-Zr 2.5-Cb/Nb 1.5																		
956	AT2-1	—	1.5	1.5	—	2.0-3.0	—	—	—	—	—	1.5	—	—	—	—	—	—
Ti—V 2-Zr 2																		
957	AT2-3	—	1.95	—	—	1.95	—	—	—	0.12	—	—	—	0.085	0.12	0.011 (110)	0.04	—
Ti—V 10																		
958	Ti-V	—	10.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti—Zr 0-(V,Mo,Cb/Nb) 0																		
959	AT2-4	—	V	MO	—	Zr	—	—	—	—	—	Cb/Nb	—	—	—	—	—	—
Ti—Al 6-Zr 5-W 1-Si 0.2																		
960	UT684	6.0	—	—	—	5.0	—	—	—	0.3	—	—	W 1.0	—	—	—	—	—
Ti—Al 4-Mo 4-Sn 4-Si 0.5																		
961	BS TA 42	3.0-5.0	—	3.0-5.0	3.0-5.0	—	—	—	—	0.3-0.7	—	—	—	0.20	0.25	0.015 (150)	0.05	0.05-0.20
962	BS TA 39	3.0-5.0	—	3.0-5.0	3.0-5.0	—	—	—	—	0.3-0.7	—	—	—	0.20	0.25	0.0125 (125)	0.05	0.05-0.20
963	BS TA 38	3.0-5.0	—	3.0-5.0	3.0-5.0	—	—	—	—	0.3-0.7	—	—	—	0.20	0.25	0.0125 (125)	0.05	0.05-0.20
964	BS TA 40	3.0-5.0	—	3.0-5.0	3.0-5.0	—	—	—	—	0.3-0.7	—	—	—	0.20	0.25	0.0125 (125)	0.05	0.05-0.20
965	BS TA 41	3.0-5.0	—	3.0-5.0	3.0-5.0	—	—	—	—	0.3-0.7	—	—	—	0.20	0.25	0.0125 (125)	0.05	0.05-0.20
Ti—Al 6-V 4																		
966	Titanium 6Al-4V	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	—	0.25	0.20	0.015 (150)	0.05 (500)	0.08
967	MST Alloys* (see RMI list)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ti—Al 6-V 4 ELI																		
968	Titanium 6Al-4V ELI	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	—	0.25	0.13	0.015 (150)	0.05 (500)	0.08
Ti-Unalloyed—99.5, CP, -40 ksi																		
969	CSN 42 4655	—	—	—	—	—	—	—	—	0.15	—	—	Total 0.50	0.03	0.15	0.020 (200)	0.05 (500)	0.10
970	ON 42 4656	—	—	—	—	—	—	—	—	0.15	—	—	Total 0.50	0.03	0.15	0.020 (200)	0.05 (500)	0.10
971	JK 183 122	—	—	—	—	—	—	—	—	0.15	—	—	Total 0.50	0.03	0.15	0.020 (200)	0.05 (500)	0.10
972	MIL-T-9047E, Comp 1	—	—	—	—	—	—	—	—	—	—	—	Total 0.50	0.50	0.40	0.0125 (125)	0.05 (500)	0.08
973	MIL-T-009047F, Comp 1	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.50	0.40	0.0125 (125)	0.05 (500)	0.08
974	MIL-F-83142A, Comp 1	—	—	—	—	—	—	—	—	—	—	—	Total 0.30	0.50	0.40	0.0125 (125)	0.05 (500)	0.08
975	MIL-T-81556, Type I, Comp A	—	—	—	—	—	—	—	—	—	—	—	Total 0.60	0.20	0.20	0.015 (150)	0.05 (500)	0.08
976	MIL-T-81915, Type I, Comp A	—	—	—	—	—	—	—	—	—	—	—	Total 0.60	0.20	0.20	0.015 (150)	0.05 (500)	0.08
Ti-Unalloyed—99.2, CP, -55 ksi																		
977	MIL-T-81556, Type I, Comp C	—	—	—	—	—	—	—	—	—	—	—	Total 0.60	0.30	0.30	0.015 (150)	0.05 (500)	0.08

Information on this group of alloys is continued on page below

*Noncurrent standard or alloy designation

Index No.	Alloy Designation	Common Name/ Alloy	Company Code	Ctry Code	Prime Country Standard	Alloy Type	Forms Available	Applications
Ti—Pd 0.15-0.20 (cont.)								
941	Carlson C-40/Pd	(Pd alloy)	C-0053	US	ASTM B265-7	Alpha	P,FG	Plate product applications
942	Carlson C-30/Pd	(Pd alloy)	C-0053	US	ASTM B26511	Alpha	P,FG	Plate product applications
943	Fuchs TP 02	(Pd alloy)	C-0054	GY	—	Alpha	FG	Excellent corrosion resistance to HCl and reducing media
944	IMI-260	(Pd alloy)	C-0013	UK	BS 2TA 1	Alpha	—	Increased corrosion resistant applications
945	IMI-261	(Pd alloy)	C-0013	UK	—	Alpha	—	Increased corrosion resistant applications
946	DIN 3 7040 (proposed)	(Pd alloy)	—	GY	DIN 3 7040	Alpha	All forms	Corrosion resistant
947	DIN 3 7070 (proposed)	(Pd alloy)	—	GY	DIN 3 7070	Alpha	All forms	Corrosion resistant
948	DIN 2 7056 (proposed)	(Pd alloy)	—	GY	DIN 3 7056	Alpha	All forms	Corrosion resistant
949	DIN 3 7030 (proposed)	(Pd alloy)	—	GY	DIN 3 7030	Alpha	All forms	Corrosion resistant
950	Ti-0 15Pd	(Pd alloy)	C-0001	US	—	Alpha	SH,ST,P,BI,BA,W,T,E	Chemical industry equipment, special corrosion resistant applications
Ti—Pt 1								
951	Ti-P7	—	C-0057	US	—	Alpha	Powder-325 mesh	Scientific applications
Ti—Si 8								
952	Ventron 88399 92 8	—	—	US	—		Alpha	For scientific applications
Ti—Ta 5								
953	4202	—	—	UR	—	Alpha	—	
Ti—V 1-Mo 1-Mn 2.5-Cr 1-Fe 1.5								
954	48-T6*	—	—	UR	—	Alpha + beta	—	Early titanium alloy
Ti—V 1-Mo 1-Mn 3-Cr 1-Fe 1								
955	Eltanit AB 105*	—	C-0046	GY	—	—	—	
Ti—V 1.5-Mo 1.5-Zr 2.5-Cb/Nb 1.5								
956	AT2-1	—	—	UR	—	Alpha	SH	
Ti—V 2-Zr 2								
957	AT2-3	—	—	UR	—	—	—	
Ti—V 10								
958	Ti-V	—	C-0057	US	—	—	Powder-100 mesh	For scientific applications
Ti—Zr 0-(V,Mo,Cb/Nb) 0								
959	AT2-4	—	—	UR	—	Alpha	SH	
Ti								
960	UT684	—	C-0020	FR	—	Alpha	—	Used in the Adour jet engine of Jaguar Strike Aircraft
Ti—Al 4-Mo 4-Sn 4-Si 0.5								
961	BS TA 42	(IMI-551)	—	UK	BS TA 42	Alpha + beta***	FG	Forgings
962	BS TA 39	(IMI-551)	—	UK	BS TA 39	Alpha + beta***	FG stock	Forgings, forging stock
963	BS TA 38	(IMI-551)	—	UK	BS TA 38	Alpha + beta***	BA for machining	
964	BS TA 40	(IMI-551)	—	UK	BS TA 40	Alpha + beta***	BA for machining	
965	BS TA 41	(IMI-551)	—	UK	BS TA 41	Alpha + beta***	FG stock	Forgings, forging stock
Ti—Al 6-V 4								
966	Titanium 6Al-4V	—	C-0051	US	AMS 4928B	—	—	
967	MST Alloys* (see RMI list)	—	C-0003	US	—	—	—	
Ti—Al 6-V 4 ELI								
968	Titanium 6Al-4V ELI	—	C-0051	US	AMS 4928B	—	—	
Ti-Unalloyed—99.5, CP, -40 ksi YS								
969	CSN 42 4655	(CP)	—	CZ	CSN 42 4655	Alpha	All forms	Airframes, chemical equipment, and marine applications. Good formability
970	ON 42 4656	(CP)	—	CZ	ON 42 4656	Alpha	All forms	Airframes, chemical equipment, and marine applications. Good formability
971	JK 183 122	(CP)	—	CZ	JK 183 122	Alpha	All forms	Airframes, chemical equipment, and marine applications. Good formability
972	MIL-T-9047E, Comp. 1	(CP)	—	US	MIL-T-9047E	Alpha	All forms	Airframes, chemical equipment, and marine applications. Good formability
973	MIL-T-009047F, Comp. 1	(CP)	—	US	MIL-T-009047F	Alpha	All forms	Airframes, chemical equipment, and marine applications. Good formability
974	MIL-F-83142A, Comp. 1	(CP)	—	US	MIL-F-83142A	Alpha	All forms	Airframes, chemical equipment, and marine applications. Good formability
975	MIL-T-81556 Type I, Comp. A	(CP)	—	US	MIL-T-81556	Alpha	All forms	Airframes, chemical equipment, and marine applications. Good formability
976	MIL-T-81915 Type I, Comp. A	(CP)	—	US	MIL-T-81915	Alpha	Castings	Airframes, chemical equipment, and marine applications
Ti-Unalloyed—99.2, CP, -55 ksi, YS								
977	MIL-T-81556 Type I, Comp. C	(CP)	—	US	MIL-T-81556	Alpha	All forms	Airframes, chemical equipment, and airframe applications

BA—bars, BI—billet, C—casting, E—extrusion, F—foil, FG-forging, I—ingot, P—plate, RD—rod, SH—sheet, ST—strip, T—tubing, W—wire, con—condensers, H exch—heat exchanger, S T—seamless tubing, W T—welded tubing

*Noncurrent standard or alloy designation
**Current standard or alloy designation, not to be used on new designs
***These alloys also known as alpha-dispersoid types

TABLE 1. (Continued)

Index No.	Alloy Designation	CHEMICAL COMPOSITION, WEIGHT PERCENT, ≤ (BALANCE TITANIUM)																
		ALLOYING ELEMENTS											Interstitial Elements					
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt.% (ppm)	Nitrogen Wt.% (ppm)	Carbon
Ti-Unalloyed—99.0, CP, ~70 ksi TS																		
978	MIL-T-81556, Type I, Comp D	—	—	—	—	—	—	—	—	—	—	—	Total 0.80	0.50	0.40	0.015 (150)	0.05 (500)	
979	MIL-T-13405C, Ti Powder	No specific analysis given, Minimum 94 percent Ti					—	—	—	—	—	—	—	—	—	—	—	—
Ti—Al 2.25-Sn 11-Zr 5-Mo 1-Si 0.2																		
980	MIL-T-9047E, Comp 10	2.0-2.5	—	0.8-1.2	10.5-11.5	4.0-6.0	—	—	—	0.15-0.27	—	—	*Total 0.40*	*0.12*	*0.15*	0.0125 (125)	0.05 (500)	*0.04*
981	MIL-T-009047F, Comp 10	2.0-2.5	—	0.8-1.2	10.5-11.5	4.0-6.0	—	—	—	0.15-0.27	—	—	Total 0.40	0.12	0.15	0.0125 (125)	0.05 (500)	0.04
982	MIL-F-83142A, Comp 10	2.0-2.5	—	0.8-1.2	10.5-11.5	4.0-6.0	—	—	—	0.15-0.27	—	—	Total 0.40	0.12	0.15	0.0125 (125)	0.05 (500)	0.04
Ti—Al 3-V 13-Cr 11																		
983	MIL-T-9047E, Comp 12	2.5-3.5	12.5-14.5	—	—	—	—	10.0-12.0	—	—	—	—	Total 0.40	0.30	0.20	0.015 (150)	0.000	0.05
984	MIL-T-009047F, Comp 12	2.5-3.5	12.5-14.5	—	—	—	—	10.0-12.0	—	—	—	—	Total 0.40	0.30	0.20	0.015 (150)	0.000	0.05
985	MIL-F-83142A, Comp 12	2.5-3.5	12.5-14.5	—	—	—	—	10.0-12.0	—	—	—	—	Total 0.40	0.30	0.20	*0.015 (150)*	*0.000*	0.05
986	MIL-R-81588, Type IV, Comp A	2.5-3.5	12.5-14.3	—	—	—	—	10.0-12.0	—	—	—	—	Total 0.30	0.25	0.12	0.008 (80)	0.03 (300)	0.05
Ti—Al 5-Sn 2.5																		
987	MIL-T-9047E, Comp 2	4.50-5.75	—	—	2.0-3.0	—	—	—	—	—	—	—	Total 0.40	0.50	0.20	0.020 (200)	0.05 (500)	*0.08*
988	MIL-T-009047F, Comp 2	4.50-5.75	—	—	2.0-3.0	—	—	—	—	—	—	—	Total 0.40	0.50	0.20	0.020 (200)	0.05 (500)	0.08
989	MIL-F-83142A, Comp 2	4.50-5.75	—	—	2.0-3.0	—	—	—	—	—	—	—	Total 0.40	0.50	0.20	0.020 (200)	0.05 (500)	0.08
990	MIL-T-81556, Type II, Comp A	4.50-5.75	—	—	2.0-3.0	—	—	—	—	—	—	—	Total 0.40	0.50	0.20	0.020 (200)	0.05 (500)	0.08
991	MIL-R-81588, Type II, Comp A	4.5-7.5	—	—	2.0-3.0	—	—	—	—	—	—	—	Total 0.40	0.40	0.12	0.008 (80)	0.03 (300)	0.05
Ti—Al 5-Sn 2.5 ELI																		
992	MIL-T-9047E, Comp 3	4.7-5.6	—	—	2.0-3.0	—	0.10 max	—	0.10 max	—	—	—	Total 0.30	0.25	0.12	0.0125 (125)	0.035 (350)	0.05
993	MIL-T-009047F, Comp 3	4.7-5.6	—	—	2.0-3.0	—	0.10 max	—	0.10 max	—	—	—	Total 0.30	0.25	0.12	0.0125 (125)	0.035 (350)	0.05
994	MIL-F-83142A, Comp 3	4.7-5.6	—	—	2.0-3.0	—	0.10 max	—	—	—	—	—	Total 0.30	0.25	0.12	0.0125 (125)	0.035 (350)	0.05
995	MIL-T-81915, Type II, Comp A	4.50-5.75	—	—	2.0-3.0	—	—	—	—	—	—	—	Total 0.40	0.50	0.20	0.020 (200)	0.05 (500)	0.08
996	MIL-T-81556, Type II, Comp B	4.50-5.75	—	—	2.0-3.0	—	—	—	—	—	—	—	Total 0.30	0.25	0.12	0.0125 (125)	0.035 (350)	0.05
997	MIL-R-81588, Type II, Comp B	4.50-5.75	—	—	2.0-3.0	—	—	—	—	—	—	—	Total 0.30	0.25	0.10	0.005 (50)	0.015 (150)	0.04
Ti—Al 5-Sn 5-Zr 5																		
998	MIL-F-83142A, Comp 4*	5.0	—	—	5.0	5.0	Note: This alloy not being used at present								—	—	—	—
Ti—Al 6-V 4																		
999	MIL-T-46077B	5.50-6.50	3.5-4.5				—	—		—	—	—	—	0.25	0.14	0.0125 (125)	0.02 (200)	0.04
1000	MIL-T-9047E, Comp 6	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.20	0.0125 (125)	0.05 (500)	0.08
1001	MIL-T-009047F, Comp 6	5.50-6.75	3.5-4.5	0.10 max	0.10 max	0.10 max	0.10 max	—	0.10 max	—	—	—	Total 0.40	0.30	0.20	0.0125 (125)	0.05 (500)	0.08
1002	MIL-F-83142A, Comp 6	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.20	0.0125 (125)	0.05 (500)	0.08
1003	MIL-T-81556, Type III, Comp A	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.20	0.015 (150)	0.05 (500)	0.08
1004	MIL-T-81915, Type III, Comp A	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	Total 0.40	—	0.20	0.015 (150)	0.05 (500)	0.08
1005	MIL-R-81588, Type III, Comp A	5.5-6.5	3.5-4.5	—	—	—	—	—	—	—	—	—	Total 0.30	0.25	0.15	0.008 (80)	0.02 (200)	0.05
Ti—Al 6-V 4 ELI																		
1006	MIL-T-9047E, Comp 7	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	*Total 0.30*	*0.15*	*0.13*	0.0125 (125)	0.05 (500)	0.08
1007	MIL-T-009047F, Comp 7	5.50-6.75	3.5-4.5	0.10 max	0.10 max	0.10 max	0.10 max	—	0.10 max	—	—	—	Total 0.30	0.15	0.13	0.0125 (125)	0.05 (500)	0.08
1008	MIL-F-83142A, Comp 7	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	Total 0.30	0.15	0.13	0.0125 (125)	0.05 (500)	0.08
1009	MIL-T-81556, Type III, Comp B	5.50-6.75	3.5-4.5	—	—	—	—	—	—	—	—	—	Total 0.30	0.25	0.13	0.0125 (125)	0.05 (500)	0.08
1010	MIL-R-81588, Type III, Comp B	5.5-6.5	3.5-4.5	—	—	—	—	—	—	—	—	—	Total 0.20	0.15	0.08	0.005 (50)	0.012 (120)	0.03
Ti—Al 6-V 6-Sn 2																		
1011	MIL-T-9047E, Comp 8	5.0-6.0	5.0-6.0	—	1.5-2.5	—	—	—	0.35-1.00	—	—	—	Total 0.30	0.35-1.00	0.20	0.015 (150)	0.04 (400)	0.05
1012	MIL-T-009047F, Comp 8	5.0-6.0	5.0-6.0	—	1.5-2.5	—	—	—	0.35-1.00	—	—	—	Total 0.30	0.35-1.00	0.20	0.015 (150)	0.04 (400)	0.05
1013	MIL-F-83142A, Comp 8	5.0-6.0	5.0-6.0	—	1.5-2.5	—	—	—	0.35-1.00	—	—	—	Total 0.30	0.35-1.00	0.20	0.015 (150)	0.04 (400)	0.05
1014	MIL-T-81556, Type III, Comp C	5.0-6.0	5.0-6.0	—	1.5-2.5	—	—	—	0.35-1.00	—	—	—	Total 0.30	0.35-1.00	0.20	0.015 (150)	0.05 (500)	0.05
Ti—Al 6-Mo 0.8-Cb/Nb 2-Ta 1																		
1015	*MIL-R-81588, Type II, Comp D*	5.5-6.5	—	0.50-1.25	—	—	—	—	—	—	—	1.5-2.5	{Ta 0.5-1.5} {*Total 0.30*}	0.15	0.12	0.005 (50)	0.012 (120)	0.04
Ti—Al 6-Mo 2-Sn 2-Zr 4																		
1016	MIL-T-9047E, Comp 11	5.5-6.5	—	1.8-2.2	1.8-2.2	3.6-4.4	—	—	—	—	—	—	—	0.25	0.15	0.0125 (125)	0.05 (500)	0.05
1017	MIL-T-009047F, Comp 11	5.5-6.5	—	1.8-2.2	1.75-2.25	3.5-4.5	—	—	—	—	—	—	Total 0.30	0.25	0.15	0.0125 (125)	0.05 (500)	0.05
1018	MIL-F-83142A, Comp 11	5.5-6.5	—	1.8-2.2	1.75-2.25	3.6-4.4	—	—	—	—	—	—	Total 0.30	0.25	0.15	0.0125 (125)	0.05 (500)	0.05
1019	MIL-T-81915, Type III, Comp B	5.5-6.5	—	1.5-2.5	1.5-2.5	3.6-4.4	—	—	—	—	—	—	Total 0.40	0.35	0.12	0.015 (150)	0.05 (500)	0.08

Information on this group of alloys is continued on page below

*Noncurrent standard or alloy designation

Index No	Alloy Designation	Common Name/ Alloy	Company Code	Ctry Code	Prime Country Standard	Alloy Type	Forms Available	Applications
Ti-Unalloyed—99.0, CP, -70 ksi, YS								
978	MIL-T-81556, Type I, Comp. D	(CP)	—	US	MIL-T-81556	Alpha	All forms	Airframe, chemical equipment, and airframe applications
979	MIL-T-13405C, Ti Powder	(CP)	—	US	MIL-T-13405C	Alpha	Powder	Pyrotechnics
Ti—Al 2.15-Sn 11-Zr 5-Mo 1-Si 0.2								
980	MIL-T-9047E, Comp. 10	(679)	—	US	MIL-T-9047E	Near-alpha	I BI BA P SH	Airframe and turbine engine parts (blades, discs, wheels), fasteners
981	MIL-T-009047F, Comp. 10	(679)	—	US	MIL-T-009047F	Near-alpha	I BI BA P SH	Airframe and turbine engine parts (blades, discs, wheels), fasteners
982	MIL-F-83142A, Comp. 10	(679)	—	US	MIL-F-83142A	Near-alpha	I BI BA P SH	Airframe and turbine engine parts (blades, discs, wheels), fasteners
Ti—Al 3-V 13-Cr 11								
983	MIL-T-9047E, Comp. 12	(13-11-3)	—	US	MIL-T-9047E	Beta	I BI BA W P SH ST F T	Aircraft parts and fasteners. Very high strength at room and mod. temp
984	MIL-T-009047F, Comp. 12	(13-11-3)	—	US	MIL-T-009047F	Beta	I BI BA W SH ST F T	Aircraft parts and fasteners. Very high strength at room and mod. temp
985	MIL-F-83142A, Comp. 12	(13-11-3)	—	US	MIL-F-83142A	Beta	I BI BA W SH ST F T	Aircraft parts and fasteners. Very high strength at room and mod. temp
986	MIL-R-81588, Type IV, Comp. A	(13-11-3)	—	US	MIL-R-81588	Beta	I BI BA W SH ST F T	Aircraft parts and fasteners. Very high strength at room and mod. temp
Ti—Al 5-Sn 2.5								
987	MIL-T-9047E, Comp. 2	(A-110)	—	US	MIL-T-9047E	Alpha	I BI BA P SH E C	Good weldability and oxidation resistance
988	MIL-T-009047F, Comp. 2	(A-110)	—	US	MIL-T-009047F	Alpha	I BI BA P SH E C	Stability and strength at elevated temperatures
989	MIL-F-83142A, Comp. 2	(A-110)	—	US	MIL-F-83142A	Alpha	I BI BA P SH E C	Good weldability and oxidation resistance
990	MIL-T-81556, Type II, Comp. A	(A-110)	—	US	MIL-T-81556	Alpha	I BI BA P SH E C	Good weldability and strength
991	MIL-R-81588, Type II, Comp. A	(A-110)	—	US	MIL-R-81588	Alpha	I BI BA P SH E C	
Ti—Al 5-Sn 2.5 ELI								
992	MIL-T-9047E, Comp. 3	(A-110) ELI	—	US	MIL-T-9047E	Alpha	I BI BA P SH E C	High pressure cryogenic vessels, below -320 F (-196 C)
993	MIL-T-009047F, Comp. 3	(A-110) ELI	—	US	MIL-T-009047F	Alpha	I BI BA P SH E C	High pressure cryogenic vessels, below -320 F (-196 C)
994	MIL-F-83142A, Comp. 3	(A-110) ELI	—	US	MIL-F-83142A	Alpha	I BI BA P SH E C	High pressure cryogenic vessels, below -320 F (-196 C)
995	MIL-T-81915, Type II, Comp. A	(A-110) ELI	—	US	MIL-T-81915	Alpha	Castings	High pressure cryogenic vessels, below -320 F (-196 C)
996	MIL-T-81556, Type II, Comp. A	(A-110) ELI	—	US	MIL-T-81556	Alpha	I BI BA P SH E C	High pressure cryogenic vessels, below -320 F (-196 C)
997	MIL-R-81588, Type II, Comp. A	(A-110) ELI	—	US	MIL-T-81588	Alpha	I BI BA P SH E C	High pressure cryogenic vessels, below -320 F (-196 C)
Ti—Al 5-Sn 5-Zr 5								
998	MIL-F-83142A, Comp. 4	—	—	US	MIL-T-83142A	Alpha	Forgings	This alloy not being used at present
Ti—Al 6-V 4								
999	MIL-T-46077B	(6-4)	—	US	MIL-T-46077B	Alpha + beta	All forms	Armor plate
1000	MIL-T-9046E, Comp. 6	(6-4)	—	US	MIL-T-9047E	Alpha + beta	All forms	Compressor blades and discs, pressure vessels, rocket cases
1001	MIL-T-009047F, Comp. 6	(6-4)	—	US	MIL-T-009047F	Alpha + beta	All forms	Compressor blades and discs, pressure vessels, rocket cases
1002	MIL-F-83142A, Comp. 6	(6-4)	—	US	MIL-F-83142A	Alpha + beta	All forms	Compressor blades and discs, pressure vessels, rocket cases
1003	MIL-T-81556, Type III, Comp. A	(6-4)	—	US	MIL-T-81556	Alpha + beta	All forms	Compressor blades and discs, pressure vessels, rocket cases
1004	MIL-T-81915, Type III, Comp. A	(6-4)	—	US	MIL-T-81915	Alpha + beta	Castings	Compressor blades and discs, pressure vessels, rocket cases
1005	MIL-R-81588, Type III, Comp. A	(6-4)	—	US	MIL-R-81588	Alpha + beta	All forms	Compressor blades and discs, pressure vessels, rocket cases
Ti—Al 6-V 4 ELI								
1006	MIL-T-9047E, Comp. 7	(6-4) ELI	—	US	MIL-T-9047E	Alpha + beta	All forms	High fracture toughness with special heat treatment
1007	MIL-T-009047F, Comp. 7	(6-4) ELI	—	US	MIL-T-009047F	Alpha + beta	All forms	For high pressure cryogenic vessels, below -320 F (-196 C)
1008	MIL-F-83142A, Comp. 7	(6-4) ELI	—	US	MIL-F-83142A	Alpha + beta	All forms	For high pressure cryogenic vessels, below -320 F (-196 C)
1009	MIL-T-81556, Type III, Comp. B	(6-4) ELI	—	US	MIL-T-81556	Alpha + beta	All forms	For high pressure cryogenic vessels, below -320 F (-196 C)
1010	MIL-R-81588, Type III, Comp. B	(6-4) ELI	—	US	MIL-R-81588	Alpha + beta	All forms	For high pressure cryogenic vessels, below -320 F (-196 C)
Ti—Al 6-V 6-Sn 2								
1011	MIL-T-9047E, Comp. 8	(6-6-2)	—	US	MIL-T-9047E	Alpha + beta	I BI BA P SH E	Rocket engine cases, airframe components, ordnance components
1012	MIL-T-009047F, Comp. 8	(6-6-2)	—	US	MIL-T-009047F	Alpha + beta	I BI BA P SH E	Rocket engine cases, airframe components, ordnance components
1013	MIL-F-83142A, Comp. 8	(6-6-2)	—	US	MIL-F-83142A	Alpha + beta	I BI BA P SH E	Rocket engine cases, airframe components, ordnance components
1014	MIL-T-81556, Type III, Comp. C	(6-6-2)	—	US	MIL-T-81556	Alpha + beta	I BI BA P SH E	Rocket engine cases, airframe components, ordnance components
Ti—Al 6-Mo 0.8-Cb/Nb 2-Ta 1								
1015	MIL-R-81588, Type II, Comp. D	(6-2-1-1)	—	US	MIL-R-81588	Near-alpha	I BI BA P	High tough., mod. strgh., weldblty., and resist. seawater corr., deep diving vessel
Ti—Al 6-Mo 2-Sn 2-Zr 4								
1016	MIL-T-9047E, Comp. 11	(6-6-2)	—	US	MIL-T-9047E	Alpha + beta	I BA BI P SH E	For use where high creep strength is needed, jet engine components
1017	MIL-T-009047F, Comp. 11	(6-6-2)	—	US	MIL-T-009047F	Alpha + beta	I BA BI P SH E	For use where high creep strength is needed, jet engine components
1018	MIL-F-83142A, Comp. 11	(6-6-2)	—	US	MIL-F-83142A	Alpha + beta	Castings	For use where high creep strength is needed, jet engine components
1019	MIL-T-81915, Type III, Comp. B	(6-6-2)	—	US	MIL-T-81915	Alpha + beta	I BA BI P SH E	For use where high creep strength is needed, jet engine components

BA—bars, BI—billet, C—casting, E—extrusion, F—foil, FG-forging, I—ingot, P—plate, RD—rod, SH—sheet, ST—strip, T—tubing, W—wire, con—condensers, H exch—heat exchanger, S T—seamless tubing, W T—welded tubing

*Noncurrent standard or alloy designation

TABLE 1. (Continued)

Index No.	Alloy Designation	CHEMICAL COMPOSITION, WEIGHT PERCENT, ≤ (BALANCE TITANIUM)																
		ALLOYING ELEMENTS												Interstitial Elements				
		Al	V	Mo	Sn	Zr	Mn	Cr	Cu	Si	Pd	Cb/Nb	Other Elements	Fe	Oxygen	Hydrogen Wt.% (ppm)	Nitrogen Wt.% (ppm)	Carbon
Ti—Al 6-Mo 6-Sn 2-Zr 4-Si 0.2																		
1020	MIL-T-9047E, Comp. 14	5.5-6.5	—	5.5-6.5	1.75-2.25	3.5-4.5	—	—	—	—	—	—	Total 0.40	0.15	0.15	0.0125 (125)	0.04 (400)	0.04
1021	MIL-T-009047F, Comp. 14	5.5-6.5	—	5.5-6.5	1.75-2.25	3.5-4.5	—	—	—	—	—	—	Total 0.40	0.15	0.15	0.0125 (125)	0.04 (400)	0.04
Ti—Al 7-Mo 4																		
1022	MIL-T-9047E, Comp. 9	6.5-7.3	—	3.5-4.5	—	—	—	—	—	—	—	—	Total 0.30	0.30	0.20	0.013 (130)	0.05 (500)	0.10
1023	MIL-T-009047F, Comp. 9	6.5-7.3	—	3.5-4.5	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.20	0.013 (130)	0.05 (500)	0.10
1024	MIL-F-83142A, Comp. 9	6.5-7.3	—	3.5-4.5	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.20	0.013 (130)	0.05 (500)	0.10
1025	MIL-T-81556, Type III, Comp. D	6.5-7.5	—	3.5-4.5	—	—	—	—	—	—	—	—	Total 0.40	0.25	0.20	0.015 (150)	0.05 (500)	0.10
Ti—Al 8-V 1-Mo 1																		
1026	MIL-T-9047E, Comp. 5	7.35-8.35	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.12	0.012 (120)	0.05 (500)	0.08
1027	MIL-T-009047F, Comp. 5	7.35-8.35	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.12	0.012 (120)	0.05 (500)	0.08
1028	MIL-F-83142A, Comp. 5	7.35-8.35	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	—	Total 0.40	0.30	0.12	0.012 (120)	0.05 (500)	0.08
1029	MIL-T-81556, Type II, Comp. C	7.3-8.3	0.75-1.25	0.75-1.25			—	—	—	—	—	—	Total 0.40	0.30	0.15	0.015 (150)	0.05 (500)	0.08
1030	MIL-R-81588, Type II, Comp. C	7.3-8.3	0.75-1.25	0.75-1.25	—	—	—	—	—	—	—	0.75-1.25	Total 0.30	0.25	0.12	0.008 (80)	0.03 (300)	0.05
Ti—Mo 11.5-Sn 4.5-Zr 6																		
1031	MIL-T-9047E, Comp. 13	—	—	10.0-13.0	3.75-5.25	4.5-7.5	—	—	—	—	—	—	Total 0.40	0.35	0.18	0.015 (150)	0.05 (500)	0.10
1032	MIL-T-009047F, Comp. 13	—	—	10.0-13.0	3.75-5.25	4.5-7.5	—	—	—	—	—	—	Total 0.40	0.35	0.18	0.015 (150)	0.05 (500)	0.10
1033	MIL-F-83142A, Comp. 13	—	—	10.0-13.0	3.75-5.25	4.5-7.5	—	—	—	—	—	—	Total 0.40	0.35	0.18	0.015 (150)	0.05 (500)	0.10
Ti-Alloys (For Critical Applications)																		
1034	MIL-T-4/035B, ELI	Composition dependent on alloy involved					—	—	—	—	—	—	—		0.10	0.0125 (125)	0.02 (200)	0.10
1035	MIL-T-46035B, LI	Composition dependent on alloy involved					—	—	—	—	—	—	—		0.12	0.0125 (125)	0.03 (300)	0.10
1036	MIL-T-46035B, NI	Composition dependent on alloy involved					—	—	—	—	—	—	—		0.18	0.0125 (125)	0.04 (400)	0.10
1037	MIL-T-46038A, ELI	Composition dependent on alloy involved					—	—	—	—	—	—	—		0.10	0.0125 (125)	0.02 (200)	0.10
1038	MIL-T-46038A, LI	Composition dependent on alloy involved					—	—	—	—	—	—	—		0.12	0.0125 (125)	0.03 (300)	0.10
1039	MIL-T-46038A, NI	Composition dependent on alloy involved					—	—	—	—	—	—	—		0.18	0.0125 (125)	0.04 (400)	0.10

Information on this group of alloys is continued on page below

ELI—extra low interstitials, LI—low impurities, NI—normal impurities

Index No.	Alloy Designation	Common Name/ Alloy	Company Code	Ctry Code	Prime Country Standard	Alloy Type	Forms Available	Applications
Ti—Al 6-Mo 6-Sn 2-Zr 4-Si 0.2								
1020	MIL-T-9047E, Comp. 14	(6-2-4-6)	—	US	MIL-T-9047E	Alpha + beta	I,BI,BA,P,SH	Jet engine components requiring high tensile and intermediate creep strength
1021	MIL-T-009047F, Comp. 14	(6-2-4-6)	—	US	MIL-T-009047F	Alpha + beta	I,BI,BA,P,SH	Jet engine components requiring high tensile and intermediate creep strength
Ti—Al 7-Mo 4								
1022	MIL-T-9047E, Comp. 9	(7-4)	—	US	MIL-T-9047E	Alpha + beta	I,BI,BA,P	Aircraft and jet engine parts
1023	MIL-T-009047F, Comp. 9	(7-4)	—	US	MIL-T-009047F	Alpha + beta	I,BI,BA,P	Aircraft and jet engine parts
1024	MIL-F-83142A, Comp. 9	(7-4)	—	US	MIL-F-83142A	Alpha + beta	I,BI,BA,P	Aircraft and jet engine parts
1025	MIL-T-81556, Type III, Comp. D	(7-4)	—	US	MIL-T-81556	Alpha + beta	I,BI,BA,P	Aircraft and jet engine parts
Ti—Al 8-V 1-Mo 1								
1026	MIL-T-9047E, Comp. 5	(8-1-1)	—	US	MIL-T-9047E	Near-alpha	I,BI,BA,P,SH,E	Aircraft and jet engine parts, high strength and superior creep and toughness
1027	MIL-T-009047F, Comp. 5	(8-1-1)	—	US	MIL-T-009047F	Near-alpha	I,BI,BA,P,SH,E	Aircraft and jet engine parts, high strength and superior creep and toughness
1028	MIL-F-83142A, Comp. 5	(8-1-1)	—	US	MIL-F-83142A	Near-alpha	I,BI,BA,P,SH,E	Aircraft and jet engine parts, high strength and superior creep and toughness
1029	MIL-T-81556, Type II, Comp. C	(8-1-1)	—	US	MIL-T-81556	Near-alpha	I,BI,BA,P,SH,E	Aircraft and jet engine parts, high strength and superior creep and toughness
1030	MIL-R-81588, Type II, Comp. C	(8-1-1)	—	US	MIL-R-81588	Near-alpha	I,BI,BA,P,SH,E	Aircraft and jet engine parts, high strength and superior creep and toughness
Ti—Mo 11.5-Sn 4.5-Zr 6								
1031	MIL-T-9047E, Comp. 13	(Beta III)	—	US	MIL-T-9047E	Beta	BI,BA,W,P,SH,ST,F,T	High strength fasteners, high strength aircraft sheet components
1032	MIL-T-009047F, Comp. 13	(Beta III)	—	US	MIL-T-009047F	Beta	BI,BA,W,P,SH,ST,F,T	High strength fasteners, high strength aircraft sheet components
1033	MIL-F-83142A, Comp. 13	(Beta III)	—	US	MIL-F-83142A	Beta	BI,BA,W,P,SH,ST,F,T	High strength fasteners, high strength aircraft sheet components
Ti-Alloys (For Critical Applications)								
1034	MIL-T-46035B, ELI	—	—	US	MIL-T-46035B	Depends on alloy		High strength critical applications
1035	MIL-T-46035B, LI	—	—	US	MIL-T-46035B	Depends on alloy		High strength critical applications
1036	MIL-T-46035B, NI	—	—	US	MIL-T-46035B	Depends on alloy		High strength critical applications
1037	MIL-T-46038A, ELI	—	—	US	MIL-T-46038	Depends on alloy	BA,BI,Rods	High strength critical applications
1038	MIL-T-46038A, LI	—	—	US	MIL-T-46038	Depends on alloy	BA,BI,Rods	High strength critical applications
1039	MIL-T-46038A, NI	—	—	US	MIL-T-46038	Depends on alloy	BA,BI,Rods	High strength critical applications

BA—bars, BI—billet, C—casting, E—extrusion, F—foil, FG-forging, I—ingot, P—plate, RD—rod, SH—sheet, ST—strip, T—tubing, W—wire, con—condensers, H exch—heat exchanger, S T—seamless tubing, W T—welded tubing

ELI—extra low interstitials, LI—low impurities, NI—normal impurities

TABLE 1A. COMPARISON OF NOMINAL CHEMICAL COMPOSITIONS (CONVENTIONAL FORMAT) PLUS THE COMMON NAMES/ALLOYS WITH NOMINAL CHEMICAL COMPOSITIONS (COMPUTERIZED FORMAT) [ALPHANUMERICAL BY COMPUTERIZED FORMAT]

Nominal Composition Wt % (Conventional Format)	Some Common Names/Alloys	Country Code	Nominal Composition Wt % (Computerized Format)
Unalloyed Ti, 99.0-70 ksi YS	(CP),(Grade 4)	US,UK,FR,GY,UR	Ti-Unalloyed-99.0,CP,-70 ksi YS
Unalloyed Ti, 99.2-55 ksi YS	(CP),(Grade 3)	US,UK,FR,GY	Ti-Unalloyed-99.2,CP,-55 ksi YS
Unalloyed Ti, 99.5-40 ksi YS	(CP),(Grade 2)	US,UK,FR,GY	Ti-Unalloyed-99.5,CP,-40 ksi YS
Unalloyed Ti, 99.6-25 ksi YS	(CP),(Grade 1)	US,UK,FR,GY	Ti-Unalloyed-99.6,CP,-25 ksi YS
Ti-0.8Al-0.8Mn	(OT4-0)	UR	Ti-Al0.8-Mn0.8
Ti-1Al-1.5Mn	(OT4-0)	UR	Ti-Al1-Mn1.5
Ti-1Al-8V-5Fe	(185)	US	Ti-Al1-V8-Fe5
Ti-2Al-1.5Mn	(OT4-1)	UR	Ti-Al2-Mn1.5
Ti-2Al-2Mn	(IMI 315),T-A2M	UK,FR	Ti-Al2-Mn2
Ti-2Al-11V-2Sn-11Zr	(Transage 129)	US	Ti-Al2-V-11-Sn2-Zr-11
Ti-2.5Al-11Sn-5Zr-1Mo-0.2Si	(679),(IMI 679)	US,UK	Ti-Al2.5-Sn-11-Zr5-Mo1-Si0.2
Ti-2.25Al-11Sn-4Mo-0.25Si	(IMI 680),TE11DA	UK,FR	Ti-Al2.25-Sn-11-Mo4-Si0.25
Ti-2.5Al-8Mo-4.5Cr	Development	US	Ti-Al2.5-Mo8-Cr4.5
Ti-2.5Al-10Mo-6Cr	Development	US	Ti-Al2.5-Mo10-Cr6
Ti-2.5Al-5Mo-4.5V	(VT16)	UR	Ti-Al2.5-Mo5-V4.5
Ti-2.5Al-8V-10Mo	Development	US	Ti-Al2.5-V8-Mo10
Ti-3Al-5Cr-3Fe	(IMP 6-2)	UR	Ti-Al3-Cr5-Fe3
Ti-3Al-7Mo-5.5Cr-3Fe	(IVT 1)	UR	Ti-Al3-Mo7-Cr5.5-Fe3
Ti-3Al-7.5Mo-11Cr	(VT15)	UR	Ti-Al3-Mo7.5-Cr-11
Ti-3Al-1V-3Mo	(T-A4D3V)	FR	Ti-Al3-V1-Mo3
Ti-3Al-V2	(IMP 7)	UR	Ti-Al3-V2
Ti-3Al-2.5V	(3-2.5),T-AV2.5	US,FR	Ti-Al3-V2.5
Ti-3Al-7V-3.5Mo-10Cr	(TS6)	UR	Ti-Al3-V7-Mo3.5-Cr-10
Ti-3Al-8V-4Mo-6Cr-4Zr	(Beta C)	US,FR	Ti-Al3-V8-Mo4-Cr6-Zr4
Ti-3Al-8V-8Mo-2Fe	(3-8-8-2)	US	Ti-Al3-V8-Mo8-Fe2
Ti-10V-3Al-2Fe	Development	US	Ti-Al3-V-10-Fe2
Ti-3Al-13V-11Cr	(3-13-11)(B-120)	US,FR,GY	Ti-Al3-V-13-Cr-11
Ti-3Al-1.5(Cr+Fe+Si)	(AT3)	UR	Ti-Al3-(Cr+Fe+Si)1.5
Ti-4Al-4Nb	(IRM1)	UR	Ti-Al4-Cb/Nb4
Ti-4Al-4Nb-0.1Re	(IRM2)	UR	Ti-Al4-Cb/Nb4-Re0.1
Ti-4Al-4.5Fe	(IRM6)	UR	Ti-Al4-Fe4.5
Ti-4Al-1.5Mn	(VT4)	UR	Ti-Al4-Mn1.5
Ti-4Al-4Mn	(IMI 314)(T-A4M)	UK,FR	Ti-Al4-Mn4
Ti-4Al-1V-3Mo	(VT14),(4-1-3)	US,FR,UR	Ti-Al4-V1-Mo3
Ti-4Al-1V-3Mo-0.2Si	(VT14L)	UR	Ti-Al4-V1-Mo3-Si0.2
Ti-4Al-4Mo-2Sn-0.5Si	(IMI 550),T-A4DE	UK,FR,GY	Ti-Al4-Mo4-Sn2-Si0.5
Ti-4Al-4Mo-4Sn-0.5Si	(IMI 551)	UK	Ti-Al4-Mo4-Sn4-Si0.5
Ti-4Al-1V-3Mo	(4-1-3),(VT14)	US,UR	Ti-Al4-V1-Mo3
Ti-4Al-2V	(IMP 9)	UR	Ti-Al4-V2
Ti-4.25Al-1.5Mn	(OT4)	UR	Ti-Al4.25-Mn1.5
Ti-4.5Al-5Mo-1.5Cr	Development	US	Ti-Al4.5-Mo5-Cr1.5
Ti-4.5Al-1.5(Cr+Fe+Si)	(AT4)	UR	Ti-Al4.5-(Cr+Fe+Si)1.5
Ti-5Al	(VT5)	UR	Ti-Al5
Ti-5Al-3Cr-1Fe	(VT3)	UR	Ti-Al5-Cr3-Fe1
Ti-5Al-6Sn-2Zr-1Mo-0.25Si	(5621Si)	US	Ti-Al5-Sn6-Zr2-Mo1-Si0.25
Ti-5Al-2Sn-2Zr-4Mo-4Cr	(Ti-17)	US,UK,FR,UR	Ti-Al5-Sn2-Zr2-Mo4-Cr4
Ti-5Al-0.5Si	(VT5L)	UR	Ti-Al5-Si0.5
Ti-5Al-2.5Sn	(A-110),(MI 317	US,UK,FR,GY,UR	Ti-Al5-Sn2.5

TABLE 1A. (Continued)

Nominal Composition Wt % (Conventional Format)	Some Common Names/Alloys	Country Code	Nominal Composition Wt % (Computerized Format)
Ti-5Al-2.5Sn ELI	(A-110 ELI)	US,GY	Ti-Al5-Sn2.5 ELI
Ti-5Al-5Sn-5Zr	(LT23)	GY	Ti-Al5-Sn5-Zr5
Ti-5Al-5V-5Mo-1.3Cr-1Fe	(VT22)	UR	Ti-Al5-V5-Mo5-Cr1.3-Fe1
Ti-5Al-2Zr	(T-A6ZW)	FR	Ti-Al5-Zr2
Ti-5.5Al-4V	(VT6S)	UR	Ti-Al5.5-V4
Ti-6Al-1.5Mn-(1.5Zr)	(OT4-2)	UR	Ti-Al6-Mn1.5-(Zr1.5)
Ti-6Al-5Zr-0.5Mo-0.2Si	(IMI-685)	UK,FR,GY	Ti-Al6-Zr5-Mo0.5-Si0.2
Ti-6Al-2Cb-1Ta-0.8Mo	(6-2-1-1)	US	Ti-Al6-Cb/Nb2-Ta1-Mo0.8
Ti-6Al-2Sn-1.5Zr-1Mo-0.35Bi-0.1Si	(TI-11)	US	Ti-Al6-Sn2-Zr1.5-Mo1-Bi0.35-Si0.1
Ti-6Al-2Sn-5Zr-1Mo-0.25Si	(T-651A)	FR	Ti-Al6-Sn2-Zr5-Mo1-Si0.25
Ti-6Al-11Zr-1Mo-0.15Si	(VT18)	UR	Ti-Al6-Zr11-Mo1-Si0.15
Ti-6Al-2Mo-2Cr-1Fe-0.2Si	(VT3-1),(VT3-1L)	UR	Ti-Al6-Mo2-Cr2-Fe1-Si0.2
Ti-6Al-2Sn-2Zr-2Mo-2Cr-0.2Si	(6-2-2-2-2)	US,FR	Ti-Al6-Sn2-Zr2-Mo2-Cr2-Si0.2
Ti-6Al-2Sn-4Zr-2Mo	(6-2-4-2)	US,FR,GY	Ti-Al6-Sn2-Zr4-Mo2
Ti-6Al-5Zr-4Mo-1Cu-0.2Si	(IMI-700)	UK	Ti-Al6-Zr5-Mo4-Cu1-Si0.2
Ti-6Al-2Sn-4Zr-6Mo	(6-2-4-6)	US,FR	Ti-Al6-Sn2-Zr4-Mo6
Ti-6Al-0.5V-6Sn-6Zr-0.5Cu-0.5Fe	(T-A6V6E2ZR)	FR	Ti-Al6-V0.5-Sn6-Zr6-Cu0.5-Fe0.5
Ti-6Al-5Zr-0.7Mo-1V-0.3Cr-0.2Si	(VT21L)	UR	Ti-Al6-Zr5-Mo0.7-V1-Cr0.3-Si0.2
Ti-6Al-9V ELI	(6-4 ELI)	US,GY	Ti-Al6-V9 ELI
Ti-6Al-4V	(6-4),(IMI-318)	US,UK,FR,GY,UR	Ti-Al6-V4
Ti-6Al-4V-3Co	(T-A6V4K3)	US,FR	Ti-Al6-V4-Co3
Ti-6Al-4V-0.2Si	(VT6L)	UR	Ti-Al6-V4-Si0.2
Ti-6Al-6V-2Sn	(6-6-2),(3.7174)	US,FR,GY	Ti-Al6-V6-Sn2
Ti-6Al-6V-2Sn-0.5Cu-0.5Fe	(T-A6V6E2)	FR	Ti-Al6-V6-Sn2-Cu0.5-Fe0.5
Ti-6Al-6V-2Sn-6Zr	(Ti-662Zr)	FR	Ti-Al6-V6-Sn2-Zr6
Ti-6Al-5Zr-1W-0.2Si	(IMI-684)	UK,FR	Ti-Al6-Zr5-W1-Si0.2
Ti-6Al-1.5(Cr+Fe+Si)	(AT6)	UR	Ti-Al6-(Cr+Fe+Si)1.5
Ti-6.5Al-3.5Mo-0.25Si	(VT8)	UR	Ti-Al6.5-Mo3.5-Si0.25
Ti-6.5Al-3.5Mo-2Zr(or Sn)-0.25Si	(VT9),(VT9L)	UR	Ti-Al6.5-Mo3.5-Zr(or Sn)2-Si0.25
Ti-6.5Al-2Zr-1Mo-1V	(VT20)	UR	Ti-Al6.5-Zr2-Mo1-V1
Ti-7Al-4Mo	(7-4),(T-A7D)	US,FR,GY,UR	Ti-Al7-Mo4
Ti-7Al-1.5(Fe+Cr+Si+B)	(AT8)	UR	Ti-Al7-(Fe+Cr+Si+B)1.5
Ti-8Al-1Mo-1V	(8-1-1),(T-A8DV)	US,FR,GY	Ti-Al8-Mo1-V1
Ti-45Cb		US	Ti-Cb/Nb45
Ti-2Cu	(T-U2),(3.7124)	US,FR,GY	Ti-Cu2
Ti-2.5Cu	(IMI-230),(T-U2)	UK,FR	Ti-Cu2.5
Ti-3Cr-3Mn-3Fe	(IMP-6-1)	UR	Ti-Cr3-Mn3-Fe3
Ti-8Mn	(8Mn)	US	Ti-Mn8
Ti-0.3Mo-0.8Ni			Ti-Mo0.3-Ni0.8
Ti-2.5Zr-1.5Mo	(AT2)	UR	Ti-Zr2.5-Mo1.5
Ti-4.5Sn-6Zr-11.5Mo	(Beta III)	US,FR	Ti-Sn4.5-Zr6-Mo11.5
Ti-15Mo	(IMI-205)	UK	Ti-Mo15
Ti-32Mo	(4201)	UR	Ti-Mo32
Ti-32Mo-1.5Nb	(4203)	UR	Ti-Mo32-Cb/Nb1.5
Ti-1 to 2Ni		US	Ti-Ni1 to 2
Ti-0.15 to 0.25Pd	(Pd Alloy)	US	Ti-Pd0.15 to 0.25
Ti-0.15 to 0.30Pd	(4200)	UR	Ti-Pd0.15 to 0.30
Ti-5Ta	(4204)	UR	Ti-Ta5
Ti-0.15 to 0.20Pd	(Pd Alloy)	US,UK,FR,GY,UR	Ti-Pd0.15 to 0.20

TABLE 1B. PHYSICAL PROPERTIES OF US AND NON-US TITANIUM ALLOY SYSTEMS BY THEIR NOMINAL CHEMICAL COMPOSITION (Alphanumerical by Computerized Format)

Nominal Composition Wt % (Computerized Format)	Common Name/Alloy	Alloy Type	Typical Physical Properties									
			Density		Thermal Conductivity		Thermal Expansion Coefficient, $X10^{-6}$		Specific Heat		Beta Transus	
						Btu/hr	m/m/C	in/in/F				
			kg/m^3	lb/in^3	watt/m K	ft^2 F ft	0-100 C	32-212 F	J/kg K	Btu/lb/F	C	F
Ti-unalloyed-powder	(powder)	α										
Ti-unalloyed-sponge	(sponge)	α										
Ti-unalloyed-100	(high purity)	α										
Ti-unalloyed-99.0,CP,-70 ksi YS	(CP)(grade 4)	α	4,540	0.164	16.96	9.8	8.6	4.8	540	0.129	954	1,750
Ti-unalloyed-99.2,CP,-55 ksi YS	(CP)(grade 3)	α										
Ti-unalloyed-99.5,CP,-40 ksi YS	(CP)(grade 2)	α	4,520	0.163	16.44	9.5	8.6	4.8	525	0.125	921	1,680
Ti-unalloyed-99.6,CP,-25 ksi YS	(CP)(grade 1)	α	4,520	0.163	15.77	9.0	8.6	4.8	520	0.124	888	1,630
Ti-unalloyed-99.9,CP	(high purity)	α										
Ti-Al1-Mn1	(USSR)(OT4-0)	near-α										
Ti-Al1-V8-Fe5	(185)	near-β	4,650	0.168							830	1,525
Ti-Al1.5-Mn1.5												
Ti-Al2-Mn1.5	(USSR)(OT4-1)	α+β										
Ti-Al2-Mn2	(BR)IMI-315	α+β										
Ti-Al2-Mo4-Sn-11-Si0.3		α+β										
Ti-Al2-V-11-Sn2-Zr-11	(transage 129)	β	4,820	0.174								
Ti-Al2.25-Mo1-Sn-11-Zr5-Si0.2	(BR)IMI-679	near-α	4,820	0.174	6.58	3.8	9.0	5.0	500	0.120	943	1,730
Ti-Al2.25-Mo4-Sn-11-Si0.3	(BR)IMI-680		4,840	0.175	7.06	4.1	9.2(*A)	5.1(*A)				
Ti-Al2.2-Sn-11-Zr5-Si0.4		near-α										
Ti-Al2.5-Mo4-Sn2-Si0.5												
Ti-Al2.5-V4.5-Mo5	(USSR)(VT16)	near-β										
Ti-Al2.5-V5-Mo5-Cr1.3-Fe1	(USSR)(VT22)	near-β										
Ti-Al2.5-V-16												
Ti-Al2.9-V-15												
Ti-Al3-Cr5		α+β										
Ti-Al3-Mn1.5	(USSR)(OT4)	α+β										
Ti-Al3-Mo0.5-Sn6-Zr5-Si0.4			4,680	0.168	7.49	4.3	10.3(*B)	5.7(*B)				
Ti-Al3-Mo2-Sn6-Zr5-Si0.4			4,650	0.168	7.06	4.1	10.4(*B)	5.8(*B)				
Ti-Al3-Mo7-Cr5.5-Fe3	(USSR)(IVT-1)	β										
Ti-Al3-Mo7.5-Cr-11	(USSR)(VT15)	β										
Ti-Al3-Sn6-Zr5-Si0.5			4,760	0.172	7.06	4.1	10.4(*B)	5.8(*B)				
Ti-Al3-V2.5	(3-2.5)	α+β	4,490	0.162	7.27	4.2					935	1,715
Ti-Al3-V7-Mo3.5-Cr-10	(USSR)(TS6)	β										
Ti-Al3-V8-Mo4-Zr4-Cr6	(beta C)	β	4,820	0.174			9.7	5.4			793	1,460
Ti-Al3-V8-Mo8-Fe2	(8-8-2-3)	β	4,850	0.175			7.7	4.3				
Ti-Al3-V-13-Cr-11	(13-11-3)	β	4,820	0.175	11.24	6.5	9.4	5.2	500	0.120	719	1,325
Ti-Al3-(Cr+Fe+Si)1.5	(USSR)(AT3)	α+β										

TABLE 1B. (Continued)

Nominal Composition Wt % (Computerized Format)	Common Name/Alloy	Alloy Type	Typical Physical Properties: Density kg/m^3	Density lb/in^3	Thermal Conductivity watt/m K	Thermal Conductivity Btu/hr ft^2 F ft	Thermal Expansion Coefficient, X10^{-6} m/m/C 0-100 C	Thermal Expansion Coefficient, X10^{-6} in/in/F 32-212 F	Specific Heat J/kg K	Specific Heat Btu/lb/F	Beta Transus C	Beta Transus F
Ti-Al4-Cb/Nb4	(USSR)(IRMI)											
Ti-Al4-Cb/Nb4-Re0.1	(USSR)IRM2	α+β										
Ti-Al4-Mn1.5	(USSR)(VT4)	α+β										
Ti-Al4-Mn4	(BR)IMI-314	α+β										
Ti-Al4-Mo4												
Ti-Al4-Mo4-Sn2-Si0.5	(BR)IMI-550	α+β	4,600	0.166	7.53	4.35	8.8	4.9			975	1,787
Ti-Al4-Mo4-Sn4-Si0.5	(BR)IMI-551	α+β										
Ti-Al4-V1-Mo3	(4-3-1)(VT14)	α+β	4,520	0.163	6.58	3.8	9.0	5.0	545	0.130	957	1,755
Ti-Al4-V1-Mo3-Si0.2	(USSR)(VT14L)	α+β										
Ti-Al4.5-Sn2.5												
Ti-Al4.5-V3.5	(USSR)(VT6S)	α+β										
Ti-Al4.5-(Cr+Fe+Si)1.5	(USSR)(AT4)	α+β										
Ti-Al5	(USSR)(VT5)	α										
Ti-Al5-Cr2.75-Fe1.25		α+β										
Ti-Al5-Mo1-Sn6-Zr2-Si0.2	(5621S)	near-α	4,520	0.163							1,010	1,850
Ti-Al5-Mo1.2-Cr1.4-Fe1.4		α+β										
Ti-Al5-Mo4-Sn2-Zr2-Cr4	(TI-17)	α+β	4,650	0.168			5.2	5.1			871	1,600
Ti-Al5-Si0.5	(USSR)(VT5L)	α dispers.										
Ti-Al5-Sn2-Zr5		α										
Ti-Al5-Sn2.5 ELI	(A-110 ELI)	α	4,490	0.161	7.79	4.5	9.4	5.2	525	0.125	1,043	1,910
Ti-Al5-Sn2.5	(A-110)VT5-1	α	4,490	0.161	7.79	4.5	9.4	5.2	525	0.125	1,038	1,900
Ti-Al5-Sn5-Zr5		α	4,690	0.166	6.28	3.6	9.0	6.0			990	1,814
Ti-Al5-Zr5-Si0.3-W1												
Ti-Al5.4-Mo1.25-Cr1.4-Fe1.3												
Ti-Al6-Mn1.5(w/wo Zr1.5)	(USSR)(OT4-2)											
Ti-Al6-Mo0.5-Si0.5		α+β										
Ti-Al6-Mo0.5-Zr5-Si0.2	(BR)IMI-685	α+β	4,450	0.161			10.0	5.6			1,030	1,886
Ti-Al6-Mo0.8-Cb/Nb2-Ta1	(6-2-1-1)	near α	4,490	0.162							1,010	1,850
Ti-Al6-Mo1-Cr1.5-Fe1.5												
Ti-Al6-Mo1-Sn2-Zr1.5-Si0.1-Bi0.35	(TI-11)	near-α	4,490	0.162								
Ti-Al6-Mo1-Zr-11-Si0.15	(USSR)(VT18)	near-α										
Ti-Al6-Mo2-Cr2-Fe1-Si0.2	(USSR)(VT3-1)	α+β										
Ti-Al6-Mo2-Sn2-Zr2-Cr2-Si0.2	(6-2-2-2-2)	α+β	4,490	0.162			9.2	5.1			969	1,775
Ti-Al6-Mo2-Sn2-Zr4	(6-2-4-2)	α+β	4,540	0.164	6.06	3.5	9.9	5.5	525	0.125	990	1,815
Ti-Al6-Mo4-Zr5-Cu1-Si0.2	(BR)IMI-700	α+β	4,540	0.164	6.06		10.1(°C)	5.6(°C)				
Ti-Al6-Mo6-Sn2-Zr4	(6-2-4-6)	α+β	4,650	0.169	7.09	4.1	9.4	5.2			932	1,710

TABLE 1B. (Continued)

Nominal Composition Wt % (Computerized Format)	Common Name/Alloy	Alloy Type	Typical Physical Properties									
			Density		Thermal Conductivity		Thermal Expansion Coefficient, X10^{-6}		Specific Heat		Beta Transus	
						Btu/hr	m/m/C	in/in/F				
			kg/m^3	lb/in^3	watt/m K	ft^2 F ft	0-100 C	32-212 F	J/kg K	Btu/lb/F	C	F
Ti-Al6-V0.5-Sn6-Zr6-Fe0.5-Cu0.5	(FR)T-A6V6E2Zr											
Ti-Al6-V1-Mo0.7-Zr5-Cr0.3-Si0.2	(USSR)(VT21L)	near-α										
Ti-Al6-V4 ELI	(6-4)ELI	α+β	4,430	0.161	7.27	4.2	9.5	5.3	565	0.135	993	1,820
Ti-Al6-V4	(6-4)(VT6)	α+β	4,430	0.161	7.27	4.2	9.5	6.3	565	0.135	993	1,820
Ti-Al6-V4-Co3	(FR)T-A6V4K3											
Ti-Al6-V4-Si0.2	(USSR)(VT6L)	α+β										
Ti-Al6-V6-Sn2	(6-6-2)	α+β	4,540	0.164	7.27	4.2	7.6	4.2	670	0.160	946	1,735
Ti-Al6-V6-Sn2-Cu+Fe1												
Ti-Al6-V6-Xn2-Zr6	(FR)Ti-662Zr	α+β										
Ti-Al6-Zr1.5-(Mn1.5)	(USSR)(OT4-2)	α+β										
Ti-Al6-Zr5-Si0.3-W1	(BR)IMI-684	α+β	4,480	0.162			9.9(°D)	5.5(°D)				
Ti-Al6-(Cr+Fe+Si)1.5	(USSR)(AT6)	α+β										
Ti-Al6.5-Mo3.5-Sn(or Zr)2-Si0.25	(USSR)(VT9L)	α+β										
Ti-Al6.5-Mo3.5-Sn(or Zr)2-Si0.25	(USSR)(VT9)	α+β										
Ti-Al6.5-Mo3.5-Si0.25	(USSR)(VT8)	α+β										
Ti-Al6.5-V1-Mo1-Zr2	(USSR)(VT20)	near-α										
Ti-Al7-Cb/Nb2-Ta1		α										
Ti-Al7-Mo4	(7-4)	α+β	4,490	0.162	6.58	3.8	9.0	5.0	525	0.125	1,004	1,840
Ti-Al7-Zr-12		α										
Ti-Al8-Cb/Nb2-Ta1												
Ti-Al8-V1-Mo1	(8-1-1)	near-α	4,380	0.159	6.58	3.8	8.5	4.7	500	0.120	1,038	1,900
Ti-Al8-V1-Mo1-C0.5												
Ti-Al8-Zr8-Cb/Nb1												
Ti-Al9-Sn2.5												
Ti-Cb/Nb45												
Ti-Cr3-Fe1.5												
Ti-Cu2		α dispers.	4,560	0.165	12.97	7.5	9.0	5.0			880	1,616
Ti-Cu2.5	(BR)IMI-230	α dispers.										
Ti-Mn8	(8Mn)	α+β	4,710	0.171	11.07	6.4	10.8	6.0	495	0.118	801	1,475
Ti-Mo1.5-Zr2.5	(USSR)(AT2)	α+β										
Ti-Mo2-Cr2-Fe2		α+β										
Ti-Mo-11.5		β										
Ti-Mo-11.5-Sn4.5-Zr6	(beta III)	β	5,070	0.183			7.6		746		746	1,375
Ti-Mo-15	(BR)IMI-205	β										
Ti-Mo-32	(USSR)(4201)	β										
Ti-Mo-32-Cb/Nb1.5	(USSR)(4203)	β										

TABLE 1B. (Continued)

Nominal Composition Wt % Computerized Format	Common Name/Alloy	Alloy Type	Typical Physical Properties: Density kg/m^3	Density lb/in^3	Thermal Conductivity watt/m K	Thermal Conductivity Btu/hr ft^2 F ft	Thermal Expansion Coefficient, X10^{-6} m/m/C 0-100 C	Thermal Expansion Coefficient, X10^{-6} in/in/F 32-212 F	Specific Heat j/kg K	Specific Heat Btu/lb/F	Beta Transus C	Beta Transus F
Ti-Ni1--2		α dispers.										
Ti-Ta5	(USSR)(4204)	α										
Ti-Pd0.15--0.20	(Pd alloy)4200	α	4,420	0.163	16.44	9.5	8.6	4.8	5.25	0.125	913	1,675

(*A) 70 to 570 F (21 to 299 C).
(*B) 70 to 1290 F (21 to 699 C).
(*C) 70 to 932 F (21 to 500 C).
(*D) 70 to 1110 F (21 to 599 C).

TABLE 1C. MECHANICAL PROPERTIES OF US AND NON-US TITANIUM ALLOY SYSTEMS BY THEIR NOMINAL CHEMICAL COMPOSITION (Alphanumerical by Computerized Format)

Nominal Composition Wt % (Computerized Format)	Common Name/Alloy	Alloy Type	Product Form	Heat Treated Condition(*A)	Typical Mechanical Properties: Ultimate Tensile Strength MN/m^2	Ultimate Tensile Strength KSI	Tensile Yield Strength MN/m^2	Tensile Yield Strength KSI	Elongation Percent	Modulus of Elasticity MN/m^2	Modulus of Elasticity PSI x 10^6
Ti-unalloyed-powder	(powder)										
Ti-unalloyed-sponge	(sponge)										
Ti-unalloyed-sponge, compressed		α									
Ti-unalloyed-100	(high purity)	α									
Ti-unalloyed-99.0,CP,-70 ksi YS	(CP)(grade 4)	α	Sheet	Ann	550	80	480	70	15	104,000	15.1
Ti-unalloyed-99.2,CP,-55 ksi YS	(CP)(grade 3)	α									
Ti-unalloyed-99.5,CP,-40 ksi YS	(CP)(grade 2)	α	Sheet	Ann	345	50	275	40	22	103,000	14.9
Ti-unalloyed-99.6,CP,-25 ksi YS	(CP)(grade 1)	α	Sheet	Ann	240	35	170	25	25	103,000	14.9
Ti-unalloyed-99.9,CP	(high purity)	α									
Ti-Al1-Mn1	(USSR)(OT4-0)	near-α									
Ti-Al1-V8-Fe5	(185)	near-β	Bar	Sta	1,450	210	1,380	200	6		
Ti-Al1.5-Mn1.5											
Ti-Al2-Mn1.5	(USSR)(OT4-1)	$\alpha+\beta$	Sheet	Ann	655	95	560	81	20		
Ti-Al2-Mn2	(BR)IMI-315	$\alpha+\beta$									
Ti-Al2-Mo4-Sn 11-Si0.3		$\alpha+\beta$	Bar	Sta	1,295	188	1,045	152	10		
Ti-Al2-V 11-Sn2-Zr 11	(transage 129)	β	Plate	Ann	1,380	200	1,275	185	6	96,500	4.0
Ti-Al2.25-Mo1-Sn 11-Zr5-Si0.2	(BR)IMI-679	near-α	Sheet	Ann	1,000	145	895	130	10	100,000	14.5
Ti-Al2.25-Mo4-Sn 11-Si0.3	(BR)IMI-680										
Ti-Al2.2-Sn 11-Si0.4		near-α									
Ti-Al2.5-V 16											
Ti-Al2.5-Mo4-Sn2-Si0.5											
Ti-Al2.5-V4.5-Mo5	(USSR)(VT16)	near-β									
Ti-Al2.5-V5-Mo5-Cr1.3-Fe1	(USSR)(VT22)	near-β									
Ti-Al2.9-V 15											
Ti-Al3-Cr5		$\alpha+\beta$									
Ti-Al3-Mn1.5	(USSR)(OT4)	$\alpha+\beta$	Sheet	Ann	760	110	585	85	28		
Ti-Al3-Mo0.5-Sn6-Zr5-Si0.4											
Ti-Al3-Mo2-Sn6-Zr5-Si0.4			Bar	Ann	1,075	156	930	135	14		
Ti-Al3-Mo7-Cr5.5-Fe3	(USSR)(IVT-1)										
Ti-Al3-Mo7.5-Cr 11	(USSR)(VT15)	β	Sheet	Sta	1,475	214			4		
Ti-Al3-Sn6-Zr5-Si0.5		α	Bar	Ann	895	130	805	117	16	115,000	16.7
Ti-Al3-V2.5	(3-2.5)	$\alpha+\beta$	Sheet	Ann	620	90	515	75	20	103,000	15.0
Ti-Al3-V7-Mo3.5-Cr 10	(USSR)(TS6)	β									
Ti-Al3-V8-Mo4-Zr4-Cr6	(Beta C)	β	Bar	Sta	1,240	180	1,170	170	6	101,000	14.7
Ti-Al3-V8-Mo8-Fe2	(8-8-2-3)	β	Sheet	Sta	1,310	190	1,240	180	8	114,000	16.5
Ti-Al3-V 13-Cr 11	(13-11-3)	β	Sheet	Ann	860	125	825	120	15	100,000	14.5

TABLE 1C. (Continued)

Nominal Composition Wt % (Computerized Format)	Common Name/Alloy	Alloy Type	Product Form	Heat Treated Condition(*A)	Typical Mechanical Properties						
					Ultimate Tensile Strength		Tensile Yield Strength		Elongation Percent	Modulus of Elasticity	
					MN/m^2	KSI	MN/m^2	KSI		MN/m^2	PSI x 10^6
Ti-Al3-(Cr+Fe+Si)1.5	(USSR)(AT3)		Sheet	Ann	790	115	770	112	18		
Ti-Al4-Cb/Nb4	(USSR)IRM1	α+β	Sheet	Ann	890	129	750	109	17		
Ti-Al4-Cb/Nb4-Re0.1	(USSR)IRM2	α+β	Sheet	Ann	925	134	870	126	12		
Ti-Al4-Mn1.5	(USSR)(VT4)	α+β									
Ti-Al4-Mn4	(BR)IMI-314	α+β		None	835	121			19		
Ti-Al4-Mo4											
Ti-Al4-Mo4-Sn2-Si0.5	(BR)IMI-550	α+β	Bar	Ann	1,235	179	1,125	163	15		
Ti-Al4-Mo4-Sn4-Si0.5	(BR)IMI-551	α+β	Bar	Ann	1,050	152	920	133	9	117,000	17.0
Ti-Al4-V1-Mo3	(4-3-1)(VT14)	α+β	Sheet	Ann	860	125	790	115	10	110,000	16.1
Ti-Al4-V1-Mo3-Si0.2	(USSR)(VT14L)	α+β									
Ti-Al4.5-Sn2.5											
Ti-Al4.5-V3.5	(USSR)(VT6S)	α+β									
Ti-Al4.5-(Cr+Fe+Si)1.5	(USSR)(AT4)		Sheet	Ann	955	137	905	131	15		
Ti-Al5	(USSR)(VT5)	α		None	855	124			18		
Ti-CrFe4		α+β									
Ti-Al5-Cr2.75-Fe1.25		α+β									
Ti-Al5-Mo1-Sn6-Zr2-Si0.2	(5621S)	near-α	Bar	Ann	965	140	895	130	10	114,000	16.5
Ti-Al5-Mo1.2-Cr1.4-Fe1.4		α+β									
Ti-Al5-Mo4-Sn2-Zr2-Cr4	(Ti-17)	α+β	Bar	Sta	1,170	170	1,105	160	10	110,000	16.0
Ti-Al5-Si0.5	(USSR)(VT5L)	α dispers.									
Ti-Al5-Sn2-Zr5		α									
Ti-Al5-Sn2.5 ELI	(A-110 ELI)	α	Sheet	Ann	725	105	655	95	10	110,000	16.0
Ti-Al5-Sn2.5	(A-110)VT5-1	α	Sheet	Ann	825	120	795	115	10	110,000	16.0
Ti-Al5-Sn5-Zr5		α	Bar	Ann	820	119	760	110	10	110,000	16.0
Ti-Al5-Zr5-Si0.3-W1											
Ti-Al5.4-Mo1.25-Cr1.4-Fe1.3											
Ti-Al6-Mn1.5(w/wo Zr1.5)	(USSR)(OT4-2)										
Ti-Al6-Mo0.5-Si0.5		α+β									
Ti-Al6-Mo0.5-Zr5-Si0.2	(BR)IMI-685	α+β	Bar	Aged	990	144	850	123	6	121,000	17.6
Ti-Al6-Mo0.8-Cb/Nb2-Ta1	(6-2-1-1)	near-α	Plate	Ann	770	112	670	97	10	110,000	16.0
Ti-Al6-Mo1-Cr1.5-Fe1.5											
Ti-Al6-Mo1-Sn2-Zr1.5-Si0.1-Bi0.35	(Ti-11)	near-α	Bar	β Ann	1,000	145	940	136	15	110,000	16.0
Ti-Al6-Mo1-Zr 11-Si0.15	(USSR)(VT18)	near-α									
Ti-Al6-Mo2-Cr2-Fe1-Si0.2	(USSR)(VT3-1)	α+β	Forging	Ann	1,050	152	950	138	13		
Ti-Al6-Mo2-Sn2-Zr2-Cr2-Si0.2	(6-2-2-2-2)	α+β	Plate	Sta	1,205	175	1,070	155	12	120,600	17.5
Ti-Al6-Mo2-Sn2-Zr4	(6-2-4-2)	α+β	Bar	Ann	895	130	825	120	10	114,000	16.5

TABLE 1C. (Continued)

Nominal Composition Wt % (Computerized Format)	Common Name/Alloy	Alloy Type	Product Form	Heat Treated Condition(°A)	Typical Mechanical Properties: Ultimate Tensile Strength MN/m²	Ultimate Tensile Strength KSI	Tensile Yield Strength MN/m²	Tensile Yield Strength KSI	Elongation Percent	Modulus of Elasticity MN/m²	Modulus of Elasticity PSI x 10^6
Ti-Al6-Mo4-Zr5-Cu1-Si0.2	(BR)IMI-700	α+β	Forging	Sta	1,450	210	1,270	184	9		
Ti-Al6-Mo6-Sn2-Zr4	(6-2-4-6)	α+β	Bar	Sta	1,275	185	1,170	170	10	114,000	16.5
Ti-Al6-V0.5-Sn6-Zr6-Fe0.5-Cu0.5	(FR)T-A6V6E2Zr										
Ti-Al6-Mo0.7-Zr5-Cr0.3-Si0.2	(USSR)(VT21L)	near-α									
Ti-Al6-V4 ELI	(6-4) ELI	α+β	Sheet	Ann	895	130	825	120	15	110,000	16.0
Ti-Al6-V4	(6-4)	α+β	Sheet	Ann	895	130	825	120	12	114,000	16.5
Ti-Al6-V4-Co3	(FR)T-A6V4K3										
Ti-Al6-V4-Si0.2	(USSR)(VT6L)	α+β									
Ti-Al6-V6-Sn2	(6-6-2)	α+β	Sheet	Ann	1,035	150	965	140	10	114,000	16.5
Ti-Al6-V6-Sn2-Cu+Fe1	(FR)T-A6V6E										
Ti-Al6-V6-Sn2-Zr6	(FR)Ti-662Zr	α+β									
Ti-Al6-Zr1.5-Mn1.5	(USSR)(OT4-2)										
Ti-Al6-Zr5-Si0.3-W1	(BR)IMI-684	α+β	Bar	Sta	1,035	150	910	182	17		
Ti-Al6-(Cr+Fe+Si)1.5	(USSR)(AT6)		Sheet	Ann	1,110	161	1,080	157	13		
Ti-Al6.5-Mo3.5-Zr(or Sn)2-Si0.25	(USSR)(VT9)	α+β									
Ti-Al6.5-Mo3.5-Zr(or Sn)2-Si0.25	(USSR)(VT9L)	α+β									
Ti-Al6.5-Mo3.5-Si0.25	(USSR)(VT8)	α+β	Bar	Ann	1,110	160	1,005	146	12		
Ti-Al6.5-V1-Mo1-Zr2	(USSR)(VT20)	near-α									
Ti-Al7-Cb/Nb2-Ta1		α									
Ti-Al7-Mo4	(7-4)	α+β	Bar	Ann	980	142	910	132	12	112,000	16.2
Ti-Al7-Zr 12		α									
Ti-Al8-Cb/Nb2-Ta1											
Ti-Al8-V1-Mo1	(8-1-1)	near-α	Bar	Ann	895	130	825	120	10	124,000	18.0
Ti-Al8-V1-Mo1-C0.5											
Ti-Al8-Zr8-Cb/Nb1											
Ti-Al9-Sn2.5											
Ti-Cb/Nb 45											
Ti-Cr3-Fe1.5											
Ti-Cu2		α dispers.	Sheet	Ann	540	78	460	67	15	113,000	16.4
Ti-Cu2.5	(BR)IMI-230	α dispers.									
Ti-Mn8	(8Mn)	α+β	Sheet	Ann	945	137	960	125	15	110,000	16.0
Ti-Mo1.5-Zr2.5	(USSR)(AT2)	α+β									
Ti-Mo2-Cr2-Fe2		α+β									
Ti-Mo 11.5		β									
Ti-Mo 11.5-Sn4.5-Zr6	(Beta III)	β	Bar	Ann	895	130	825	120	20	83,000	12.0

TABLE 1C. (Continued)

Nominal Composition Wt % (Computerized Format)	Common Name/Alloy	Alloy Type	Product Form	Heat Treated Condition(*A)	Typical Mechanical Properties: Ultimate Tensile Strength MN/m^2	Ultimate Tensile Strength KSI	Tensile Yield Strength MN/m^2	Tensile Yield Strength KSI	Elongation Percent	Modulus of Elasticity MN/m^2	Modulus of Elasticity PSI x 10^6
Ti-Mo 15	(BR)IMI-205	β									
Ti-Mo 32	(USSR)(4201)	β									
Ti-Mo 32-Cb/Nb1.5	(USSR)(4203)	β									
Ti-Ni1--2		α dispers.									
Ti-Ta5	(USSR)(4204)	α									
Ti-Pd0.15--0.20	(Pd alloy)4200	α	Sheet	Ann	345	50	275	40	22	103,000	14.9

(*A) Ann=annealed, β Ann=beta annealed, Sta=solution treated and aged.

TABLE 1D. CORRELATION OF TITANIUM AND TITANIUM ALLOY NOMINAL CHEMICAL COMPOSITIONS WITH COMMON NAMES, ALLOY TYPES, UNIFIED NUMBER SYSTEM (UNS), AND COUNTRY STANDARDS (Alphanumerical by Computerized Format)

Nominal Composition Wt % (Computerized Format)	Common Name/Alloy	Alloy Type	UNS Equivalent	Aerospace Materials Specifications (US) (AMS Prefix)	ASTM B348-74	ASTM (US) Other ASTM Specifications	MIL-T-9047E	Military (US) Other Military Specifications
Ti unalloyed powder	(powder)	α						MIL T-1340SC
Ti unalloyed sponge	(sponge)	α				B299(ML-120), (SL 120) (GP 1), (MD 120)		MIL T 12118A*
Ti unalloyed 100	(high purity)	α						
Ti unalloyed 99.0 CP, 70 ksi YS	(CP)(Grade 4)	α	Appendix 4	4901, 4921	Grade 4	B265(Gr. 4), F67(Gr. 4), B367(Gr. 4), B381(Gr. F 4)	Composition 1	MIL F 83142 (Comp. 1) MIL T 9046, I (Comp. B) MIL T 009047 (Comp. 1) MIL T 81556, I (Comp. D)
Ti unalloyed 99.2 CP, 55 ksi YS	(CP)(Grade 3)	α	Appendix 4	4900	Grade 3	B265(Gr. 3), B367(Gr. C-3), B381(Gr. F 3), B337(Gr. 3), B338(Gr. 3), B363(Gr. WPT3), B381(Gr. F 3), F67(Gr. 3)	Composition 1	MIL T-83142 (Comp. 1) MIL T 9046, I (Comp. C) MIL T 009047 (Comp. 1)
Ti unalloyed 99.5 CP, 40 ksi YS	(CP)(Grade 2)	α	Appendix 4	4902, 4941, 4942, 4951, 4953	Grade 2	B265(Gr. 2), B367(Gr. C-2), B381(Gr. F 2), B337(Gr. 2), B338(Gr. 2)	Composition 1	MIL T 83142 (Comp. 1) MIL T-9046, I (Comp. A) MIL T-009047 (Comp. 1) MIL T 81556, I (Comp. B)
Ti unalloyed 99.6 CP, 25 ksi YS	(CP)(Grade 1)	α	Appendix 4		Grade 1	B381(Gr. F 1), B338(Gr. 1), B337(Gr. 1), B265(Gr. 1), B367(Gr. C 1)		
Ti unalloyed 99.9 CP	(high purity)	α						
Ti Al 1 Mn 1	(UAAR)(OT4 0)	near α						
Ti Al 1.5 Mn 1.5								
Ti Al 2 Mn 1.5	(USSR)(OT4 1)	α+β						
Ti Al 2 Mn 2	(BR)(IMI 315)	α+β						
Ti Al 2 Mn 4 Sn 1 1 Si 0.3		α+β						
Ti Al 2 V 11 Sn 2 Zr 1 1	(Transage 129)	β						
Ti Al 2.25 Mo 1 Si 1 1 Zr 5 Si 0.2	(BR)(IMI 679)	near α		4974			Composition 1	MIL F 83142 (Comp. 10) MIL T 009047 (Comp. 10)

TABLE 1D. (Continued)

Nominal Composition Wt % (Computerized Format)	British Standards, BS (Aerospace Series), and DTD (UK)	French Standards (FR), A.I.C.M., AFNOR, and NF	German Country Standards (GY and GE), DIN	Soviet Country Standards (UR), GOST	Other Standards Japanese, Czechoslovakian, American Welding Society (AWS), ISO, Spanish	Applications
Ti unalloyed powder				TU 48 05 30, VTU 9 3 67, VTU 10 68, VTU 3 80	ISO T119/SC5	Pyrotechnic applications, powder metallurgy products
Ti unalloyed sponge				GOST 17746(TG 90, 100, 110, 120, 130, 150 TGV), GOST 5303 (TG 100, 105)	JIS H2151(TS 105, 120, 140, 160)	Melting stock
Ti unalloyed 100						For the chemical industries commercially pure Ti
Ti unalloyed 99.0 CP, 70 ksi YS	BS 2TA6,2TA7,2TA8,2TA9 (IMI 155, 160), BS 3003, part 9, Gr. 5 (IMI 155, 160)	AIR 9182 (T 60), AECMA T-P 04 (IMI 155, 160), PUG (UT60)	DIN 3 7005, DIN 17850, 17862, VDTU 230(Gr. 4), KRUPP (RT20), LW 3 7064, CONTIMET (55), FUCHS (T 6)	(VT1 2)	ISO fitesilent Ti, SP L 7004	Chemical, marine, airframe, and aircraft engine parts, surgical implants, high speed fans, gas compressors, good formability and corrosion resistance, high strength
Ti unalloyed 99.2 CP, 55 ksi YS	BS 3003 part 9, Gr. 3 (IMI 130), DTD 5003, 5023B, 5273, 5283	AIR 9182 (T 50), AECMA T-P 05	DIN 3 7055, DIN 17862, 17850, VDTU 230(Gr. 3), KRUPP (RT18), CONTIMET (35D)	(VT1 1)	SP L 7003, JIS 4631(TTH 49), 4600(TP 49), 4630(TP 49), 4970(TP TTH 49)	Airframes, aircraft engines, marine and chemical parts, heat exchangers, condenser and evaporator tubing, high formability, aircraft engine parts which require formability, strength, weldability, and corrosion resistance
Ti unalloyed 99.5 CP, 40 ksi YS	BS 2TA3,2TA4,2TA5 (IMI 125)	AECMA T-P 02, PUG (UT40), AIR 9182 (T 40)	VDTU 230(Gr. 1), KRUPP (RT15), EMO 140, CONTIMET (35), DIN 3 7035, FUCHS (T 3)	AMTU 457 451 (VT1 0), OST1 90000,90051,90027,90145 (VT1 0), TU1 5 111 83 21 92 6 (VT1 0)	CSN 42 1490,1492,7790,7391, 7590,7591, 6655, ON 42 4256, SP L 7002, JIS H4600,H4630, H4650,H4631,H4670, SP L 7001	Airframe applications, skins, chemical industry applications where maximum formability required with moderate strength, chemical, desalination, and marine parts, plate type heat exchangers, cold spun or pressed parts, platinized anodes, high formability
Ti unalloyed 99.6 CP, 25 ksi YS	BS 3003, part 9, Gr. 2 (IMI 115), DTD 5038B, 5013B, (IMI 115)	AIR 9182 (T 35), (IMI 115), PUG (UT35)	VDTU (Gr. 1), LW 3 7034 (IMI 115), DIN 3 7025, DIN 17850, 17862, 17864, KRUPP (RT12), CONTIMET (30), FUCHS (T 2)	OST1 90000,90015,90045,90027, 90145 (VT1 00), TU1 55 111 83 21 92 6, AMTU 451 475 (VT1 00)	ISO ductile Ti (draft)(IMI 115)	
Ti unalloyed 99.9 CP						
Ti-Al 1 Mn 1				AMTU 451 473 (OT4 0), OST1 90000, 90015,90027,90050,90107,90024 (OT4 0), TU1 5 107 83 21 92 6 (OT4 0)		
Ti-Al 1.5 Mn 1.5						
Ti-Al 2 Mn 1.5				AMTU 451 475 (OT4 1), OST1 90015, 90024,90050,90107 (OT4 1), TU1 5 107 83 21 92 6 (OT4 1)		
Ti-Al 2 Mn 2	DTD 5043B (IMI 315)					For compressor discs and blades, fasteners, fuel systems, heat treatable, for aircraft and missile components, high temperature use, fatigue limit 60-65% of TS
Ti-Al 2 Mo 1 Cr 1 Si 0.3						
Ti-Al 2 V 11 Sn 2 Zr 11						
Ti-Al 2.25 Mo 1 Sn 11 Zr 5 Si 0.2	TA18,19,20,25,26,27 (IMI 679), DTD 5113, 5213 (IMI 679)					Airframe and turbine engine parts (blades, discs, wheels, spacers), fasteners, high stress, stability at 900 F, good creep and short time strength

TABLE 1D. (Continued)

Nominal Composition Wt % (Computerized Format)	Common Name/Alloy	Alloy Type	UNS Equivalent	Aerospace Materials Specifications (US) (AMS Prefix)	ASTM B348 74	ASTM (US) Other ASTM Specifications	MIL T 9047E	Military (US) Other Military Specifications
Ti Al2 25 Mo4 Sn 11 Si0 25	(BR)(IMI 680)							
Ti Al2 5 Mo4 Sn2 Si0 5								
Ti Al2 5 V4 5 Mo5	(USSR)(VT16)	near β						
Ti Al2 5 V5 Mo5 Cr1 3 Fe1	(USSR)(VT22)	near β						
Ti Al2 5 V 16								
Ti Al2 9 V 15								
Ti Al3 Cr5		α+β		4927*				
Ti Al3 Mn1 5	(USSR)(OT4)	α+β						
Ti Al3 Mo0 5 Sn6 Zr5 Si0 4		near α						
Ti Al3 Mo2 Sn6 Zr5 Si0 4		α+β						
Ti Al3 Mo7 Cr5 5 Fe3	(USSR)(IVT 1)	β						
Ti Al3 Mo7 5 Cr 11	(USSR)(VT15)	β						
Ti Al3 Sn6 Zr5 Si0 5		α						
Ti Al3 V2 5	(3 2 5)	α+β		4943 4944				
Ti Al3 V7 Mo3 5 Cr 10	(USSR)(TS6)	β						
Ti Al3 V8 Mo4 Zr4 Cr6	(Beta C)	β						MIL T 9046 IV (Comp C)
Ti Al3 V8 Mo8 Fe2	(8 8 2 3)	β						MIL T 9046 IV (Comp D)
Ti Al3 V 13 Cr 11	(13 11 3)	β		4917			Composition 12	MIL T 83142 (Comp 12) MIL T 9046 IV (Comp A) MIL T 009047 (Comp 12) MIL R 81558 IV (Comp A)
Ti Al3 (Cr+Fe+Si)1 5	(USSR)(AT3)	α+β						
Ti Al4 Cb/Nb4	(USSR)(IBM 1)							
Ti Al4 Cb/Nb4 Re0 1	(USSR)(IBM 2)	α+β						
Ti Al4 Mn1 5	(USSR)(VT4)	α+β						
Ti Al4 Mn4	(BR)(IMI 314	α+β		4925				
Ti Al4 Mo4								

TABLE 1D. (Continued)

Nominal Composition Wt % (Computerized Format)	British Standards, BS (Aerospace Series), and DTD (UK)	French Standards (FR), A.I.C.M., AFNOR, and NF	German Country Standards (GY and GE), DIN	Soviet Country Standards (UR), GOST	Other Standards Japanese, Czechoslovakian, American Welding Society (AWS), ISO, Spanish	Applications
Ti-Al2.25-Mo4-Sn-11-Si0.25	DTD ML60, DTD 5213 (IMI 680)	AIR (T.E11.D4E)				High strength alloy
Ti-Al2.5-Mo4-Sn2-Si0.5						
Ti-Al2.5-V4.5-Mo5				AMTU 552.553 (VT16), TU1 92.6 (VT16)		
Ti-Al2.5-V5-Mo5-Cr1.3-Fe1				AMTU 552.553 (VT22), TU1 92.1 (VT22), OST1 90107 (VT22)		
Ti-Al2.5-V16						
Ti-Al2.9-V15						
Ti-Al3-Cr5						
Ti-Al3-Mn1.5				TU1 5.055.5.058.5.054 (AT3)		
Ti-Al3-Mo0.5-Sn6-Zr5-Si0.4	(HyLite 65)					For jet engine compressor components, discs, shakers, blades
Ti-Al3-Mo2-Sn6-Zr5-Si0.4	(HyLite 60)					For turbine compressor blades and discs up to 500 C, good creep and tensile properties
Ti-Al3-Mo7-Cr5.5-Fe3				(IVT.1)		
Ti-Al3-Mo7.5-Cr11				(VT15)		
Ti-Al3-Sn6-Zr5-Si0.5	(HyLite 55)					For turbine compressor blades and discs, good properties to over 930 F (500 C), high temperature strength
Ti-Al3-V2.5		PUG (UTA3V)				Aircraft hydraulic tubing, foil; combines strength, weldability, and formability
Ti-Al3-V7-Mo3.5-Cr10				(TS6)		
Ti-Al3-V8-Mo4-Zr4-Cr6						Heavy sections where deep hardening high strength with good fracture toughness are required, airframe components, high strength fasteners and rivets, torsion bars
Ti-Al3-V8-Mo8-Fe2						High strength, tough airframe sheet, plate, fasteners, and forged components, for high temperature applications, good notch toughness, age hardened, good weldability
Ti-Al3-V13-Cr11			KRUPP (LT 41), CONTIMET (VCRAL 13.11.3)			Advanced airframe applications, lightweight welded pressure vessels, airframe skins, suitable for honeycomb, excellent formability, high strength fasteners, aerospace components, honeycomb panels, heat treatable
Ti-Al3-(Cr+Fe+Si)1.5				(AT3)		
Ti-Al4-Cb-Nb4				(IRM 1) Early alloy		
Ti-Al4-Cb-Nb4-Re0.1				(IRM 2) Early alloy		
Ti-Al4-Mn1.5				AMTI 451 (VT4)		
Ti-Al4-Mn4	DTD 5143 (IMI 314) (HyLite 40)					For aircraft and jet engine components, heat resistant, low density, airframe forgings, bolts, fasteners, good creep strength above 600 F
Ti-Al4-Mo4				(IRM 3) Early Alloy		

TABLE 1D. (Continued)

Nominal Composition Wt % (Computerized Format)	Common Name/Alloy	Alloy Type	UNS Equivalent	Aerospace Materials Specifications (US) (AMS Prefix)	ASTM B348 74	ASTM (US) Other ASTM Specifications	MIL T 9047E	Military (US) Other Military Specifications
Ti Al4 Mo4 Sn2 Si0 5	(BR)IMI 550	α+β						
Ti Al4 Mo4 Sn4 Si0 5	(BR)IMI 551	α+β						
Ti Al4 V1 Mo3	(4 3 1)(VT14)	α+β						MIL T 0406 III (Comp 8)
Ti Al4 V1 Mo3 Si0 2	(USSR)(VT14L)	α+β						
Ti Al4 5 Sn2 5								
Ti Al4 5 V3 5	(USSR)(VT6S)	α+β						
Ti Al4 5 (Cr+Fe+Si)1 5	(USSR)(AT4)	α+β						
Ti Al5	(USSR)(VT5)	α						
Ti Al5 CrFe4								
Ti Al5 Cr2 75 Fe1 25		α+β						
Ti Al5 Mo1 Sn6 Zr2 Si0 2	(5621S)	near α						
Ti Al5 Mo1 2 Cr1 4 Fe1 4		α+β						
Ti Al5 Mo4 Sn2 Zr2 Cr4	(TI 17)	α+β						
Ti Al5 Si0 5	(USSR)(VT5L)	α dispers						
Ti Al5 Sn2 Zr5		α		4968*				
Ti Al5 Sn2 5 ELI	(A 110 ELI)	α	Appendix 4	4909 4924 4953			Composition 3	MIL F 83142 (Comp 3) MIL T 9046 II (Comp 8) MIL T 09047 (Comp 3) MIL R 81558 II (Comp 8)
Ti Al5 Sn2 5	(A 110)(VT5 1)	α	Appendix 4	4910 4926 4953 4966	Grade 6	B265(Gr 6) B381(Gr F 6) B367(Gr C 6)	Composition 2	MIL F 83142 (Comp 2) MIL T 9046 II (Comp A) MIL T 09047 (Comp 2) MIL R 81558 II (Comp A) MIL T 81915 II (Comp A)
Ti Al5 Sn5 Zr5		α		4968				MIL F 83142 (Comp 4)
Ti Al5 Zr5 Si0 3 W1								

TABLE 1D. (Continued)

Nominal Composition Wt % (Computerized Format)	British Standards, BS (Aerospace Series), and DTD (UK)	French Standards (FR), A.I.C.M., AFNOR, and NF	German Country Standards (GY and GE), DIN	Soviet Country Standards (UR), GOST	Other Standards Japanese, Czechoslovakian, American Welding Society (AWS), ISO, Spanish	Applications
Ti-Al4-Mo4-Sn2-Si0.5	TA29, 30, 31, 32, 33, 34, 41, TA35, 36, 37, 45,46,47,48,49,50,51,57 (IMI 550) (HyLite 50), DTD 5203, 5233, 5343, 5103, 5153 (IMI 550)	AIR (T A4DE) AIR (T A4CE2) AECMA Ti-P.68	LW 3.7184 (draft) KRUPP (LT 34)			High strength alloy, creep resistant up to 750 F (400 C), for compressor discs and blades, fuel systems, fasteners, heat treatable
Ti-Al4-Mo4-Sn4-Si0.5	TA38,30,40,41,42 (IMI 551) DTD 5203,5223 (IMI 551) (HyLite 51)					Very high strength titanium alloy, for heavy duty service aircraft structural members, good creep properties
Ti-Al4-V1-Mo3				AMTU 451,461,475 (VT14), OST1 90000,90107 (VT14) (VT14L) casting		Airframe applications, very high strength, good high temperature stability
Ti-Al4-V1-Mo3-Si0.2						
Ti-Al4.5-Sn2.5	TA14,15,16,17 (IMI 317)					
Ti-Al4.5-V3.5				AMTU 451,475 (VT6S), TU1 83.21 92.6 (VT6S), OST1 90000,90024 90107 (VT6S)		
Ti-Al4.5-(Cr+Fe+Si)1.5				(AT4)		For high temperature fasteners, aircraft structures, pseudoalpha alloy, corrosion resistant
Ti-Al5				AMTU 451,475 (VT5), TU1 83.21 92.6 (VT5), OST1 90000, 90107 (VT5)		
Ti-Al5-CrFe4						Airframe components
Ti-Al5-Cr2.75-Fe1.25						For jet engine components, good hot strength to 1000 F (538 C), age hardened
Ti-Al5-Mo1-Sn6-Zr2-Si0.2						For use where high creep strength and elevated temperature are required, as in jet engine components, alpha alloy
Ti-Al5-Mo1.2-Cr1.4-Fe1.4						
Ti-Al5-Mo4-Sn2-Zr2-Cr4						
Ti-Al5-Si0.5				(VT5L) casting		
Ti-Al5-Sn5-Zr5						
Ti-Al5-Sn2.5-ELI						Liquid hydrogen tankage, special grade for high pressure cryogenic vessels operating down to -423 F (-219 C)
Ti-Al5-Sn2.5	TA14, 15, 16, 17 (IMI 317) DTD 5083, 5093 (IMI 317)	AECMA Ti-P.65, PUG (UTA5E) AIR (T A5E)	LW 3.7314, KRUPP (LT21) DIN 3.7115, CONTIMET (ALSN52)	AMTU 551 (VT5-1), TU1 83.21 92.6 (VT5-1), OST1 90000,90024,90107 (VT5-1)		Weldable alloy for forgings and sheet metal parts such as aircraft engine compressor blades and ducting, steam turbine blades, good oxidation resistance and strength at 600 to 1100 F (316 to 593 C), good stability at elevated temperatures, engine cowlings and supportings
Ti-Al5-Sn5-Zr5						Turbine engines and airframe applications requiring high creep strength
Ti-Al5-Zr5-Si0.3-W1						

TABLE 1D. (Continued)

Nominal Composition Wt % (Computerized Format)	Common Name/Alloy	Alloy Type	UNS Equivalent	Aerospace Materials Specifications (US) (AMS Prefix)	ASTM B348 74	ASTM (US) Other ASTM Specifications	MIL T 9047E	Military (US) Other Military Specifications
Ti Al5 4 Mo1 25 Cr1 4 Fe1 3				4929 4969				
Ti Al6 Mo1 5 (Zr1 5)w/wo the Zr	(USSR)(OT4 2)							
Ti Al6 Mo0 5 Si0 5		near α						
Ti Al6 Mo0 5 Zr5 Si0 2	(BR)(IMI 655)	near α						
Ti Al6 Mo0 8 Cb(Nb2 Ta1	(6 2 1 1)	near α						MIL T 9046 III (Comp G) MIL R 81558 II (Comp D)
Ti Al6 Mo1 Cr1 5 Fe1 5								
Ti Al6 Mo1 Sn2 Zr1 5 Si0 1 B0 35	(TI 11)	near α						
Ti Al6 Mo1 Zr 11 Si0 15	(USSR)(VT18)	near α						
Ti Al6 Mo2 Cr2 Fe1 Si0 2	(USSR)(VT3 1)	near α						
Ti Al6 Mo2 Sn2 Zr2 Cr2 Si0 2	(6 2 2 2 2)	near α						
Ti Al6 Mo2 Sn2 Zr4	(6 2 4 2)	near α		4975 4976			Composition 11	MIL F 83142 (Comp 11) MIL T 9046 III (Comp G) MIL T 81915 III (Comp B) MIL T 009047 (Comp 11)
Ti Al6 Mo4 Zr5 Cu1 Si0 2	(BR)(IMI 700)	near α						
Ti Al6 Mo6 Sn2 Zr4	(6 2 4 6)	near α		4981			Composition 14	MIL T 009047 (Comp 14)
Ti Al6 V0 5 Sn6 Zr6 Fe0 5 Cu0 5	(FRIT A6V6E2ZR							
Ti Al6 V1 Mo0 7 Zr5 Cr0 3 Si0 2	(USSR)(VT21L)	near α						
Ti Al6 V4 ELI	(6 4 ELI	α+β	Appendix 4	4907 4930 4956		F 136	Composition 7	MIL F 83142 (Comp II) MIL R 81558 (Comp B) MIL T 9046 III (Comp D) MIL T 009047 (Comp 7) MIL T 81556 III (Comp B)

TABLE 1D. (Continued)

Nominal Composition Wt % (Computerized Format)	British Standards, BS (Aerospace Series), and DTD (UK)	French Standards (FR), A.F.C.M., AFNOR, and NF	German Country Standards (GY and GS), DIN	Soviet Country Standards (UR), GOST	Other Standards Japanese, Czechoslovakian, American Welding Society (AWS), ISO, Spanish	Applications
Ti-Al5.4-Mo1.25-Cr1.4-Fe1.3						For aircraft propeller blades, cylinders and pistons, heat treatable
Ti-Al6-Mn1.5-(Zr1.5)w/wo the Zr				(OT4-2)		
Ti-Al6-Mo0.5-Si0.5						
Ti-Al6-Mo0.5-Zr5-Si0.2	BS TA43.44 (IMI 685)	AIR (T A6ZD), AECMA T.P.67 (UT685), AIR (T AL6ZR5D)	LW 3.7154, KRUPP (LT26)			
Ti-Al6-Mo0.8-Cb/Nb2-Ta1						For use where high toughness, moderate strength, weldability, hot-salt stress corrosion resistance, resistance to sea water are required, as in deep diving under sea vehicles
Ti-Al6-Mo1-Cr1.5-Fe1.5						
Ti-Al6-Mo1-Sn2-Zr1.5-Si0.1-B-0.35						Jet engine discs and blades requiring extra creep resistance and stability
Ti-Al6-Mo1-Zr1.1-Si0.15				(VT18)		
Ti-Al6-Mo2-Cr2-Fe1-Si0.2				AMTU 451.453 (VT3.1), TU1.83.21-92.6 (T.3.1), OST1 90000.90107 (VT3.1) also (T3.1) for castings		
Ti-Al6-Mo2-Sn2-Zr2-Cr2-Si0.2						Air frame/jet engine parts requiring high strength and fracture toughness intermediate creep strength, good strength, fracture toughness in heavy sections, landing gear wheels
Ti-Al6-Mo2-Sn2-Zr4		PUG (UT6242), AIR (T A6ZR4DE)	LW 3.7144, KRUPP (LT24), CONTIMET (ALSNZRMO 6.2.4.2)			Jet engine compressor parts (blades, discs, wheels, spacers), compressor case details, airframe skin components, good creep and tensile strength to 1050 F (566 C)
Ti-Al6-Mo4-Zr5-Cu1-Si0.2	DTD M201 (IMI 700)					Ultra high strength alloy, creep resistance up to 400 C
Ti-Al6-Mo6-Sn2-Zr4		AIR (T A6V6E)				Gas turbine engine and air frame/missile structure components for advanced jet engines
Ti-Al6-V0.5-Sn6-Zr6-Fe0.5-Cu0.5					JIS H7152	
Ti-Al6-V1-Mo0.7-Zr5-Cr0.3-Si0.2				(VT21L)		
Ti-Al6-V4-ELI						Liquid hydrogen tankage and airframe parts requiring high fracture toughness

TABLE 1D. (Continued)

Nominal Composition Wt % (Computerized Format)	Common Name/Alloy	Alloy Type	UNS Equivalent	Aerospace Materials Specifications (US) (AMS Prefix)	ASTM B348 74	ASTM (US) Other ASTM Specifications	MIL T 9047E	Military (US) Other Military Specifications
Ti Al6 V4	(6 4) (BR)(IMI 318) (USSR)(VT6) (FR)(T A6V)	α+β	Appendix 4	4906 4911 4928 4935 4954 4965 4934 4967	Grade 5	B265 (Grade 5) B367 (Grade C 5) B381 (Grade F 5)	Composition 6	MIL F 83142 (Comp 6) MIL R 81558 III (Comp A) MIL T 9046 III (Comp C) MIL T 81915 III (Comp A) MIL T 009047 (Comp G) MIL T 81556 III (Comp A) MIL T 9046 III (Comp H SPL) MIL T 46077
Ti Al6 V4 Co3	(FR)T A6V4K3							
Ti Al6 V4 Si0 2	(USSR)(VT6L)	α+β						
Ti Al6 V6 Sn2	(6 6 2)	α+β		4918 4936 4971 4978 4979			Composition 8	MIL F 83142 (Comp 8) MIL T 9046 III (Comp E) MIL T 009047 (Comp 8) MIL T 81556 III (Comp C)
Ti Al6 V6 Sn2 Cu+Fe1		α+β						
Ti Al6 V6 Sn2 Zr6	(FR)Ti 662ZR	α+β						
Ti Al6 (Zr1 5) Mn1 5 w wo Zr	(USSR)(OT4 2)	α+β						
Ti Al6 Zr5 Si0 3 W1	(BR)(IMI 684)	α+β		AMI 10 (Adv Matl Info)				
Ti Al6 (Cr+Fe+Si)1 5	(USSR)(AT6)	α+β						
Ti Al6 5 Mo3 5 Si0 25	(USSR)(VT8)	α+β						
Ti Al6 5 Mo3 5 Sn(or Zr)2 Si0 25	(USSR)(VT9L)	α+β						
Ti Al6 5 Mo3 5 Sn(or Zr)2 Si0 25	(USSR)(VT9)	α+β						
Ti Al6 5 V1 Mo1 Zr2	(USSR)(VT20)	near α						
Ti Al7 Cb Nb2 Ta1		α						
Ti Al7 Mo4	(7 4)	α+β		4970			Composition 9	MIL F 83142 (Comp 9) MIL T 009047 (Comp 9) MIL T 81556 III (Comp D)
Ti Al7 Zr 12		α						
Ti Al8 Cb Nb2 Ta1								

TABLE 1D. (Continued)

Nominal Composition Wt % (Computerized Format)	British Standards, BS (Aerospace Series), and DTD (UK)	French Standards (FR), A.I.C.M., AFNOR, and NF	German Country Standards (GY and GE), DIN	Soviet Country Standards (UR), GOST	Other Standards Japanese, Czechoslovakian, American Welding Society (AWS), ISO, Spanish	Applications
Ti-Al6-V4	BS 2TA10,2TA11,2TA12,2TA13, 2TA28,TA56 (IMI 318) DTD 5163, 5173, 5303, 5313, 5323 (IMI 318)	AIR 9184 (T A6V) AIR 9183 (T A6V) AECMA Ti-P63 PUG (UTA6V)	LW 3.7164, KRUPP (LT31) DIN 3.7165, CONTIMET (ALV 64) DIN 17851, FUCHS (TA64)	AMTU 451 475 (VT6), TU1 92 6 (VT6), OST1 90107 (VT6)	ISO (alloy) Draft Standard AWS A5.16 (ERTI-6Al-4V) AWS A5.16 (ERTI-6Al-4V) high purity	The most versatile titanium alloy where high strength is required for such mechanical requirements as fatigue resistance, airframe and and turbine engine parts (blades, discs, wheels, spacer rings), ordnance equipment, pressure vessels, rocket motor cases, structural forgings and fasteners, gas and chemical pumps, cryogenic parts, marine components, steam turbine blades
Ti-Al6-V4-Co3		AIR (T A6V4K3)				
Ti-Al6-V4-Si0.2				(VT6L)		
Ti-Al6-V6-Sn2		AECMA Ti-P64 AIR (T A6VE) PUG (UT662)	LW 3.7174,KRUPP (LT33) CONTIMET (ALVSN 6.6.2) FUCHS (TA66)			Airframe parts, rocket motor cases, ordnance components, structural aircraft parts and landings gears, responds well to heat treatments, good hardenability
Ti-Al6-V6-Sn2-Cu+Fe1		(T A6V6E)				
Ti-Al6-V6-Sn2-Zr6		(T 662ZR)				
Ti-Al6-(Zr1.5)-Mn1.5-w/wo-Zr				(OT4.2)		
Ti-Al6-Zr5-Si0.3-Wt	DTD 200 (IMI 684)	AIR (T A6AZ5W)				Good strength alloy, weldable, creep resistant up to 970 F (520 C)
Ti-Al6-(Cr+Fe+Si)1.5				(AT6)		For high temperature fasteners, aircraft structures, corrosion resistant.
Ti-Al6.5-Mo3.5-Si0.25				AMTU 451 475 (VT8), TU1 83 21 92 6 (VT8), OST1 90000,90107 (VT8)		
Ti-Al6.5-Mo3.5-Sn(or Zr)2-Si0.25				AMTU 451 475 (VT9L), TU1 83 21 92 6 (VT9L), OST1 90000,90107 (VT9L)		
Ti-Al6.5-Mo3.5-Sn(or Zr)2-Si0.25				AMTU 451 475 (VT9), TU1 83 21 92 6 (VT9), OST1 90000,90107 (VT9)		
Ti-Al6.5-V1-Mo1-Zr2				AMTU 451 475 (VT20), TU1 92 6 (VT20), OST1 90000,90107 (VT20)		
Ti-Al7-Cb-Nb2-Ta1						
Ti-Al7-Mo4		AIR (T A7D) PUG (UTA7D)	KRUPP (LT32) CONTIMET (ALMO 74) FUCHS (TA74)			Airframes and jet engine parts for operation at up to 800 F (427 C), missile forgings, ordnance equipment
Ti-Al7-Zr12						Turbine engines and airframe applications requiring high creep strength, fasteners
Ti-Al8-Cb-Nb2-Ta1						

TABLE 1D. (Continued)

Nominal Composition Wt % (Computerized Format)	Common Name/Alloy	Alloy Type	UNS Equivalent	Aerospace Materials Specifications (US) (AMS Prefix)	ASTM B348-74	ASTM (US) Other ASTM Specifications	MIL T 9047E	Military (US) Other Military Specifications
Ti-Al8-V1-Mo1	(8-1-1)	near-α		4915, 4916, 4955, 4972, 4973			Composition 5	MIL-F-83142 (Comp. 5) MIL-T-9046, II (Comp. F) MIL-T-81556, II (Comp. C) MIL-T-009047 (Comp. 5)
Ti-Al8-V1-Mo1-C0.5								
Ti-Al8-Zr8-Cb/Nb1								
Ti-Al9-Sn2.5								
Ti-Cb/Nb45				4982				
Ti-Cr3-Fe1.5								
Ti-Cu2	(BR)(IMI 230)	α disper.						
Ti-Cu2.5	(BR)(IMI 230)	α disper.						
Ti-Mn8	(8Mn)	α+β		4908				
Ti-Mo1.5-Zr2.5	(USSR)(AT2)	α+β						
Ti-Mo2-Cr2-Fe2		α+β		4923				
Ti-Mo11.5		β						
Ti-Mo11.5-Sn4.5-Zr6	(Beta III)	β	Appendix 4	4977, 4980	Grade 10	B265 (Grade 10) B338 (Grade 10) B337 (Grade 10)	Composition 4	MIL-F-83142 (Comp. 13) MIL-T-9046, IV (Comp. B) MIL-T-009047 (Comp. 13)
Ti-Mo15	(BR)(IMI 205)	β						
Ti-Mo32	(USSR)(4201)	β						
Ti-Mo32-Cb/Nb1.5	(USSR)(4203)	β						
Ti-Ni1.2		α disper.						
Ti-Ta5	(USSR)(4204)	α						
Ti-Pd0.15-0.20	(Pd alloy)(4200)	α			Grade 7 Grade 11	B265 (Grades 7 and 11) B337 (Grades 7 and 11) B338 (Grades 7 and 11) B367 (Grades C-7A, C-7B, C-8A, and C-8B) B381 (Grades F-7 and F-11)		

TABLE 1D. (Continued)

Nominal Composition Wt % (Computerized Format)	British Standards, BS (Aerospace Series), and DTD (UK)	French Standards (FR), A.I.C.M., AFNOR, and NF	German Country Standards (GY and GE), DIN	Soviet Country Standards (UR), GOST	Other Standards Japanese, Czechoslovakian, American Welding Society (AWS), ISO, Spanish	Applications
Ti-Al8-V1-Mo1		AIR (T A8DV) AECMA Ti-P 66 PUG UTA8DV)	LW 3.7134 KRUPP (LT22) CONTIMET (ALMOV 8-1-1)		AWS A5.16 (ERTI-8Al-1Mo-1V)	Airframe and turbine engine applications requiring short time strength, long time creep resistance stability, and stiffness, parts requiring high strength to 850 F (454 C), good creep and toughness properties, good weldability.
Ti-Al8-V1-Mo1-C0.5 Ti-Al8-Zr8-Cb/Nb1 Ti-Al9-Sn2.5 Ti-Cb/Nb45 Ti-Cr3-Fe1.5						
Ti-Cu2	BS TA53,54,55,58,52 BS 2TA21,2TA22,2TA23,2TA24, DTD 5123,5133,5233 (IMI 230)	AIR (T U2) AECMA Ti-P 11 PUG (UTC)	LW 3.7124 (draft) KRUPP (LT25) CONTIMET (CU2) FUCHS (TC 2)			For jet engine components, corrosion and heat resistant.
Ti-Cu2.5	BS TA53,54,55,58,52 BS 2TA21,2TA22,2TA23,2TA24 DTD 5123,5133,5233,5243,5253 5263 (IMI 230)	AIR (T U2) AECMA Ti-P 11 PUG (UTC)	LW 3.7124 (draft) KRUPP (LT25) CONTIMET (CU2) FUCHS (C 2)			For the chemical industry, good weldability and ductility, formable, corrosion resistant, for high temperature applications, corrosion resistant parts, good strength retained up to 570 F (300 C).
Ti-Mn8						Aircraft sheet components, structural sections, and skins, good formability, moderate strength, for aircraft and jet engine components, heat resistant, low density.
Ti-Mo1.5-Zr2.5 Ti-Mo2-Cr2-Fe2 Ti-Mo-11.5				(AT2)		
Ti-Mo-11.5-Sn4.5-Zr6		PUG (UTD12ZRE) AIR (T D12ZRE)				Good cold formability.
Ti-Mo15	(IMI 205)					
Ti-Mo-32				(4201)		Parts requiring formability and corrosion resistance, high-strength fasteners, high-strength aircraft sheet parts, high temperature applications.
Ti-Mo-32-Cb/Nb1.5 Ti-Ni-1.2 Ti-Ta5				(4203) (4204)		
Ti-Pd0.15-0.20	BS 3003, part 9 TP1 BS 2TA1 (IMI 260)	PUG (UT35.02)	DIN 3.7070,3.7056,3.7040,3.7030 KRUPP (RT12PD,RT15PD,RT18PD, RT20PD) CONTIMET (PD 02/30,02/35,02/35D) FUCHS (TP02)	(4200)	AWS A5.16 (ERTI-0.2Pd)	Chemical industry applications where environments are moderately reducing or or fluctuate between oxidizing and reducing.

TABLE 1E. TYPICAL TITANIUM ALLOY DESIGNATIONS FOR US TITANIUM ALLOYS OF COMMERCIAL INTEREST (Arranged by Alloy Type)[57]

Nominal Composition Wt %	Alloy Type	Common Name(*A)	Ctry Code
Ti-unalloyed-99.5(*B)	α	(CP)	US
Ti-unalloyed-99.2(*B)	α	(CP)	US
Ti-unalloyed-99.0(*B)	α	(CP)	US
Ti-Pd0.15--0.20	α	(Pd alloy)	US
Ti-Al5-Sn2.5(*C)	α	(A-110)	US
Ti-Ni1--2(*D)	α dispers.		US
Ti-Cu2	α dispers.	(IMI-230)	US
Ti-Al2.5-Mo1-Sn 11-Zr5-Si0.2	near-α	(679)	US
Ti-Al5-Mo1-Sn6-Zr2-Si0.25(*E)	near-α	(5621S)	US
Ti-Al6-Mo1-Sn2-Zr1.5-Bi0.35-Si0.1	near-α	(Ti-11)	US
Ti-Al6-Mo0.8-Cb/Nb2-Ta1	near-α	(6-2-1-1)	US
Ti-Al8-V1-Mo1	near-α	(8-1-1)	US
Ti-Mn8	$\alpha+\beta$	(8Mn)	US
Ti-Al3-V2.5	$\alpha+\beta$	(3-2.5)	US
Ti-Al4-V1-Mo3	$\alpha+\beta$	(4-3-1)	US
Ti-Al5-Mo4-Sn2-Zr2-Cr4	$\alpha+\beta$	(Ti-17)	US
Ti-Al6-V4(*C)	$\alpha+\beta$	(6-4)	US
Ti-Al6-V6-Sn2	$\alpha+\beta$	(6-6-2)	US
Ti-Al6-Mo2-Sn2-Zr4(*F)	$\alpha+\beta$	(6-2-4-2)	US
Ti-Al6-M06-Sn2-Zr4	$\alpha+\beta$	(6-2-4-6)	US
Ti-Al6-Mo2-Sn2-Zr2-Cr2-Si0.2	$\alpha+\beta$	(6-2-2-2-2)	US
Ti-Al7-Mo4	$\alpha+\beta$	(7-4)	US
Ti-Al1-V8-Fe5	near-β	(185)	US
Ti-Al2-V 11-Sn2-Zr 11	β	(Transage 129)	US
Ti-Al3-V8-Mo4-Zr4-Cr6	β	(beta C)	US
Ti-Mo 11.5-Sn4.5-Zr6	β	(beta III)	US
Ti-Al3-V8-Mo8-Fe2	β	(8-8-2-3)	US
Ti-Al3-V 13-Cr 11	β	(13-11-3)	US

(*A) Producer nomenclature varies since some companies use a code for designating products while others use logical symbols such as the company name followed by the composition in alphanumeric form. See Table 1E.1 for guidance.

(*B) Several grades of unalloyed titanium are produced which differ in impurity level, hence strength and ductility.

(*C) High-purity grades of these alloys are available and are designated with the suffix ELI, meaning extra low interstitials.

(*D) A new titanium alloy containing nickel, Ti-0.3Mo-0.8Ni, intended to be substituted for Ti-0.2Pd alloy in selected applications, was announced in October 1974.

(*E) A modification of this alloy, Ti-5Al-5Sn-2Zr-2Mo-0.25Si, may become commercial.

(*F) A silicon-containing grade of 6-2-4-2 is also available.

TABLE 1E.1. CORRELATION OF TYPICAL US TITANIUM ALLOY DESIGNATIONS BY US PRODUCING COMPANIES[57]

Nominal Composition Wt %	Crucible(*A)	Martin(*B)	RM(*C)	Timet(*D)	Other
Ti-unalloyed-99.5	A-40	MMA-1940	RMI 40	Ti-35A	ARMCO Ti-40(*E)
Ti-unalloyed-99.2	A-55	MMA-1950	RMI 55	Ti-65A	
Ti-unalloyed-99.0	A-70	MMA-1970	RMI 70	Ti-75A	
Ti-Pd0.15--0.20		MMA-1942	RMI 0.2Pd	Ti0.20Pd	TITECH 0.2(*F)
Ti-Al5-Sn2.5	A-110AT	MMA-5137	RMI 5Al-2.5Sn	Ti-5Al-2.5Sn	
Ti-Ni1--2				Ti-Ni2	
Ti-Cu2			RMI 2Cu		
Ti-Al2.25-Mo1-Sn 11-Zr5-Si0.2				Ti-679	
Ti-Al5-Mo1-Sn6-Zr2-Si0.25			RMI 5Al-6Sn-2Zr-1Mo-Si		
Ti-Al6-Mo1-Zr1.5-Bi0.35-Si0.1				Ti-11	
Ti-Al6-Mo0.8-Cb/Nb2-Ta1			RMI 6Al-2Cb-1Ta-1Mo		
Ti-Al8-V1-Mo1	8Al-1Mo-1V	MMA-8116	RMI 8Al-1Mo-1V	Ti-8Al-1Mo-1V	
Ti-Mn8	C-110M		RMI 8Mn	Ti-8Mn	
Ti-Al3-V2.5	3Al-2.5V	MMA-3138	RMI 3Al-2.5V	Ti-3Al-2.5V	
Ti-Al4-V1-Mo3			RMI 4Al-3Mo-1V		
Ti-Al5-Mo4-Sn2-Zr2-Cr4				Ti-17	
Ti-Al6-V4	C-120AV	MMA-6510	RMI 6Al-4V	Ti-6Al-4V	TEL-Ti-6Al-4V(*G)
Ti-Al6-V6-Sn2	C-125AVT	MMA-5158	RMI 6Al-6V-2Sn	Ti-6Al-6V-2Sn	
Ti-Al6-Mo2-Sn2-Zr4	6Al-2Sn-4Zr-2Mo	MMA-9744	RMI 6Al-2Sn-4Zr-2Mo	Ti-6Al-2Sn-4Zr-2Mo	
Ti-Al6-Mo6-Sn2-Zr4		MMA-6246	RMI 6Al-2Sn-4Zr-6Mo	Ti-6Al-2Sn-4Zr-6Mo	
Ti-Al6-Mo2-Sn2-Zr2-Cr2-Si0.2			RMI 62222S		
Ti-Al7-Mo4		MMA-7146	RMI 7Al-4Mo	Ti-7Al-4Mo	
Ti-Al1-V8-Fe5			RMI 1Al-8V-5Fe		
Ti-Al2-V 11-Sn2-Zr 11					Transage 129, experiment
Ti-Al3-V8-Mo4-Zr4-Cr6			RMI 38-6-44		ALLVAC Ti-3-8-6-4-4(*H)
Ti-Mo 11.5-Sn4.5-Zr6	beta III				
Ti-Al3-V8-Mo8-Fe2				Ti-8Mo-8V-2Fe-3Al	
Ti-Al3-V 13-Cr 11	B-120VCA		RMI 13V-11Cr-3Al	Ti-13V-11Cr-3Al	OMC-VCA(*I)

Nomenclature note: The company name may precede the alloy composition (OR), the company name (Symbol) may precede the alloy composition. Sometime alloy designations are entirely in symbols.

TABLE 1E.1. (Continued)

(*A) Crucible, Inc., subsidiary of Colt Industries.
(*B) Martin Marietta Aluminum, Titanium Division.
(*C) RMI Company (formerly Reactive Metals, Inc.).
(*D) Timet Division, Titanium Metals Corporation of America (TMCA).
(*E) ARMCO Steel Corporation, Advanced Materials Division (ARMCO).
(*F) TITECH International, Inc. (TITECH).
(*G) Teledyne Titanium, Inc. (Teledyne Ti).
(*H) Teledyne ALLVAC (ALLVAC).
(*I) Oregon Metallurgical Corporation (OREMET).

The companies providing the high-purity grades of Ti-5Al-2.5Sn and Ti-6Al-4V alloys (and sometimes others) designate such grades with the suffix ELI, meaning extra low interstitials.

TABLE 1E.2. TYPICAL TITANIUM ALLOY DESIGNATIONS AND COMPOSITIONS OF MATERIALS DESCRIBED IN AMERICAN WELDING SOCIETY SPECIFICATION AWS A5.16-70 FOR TITANIUM AND TITANIUM ALLOY BARE WELDING RODS AND ELECTRODES[45,57]

Nominal Composition, Wt %	AWS Classification	Interstitial and Iron Contents, Weight Percent(*A)				
		C	O	H	N	Fe
Ti-unalloyed(*B)	ERTI-1	0.03	0.10	0.005	0.012	0.10
Ti-unalloyed	ERTI-2	0.05	0.10	0.008	0.020	0.20
Ti-unalloyed	ERTI-3	0.05	0.10-0.15	0.008	0.020	0.20
Ti-unalloyed	ERTI-4	0.05	0.15-0.25	0.008	0.020	0.30
Ti-Pd0.15--0.25	ERTI-0.2Pd	0.05	0.15	0.008	0.020	0.25
Ti-Al3-V2.5	ERTI-3Al-2.5V	0.05	0.12	0.008	0.020	0.25
Ti-Al3-V2.5(*B)	ERTI-3Al-2.5V-1	0.04	0.10	0.005	0.012	0.25
Ti-Al5-Sn2.5	ERTI-5Al-2.5Sn	0.05	0.12	0.008	0.030	0.40
Ti-Al5-Sn2.5(*B)	ERTI-5Al-2.5Sn-1	0.04	0.10	0.005	0.012	0.25
Ti-Al6-Mo0.8-Cb/Nb2-Ta1	ERTI-6Al-2Cb-1Ta-1Mo	0.04	0.10	0.005	0.012	0.15
Ti-Al6-V4	ERTI-6Al-4V	0.05	0.15	0.008	0.020	0.25
Ti-Al6-V4(*B)	ERTI-6Al-4V-1	0.04	0.10	0.005	0.012	0.15
Ti-Al8-V1-Mo1.8	ERTI-8Al-1Mo-1V	0.05	0.12	0.008	0.03	0.25
Ti-Al3-V 13-Cr 11	ERTI-13V-11Cr-3Al	0.05	0.12	0.008	0.03	0.25

(*A) Analyses to meet interstitial content requirements are made after the welding rod or electrode is reduced to the final diameter. Single values are maximum values allowed.

(*B) Very high purity compositions.

TABLE 1F. TYPICAL TITANIUM ALLOY DESIGNATIONS FOR NON-US TITANIUM ALLOYS OF COMMERCIAL INTEREST

TABLE 1F.1. TYPICAL TITANIUM ALLOYS OFFERED BY THE IMPERIAL METAL INDUSTRIES LTD. OF THE UNITED KINGDOM (Arranged by IMI Alloy Designation Numbers)[6,7,57]

Nominal Composition Wt %	Alloy Type	IMI Alloy Designation	Common Name	Typical Product(*A) Forms	Ctry Code
Titanium	α	IMI-125	(CP)	BI,BA,W,P,SH	UK
Unalloyed	α	IMI-130	(CP)	BI,BA,W,SH	UK
Grades(*B)	α	IMI-155	(CP)	SH	UK
(IMI-125 to IMI-160)	α	IMI-160	(CP)	BI,BA,W	UK
Ti-Pd0.15--0.20	α	IMI-115	(Pd Alloy)	SH,ST	UK
Ti-Pd0.15--0.20	α	IMI-260	(Pd Alloy)	SH,ST	UK
Ti-Mo 15(*C)	β	IMI-205			UK
Ti-Cu2.5	α dispers.	IMI-230		BI,BA,W,P,SH	UK
Ti-Al4-Mn4	$\alpha+\beta$	IMI-314			UK
Ti-Al2-Mn2	$\alpha+\beta$	IMI-315		BA	UK
Ti-Al5-Sn2.5(*D)	α	IMI-317	(A-110)		UK
Ti-Al5-Sn2.5(*D)	α	IMI-317ELI	(A-110)ELI		UK
Ti-Al6-V4	$\alpha+\beta$	IMI-318	(6-4)	BI,BA	UK
Ti-Al6-V4 ELI	$\alpha+\beta$	IMI-318ELI	(6-4)ELI	BI,BA	UK
Ti-Al4-Mo4-Sn2-Si0.5	$\alpha+\beta$(*E)	IMI-550		BI,BA	UK
Ti-Al4-Mo4-Sn4-Si0.5	$\alpha+\beta$(*E)	IMI-551		BI,BA	UK
Ti-Al2.25-Mo1-Sn 11-Zr5-Si0.2	near-α(*E)	IMI-679	(679)	BI,BA	UK
Ti-Al2.25-Mo4-Sn 11-Si0.25	$\alpha+\beta$(*E)	IMI-680		BI,BA	UK
Ti-Al6-Zr5-W1-Si0.2(*D)	$\alpha+\beta$(*E)	IMI-684			UK
Ti-Al6-Mo0.5-Zr5-Si0.2	$\alpha+\beta$(*E)	IMI-685		BI,BA	UK
Ti-Al6-Mo4-Zr5-Cu1-Si0.2(*D)	$\alpha+\beta$(*E)	IMI-700			UK

(*A) BI=BILLET, BA=BAR, W=WIRE, P=PLATE, SH-SHEET.

(*B) The lower the number, the higher the purity.

(*C) The Ti-15Mo beta titanium alloy, IMI-205, and the Ti-4Al-4Mn alloy, IMI-314, are no longer offered.

(*D) Alloys not produced on a regular schedule but available upon special request.

(*E) These alloys also are known as alpha-dispersoid types.

TABLE 1F. TYPICAL TITANIUM ALLOY DESIGNATIONS FOR NON-US TITANIUM ALLOYS OF COMMERCIAL INTEREST

TABLE 1F.2. TYPICAL TITANIUM ALLOYS OFFERED BY FRANCE

(Arranged by National Titanium Alloy Designations, the Pechiney-Ugine-Kuhlman (PUG) Alloy Numbers, AIR Standard Numbers and AECMA Standard Numbers)[7,11,18,21,57]

Nominal Composition Wt %	Alloy Type	Alloy Designation	Common Name/Alloy	Typical Product(*A) Forms	Ctry Code
		AECMA			
Ti-unalloyed-99.8,CP,- ksi YS	α	Ti P.01	IMI-115,CP	All forms	EU
Ti-unalloyed-99,7,CP,- ksi YS	α	Ti P.02	IMI-125,CP	All forms	EU
Ti-unalloyed-99.5,CP,-40 ksi YS	α	Ti P.04	IMI-155,CP	All forms	EU
Ti-unalloyed-99. ,CP,- ksi YS	α	Ti P.05	IMI-130,CP	All forms	EU
Ti-Cu2	α dispers.	Ti P.11	(IMI-230)	BA,SH,P,FG,W	EU
Ti-Al4-Mn4	α+β	Ti P.62	(IMI-314)		EU
Ti-Al6-V4	α+β	Ti P.63	(IMI-318)		EU
Ti-Al6-V6-Sn2	α+β	Ti P.64	(6-6-2)		EU
Ti-Al5-Sn2.5	α	Ti P.65	(IMI 317)		EU
Ti-Al8-V1-Mo1	near-α	Ti P.66	(8-1-1)		EU
Ti-Al6-Mo0.5-Zr5-Si0.2	α+β	Ti P.67	(IMI-685)		EU
Ti-Al4-Mo4-Sn2-Si0.5	α+β	Ti P.68	(IMI-550)		EU
		AIR Norms			
Ti-unalloyed-99. ,CP,-35 ksi YS	α	9182;T-35	(IMI-115)	All forms	FR
Ti-unalloyed-99.5,CP,-40 ksi YS	α	9182;T-40	(IMI-125)	All forms	FR
Ti-unalloyed-99. ,CP,-50 ksi YS	α	9182;T-50	(IMI-130)	All forms	FR
Ti-unalloyed-99. ,CP,-60 ksi YS	α	9182;T-60	(IMI-160)	All forms	FR
Ti-Al4-Mn4	α+β	9183;T-A4M	(IMI-314)		FR
Ti-Al6-V4	α+β	9183;T-A6V	(IMI-318)		FR
Ti-Al4-Mn4	α+β	9184;T-A4M	(IMI-314)		FR
Ti-Al6-V4	α+β	9184;T-A6V	(IMI-318)		FR
Ti-Pd0.15--0.20	α	T-35-02	(IMI-260)	BA,SH,P,FG,W	FR
Ti-Cu2.5	α dispers.	T-U2	(IMI-230)	BA,SH,P,FG,W	FR
Ti-Cu2.5	α dispers.	T-C	(IMI-230)	BA,SH,P,FG,W	FR
Ti-Al3-V2.5	α+β	T-A3V	(3-2.5)	BA,SH,P,FG	FR
Ti-Al3-V2.5	α+β	T-3V2.5	(3-2.5)	BA,SH,P,FG	FR
Ti-Al3-V8-Mo4-Zr4-Cr6	β	T-D8C6DZRA	(beta C)		FR
Ti-Al3-V 13-Cr 11	β	T-V13CA	(13-11-3)		FR
Ti-Al4-V1-Mo3	α+β	T-A4D3V	(4-3-1)		FR
Ti-Al4-Mo4-Sn2-Si0.5	α+β	T-A4DE	(IMI-550)		FR
Ti-Al5-Sn2.5	α	T-A5E	(A-110)	BA,SH,P,FG	FR
Ti-Al5-Mo4-Sn2-Zr2-Cr4	α+β	Ti-17	(Ti-17)		FR
Ti-Al6-V4	α+β	T-A6V	(6-4)	BA,SH,P,FG	FR
Ti-Al6-V4-Co3	α+β	T-A6V4K3	(6-4-3)		FR
Ti-Al6-V6-Sn2	α+β	T-A6V6E2	(6-6-2)	BA,SH,P,FG	FR

TABLE 1F.2. (Continued)

Nominal Composition Wt %	Alloy Type	Alloy Designation	Common Name/Alloy	Typical Product(*A) Forms	Ctry Code
Ti-Al6-V6-Sn2-Cu0.5-Fe0.5	$\alpha+\beta$	T-A6V6E2	(6-6-2)	BA,SH,P,FG	FR
Ti-Al6-V6-Sn2-Zr6-Cu0.5-Fe0.5	$\alpha+\beta$	T-A6V6E2Zr	(6-6-2)+Zr	BA,SH,P,FG	FR
Ti-Al6-Mo6-Sn2-Zr4	$\alpha+\beta$	Ti-6246	(6-2-4-6)	BA,SH,P,FG	FR
Ti-Al6-Mo0.5-Zr5-Si0.2	$\alpha+\beta$	T-A6Zr5D			FR
Ti-Al6-Mo2-Sn2-Zr4	$\alpha+\beta$	T-A6Zr4DE	(6-2-4-2)	BA,FG	FR
Ti-Al6-Mo0.5-Zr5-Si0.2	$\alpha+\beta$	T-A6ZD			FR
Ti-Al6-Zr5-W1-Si0.2	$\alpha+\beta$	T-A6AZ5W			FR
Ti-Al7-Mo4	$\alpha+\beta$	T-A7D	(7-4)	BA,FG	FR
Ti-Al8-V1-Mo1	near-α	T-A8DV	(8-1-1)	BA,FG	FR
		PUG			
Ti-unalloyed-99. ,CP,-35 ksi YS	α	UT35		BA,SH,P,FG,W	FR
Ti-unalloyed-99. ,CP,-40 ksi YS	α	UT40		BA,SH,P,FG,W	FR
Ti-unalloyed-99. ,CP,- ksi YS	α	UT60	(CP)	BA,SH,P,FG,W	FR
Ti-Pd0.15--0.20	α	UT35-02	(RD alloy)	BA,SH,P,FG,W	FR
Ti-Cu2.5	α dispers.	UTC	(IMI-230)	BA,SH,P,FG,W	FR
Ti-Al5-Sn2.5	α	UTA5E	(A-110)	BA,SH,P,FG	FR
Ti-Al6-Mo0.5-Zr5-Si0.25	$\alpha+\beta$	UT685	(IMI-685)	BA,FG	FR
Ti-Al8-V1-Mo1	α	UTA8DV	(8-1-1)	BA,FG	FR
Ti-Al6-Mo2-Sn2-Zr4	$\alpha+\beta$	UT6242	(6-2-4-2)	BA,FG	FR
Ti-Al3-V2.5	$\alpha+\beta$	UTA3V	(3-2.5)	BA,SH,P,FG	FR
Ti-Al6-V4	$\alpha+\beta$	UTA6V	(6-4)	BA,SH,P,FG	FR
Ti-Al6-V6-Sn2	$\alpha+\beta$	UT662	(6-6-2)	BA,SH,P,FG	FR
Ti-Al7-Mo7	$\alpha+\beta$	UTA7D	(7-4)	BA,FG	FR
Ti-Al6-Mo1-Sn2-Zr5-Si0.25		UT651A	develop.	BA,FG	FR
Ti-Mo 11.5-Sn4.5-Zr6	β	TD12ZRE	develop.	BA,FG	FR
Ti-unalloyed-99. ,CP,-50 ksi YS	α	UT50	(CP)	BA,SH,P,FG,W	FR
Ti-Al5-Sn2.5	α	UTA5E"L"	(A-110)"L"	BA,SH,P,FG	FR
Ti-unalloyed-99. ,CP,-40 ksi YS	α	UT40R	(CP)	wire/rivets, aerospace	FR
Ti-Al6-V6-Sn2-Zr6	$\alpha+\beta$	UTA6V6E2Zr	develop.		FR

Note:

AECMA=Association Europeene Constructeur de Material Aerospatial
(Association of European Airframe Manufactures, Paris, France)

AIR=Des Reglements AIR (Regulations AIR), Paris, France

PUG=Pechiney-Ugine-Kuhlman (Group), Paris, France

Forms available: BA=BAR, SH=SHEET, P=PLATE, FG=FORGING, W=WIRE

TABLE 1F. TYPICAL TITANIUM ALLOY DESIGNATIONS FOR NON-US TITANIUM ALLOYS OF COMMERCIAL INTEREST

TABLE 1F.3. TYPICAL TITANIUM ALLOYS OFFERED BY WEST GERMANY

(Arranged by Krupp Contimet, Fuchs, and Vereinigte Deutsche Metallwerke AG Alloy Numbers and by LW, DIN and VdTuV Numbers)[7,18,21,25,26]

Nominal Composition Wt %	Alloy Type	Alloy Designation	Common Name/Alloy	Typical Product(*A) Forms	Ctry Code
		LW(*B) LN or BWS WERKSTOFF			
Ti-unalloyed-99.6,CP,-25 ksi YS	α	LW 3.7024	CP, gr. 1	All forms	GY
Ti-unalloyed-99.5,CP,-40 ksi YS	α	LW 3.7034	CP, gr. 2	All forms	GY
Ti-unalloyed-99.0,CP,-70 ksi YS	α	LW 3.7064	CP, gr. 4	All forms	GY
Ti-Al5-Sn2.5	α	LW 3.7114	(A-110)		GY
Ti-Cu2	α	LW 3.7124	(IMI-230)	BA,SH,ST,P,W,FG,T	GY
Ti-Al8-V1-Mo1	near-α	LW 3.7134	(8-1-1)	BA,SH,ST,P,W,FG,T,E	GY
Ti-Al6-Mo2-Sn2-Zr4	$\alpha+\beta$	LW 3.7144	(6-2-4-2)	BA,SH,ST,P,W,FG,T,E	GY
Ti-Al6-Mo0.5-Zr5-Si0.25	$\alpha+\beta$	LW 3.7154	(IMI-685)		GY
Ti-Al6-V4	$\alpha+\beta$	LW 3.7164	(6-4)	BA,SH,ST,P,W,FG,T,E	GY
Ti-Al6-V6-Sn2	$\alpha+\beta$	LW 3.7174	(6-6-2)	BA,SH,ST,P,W,FG,T,E	GY
Ti-Al4-Mo4-Sn2-Si0.5	$\alpha+\beta$	LW 3.7184	(IMI-550)	BA,SH,ST,P,FG	GY
		DIN(*D) WERKSTOFF			
Ti-unalloyed-99.6,CP,-25 ksi YS	α	DIN 3.7025	CP,IMI-115	All forms	GY
Ti-Pd0.15-0.25	α	DIN 3.7030	(Pd alloy)	All forms	GY
Ti-unalloyed-99.5,CP,-40 ksi YS	α	DIN 3.7035	CP,IMI-125	All forms	GY
Ti-Pd0.15--0.25	α	DIN 3.7040	(Pd alloy)	All forms	GY
Ti-unalloyed-99.2,CP,-55 ksi YS	α	DIN 3.7055	CP,IMI-130	All forms	GY
Ti-Pd0.15--0.25	α	DIN 3.7056	(Pd alloy)	All forms	GY
Ti-unalloyed-99.0,CP,-70 ksi YS	α	DIN 3.7065	CP,IMI-155	All forms	GY
Ti-Pd0.15--0.25	α	DIN 3.7070	(Pd alloy)	All forms	GY
Ti-Al5-Sn2.5	α	DIN 3.7115	(A-110)	All forms	GY
Ti-Al6-V4	$\alpha+\beta$	DIN 3.7165	(6-4)	All forms	GY
		VdTuV(*E) 230-1-68 WERKSTOFF			
Ti-unalloyed-99.6,CP,-25 ksi YS	α	Grade I	ASTM-gr. 1	All forms	GY
Ti-unalloyed-99.5,CP,-40 ksi YS	α	Grade II	ASTM-gr. 2	All forms	GY
Ti-unalloyed-99.2,CP,-55 ksi YS	α	Grade III	ASTM-gr. 3	All forms	GY
Ti-unalloyed-99.0,CP,-70 ksi YS	α	Grade IV	ASTM-gr. 4	All forms	GY

TABLE 1F.3. (Continued)

Nominal Composition Wt %	Alloy Type	Alloy Designation	Common Name/Alloy	Typical Product(*A) Forms	Ctry Code
		DIN(*C) Form Standards			
Ti-unalloyed-99.+,CP	α	DIN 17850	CP,all gr.	All forms	GY
Ti-Al6-V4	$\alpha+\beta$	DIN 17851	(6-4)	SH,ST	GY
Ti-Al5-Sn2.5	α	DIN 17851	(A-110)	SH,ST,P	GY
Ti-unalloyed-99.+,CP	α	DIN 17860	CP,all gr.	SH,ST annealed	GY
Ti-unalloyed-99.+,CP	α	DIN 17862	CP,all gr.	BA annealed	GY
Ti-unalloyed-99.+,CP	α	DIN 17863	CP,all gr.	W annealed	GY
Ti-unalloyed-99.+,CP	α	DIN 17864	CP,all gr.	FG annealed	GY
		Krupp(*F) Tikrutan Brand			
Ti-unalloyed-99.6,CP,-25 ksi YS	α	RT12	CP, gr. 1	All forms	GY
Ti-Pd0.15--0.25	α	RT12 Pd	(Pd alloy)	All forms	GY
Ti-unalloyed-99.5,CP,-40 ksi YS	α	RT15	CP, gr. 2	All forms	GY
Ti-Pd0.15--0.25	α	RT15 Pd	(Pd alloy)	All forms	GY
Ti-unalloyed-99.2,CP,-55 ksi YS	α	RT18	CP, gr. 3	All forms	GY
Ti-Pd0.15--0.25	α	RT18 Pd	(Pd alloy)	All forms	GY
Ti-unalloyed-99.0,CP,-70 ksi YS	α	RT20	CP, gr. 4	All forms	GY
Ti-Pd0.15--0.25	α	RT20 Pd	(Pd alloy)	All forms	GY
Ti-Al5-Sn2.5	α	LT21	(A-110)	All forms	GY
Ti-Al8-V1-Mo1	near-α	LT22	(8-1-1)	All forms	GY
Ti-Al5-Sn5-Zr5	α	LT23		All forms	GY
Ti-Al6-Mo2-Sn2-Zr4	$\alpha+\beta$	LT24	(6-2-4-2)	All forms	GY
Ti-Cu2	α dispers.	LT25	(IMI-230)	All forms	GY
Ti-Al6-Mo0.8-Zr5-Si0.3	$\alpha+\beta$	LT26	(IMI-685)	All forms	GY
Ti-Al6-V4	$\alpha+\beta$	LT31	(6-4)	All forms	GY
Ti-Al7-Mo4	$\alpha+\beta$	LT32	(7-4)	All forms	GY
Ti-Al6-V6-Sn2	$\alpha+\beta$	LT33	(6-6-2)	All forms	GY
Ti-Al4-Mo4-Sn2-Si0.5	$\alpha+\beta$	LT34	(IMI-550)	All forms	GY
Ti-Al3-V 13-Cr 11	β	LT41	(13-11-3)	All forms	GY
		Thyssen(*G) Contimet Brand			
Ti-unalloyed-99.6,CP,-25 ksi YS	α	30	CP, gr. 1	All forms	GY
Ti-unalloyed-99.5,CP,-40 ksi YS	α	35	CP, gr. 2	All forms	GY
Ti-unalloyed-99.2,CP,-55 ksi YS	α	35D	CP, gr. 3	All forms	GY
Ti-unalloyed-99.0,CP,-70 ksi YS	α	55	CP, gr. 4	All forms	GY

TABLE 1F.3. (Continued)

Nominal Composition Wt %	Alloy Type	Alloy Designation	Common Name/Alloy	Typical Product(*A) Forms	Ctry Code
Ti-Pd-0.15--0.25	α	Pd 02/30	(Pd alloy)	All forms	GY
Ti-Pd0.15--0.25	α	Pd 02/35	(Pd alloy)	All forms	GY
Ti-Pd-0.15--0.25	α	Pd 02/35D	(Pd alloy)	All forms	GY
Ti-Al5-Sn2.5	α	AlSn 52	(A-110)	All forms	GY
Ti-Al5-Sn2.5 ELI	α	AlSn 52 ELI	(A-110)ELI	All forms	GY
Ti-Cu2	α dispers.	Cu 2	(IMI-230)	All forms	GY
Ti-Al6-V4	$\alpha+\beta$	AlV 64	(6-4)	All forms	GY
Ti-Al6-V4 ELI	$\alpha+\beta$	AlV 64 ELI	(6-4)ELI	All forms	GY
Ti-Al8-V1-Mo1	near-α	AlMoV 8-1-1	(8-1-1)	All forms	GY
Ti-Al6-Mo0.5-Zr5	$\alpha+\beta$	685	(IMI-685)	All forms	GY
Ti-Al6-Mo2-Sn2-Zr4	$\alpha+\beta$	AlSnZrMo 6-2-4-2	(6-2-4-2)	All forms	GY
Ti-Al6-V2-Sn2	$\alpha+\beta$	AlVSn 6-6-2	(6-6-2)	All forms	GY
Ti-Al4-Mo4-Sn2	$\alpha+\beta$	AlMoSn 442	(4-4-2)	All forms	GY
		Otto Fuchs(*H) Brand			
Ti-unalloyed-99.6,CP,-25 ksi YS	α	T2	CP, gr. 1	Forgings	GY
Ti-unalloyed-99.5,CP,-40 ksi YS	α	T3	CP, gr. 2	Forgings	GY
Ti-unalloyed-99.2,CP,-55 ksi YS	α	T6	CP, gr. 3	Forgings	GY
Ti-Al4-Mo4-Sn2	$\alpha+\beta$	Ta44		Forgings	GY
Ti-Al5-Sn2.5	α	Ta52	(A-110)	Forgings	GY
Ti-Al6-V4	$\alpha+\beta$	Ta64	(6-4)	Forgings	GY
Ti-Al6-V6-Sn2	$\alpha+\beta$	Ta66	(6-6-2)	Forgings	GY
Ti-Al7-Mo4	$\alpha+\beta$	Ta74	(7-4)	Forgings	GY
Ti-Cu2	α	TC2	(IMI-230)	Forgings	GY
Ti-Pd0.15--0.20	α dispers.	TP02	(Pd alloy)	Forgings	GY
		Vereinigte(*I) Metallwerke AG Brand			
Ti-unalloyed-99.6,CP,-25 ksi YS	α	Ti995	(CP)	Forgings	GY
Ti-unalloyed-99.4,CP,-40 ksi YS	α	Ti994	(CP)	Forgings	GY
Ti-unalloyed-99.3,CP,-55 ksi YS	α	Ti993	(CP)	Forgings	GY
Ti-unalloyed-99.2,CP,- ksi YS	α	Ti992	(CP)	Forgings	GY

(*A) B=BAR, SH=SHEET, ST=STRIP, P=PLATE, W=WIRE, FG=FORGINGS, T=TUBE, E=EXTRUSION.

(*B) LW=Luftfahrt Werkstoff Number, also referred to as Aircraft Material and Aircraft Industry. The British list these alloys as BWB Numbers (Bundesamt fur Wehrtechnik) und Beschaffung (BWB), Koblenz, West Germany.

(*C) DIN=Deutsche Normen (German Standards) (General form and composition specifications).

(*D) DIN=Deutsche Norman Werkstoffe Numbers. These materials or alloys numbers are subdivisions of the general DIN specifications for wrought titanium alloys, and are issued by Deutscher Normenausschuss, Berlin/Koln, West Germany. The DIN Werkstoff Numbers 3.7030, 3.7040, 3.7056, and 3.7070 are proposed specifications.

(*E) VdTuV=Vereingigung der Technischen Uberwachungsverein Ev (German Association for Technical Supervision), Essen, West Germany.

TABLE 1F.3. (Continued)

(*F) Fried, Krupp Gmbh, Krupp Metall-und Schmiedewerke, Essen, West Germany.
(*G) Thyssen Edelstahlwerk AG, Titanium Division, Krefeld, West Germany.
(*H) Otto Fuchs Metallwerke, Meinerzhagen, West Germany.
(*I) Vereinigte Deutsche Metallwerke AG.

TABLE 1F. TYPICAL TITANIUM ALLOY DESIGNATIONS FOR NON-US TITANIUM ALLOYS OF COMMERCIAL INTEREST

TABLE 1F.4. TYPICAL TITANIUM ALLOYS OFFERED IN THE TECHSNABEXPORT BROCHURE FROM THE SOVIET UNION AS WELL AS ALLOYS SHOWN IN THE 1975 BOOK "USE OF TITANIUM IN THE NATIONAL ECONOMY" (Arranged by Soviet Alloy Designation Numbers)[50,87,88]

Nominal Composition Wt %	Alloy Type	Alloy Designation	Common Name/Alloy	Typical Product(*A) Forms	Ctry Code
Titanium	α	VT1-00	(CP)	All forms	UR
Unalloyed	α	VT1-0	(CP)	All forms	UR
Grades(*D)	α	VT1	(CP)	All forms	UR
	α	VT1-1	(CP)	All forms	UR
(VT1 and suffixes)	α	VT1L	(CP)	Unalloyed Ti/castings	UR
Ti-Al4-Mn1.5	$\alpha+\beta$	VT4		I,BI,BA,SH,T	UR
Ti-Al5	α	VT5		I,BI,BA,E	UR
Ti-Al5-Si0.5	α dispers.	VT5L		I,C	UR
Ti-Al5-Sn2.5	α	VT5-1	(A-110)	I,BI,BA,P,SH,E,T	UR
Ti-Al6-V4	$\alpha+\beta$	VT6	(6-4)	I,BI,BA,SH,E,T	UR
Ti-Al6-V4-Si0.2	$\alpha+\beta$	VT6L		I,C	UR
Ti-Al4.5-V3.5	$\alpha+\beta$	VT6S		I,BI,BA,P,SH,T,C	UR
Ti-Al6-Mo2-Cr2-Fe1-Si0.2	$\alpha+\beta$	VT3-1		I,BI,BA,E,T	UR
Ti-Al6-Mo2-Cr2-Fe1-Si0.2	$\alpha+\beta$	VT3-1L		I,C	UR
Ti-Al6.5-Mo3.5-Si0.25	$\alpha+\beta$	VT8		I,BI,BA,E	UR
Ti-Al6.5-Mo3.5-Zr(or Sn)2-Si0.25	$\alpha+\beta$	VT9		I,BI,BA	UR
Ti-Al6.5-Mo3.5-Zr(or Sn)2-Si0.25	$\alpha+\beta$	VT9L		I,C	UR
Ti-Al4-V1-Mo3	$\alpha+\beta$	VT14		I,BI,BA,P,SH,E,T	UR
Ti-Al4-V1-Mo3-Si0.2	$\alpha+\beta$	VT14L		I,C	UR
Ti-Al3-Mo7.5-Cr 11	β	VT15		I,BA	UR
Ti-Al2.5-V4.5-Mo5	near-β	VT16		I,BA	UR
Ti-Al6-Mo1-Zr 11-Si0.15	near-α	VT18		I,BA	UR
Ti-Al6.5-V1-Mo1-Zr2	near-α	VT20		I,BI,P,SH,E	UR
Ti-Al6-V1-Mo0.7-Zr5-Cr0.3-Si0.2	near-α	VT21L		I,C	UR
Ti-Al2.5-V5-Mo5-Cr1.3-Fe1	near-β	VT22		I,BA,E	UR
Ti-Al1-Mn1	near-α	OT4-0		I,BI,BA,P,SH,ST,F,E,T	UR
Ti-Al2-Mn1.5	$\alpha+\beta$	OT4-1		I,BI,BA,W,P,SH,ST,E,T	UR
Ti-Al3-Mn1.5	$\alpha+\beta$	OT4		I,BI,BA,W,P,SH,E,T	UR
Ti-Al6-Mn1.5-(Zr)1.5(*F)	$\alpha+\beta$	OT4-2		I,BI,BA,SH,T	UR
Ti-Mo1.5-Zr2.5	$\alpha+\beta$	AT2			UR
Ti-Al3-(Cr,Fe,Si)1.5(*G)	$\alpha+\beta$	AT3			UR
Ti-Al4.5-(Cr,Fe,Si)1.5(*G)	$\alpha+\beta$	AT4			UR
Ti-Al6-(Cr,Fe,Si)1.5(*G)	$\alpha+\beta$	AT6			UR
Ti-Pd0.15--0.20	α	4200	(Pd alloy)		UR
Ti-Mo 32	β	4201			UR
Ti-Mo 32-Cb/Nb1.5	β	4203			UR

TABLE 1F.4. (Continued)

Nominal Composition Wt %	Alloy Type	Alloy Designation	Common Name/Alloy	Typical Product(*A) Forms	Ctry Code
Ti-Ta5	α	4204			UR
Ti-Al3-V7-Mo3.5-Cr 10	β	TS6			UR
Ti-Al3-Mo7-Cr5.5-Fe3	β	IVT-1			UR

(*A) Additional Compositions are included which are believed to be commonly produces.

(*B) Modifications of the compositions listed are frequently reported with the same designations.

(*C) I-INGOT, BI=BILLET, BA=BAR and ROD, W=WIRE, P=PLATE, SH=SHEET, ST=STRIP, F=FOIL, E=EXTRUSION, T=TUBING, and C=CASTINGS. Additionally, the brochure lists specific forging forms, e.g. blades, rings, and discs, and extruded forms for some alloys.

(*D) VT1-11=highest purity grade.

(*E) VT1L, unalloyed Ti castings grade contains Si0.2.

(*F) OT4-2 is listed with and without Zr.

(*G) Typically Cr0.7-Fe0.7-Si0.1-B0.005

TABLE 1F. TYPICAL TITANIUM ALLOY DESIGNATION FOR NON-US TITANIUM ALLOYS OF COMMERCIAL INTEREST

TABLE 1F.5. TYPICAL TITANIUM ALLOYS OFFERED IN CZECHOSLOVAKIA
(Arranged by CSN Standard Numbers)[9]

Nominal Composition Wt %	Alloy Type	Alloy Designation	Common Name/Alloy	Typical Product(*A) Forms	Ctry Code
Ti-unalloyed-99.5,CP,-40 ksi YS	α	CSN 42 4655	(CP)	All forms	CZ
Ti-unalloyed-99.5,CP,-40 ksi YS	α	CSN 42 4656	(CP)	Ti ingots	CZ

Note:

The other Czechoslovakian Standards for titanium do not relate to composition, but pertain to various titanium products as follows:

CSN 42 1490 - Titanium sheets, bands and strips
CSN 42 1491 - Titanium wires
CSN 42 1492 - Titanium bars
CSN 42 1493 - Titanium seamless tubing
CSN 42 1496 - Titanium ingots.

(*A) BI=BILLETS, BA=BAR, P=PLATE, SH=SHEET, ST=STRIP.

TABLE 1F. TYPICAL TITANIUM ALLOY DESIGNATIONS FOR NON-US TITANIUM ALLOYS OF COMMERCIAL INTEREST

TABLE 1F.6. TYPICAL TITANIUM ALLOYS OFFERED BY JAPAN
(Arranged by Japanese Standard and Alloy Symbol Number)[29,57]

Nominal Composition Wt %	Alloy Type	Alloy Designation	Common Name/Alloy	Typical Products(*I) Forms	Ctry Code
Ti-unalloyed-99. ,CP,- ksi YS	α	KS-50(*A)	(CP)	All forms	JA
Ti-unalloyed-99. ,CP,- ksi YS	α	KS-70(*A)	(CP)	All forms	JA
Ti-unalloyed-99. ,CP,- ksi YS	α	ST-40(*B)	(CP)	All forms	JA
Ti-unalloyed-99. ,CP,- ksi YS	α	ST-50(*B)	(CP)	All forms	JA
Ti-unalloyed-99. ,CP,- ksi YS	α	ST-60(*B)	(CP)	All forms	JA
Ti-unalloyed-99. ,CP,- ksi YS	α	ST-70(*B)	(CP)	All forms	JA
Ti-unalloyed-99. ,CP,- ksi YS	α	ST-80(*B)	(CP)	All forms	JA
Ti-unalloyed-99.6,CP,-25 ksi YS	α	TTH 28(*C)	(CP)	Tubing/heat exch. cl. 1	JA
Ti-unalloyed-99.5,CP,-40 ksi YS	α	TTH 35(*C)	(CP)	Tubing/heat exch. cl. 2	JA
Ti-unalloyed-99.2,CP,-55 ksi YS	α	TTH 49(*C)	(CP)	Tubing/heat exch. cl. 3	JA
Ti-unalloyed-99.6,CP,-25 ksi YS	α	TB 28(*D)	(CP)	Titanium bar, class 1	JA
Ti-unalloyed-99.5,CP,-40 ksi YS	α	TB 35(*D)	(CP)	Titanium bar, class 2	JA
Ti-unalloyed-99.2,CP,-55 ksi YS	α	TB 40(*D)	(CP)	Titanium bar, class 3	JA
Ti-unalloyed-99.6,CP,-25 ksi YS	α	TW 28(*E)	(CP)	Titanium wire, class 1	JA
Ti-unalloyed-99.5,CP,-40 ksi YS	α	TW 35(*E)	(CP)	Titanium wire, class 2	JA
Ti-unalloyed-99.2,CP,-55 ksi YS	α	TW 49(*E)	(CP)	Titanium wire, class 3	JA
Ti-unalloyed-99.6,CP,-25 ksi YS	α	TTP 28(*F)	(CP)	Ti ord. piping, class 1	JA
Ti-unalloyed-99.5,CP,-40 ksi YS	α	TTP 35(*F)	(CP)	Ti ord. piping, class 2	JA
Ti-unalloyed-99.2,CP,-55 ksi YS	α	TTP 40(*F)	(CP)	Ti ord. piping, class 3	JA
Ti-unalloyed-99. ,CP,- ksi YS	α	TS-105(*G)	(CP)	Titanium sponge	JA
Ti-unalloyed-99. ,CP,- ksi YS	α	TS-120(*G)	(CP)	Titanium sponge	JA
Ti-unalloyed-99. ,CP,- ksi YS	α	TS-140(*G)	(CP)	Titanium sponge	JA
Ti-unalloyed-99. ,CP,- ksi YS	α	TS-160(*G)	(CP)	Titanium sponge	JA
Ti-unalloyed-99.6,CP,-25 ksi YS	α	TP 28(*H)	(CP)	Ti plate, class 1	JA
Ti-unalloyed-99.5,CP,-40 ksi YS	α	TP 35(*H)	(CP)	Ti plate, class 2	JA
Ti-unalloyed-99.2,CP,-55 ksi YS	α	TP 49(*H)	(CP)	Ti plate, class 3	JA

(*A) Titanium alloys of Kobe Steel Company.

(*B) Titanium alloys of Sumitomo Light Metal Industries (later Nippon Steel Co.).

(*C) JIS Standard H4631.

(*D) JIS Standard H4650.

(*E) JIS Standard H4670.

(*F) JIS Standard H4630.

(*G) JIS Standard H2151(sponge Ti).

(*H) JIS Standard H4600.

(*I) BI=BILLET, BA=BAR, SH=SHEET, ST=STRIP, P=PLATE, W=WIRE.

TABLE 1F. TYPICAL TITANIUM ALLOY DESIGNATIONS FOR NON-US TITANIUM ALLOYS OF COMMERCIAL INTEREST

TABLE 1F.7. TYPICAL TITANIUM ALLOYS REFERENCED BY SPAIN
(Arranged by the Spanish Alloy Designation Number)[30]

Nominal Composition Wt %	Alloy Type	Alloy Designation	Common Name/Alloy	Typical Product(*A) Forms	Ctry Code
Ti-unalloyed-99.6,CP,-25 ksi YS	α	INTA L-7001	(CP)	All forms	SP
Ti-unalloyed-99.5,CP,-40 ksi YS	α	INTA L-7002	(CP)	All forms	SP
Ti-unalloyed-99.2,CP,-55 ksi YS	α	INTA L-7003	(CP)	All forms	SP
Ti-unalloyed-99.0,CP,-70 ksi YS	α	INTA L-7004	(CP)	All forms	SP
Ti-Pd0.12--0.25	α	INTA L-7021	(Pd alloy)	All forms	SP
Ti-Al5-Sn2.5	α	INTA L-7101	(A-110)	All forms	SP
Ti-Al6-V4	$\alpha+\beta$	INTA L-7301	(6-4)	All forms	SP
Ti-Cu2.5	α dispers.	INTA L-7501	(IMI-230)	BI,BA,P,SH	SP
Ti-Al3-V 13,Cr 11	β	INTA L-7701	(13-11-3)		SP

(*A) BI=BILLET, BA=BAR, SH=SHEET, ST=STRIP, P=PLATE, W=WIRE.

(*B) Alloy designations furnished by the Instituto Nacional de Tecnica Aerospacial (INTA), Madrid, Spain.

TABLE 1F. TYPICAL TITANIUM ALLOY DESIGNATIONS FOR NON-US TITANIUM ALLOYS OF COMMERCIAL INTEREST

TABLE 1F.8. TYPICAL TITANIUM ALLOYS REFERENCED BY ISO (INTERNATIONAL STANDARDS ORGANIZATION) (Arranged by ISO Standard Numbers)[7]

Nominal Composition Wt %		Alloy Type	Alloy(*B) Designation	Common Name/Alloy	Typical Product(*A) Forms	Ctry Code
Ti-unalloyed-99. ,CP,-	ksi YS	α	Ductile Titanium	IMI-115, CP	All forms	XX
Ti-unalloyed-99. ,CP,-	ksi YS	α	Resilient	IMI-155/60	All forms	XX
Ti-unalloyed-99. ,CP,-	ksi YS	α	Alloy	IMI-318, CP	All forms	XX
Ti-unalloyed-99. ,CP,-	ksi YS	α	TC 119/SC5		Powder	XX

(*A) BI=BILLET, BA=BAR, SH=SHEET, ST=STRIP, P=PLATE, W=WIRE.

(*B) ISO Draft Specifications. The wrought alloys are intended for surgical implants.

TABLE 1G. CURENT AMS (AEROSPACE MATERIALS SPECIFICATIONS) SPECIFICATIONS COVERING TITANIUM AND TITANIUM ALLOYS[36,45]

Ctry Code	Standard Number	Date Mo-Yr	Title of Standard
US	AMS 4900D	05-72	Aerospace Material Specification for Titanium Sheet, Strip, and Plate, Annealed, 55,000 psi (379 MPA) Yield, (Unalloyed Ti)
US	AMS 4901E	11-72	Aerospace Material Specification for Titanium Sheet, Strip, and Plate, Annealed, 70,000 psi (483 MPA) Yield, (Unalloyed Ti)
US	AMS 4902B	11-68	Aerospace Material Specification for Titanium Sheet, Strip, and Plate, Annealed, 40,000 psi Yield, (Unalloyed Ti)
US	AMS 4906	11-69	Aerospace Material Specification for Titanium Alloy Sheet and Strip, Ti-6Al-4V, Continuously Rolled, Annealed
US	AMS 4907C	06-75	Aerospace Material Specification for Titanium Sheet, Strip, and Plate, Ti-6Al-4V, Extra-Low Interstitial, Annealed
US	AMS 4908C	06-75	Aerospace Material Specification for Titanium Alloy Sheet and Strip, Ti-8Mn, Annealed, 110,000 psi Yield
US	AMS 4909C	01-76	Aerospace Material Specification for Titanium Alloy Sheet, Strip, and Plate, Ti-5Al-2.5Sn, Extra-Low Interstitial, Annealed
US	AMS 4910F	06-75	Aerospace Material Specification for Titanium Alloy Sheet, Strip, and Plate, Ti-5Al-2.5Sn, Annealed
US	AMS 4911C	12-73	Aerospace Material Specification for Titanium Alloy Sheet, Strip, and Plate, Ti-6Al-4V, Annealed
US	AMS 4912A	11-68	Aerospace Material Specification for Titanium Alloy Sheet and Strip, Ti-4Al-3Mo-1V, Solution Heat Treated
US	AMS 4913A	11-68	Aerospace Material Specification for Titanium Alloy Sheet and Strip, Ti-4Al-3Mo-1V, Solution and Precipitation Treated
US	AMS 4915C	01-76	Aerospace Material Specification for Titanium Alloy Sheet, Strip, and Plate, Ti-8Al-1Mo-1V, Single Annealed
US	AMS 4916C	01-76	Aerospace Material Specification for Titanium Alloy Sheet, Strip, and Plate, Ti-8Al-1Mo-1V, Duplex Annealed
US	AMS 4917B	05-69	Aerospace Material Specification for Titanium Alloy Sheet, Strip, and Plate, Ti-13.5V-11Cr-3Al, Solution Heat Treated

TABLE 1G. (Continued)

Ctry Code	Standard Number	Date Mo-Yr	Title of Standard
US	AMS 4918D	06-75	Aerospace Material Specification for Titanium Alloy Sheet, Strip, and Plate, Ti-6Al-6V-2Sn, Annealed
US	AMS 4921C	01-76	Aerospace Material Specification for Titanium Bars, Forgings, and Rings-Annealed, 70,000 psi (483 MPA) Yield, (Unalloyed Ti)
US	AMS 4924C	01-76	Aerospace Material Specification for Titanium Alloy Bars, Forgings, and Rings, Ti-5Al-2.5Sn, Extra-Low Interstitial, Annealed
US	AMS 4926E	01-76	Aerospace Material Specification for Titanium Alloy Bars and Rings, Ti-5Al-2.5Sn, Annealed, 110,000 psi (758 MPA) Yield
US	AMS 4928G	11-72	Aerospace Material Specification for Titanium Alloy Bars and Forgings, Ti-6Al-4V, Annealed, 120,000 psi (827 MPA) Yield
US	AMS 4930A	01-76	Aerospace Material Specification for Titanium Alloy Bars, Forgings, and Rings, Ti-6Al-4V, Extra-Low Interstitial, Annealed
US	AMS 4934	06-75	Aerospace Material Specification for Titanium Alloy Extrusions and Flash-Welded Rings, Ti-6Al-4V, Solution Heat Treated and Aged
US	AMS 4935C	06-75	Aerospace Material Specification for Titanium Alloy Extrusions and Flash-Welded Rings, Ti-6Al-4V, Annealed
US	AMS 4936	11-71	Aerospace Material Specification for Titanium Alloy Extrusions, Ti-6Al-6V-2Sn
US	AMS 4941A	12-74	Aerospace Material Specification for Titanium Tubing, Welded-Annealed, 40,000 psi (276 MPA) Yield, (Unalloyed Ti)
US	AMS 4942A	01-76	Aerospace Material Specification for Titanium Tubing, Seamless-Annealed, 40,000 psi (276 MPA) Yield, (Unalloyed Ti)
US	AMS 4943	11-71	Aerospace Material Specification for Titanium Alloy Tubing, Seamless-Annealed, Ti-3Al-2.5V
US	AMS 4944	06-74	Aerospace Material Specification for Titanium Alloy Tubing, Seamless-Hydraulic, Ti-3Al-2.5V, Cold-Worked, Stress-Relieved
US	AMS 4915C	05-72	Aerospace Material Specification for Titanium Wire, Welding, (Unalloyed Ti)
US	AMS 4953	03-58	Aerospace Material Specification for Titanium Alloy Wire, Welding, Ti-5Al-2.5Sn, Annealed

TABLE 1G. (Continued)

Ctry Code	Standard Number	Date Mo-Yr	Title of Standard
US	AMS 4954B	11-72	Aerospace Material Specification for Titanium Alloy Wire, Welding, Ti-6Al-4V
US	AMS 4955	09-65	Aerospace Material Specification for Titanium Alloy Wire, Welding, Ti-8Al-1Mo-1V
US	AMS 4956	05-69	Aerospace Material Specification for Titanium Alloy Wire, Welding, Ti-6Al-4V, Extra-Low Interstitial, Environment Controlled
US	AMS 4965C	12-74	Aerospace Material Specification for Titanium Alloy Bars, Forgings, and Rings, Ti-6Al-4V, Solution and Precipitaion Heat Treated
US	AMS 4966E	12-74	Aerospace Material Specification for Titanium Alloy Forgings, Ti-5Al-2.5Sn, Annealed, 110,000 psi (758 MPA) Yield
US	AMS 4967D	05-72	Aerospace Material Specification for Titanium Alloy Bars and Forgings, Ti-6Al-4V, Annealed, Heat Treatable
US	AMS 4970C	05-70	Aerospace Material Specification for Titanium Alloy Bars and Forgings, Ti-7Al-4Mo, Solution and Precipitation Treated
US	AMS 4971A	05-70	Aerospace Material Specification for Titanium Alloy Bars, Forgings, and Rings, Ti-6Al-6V-2Sn, Annealed, Heat Treatable
US	AMS 4972A	05-70	Aerospace Material Specification for Titanium Alloy Bars and Rings, Ti-8Al-1Mo-1V, Solution Treated and Stabilized
US	AMS 4973A	05-70	Aerospace Material Specification for Titanium Alloy Forgings, Ti-8Al-1Mo-1V, Solution Treated and Stabilized
US	AMS 4974	11-67	Aerospace Material Specification for Titanium Alloy Bars and Forgings, Ti-11Sn-5Zr-2.3Al-1Mo-0.21Si, Solution and Precipitation Treated
US	AMS 4975B	11-71	Aerospace Material Specification for Titanium Alloy Bars and Rings, Ti-6Al-2Sn-4Zr-2Mo, Solution and Precipitation Treated
US	AMS 4976	05-68	Aerospace Material Specification for Titanium Alloy Forgings, Ti-6Al-2Sn-4Zr-2Mo, Solution and Precipitation Treated
US	AMS 4977A	11-72	Aerospace Material Specification for Titanium Alloy Bars and Wire, Ti-11.5Mo-6Zr-4.5Sn, 1275-1350 F, (690.6-732.2 C), Solution Heat Treated

TABLE 1G. (Continued)

Ctry Code	Standard Number	Date Mo-Yr	Title of Standard
US	AMS 4978A	05-71	Aerospace Material Specification for Titanium Alloy Bars, Forgings, and Rings, Ti-6Al-6V-2Sn, Annealed, 140,000 psi Yield
US	AMS 4979	05-70	Aerospace Material Specification for Titanium Alloy Bars, Forgings, and Rings, Ti-6Al-6V-2Sn, Solution and Precipitation Heat Treated
US	AMS 4980A	11-72	Aerospace Material Specification for Titanium Alloy Bars and Wire, Ti-11.5Mo-6Zr-4.5Sn, 1375 F, (746 C), Solution Heat Treated
US	AMS 4981	11-72	Aerospace Material Specification for Titanium Alloy Bars and Forgings, Ti-6Al-2Sn-4Zr-6Mo, Solution and Precipitation Heat Treated
US	AMS 4982	12-74	Aerospace Material Specification for Titanium Alloy Bars, Ti-45Cb, Annealed

TABLE 1H. CORRELATION OF AMS STANDARD COMPOSITIONS WITH AMS PRODUCT FORM SPECIFICATIONS
(Alphanumerical by Computerized Format)[45]

Nominal Composition Wt % (Computerized Format)	Forgings	Bars	Rings	Wire	Plate	Sheet	Strip	Tubing	Extrusions
Ti-unalloyed-99.0,CP,-70 ksi YS, ann.	4921C	4921C	4921C		4901E	4901E	4901E		
Ti-unalloyed-99.2,CP,-55 ksi YS, ann.					4900D	4900D	4900D		
Ti-unalloyed-99.5,CP,-40 ksi YS, ann.								4942A (seamless)	
Ti-unalloyed-99.5,CP,-40 ksi YS, ann.				4951C (welding)	4902B	4902B	4902B	4941A (welded)	
Ti-Al1-V8-Fe5									
Ti-Al2-V 11-Sn2-Zr 11									
Ti-Al2.25-Mo1-Sn 11-Zr5-Si0.2, sta	4974	4974							
Ti-Al3-Cr5, not current	4927	4927							
Ti-Al3-V2.5, ann.								4943 (seamless)	
Ti-Al3-V8-Mo4-Zr4-Cr6									
Ti-Al3-V8-Mo8-Fe2									
Ti-Al3-V 13-Cr 11, sol. treated					4917B	4917B	4917B		
Ti-Al4-Mn4, not current	4925B	4925B							
Ti-Al4-V1-Mo3, sol. treated						4912A	4912A		
Ti-Al4-V1-Mo3, sta						4913A	4913A		
Ti-Al5-Mo2-Sn6-Zr2-Si0.25									
Ti-Al5-Mo4-Sn2-Zr2-Cr4									
Ti-Al5-Sn2.5 ELI, ann. 90 ksi YS	4924C	4924C	4924B		4909C	4909C	4909C		
Ti-Al5-Sn2.5, ann. 110 ksi YS	4966D	4926E	4926E	4953 (welding)	4910F	4910F	4910F		
Ti-Al5-Sn5-Zr5, not current	4968A	4968A							
Ti-Al5.4-Mo1.25-Cr1.4-Fe1.5, not current	4969	4929							
Ti-Al6-Mo0.8-Cb/Nb2-Ta1									
Ti-Al6-Mo1-Sn2-Zr1.5-Bi0.35-Si0.1									
Ti-Al6-Mo2-Sn2-Zr2-Cr2-Si0.2									
Ti-Al6-Mo2-Sn2-Zr4, sta	4976	4975B	4975B						
Ti-Al6-Mo6-Sn2-Zr4, sta	4981	4981							
Ti-Al6-V4, ann. heat treatable	4967D	4967D							
Ti-Al6-V4, ann. 120 ksi YS	4928G	4928G		4954B (welding)	4911C	4911C	4911C		4935C
Ti-Al6-V4, continuously rolled, ann.						4906	4906		

TABLE 1H. (Continued)

Nominal Composition Wt % (Computerized Format)	Forgings	Bars	Rings	Wire	Plate	Sheet	Strip	Tubing	Extrusions
Ti-Al6-V4, ELI, ann.	4930A	4930A	4930A	4956 (welding)	4907C	4907C	4907C		
Ti-Al6-V4, sta	4965C	4965C	4965C						
Ti-Al6-V6-Sn2, ann. heat treatable	4971A	4971A	4971A						
Ti-Al6-V6-Sn2, ann. 140 ksi YS	4978A	4978A	4978A		4918D	4918D	4918D		4936
Ti-Al6-V6-Sn2, sta	4979	4979	4979						
Ti-Al7-Mo4, sta	4970C	4970C							
Ti-Al8-V1-Mo1, duplex ann.					4916C	4916C	4916C		
Ti-Al8-V1-Mo1, single ann.				4955 (welding)	4915C	4915C	4915C		
Ti-Al8-V1-Mo1, sol. treated and aged	4973A	4972A	4972A						
Ti-Cu2									
Ti-Mn8, ann. 110 ksi YS									
Ti-Mo2-Cr2-Fe, not current	4923A	4923A							
Ti-Mo 11.5-Sn4.5-Zr6, sol. treated		4977A		4977A					
Ti-Mo 11.5-Sn4.5-Zr6, 1375 F, sol. treat.		4980A		4980A					
Ti-Ni1--2									
Ti-Pd0.15--0.20									

Note: Ann. = annealed, YS = Yield Strength, sol = solution, sta = solution and precipitation heat treated (i.e., aged).

TABLE 1I. CURRENT ASTM (AMERICAN SOCIETY FOR TESTING AND MATERIALS) STANDARD SPECIFICATIONS COVERING TITANIUM AND TITANIUM ALLOYS[37,45]

Ctry Code	Standard Number	Year	Title of Standard
US	ASTM B265-74	1974	ASTM Standard Specification for Titanium and Titanium Alloy Strip, Sheet, and Plate
US	ASTM B299-74	1974	ASTM Standard Specification forTitanium sponge
US	ASTM B348-74	1974	ASTM Standard Specification for Titanium and Titanium Bars and Billets
US	ASTM B337-74	1974	ASTM Standard Specification for Seamless and Welded Titanium and Titanium Alloy Pipe
US	ASTM B338-74	1974	ASTM Standard Specification for Seamless and Welded Titanium and Titanium Alloy Tubes for Condensers and Heat Exchangers
US	ASTM B363-71	1971	ASTM Standard Specification for Seamless and Welded Unalloyed Titanium Welding Fittings
US	ASTM B367-69	1969	ASTM Standard Specification for Titanium and Titanium Alloy Castings
US	ASTM B381-75	1975	ASTM Standard Specification for Titanium and Titanium Alloy Forgings
US	ASTM B382-64*	1964	ASTM Standard Specification for Titanium and Titanium Alloy Bare Welding Rods and Electrodes-Discontinued in 1969, See AWS A5.16-70
US	ASTM F67-74	1974	ASTM Standard Specification for Titanium for Surgical Implants
US	ASTM F136-70	1970	ASTM Standard Specification for Titanium 6Al-4V ELI Alloy for Use in Clinical Evaluations as a Surgical Implant Material

* Non current standard.

TABLE 1J. CORRELATION OF ASTM TITANIUM AND TITANIUM ALLOY COMPOSITIONS WITH ASTM GRADE NUMBERS AND ASTM STANDARD FORM SPECIFICATIONS[45]

Nominal Composition Wt %	B348-74 Bars and Billets	B381-75 Forgings	B265-74 Strip, Sheet, and Plate	B337-74 Pipe	B338-74 Tubing	B363-71 Welding Fittings	B367-69(74) Castings	F67-74(*D) Wrought Forms	F136-70(*D) Wrought Forms
Ti-unalloyed-99.6,CP,-25 ksi YS (low iron, low interstitials)	Grade 1	Grade F-1	Grade 1	Grade 1	Grade 1	WPT1(*A)	Grade C-1	--	--
Ti-unalloyed-99.5,CP,-40 ksi YS (intermediate iron and interstitials)	Grade 2	Grade F-2	Grade 2	Grade 2	Grade 2	WPT2(*A)	Grade C-2	--	--
Ti-unalloyed-99.2,CP,-55 ksi YS (intermediate iron and interstitials)	Grade 3	Grade F-3	Grade 3	Grade 3	Grade 3	WPT3(*A)	Grade C-3	Grade 3(*B)	--
Ti-unalloyed-99.0,CP,-70 ksi YS (high iron and interstitials)	Grade 4	Grade F-4	Grade 4	Grade 4	Grade 4	--	Grade C-4	Grade 4(*C)	--
Ti-Al6-V4	Grade 5	Grade F-5	Grade 5	--	--	--	Grade C-5	--	--
Ti-Al6-V4 ELI (high purity)	--	--	--	--	--	--	--	--	Ti-Al6-V4 ELI
Ti-Al5-Sn2.5	Grade 6	Grade F-6	Grade 6	--	--	--	Grade C-6	--	--
Ti-Pd0.12--0.25 (low iron and low interstitials)	--	--	--	--	--	--	Grade C-7A	--	--
Ti-Pd0.12--0.25 (intermediate iron and interstitials)	Grade 7	Grade F-7	Grade 7	Grade 7	Grade 7	--	Grade C-7B	--	--
Ti-Pd1.2--0.25 (intermediate iron, high interstitials)	--	--	--	Grade 8	Grade 8	--	Grade C-8A	--	--
Ti-Pd1.2--0.25 (high iron and interstitials)	--	--	--	--	--	--	Grade C-8B	--	--
Ti-Mo 11.5-Sn4.5-Zr6	Grade 10	--	Grade 10	--	--	--	--	--	--

(*A) When fittings are of welded construction, the symbol shown shall be suplemented by the letter (W). The designated grades correspond to grades 1, 2, and 3 of B348, B265, B337, B338, and grades C-1, C-2, and C-3 of B367.

(*B) Corresponds to grade 3 of B348, B381, and B265.

(*C) Corresponds to grade 4 of B381 and B265.

(*D) Material for surgical implants.

TABLE 1K. CURRENT MIL (US MILITARY) SPECIFICATIONS COVERING TITANIUM AND TITANIUM ALLOYS[44,45,57]

Ctry Code	Standard Number	Date Mo-Yr	Title of Standard
US	MIL-HDBK 697A	06-74	US Military Handbook, Titanium and Titanium Alloys
US	MIL-F-83142A	12-69	US Military Specifications, Forging, Titanium Alloys, Premium Quality
US	MIL-H-81200A	09-68	US Military Specification, Heat Treatment of Titanium and Titanium alloy
	+ Amendment No. 1	03-69	
US	MIL-T-9046H	03-74	US Military Specification, Titanium and Titanium Alloy, Sheet, Strip, and Plate (Superseding MIL-T-009046G)
US	MIL-T-9047E	06-70	US Military Specification, Titanium and Titanium Alloy Bars and Forging Stock
US	MIL-T-009047F	03-71	US Military Specification, Titanium and
	+ Amendment No. 1	09-72	Titanium Alloy Bars and Forging Stock
US	MIL-T-13405C	05-66	US Military Specification, Titanium Powder
US	MIL-T-46035A	10-66	US Military Specification, Titanium Alloy,
	+ Amendment No. 1	05-72	High Strength Wrought, (for Critical Components)
US	MIL-T-46038B	06-76	US Military Specification, Titanium Alloy Wrought, Rods, Bars, and Billets (for Critical Applications)
US	MIL-T-46077B	07-75	US Military Specification, Titanium Alloy Armor Plate, Weldable
US	MIL-T-81556	03-68	US Military Specification, Titanium and Titanium Alloy Bars, Rods, and Special Shaped Sections Extruded
US	MIL-T-81915	03-73	US Military Specification, Titanium and Titanium-Alloy Castings, Invertment
US	MIL-R-81588	07-70	US Military Specification, Welding Rods and Wire, Titanium and Titanium Alloys
US	MIL-W-6858C	10-64	US Military Specification, Welding
	+ Amendment No. 1	06-65	Resistance: Aluminum, Magnesium, Non-Hardening Steels or Alloys, Nickel Alloys, Heat Resisting Alloys, and Titanium Alloys, Spot and Seam
US	MIL-T-13405C	05-65	US Military Specification for Titanium Powder (for Pyrotechnic Use)

The use of double zeros (00) in standard numbers indicates an uncoordinated specification, and not necessarily accepted by all services.

TABLE 1L. CORRELATION OF US MILITARY SPECIFICATIONS[45]

Nominal Composition Wt %	MIL-T-9047E Bars, Forgings, and Forging Stock	MIL-T-009047(*A) Bars and Forging Stock	MIL-F-83142A Premium Quality Material	MIL-T-9046H Sheet, Strip, and Plate	MIL-T-81556 Bars, Rods, Special Shapes, and Extrusions	MIL-R-81588 Welding Rods and Wire
Ti-unalloyed-high purity grade	—	—	—	—	Type I, Composition A	—
Ti-unalloyed-99.5,CP	Composition 1	Composition 1	Composition 1	Type I, Composition A unalloyed (40 ksi YS)	Type I, Composition B	—
Ti-unalloyed-99.1,CP	(all unalloyed	(all unalloyed	(all unalloyed	Type I, Composition C unalloyed (55 ksi YS)	Type I, Composition C	—
Ti-unalloyed-99.0,CP	grades are in this category)	grades are in this category)	grades are in this category)	Type I, Composition B unalloyed (70 ksi YS)	Type I, Composition D	—
Ti-PD0.15-0.20	—	—	—	—	—	—
Ti-Al5-Sn2.5	Composition 2	Composition 2	Composition 2	Type II, Composition A	Type II, Composition A	—
Ti-Al5-Sn2.5 ELI	Composition 3	Composition 3	Composition 3	Type II, Composition B	Type II, Composition B	—
Ti-Ni1-2	—	—	—	—	—	—
Ti-Cu2	—	—	—	—	—	—
Ti-Al2.25-Mo1-Sn 11-Zr5-Si0.2	Composition 10	Composition 10	Composition 10	—	—	—
Ti-Al5-Mo1-Sn6-Zr2-Si0.25	—	—	—	—	—	—
Ti-Al6-Mo1-Sn2-Zr1.5-Bi0.35-Si0.1	—	—	—	—	—	—
Ti-Al6-Mo0.8-Cb/Nb2-Ta1	—	—	—	Type II, Composition G	—	Type II, Composition D
Ti-Al8-V1-Mo1	Composition 5	Composition 5	Composition 5	Type II, Composition F	Type II, Composition C	Type II, Composition C
Ti-Mn8	—	—	—	Type III, Composition A	—	—
Ti-Al3-V2.5	—	—	—	—	—	—
Ti-Al4-V1-Mo3	—	—	—	Type III, Composition B	—	—
Ti-Al5-Mo4-Sn2-Zr2-Cr4	—	—	—	—	—	—
Ti-Al6-V4	Composition 6	Composition 6	Composition 6	Type III, Composition C	Type III, Composition A	Type III, Composition A
Ti-Al6-V4 ELI	Composition 7	Composition 7	Composition 7	Type III, Composition D	Type III, Composition B	Type III, Composition B
Ti-Al6-V4 SPL	—	—	—	Type III, Composition H	—	—
Ti-Al6-V6-Sn2	Composition 8	Composition 8	Composition 8	Type III, Composition E	Type III, Composition C	—
Ti-Al6-Mo2-Sn2-Zr4	Composition 11	Composition 11	Composition 11	Type III, Composition G	—	—
Ti-Al6-Mo6-Sn2-Zr4	Composition 14	Composition 14	—	—	—	—
Ti-Al6-Mo2-Sn2-Zr2-Cr2-Si0.2	—	—	—	—	—	—
Ti-Al7-Mo4	Composition 9	Composition 9	Composition 9	—	Type III, Composition D	—
Ti-Al1-V8-Fe5	—	—	—	—	—	—
Ti-Al2-V 11-Sn2-Zr 11	—	—	—	—	—	—
Ti-Al3-V8-Mo4-Zr4-Cr6	—	—	—	—	—	—
Ti-Mo 11.5-Sn4.5-Zr6	Composition 13	Composition 13	Composition 13	—	—	—
Ti-Al3-V8-Mo8-Fe2	—	—	—	—	—	—
Ti-Al3-V 13-Cr 11	Composition 12	Composition 12	Composition 12	Type IV, Composition A	—	Type IV, Composition A
Ti-Al5-Sn5-Zr5(*B)	—	—	Composition 4	—	—	—
Ti-Al7-Zr 12(*B)	These alloys are not described in current specifications except for the heat treatment specification MIL-H-81200A.					
Ti-Al7-Cb/Nb2-Ta1(*B)						
Ti-Al4-V4(*B)						
Ti-Al5-Mo1-Cr1.5-Fe1.5(*B)						
Ti-Mo2-Cr2-Fe2(*B)						

Note: ELI = extra-low interstitial, SPL = special low, 0.005H.

(*A) An uncoordinated specification.

(*B) Alloys used infrequently.

TABLE 1M. CURRENT AWS (AMERICAN WELDING SOCIETY) STANDARDS COVERING TITANIUM AND TITANIUM ALLOY WELDING RODS[45,57]

Ctry Code	Standard Number	Year	Title of Standard
US	AWS A5.16-70	1970	American Welding Society Specifications for Titanium and Titanium Alloy Bare Welding Rods and Electrodes (Covers Four Unalloyed Ti Materials, Two Ti-6Al-4V Materials, Two Ti-5Al-2.5Sn Materials, Two Ti-3Al-2.5V Materials As Well As, Ti-Pd0.15--0.25, Ti-8Al-1Mo-1V, Ti-6Al-2Cb-1Ta-0.8Mo, and Ti-13V-11Cr-3Al Alloys)

Note: Detailed composition of each of the 10 materials is shown in Table 1E.2.

TABLE 1N. COMPARISON OF TITANIUM SPONGE SPECIFICATIONS OF US NATIONAL STOCKPILE PURCHASE SPECIFICATIONS, ASTM, USSR, AND JAPAN (Sequenced by the Important Impurities) (percent by weight on a dry basis)[57]

	US Specifications, National Stockpile Purchase Specifications P-97-R5 (8/15/69)(*A)				Soviet Produced Sponge GOST-5303 MRTU-14 1960		Japanese Produced Sponge Range H2151-1969		US Specifications ASTM SPEC B-299-69		
	Grade 1A-0		Grade 1B-0		TG-110	TG-120	Minus 100BHN Typical	Minus 120BHN Typical	MD-120	ML-120	SL-120
	Type A(*B)	Type B(*B)	Type C(*B)	Type A(*B)	Type A(*B)	Type A(*B)	Type A(*B)	Type A(*B)	Type A(*B)	Type B(*B)	Type C(*B)
Nitrogen Maximum %	0.015	0.015	0.010	0.015	0.02	0.03	0.005 to 0.008	0.005 to 0.008	0.015	0.015	0.010
Carbon Maximum %	0.020	0.025	0.020	0.020	0.03	0.03	0.006 to 0.007	0.010	0.020	0.025	0.020
Sodium Total Maximum %	–	–	0.19	–	(N)	(N)	–	–	–	–	0.190
Magnesium Maximum %	0.08	0.40	–	0.08	(N)	(N)	0.030 to 0.40	0.030 to 0.060	0.30	0.50	–
Chlorine Maximum %	0.12	0.15	0.20	0.12	0.08	0.08	0.070 to 0.090	0.070 to 0.090	0.12	0.20	0.20
Iron Maximum %	0.12	0.10	0.05	0.05	0.07	0.11	0.020 to 0.050	0.020 to 0.050	0.12	0.10	0.05
Silicon Maximum %	0.04	0.04	0.04	0.04	0.04	0.05	less than 0.010	less than 0.010	0.04	0.04	0.04
Hydrogen Maximum %	0.005	0.03	0.05	0.005	(N)	(N)	0.002 to 0.003	0.002 to 0.003	0.005	0.03	0.05
Oxygen Maximum %	0.10	0.10	0.10	0.07	0.04	0.065	0.040 to 0.050	0.050 to 0.070	0.10	0.10	0.10
Water Maximum %	0.02	0.02	0.02	0.02	(N)	(N)	(N)	(N)	(N)	(N)	(N)
Total All Other Impurities	0.05	0.05	0.05	0.05	(N)	(N)	(N)	(N)	0.05	0.05	0.05
Titanium Balance (Nominally)	99.3	99.1	99.3	99.3	(N)	(N)	Plus	Plus	99.3	99.1	99.3
Brinell Hardness Number	120 max	120 max	120 max	120 max	100 max	120 max	97 to 99	100 to 106	120 max	120 max	120 max

(*A) The sample shall be dried for 2 hours at 1350 C.

(*B) Type A - Magnesium reduced and finished by vacuum distillation. Type A is produced only oe Japan and the USSR.
Type B - Magnesium reduced and finished by acid leaching or inert gas-sweep distillation. Type B is produced by Oremet and Titanium Metals Corporation of America.
Type C - Sodium reduced and finished by acid leaching. Type C is produced by the RMI Company.

TABLE 10. CURRENT BRITISH STANDARD NUMBERS AND TITLES COVERING TITANIUM AND TITANIUM ALLOYS[5,6,7]

Ctry Code	Standard Number	Date Mo/Yr	Title of Standard
UK	BS CP 3003 (9)	00/70	Titanium lining of vessels and equipment for chemical processes, guidance to manufacturers and users of lined vessels and equipment: selection, design, application, maintenance, inspection and testing, of linings: recommendations on design of the items to be lined
UK	BS 2TA1	11/74	Aerospace series specification for sheet and strip of commercially pure titanium (tensile strength 290-420 MPA), (supersedes TA1)
UK	BS 2TA2	04/73	Aerospace series specification for sheet and strip of commercially pure titanium (tensile strength 390-540 N/mm^2), (supersedes TA2)
UK	2TA3	04/73	Aerospace series specification for bars and sections for machining of commercially pure titanium (tensile strength 390-540 N/mm^2), supersedes TA3)
UK	BS 2TA4	04/73	Aerospace series specification for forging stock of commercially pure titanium (tensile strength 390-540 N/mm^2), (supersedes TA4)
UK	BS 2TA5	04/73	Aerospace series specification for forgings of commercially pure titanium (tensile strength 390-540 N/mm^2), (supersedes TA5)
UK	BS 2TA6	04/73	Aerospace series specification for sheet and strip of commercially pure titanium (tensile strength 570-730 N/mm^2), (supersedes TA6)
UK	BS 2TA7	04/73	Aerospace series specification for bars and section for machining of commercially pure titanium (tensile strength 540-740 N/mm^2), (supersedes TA7)
UK	BS 2TA8	04/73	Aerospace series specification for forging stock of commercially pure titanium (tensile strength 540-740 N/mm^2), (supersedes TA8)
UK	BS 2TA9	04/73	Aerospace series specification for forgings of commercially pure titanium (tensile strength 540-740 N/mm^2), (supersedes TA9)
UK	BS 2TA10	05/74	Aerospace series specification for sheet and strip of titanium-aluminium-vanadium alloy (tensile strength 960-1270 MPA), (supersedes TA10)

TABLE 10. (Continued)

Ctry Code	Standard Number	Date Mo/Yr	Title of Standard
UK	BS 2TA11	05/74	Aerospace series specification for bars and section for machining of titanium-aluminium-vanadium alloy (tensile strength 900-1160 MPA), (max. section 155 mm), (supersedes TA11)
UK	BS 2TA12	05/74	Aerospace series specification for forging stock of titanium-aluminium-vanadium alloy (tensile strength 900-1160 MPA), (max. section 150 mm), (supersedes TA12)
UK	BS 2TA13	05/74	Aerospace series specification for forgings of titanium-aluminium-vanadium alloy (tensile strength 900-1160 MPA), (max. section 150 mm), (supersedes TA13)
UK	BS TA14*	12/68	Aerospace series specification for aluminium-tin alloy sheets (tensile strength 82-108 HBAR), (supersedes DTD 5093)
UK	BS TA15*	12/68	Aerospace series specification for titanium-aluminium-tin alloy bars for machining (tensile strength 79-108 HBAR), (max. section 150 mm), (partially supersedes DTD 5083)
UK	BS TA16*	12/68	Aerospace series specification for titanium-aluminium-tin alloy forging stock (tensile strength 79-108 HBAR), (max. section 150 mm), (partially supersedes DTD 5083)
UK	BS TA17*	12/68	Aerospace series specification for titanium-aluminium-tin alloy forgings (tensile strength 79-108 HBAR), (max. section 150 mm)
UK	BS TA18** + Amend. 1052	12/68	Aerospace series specification for titanium-tin-zirconium-aluminium-molybdenum-silicon alloy bars for machining (tensile strength 111-134 HBAR), (max. section 50 mm)
UK	BS TA19** + Amend. 1053	12/68 12/72	Aerospace series specification for titanium-tin-zirconium-aluminium-molybdenum-silicon alloy forging stock (tensile strength 111-134 HBAR), (max. section 50 mm)
UK	BS TA20** + Amend. 1054	12/68 12/71	Aerospace series specification for titanium-tin-zirconium-aluminium-molybdenum-silicon alloy forgings (tensile strength 111-134 HBAR), (max. section 50 mm)
UK	BS 2TA21	04/73	Aerospace series specification for sheet and strip of titanium-copper alloy (tensile strength 540-770 N/mm^2), (supersedes TA21)

TABLE 10. (Continued)

Ctry Code	Standard Number	Date Mo/Yr	Title of Standard
UK	BS 2TA22	04/73	Aerospace series specification for bars and section for machining of titanium-copper alloy (tensile strength 540-770 N/mm^2), (supersedes TA22)
UK	BS 2TA23	04/73	Aerospace series specification for forging stock of titanium-copper alloy (tensile strength 540-770 N/mm^2), (supersedes TA23)
UK	BS 2TA24	04/73	Aerospace series specification for forgings of titanium-copper alloy (tensile strength 540-770 N/mm^2), (supersedes TA24)
UK	BS TA25** + Amend. 1056	12/68 12/72	Aerospace series specification for titanium-tin-zirconium-aluminium-molybdenum-silicon alloy bars for machining (tensile strength 103-127 HBAR), (max. section 75 mm)
UK	BS TA27 + Amend. 1057	12/68 12/72	Aerospace series specification for titanium-tin-zirconium-aluminium-molybdenum-silicon alloy forgings (tensile strength 103-127 HBAR), (max. section 75 mm)
UK	BS 2TA28	05/74	Aerospace series specification for titanium-aluminium-vanadium alloy forging stock (tensile strength 1110-1130 HBAR), (max. section 20 mm), (primarily intended for the manufactures of fasteners for British Standards), (supersedes TA28)
UK	BS TA27 + Amend. 1057	12/68 12/72	Aerospace series specification for titanium-tin-aluminium-molybdenum-tin-silicon alloy bars for machining (tensile strength 114-136 HBAR), (max. section 25 mm)
UK	BS TA30*	07/69	Aerospace series specification for titanium-aluminium-molybdenum-tin-silicon alloy forging stock (tensile strength 114-136 HBAR), (max. section 25 mm), (partially supersedes DTD 5103)
UK	BS TA31*	07/69	Aerospace series specification for titanium-aluminium-molybdenum-tin-silicon alloy forgings (tensile strength 114-136 HBAR), (max, section 25 mm), (partially supersedes DTD 5153)
UK	BS TA32*	07/69	Aerospace series specification for titanium-aluminium-molybdenum-tin-silicon alloy for machining (tensile strength 105-127 HBAR), (max. section 75 mm), (partially supersedes DTD 5103)

TABLE 10. (Continued)

Ctry Code	Standard Number	Date Mo/Yr	Title of Standard
UK	BS TA33*	07/69	Aerospace series specification for titanium-aluminium-tin-silicon alloy forging stock (tensile strength 105-127 HBAR), (max. section 75 mm), (partially supersedes DTD 5103)
UK	BS TA34*	07/69	Aerospace series specification for titanium-aluminium-molybdenum-tin-silicon alloy forgings (tensile strength 105-127 HBAR), (max. section 75 mm), (partially supersedes DTD 5153)
UK	BS TA35*	07/69	Aerospace series specification for titanium-aluminium-molybdenum-tin-silicon alloy bars for machining (tensile strength 100-124 HBAR), (max. section 150 mm), (partially supersedes DTD 5103)
UK	BS TA36*	07/69	Aerospace series specification for titanium-aluminium-molybdenum-tin-silicon alloy forging stock (tensile strength 100-124 HBAR), (max. section 150 mm), (partially supercedes DTD 5103)
UK	BS TA37*	07/69	Aerospace series specification for titanium-aluminium-molybdenum-silicon alloy forgings (tensile strength 100-124 HBAR), (max. section 150 mm), (partially supersedes DTD 5153)
UK	BS TA38	09/71	Aerospace series specification for machining of titanium-aluminium-molybdenum-tin-silicon-carbon alloy (tensile strength 1250-1420 N/mm^2), (max. section 20 mm), (partially supercedes DTD 5203)
UK	BS TA39	09/71	Aerospace series specification for forging stock of titanium-aluminium-molybdenum-tin-silicon-carbon alloy (tensile strength 1250-1429 N/mm^2), (max. section 25 mm), (partially supersedes DTD 5203)
UK	BS TA40	09/71	Aerospace series specification for bars for machining of titanium-aluminium-molybdenum-tin-silicon-carbon alloy (tensile strength 1205-1375 N/mm^2), (partially supersedes DTD 5203)
UK	BS TA41	09/71	Aerospace series specification for forging stock of titanium-aluminium-tin-silicon-carbon alloy (tensile strength 1205-1375 N/mm^2), (max. section 25-75 mm), (partially supersedes DTD 5203)

TABLE 10. (Continued)

Ctry Code	Standard Number	Date Mo/Yr	Title of Standard
UK	BS TA42	09/71	Aerospace series specification for forgings of titanium-aluminium-molybdenum-tin-silicon-carbon alloy (tensile strength 1205-1375 N/mm^2), (max. section 25-75 mm), (partially supersedes DTD 5223)
UK	BS TA43 + Amend. 1623	06/72 11/72	Aerospace series specification for forging stock of titanium-aluminium-zirconium-molybdenum-silicon alloy (tensile strength 990-1140 N/mm^2), (max. section 65 mm)
UK	BS TA44	06/72	Aerospace series specification for forgings of titanium-aluminium-zirconium-molybdenum-silicon alloy (tensile strength 990-1140 N/mm^2), (max. section 65 mm)
UK	BS TA45	02/73	Aerospace series specification for bar and section for machining of titanium-aluminium-molybdenum-tin-silicon alloy (tensile strength 1100-1280 N/mm^2), (max. section 25 mm), (supersedes TA29)
UK	BS TA46	02/73	Aerospace series specification for bar and section for machining of titanium-aluminium-molybdenum-tin-silicon alloy (tensile strength 1050-1220 N/mm^2), (max. section 25 mm), (supersedes TA32, partially supersedes TA35)
UK	BS TA47	02/73	Aerospace series specification for forging stock of titanium-aluminium-molybdenum-tin-silicon-alloy (tensile strength 1050-1220 N/mm^2), (max. section 100 mm), (supersedes TA30 and TA33, partially supersedes TA35-see also TA50)
UK	BS TA48	02/73	Aerospace series specification for forgings of titanium-aluminium-molybdenum-tin-silicon alloy (tensile strength 1050-1200 N/mm^2), (max. section 100 mm), (supersedes TA31 and TA34, partially supersedes TA37-see also TA51)
UK	BS TA49	02/73	Aerospace series specification for bar and section for machining of titanium-aluminium-molybdenum-tin-silicon alloy (tensile strength 1000-1200 N/mm^2), (max. section 100-150 mm), (partially supersedes TA35)

TABLE 10. (Continued)

Ctry Code	Standard Number	Date Mo/Yr	Title of Standard
UK	BS TA50	02/73	Aerospace series specification for forging stock of titanium-aluminium-molybdenum-tin-silicon-alloy (tensile strength 1000-1200 N/mm^2), (max. section 100-150 mm), (partially supersedes TA36)
UK	BS TA51	02/73	Aerospace series specification for forgings of titanium-aluminium-molybdenum-tin-silicon alloy (tensile strength 1000-1200 N/mm^2), (max. section 100-150 mm), (partially supersedes TA37)
UK	BS TA52	04/73	Aerospace series specification for sheet and strip of titanium-copper alloy (tensile strength 600-920 N/mm^2), (partially supersedes DTD 5233)
UK	BS TA53	04/73	Aerospace series specification for bars and sections for machining titanium-copper alloy (tensile strength 650-880 N/mm^2), (max. section 75 mm), (supersedes DTD 5243)
UK	BS TA54	04/73	Aerospace series specification for forging stock of titanium-copper alloy (tensile strength 650-880 N/mm^2), (supersedes DTD 5253)
UK	BS TA55	04/73	Aerospace series specification for forgings of titanium-copper alloy (tensile strength 650-880 N/mm^2), (max. section 75 mm), (supersedes DTD 5263)
UK	BS TA56	05/74	Aerospace series specification for plate of titanium-aluminium-vanadium alloy (tensile strength 895-1150 MPA), (max. thickness 100 mm)
UK	BS TA57	05/74	Aerospace series specification for plate of titanium-aluminium-molybdenum-tin-silicon-alloy (tensile strength 1030-1220 MPA), (max. thickness 65 mm)
UK	BS TA58	05/74	Aerospace series specification for plate of titanium-copper alloy (tensile strength 520-640 MPA), (max. thickness 10 mm)
UK	BS 2TA100 + Amend. 1557	00/73 09/74	Aerospace series specification for procedure for inspection and testing of wrought titanium and titanium alloys

TABLE 10. (Continued)

Ctry Code	Standard Number	Date Mo/Yr	Title of Standard
UK	BS 3531: Part 1	00/68	Metal implants and tools used in bone surgery part 1, materials used for metal surgical implants
UK	BS 3351 + Amend. PD522 805.44	00/68	British standard for metal surgical implants drills, and screwdrivers used in bone surgery

* Non current standard.

** Current standard but not recommended for new designs.

TABLE 1P. CURRENT FRENCH STANDARD NUMBERS AND TITLES COVERING TITANIUM AND TITANIUM ALLOYS[7,10,21,23]

Ctry Code	Standard Number	Date Mo/Yr	Title of Standard
FR	NF L 15-130	11/58	Norme Francaise (French National Standard) for titanium sheet -dimensions and tolerances
FR	NF L 21-107	03/75	Norme Francaise (french National Standard) for T40 pure titanium wires for rivets - dimensions
FR	NF L 21-110	09/75	Norme Francaise (French National Standard) for T40 pure titanium for rivets -specification techniques
FR	NF L 21-271	08/75	Norme Francaise (French National Standard) for composite rivets with a stem of titanium alloy T-A6V, with cylindrical heat - dimensions
FR	NF L 21-272	08/75	Norme Francaise (French National Standard) for composite rivets with a stem of titanium alloy T-AV6 with a 100 milled head - dimensions
FR	AIR 9182	00/58	Reglements AIR (French Aircraft Standard) conditions for receiving sheets of unalloyed titanium
FR	AIR 9183	11/66	Reglements AIR (French Aircraft Standard) conditions for receiving bars profile and forgings of titanium alloys
FR	AIR 9184	00/00	Reglements AIR (French Aircraft Standard) conditions for receiving titanium alloy fasteners
EU	AECMA TI-P 01		AECMA Norm for unalloyed titanium, Gr. 1
EU	AECMA TI-P 02		AECMA Norm for unalloyed titanium, Gr. 2
EU	AECMA TI-P 04		AECMA Norm for unalloyed titanium, Gr. 2
EU	AECMA TI-P 05		AECMA Norm for unalloyed titanium (rivet wire)
EU	AECMA TI-P 11		AECMA Norm for Ti-2.5Cu alloy (all forms)
EU	AECMA TI-P 62		AECMA Norm for Ti-4Al-4Mn alloy (BA,FG)
EU	AECMA TI-P 63		AECMA Norm for Ti-6Al-4V alloy (BA,SH,FG)
EU	AECMA TI-P 64		AECMA Norm for Ti-6Al-6V-2Sn alloy (BA,FG)
EU	AECMA TI-P 65		AECMA Norm for Ti-5Al-2.5Sn alloy (all forms)
EU	AECMA TI-P 66		AECMA Norm for Ti-8Al-1Mo-1V alloy (all forms)
EU	AECMA TI-P 67		AECMA Norm for Ti-6Al-5Zr-0.5Mo-0.25Si (BA,FG)
EU	AECMA TI-P 68		AECMA Norm for Ti-4Al-2Sn-4Mo-0.5Si (BA)

TABLE 1Q. CURRENT GERMAN STANDARD NUMBERS AND TITLES COVERING TITANIUM AND TITANIUM ALLOYS[7,8,21]

Ctry Code	Standard Number	Date Mo/Yr	Title of Standard
GY	DIN 17850	03/75	Deutsche Normen (German Standard) for titanium chemical compositions
GY	DIN 17851	12/73	Deutsche Normen (German Standard) for wrought titanium alloys
GY	DIN 17860	11/73	Deutsche Normen (German Standard) for plate, sheet, and strip of wrought titanium and titanium alloys
GY	DIN 17862	11/73	Deutsche Normen (German Standard) for bars of wrought titanium and titanium alloys
GY	DIN 17863	11/73	Deutsche Normen (German Standard) for titanium wire
GY	DIN 17864	11/73	Deutsche Normen (German Standard) for forgings of wrought titanium and titanium alloys
GY	DIN 3.7000 draft	00/00	DIN Werkstoff Nr. (DIN Material Nr.) Ti-0.25 Pd alloy
GY	DIN 3.7040 draft	00/00	DIN Werkstoff Nr. (DIN Material Nr.) Ti-0.25 Pd alloy
GY	DIN 3.7070 draft	00/00	DIN Werkstoff Nr. (DIN Material Nr.) Ti-0.25 Pd alloy
GY	DIN 3.7115	12/73	DIN Werkstoff Nr. (DIN Material Nr.) TiAl alloy, this grade specified in DIN 17851, 17860, 17862, and 17864
GY	DIN 3.7165	12/73	DIN Werkstoff Nr. (DIN Material Nr.) TiAl6V4 alloy, this grade specified in DIN 17851, 17860, 17862, and 17864
GY	LW 3.7024	00/00	Luftfahrt Werkstoff (Aircraft Industry Material), unalloyed titanium for sheet and welding wire
GY	DIN 3.7025	03/70	DIN Werkstoff Nr. (DIN Material Nr.) unalloyed titanium, this grade specified in DIN 17850, 17860, 17862, 17863, and 17864
GY	LW 3.7034	00/00	Luftfahrt-Werkstoff (Aircraft Industry Material), unalloyed titanium for sheet, rod, forgings, and welding wire
GY	DIN 3.7035	03/70	DIN Werkstoff Nr. (DIN Material Nr.) unalloyed titanium, this grade specified in DIN 17850, 17860, 17862, 17863, and 17864

TABLE 1Q. (Continued)

Ctry Code	Standard Number	Date Mo/Yr	Title of Standard
GY	DIN 3.7055	03/70	DIN Werkstoff Nr. (DIN Material Nr.) unalloyed titanium, this grade specified in DIN 17850, 17860, 17862, 17863, and 17864
GY	LW 3.7064	00/00	Luftfahrt-Werkstoff (Aircraft Industry Material), unalloyed titanium for sheet, rod, and forgings
GY	DIN 3.7065	03/70	DIN Werkstoff Nr. (DIN Material Nr.) unalloyed titanium, this grade specified in DIN 17850, 17860, 17862, 17863, and 17864
GY	LW 3.7114	00/00	Luftfahrt-Werkstoff (Aircraft Industry Material), Ti-5Al-2.5Sn alloy for sheet, strip, bars, wire, and forgings
GY	LW 3.7124	00/00	Luftfahrt-Werkstoff (Aircraft Industry Material), Ti-2.5Cu alloy for sheet, strip, bars, wire, and forgings
GY	LW 3.7154	00/00	Luftfahrt-Werkstoff (Aircraft Industry Material), Ti-6Al-0.5Mo-5Zr-0.25Si alloy for bars and billets
GY	LW 3.7164	00/00	Luftfahrt-Werkstoff (Aircraft Industry Material), Ti-6Al-4V alloy for sheet, rod, forgings, and fastener stock
GY	LW 3.7174	00/00	Luftfahrt-Werkstoff (Aircraft Industry Material), Ti-6Al-6V-2Sn alloy
GY	LW 3.7184	00/00	Luftfahrt-Werkstoff (Aircraft Industry Material), Ti-4Al-2Sn-4Mo-0.5Si alloy for bars and billets
GY	VdTuV 230-1-68	00/68	Vereinigung der Technischen Uberwachung-suereineev (German Association for Technical Supervision) grades 1, 2, 3, and 4; supervision grades 1, 2, 3, and 4
GE	EMO	00/00	East German Standard for unalloyed titanium

TABLE 1R. CURRENT SOVIET STANDARD NUMBERS AND TITLES COVERING TITANIUM AND TITANIUM ALLOYS[85]

Ctry Code	Standard Number	Date Mo/Yr	Title of Standard
UR	AMTU 386-59	00/59	Soviet Aviation Metallurgical Specification for titanium tubing
UR	AMTU 388*	00/68	Soviet Aviation Metallurgical Specification for chemical composition of titanium alloys
UR	AMTU 449-59	00/59	Soviet Aviation Metallurgical Specification for titanium wire
UR	AMTU 451-67	00/67	Soviet Aviation Metallurgical Specification for titanium alloys, rolled bar, technical specification types covers round rolled bars of alloys VT1-00, VT1-0, OT4-0, OT4-1, OT4, VT5-1, VT6S, VT6, VT3-1, VT8, VT9, VT14, VT20, and VT22
UR	AMTU 457-67	00/67	Soviet Aviation Metallurgical Specifcation for sheet titanium alloys, cover alloys: VT1-00, VT1-0, OT4-0, OT4-1, OT4, VT5, VT6, VT14, and VT20
UR	AMTU 461-70	00/70	Soviet Aviation Metallurgical Specification for titanium alloy VT14, forgings and stampings
UR	AMTU 461-60	00/60	Soviet Aviation Metallurgical Specification for titanium sheet
UR	AMTU 476-61	00/61	Soviet Aviation Metallurgical Specification for titanium sheet, mechanical properties
UR	AMTU 487-20	00/00	Soviet Aviation Metallurgical Specification for titanium, extruded and rolled
UR	AMTU 55 2-69	00/69	Soviet Aviation Specification for titanium alloy bars for fasterners, covers VT16 alloys
UR	AMTU 553-63	00/63	Soviet Aviation Specification for titanium alloy bars for fasteners, covers alloys VT3-1 and VT16
UR	GOST 5303	00/69	USSR State Standards Committee Specification for sponge titanium, quality requirements for certified products
UR	OST19 90000-70	00/70	Soviet Industrial Specification for titanium alloys, stampings and forgings, covers alloys: VT1-00, VT1-0, OT4-0, OT4-1, OT4, VT5-1, VT5, VT6S, VT3-1, VT8, VT9, VT14, and VT20

TABLE 1R. (Continued)

Ctry Code	Standard Number	Date Mo/Yr	Title of Standard
UR	OST1. 90002	00/70	Soviet Industrial Specification for titanium alloys, blade forgings (supersedes AMTU 368-62 section on blade forgings)
UR	OST1. 90006	00/70	Soviet Industrial Specification for titanium alloys, bars and stock for blade forgings (supersedes AMTU 518-68)
UR	OST1. 90013	00/71	Soviet Industrial Specification for titanium alloys, grades VT1-00, OT401, and OT4 (supersedes AMTU 388-68)
UR	OST1. 90015	00/71	Soviet Industrial Specification for titanium welding rod wire (supersedes AMTU 449-65)
UR	OST1. 90024-71	00/71	Soviet Industrial Specification for titanium alloys, plate, covers alloys: VT1-00, VT1-0, OT4-0, OT4-1, OT4, VT5-1, VT6S, and VT14
UR	OST1. 90027-71	00/71	Soviet Industrial Specification for titanium alloys, band (narrow strip), covers alloys: VT1-00, VT1-0, and OT4-0
UR	OST1. 90107-73	00/73	Soviet Industrial Specification for titanium alloys, wrought bars, round and square, covers alloys: VT1-00, VT1-0, OT4-0, OT4-1, OT4, VT5-1, VT6S, VT6, VT3-1, VT8, VT9, VT14, VT20, and VT22
UR	OST1. 90050-72	00/72	Soviet Industrial Specification for titanium alloys, pipe rolled and drawn, technical specification, covers alloys: VT1-00, VT1-0, OT4-0, OT4-1, and OT4
UR	OST1. 90051-72	00/72	Soviet Industrial Specification for titanium alloys, welded round pipe, technical specification, covers alloys: VT1-00, VT1-0, and OT4-0
UR	OST1. 90065-72	00/72	Soviet Industrial Specification for titanium alloys, high quality drawn and rolled pipes, covers alloys: VT1-00, VT1-0, and OT4-0
UR	OST1. 90154-74	00/74	Soviet Industrial Specification for titanium alloys, foil, covers alloys: VT1-00 and VT1-0
UR	TU 48-05-03	00/71	Soviet Technical Specification for titanium electrolytic powder (supersedes VTU 9-3-67 no. 19, VTU 3-30-69 and VTU IT 10-68

TABLE 1R. (Continued)

Ctry Code	Standard Number	Date Mo/Yr	Title of Standard
UR	TU-92-62-6-72	00/72	Soviet Technical Specification for titanium alloys, large size round rolled wrought bars, covers alloys: VT1-0, OT4-0, OT4-1, OT4, VT5-1, VT5, VT6S, VT6, VT3-1, VT8, VT9, VT14, VT20, and VT22
UR	TU1-5-054-72	00/72	Soviet Technical Specification for titanium alloy sheet, covers alloy: AT3
UR	TU1-83-21-72	00/72	Soviet Technical Specification for titanium alloys, general purpose, large round bars, covers alloys: VT1-00, VT1-0, OT4-0, OT4, VT5-1, VT6S, VT3-1, VT8, VT9, and VT14
UR	TU1-92-2-72	00/72	Soviet Technical Standard for stampings and forgings of VT22 titanium alloy
UR	TU1-5-055-72	00/72	Soviet Technical Specification for titanium alloy AT3, rolled and wrought bars
UR	TU1-5-058-72	00/72	Soviet Technical Standard for forgings of AT3 titanium alloy
UR	TU1-5-107-73	00/73	Soviet Technical Specification for titanium alloys, extruded pipe, covers alloys: VT1-00, VT1-0, OT4-0, OT4-1, and OT4
UR	TU1-5-111-73	00/73	Soviet Technical Specification for titanium alloys, wide strip, covers alloys: VT1-00 and VT1-0

* Non current standard.

TABLE 1S. CURRENT CZECHOLSOVAKIAN STANDARD NUMBERS AND TITLES COVERING TITANIUM AND TITANIUM ALLOYS[9]

Ctry Code	Standard Number	Date Mo/Yr	Title of Standard
CZ	CSN 42-1490	00/69	Ceskoslovenska Statni Norma (Czechoslovakian State Standard) for titanium sheet, band and strip, technical delivery code
CZ	CSN 42-1491	00/69	Ceskoslovenska Statni Norma (Czechoslovakian State Standard) for titanium wires, technical delivery code
CZ	CSN 42-1492	00/69	Ceskoslovenska Statni Norma (Czechoslovakian State Standard) for titanium bars, technical delivery code
CZ	CSN 42-1493	00/69	Ceskoslovenska Statni Norma (Czechoslovakian State Standard) for seamless titanium tubes, technical delivery code
CZ	CSN 42-4655	00/69	Ceskoslovenska Statni Norma (Czechoslovakian State Standard) titanium unalloyed 99.5 %
CZ	CSN 42-7390	00/69	Ceskoslovenska Statni Norma (Czechoslovakian State Standard) for hot rolled titanium sheets and strips, dimensions
CZ	CSN 42-7391	00/69	Ceskoslovenska Statni Norma (Czechoslovakian State Standard) for cold rolled titanium sheets, bands, and strips, dimensions
CZ	CSN 42-7490	00/69	Ceskoslovenska Statni Norma (Czechoslovakian State Standard) for titanium round wires
CZ	CSN 42-7590	00/69	Ceskoslovenska Statni Norma (Czechoslovakian State Standard) for hot formed titanium bars, dimensions
CZ	CSN 42-7591	00/69	Ceskoslovenska Statni Norma (Czechoslovakian State Standard) for turned titanium bars, dimensions
CZ	CSN 42-7790	00/69	Ceskoslovenska Statni Norma (Czechoslovakian State Standard) for seamless titanium tubes, dimensions
CZ	ON 42-1496	00/69	Ceskoslovenska Statni Norma (Czechoslovakian State Standard) for titanium ingots, delivery code and dimensional standard
CZ	ON 42-4656	00/60	Ceskoslovenska Statni Norma (Czechoslovakian State Standard) for titanium ingots

TABLE 1T. CURRENT JAPANESE STANDARD NUMBERS AND TITLES COVERING TITANIUM AND TITANIUM ALLOYS[29]

Ctry Code	Standard Number	Date Mo/Yr	Title of Standard
JA	JIS H 2551	00/69	Japanese Industrial Standard for titanium sponge
JA	JIS H 2552	00/72	Japanese Industrial Standard for compressed titanium sponge
JA	JIS H 4630	00/75	Japanese Industrial Standard for titanium pipes and tubes for ordinary piping
JA	JIS H 4631	00/75	Japanese Industrial Standard for titanium pipes and tubes for heat exchangers
JA	JIS H 4650	00/75	Japanese Industrial Standard for titanium rods and bars
JA	JIS H 4670	00/75	Japanese Industrial Standard for titanium flat mill products, rod and wire

TABLE 1U. CURRENT ISO (INTERNATIONAL STANDARDS ORGANIZATION) STANDARD NUMBERS AND TITLES COVERING TITANIUM AND TITANIUM ALLOYS[7]

Ctry Code	Standard Number	Date Mo/Yr	Title of Standard
XX	Ductile Ti	00/00	ISO(Draft Standard) for surgical implants
XX	Resilient Ti	00/00	ISO(Draft Standard) for surgical implants
XX	Alloy	00/00	ISO(Draft Standard) for surgical implants
XX	ISO/TC 119/SC5	11/74	ISO specifications for powder metallurgy materials (except hard metals) (includes titanium)

TABLE 1V. CURRENT SPANISH NATIONAL STANDARD NUMBERS AND TITLES COVERING TITANIUM AND TITANIUM ALLOYS[30]

Ctry Code	Standard Number	Date Mo/Yr	Title of Standard
SP	INTA L-7001*	00/76	Instituto Nacional de Tecnica Aerospacial Standard for unalloyed titanium, grade 1
SP	INTA L-7002*	00/76	Instituto Nacional de Tecnica Aerospacial Standard for unalloyed titanium, grade 2
SP	INTA L-7003*	00/76	Instituto Nacional de Tecnica Aerospacial Standard for unalloyed titanium, grade 3
SP	INTA L-7004*	00/76	Instituto Nacional de Tecnica Aerospacial Standard for unalloyed titanium, grade 4
SP	INTA L-7021*	00/76	Instituto Nacional de Tecnica Aerospacial Standard for titanium-palladium alloy
SP	INTA L-7101*	00/76	Instituto Nacional de Tecnica Aerospacial Standard for Ti-5Al-2.5Sn alloy
SP	INTA L-7301*	00/76	Instituto Nacional de Tecnica Aerospacial Standard for Ti-6Al-4V alloy
SP	INTA L-7501*	00/76	Instituto Nacional de Tecnica Aerospacial Standard for Ti-2.5Cu alloy
SP	INTA L-7701*	00/76	Instituto Nacional de Tecnica Aerospacial Standard for Ti-3Al-13V-11Cr alloy

* Proposed specifications.

TABLE 1W. OTHER CURRENT US STANDARDS AND SPECIFICATIONS (NSA-NATIONAL STANDARDS ASSOCIATION; ANSI-AMERICAN NATIONAL STANDARDS INSTITUTE; NATIONAL STOCKPILE PURCHASE SPECIFICATIONS)[38]

Ctry Code	Standard Number	Date Mo/Yr	Title of Standard
US	NSA 2605, 2705, 5260, 1266, 2206, 621, 2325, 2105, 2306, 2315, 2506, 2406, 2005, 2125, 2115, 4004, 6100, 5800, 4304, 6804, 4903, 4600, 6403, 5500, 653	00/75	National Standards Association Series of Specifications for Dimensional Tolerances of a Wide Variety of Titanium and Titanium Alloy Fasteners
US	P-97-R5	08/69	Titanium Metal Sponge (National Stockpile Purchase Specification) Executive Office of the President, Office of Emergency Preparedness
US	ANSI Z179.1	00/74	American National Standard Institute Equivalent of ASTM Specification B265-74
US	ANSI Z179.13	00/74	American National Standard Institute Equivalent of ASTM Specification B299-74
US	ANSI Z179.16	05/73	American National Standard Institute Equivalent of ASTM Specification B367-74
US	ANSI Z179.2	00/74	American National Standard Institute Equivalent of ASTM Specification B344-74
US	ANSI H5091	11/72	American National Standard Institute Equivalent of ASTM Specification B363-71
US	ANSI H50.2	00/74	American National Standard Institute Equivalent of ASTM Specification B338-74

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REFERENCES

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Section I:	Aluminum - 3rd Edition (December 1965), (revised 4th edition being reproduced).
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Section III:	Magnesium - 3rd Edition (December 1966), (due for revision 1975).
Section IV:	Copper - 3rd Edition (December 1964).
Section V:	Nickel - 4th Edition (October 1972).
Section VI:	Protective Surface Treatments - 3rd Edition (December 1968).
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APPENDIXES

APPENDIX 1. COUNTRY CODE
(Alphabetical by Country)

Ctry Code	Country
AR	Argentina
AT	Australia
AU	Austria
BE	Belgium
BR	Brazil
BU	Bulgaria
CN	Canada
CH	China (Main Land)
CZ	Czechoslovakia
DE	Denmark
EU	Europe
FI	Finland
FR	France
GE	Germany (East)
GY	Germany (West)
GR	Greece
HU	Hungary
IN	India
IT	Italy
JA	Japan
MX	Mexico
NE	Netherlands
NZ	New Zealand
NO	Norway
PO	Poland
PT	Portugal
RU	Rumania
SP	Spain
SW	Sweden
SZ	Switzerland
TW	Taiwan, Formosa
UA	Union of South Africa
UK	United Kingdom
US	United States
UR	USSR (Russia)
XX	World-Wide
YU	Yugoslavia

APPENDIX 2. COMPANY CODE
(Numerical by Company Code)

Company Code	Company Name and City
C-0001	Titanium Metals Corporation of America, Timet Div. (TMCA), Pittsburgh, Pennsylvania
C-0002	Martin Marietta Aluminum, Titanium Division, Torrance, California
C-0003	RMI Company (Formerly Reactive Metals, Inc.), Niles, Ohio
C-0004	Crucible, Inc., Specialty Metals, Colt Industries, Syracuse, New York
C-0005	Armco Steel Corp., Advanced Materials Division (ARMCO), Middletown, Ohio
C-0006	Titech International, Inc. (TITECH), Pomona, California
C-0007	Teledyne Titanium, Inc. (Teledyne Ti), Monroe, New York
C-0008	Teledyne Allvac (ALLVAC), Monroe, North Carolina
C-0009	Oregon Metallurgical Corporation (Ormet), Albany, Oregon
C-0010	Gould Laboratories, Gould, Inc. (Formerly Brush Beryllium Co.), Cleveland, Ohio
C-0011	Republic Steel Corporation, Cleveland, Ohio
C-0012	Harvey Aluminum Co. (Martin Marietta), Torrance, California
C-0013	Imperial Metal Industries, Ltd. (IMI), (KYNOCH), Birmingham, England
C-0014	Imperial Chemical Industries, (See Imperial Metal Industries)
C-0015	Jessop-Saville, Ltd., (Now Imperial Metal Ind.), Birmingham, England
C-0016	Ti Aluminum Co., Ltd., London, England
C-0017	Blackwell's Metallurgical, Ltd., Lancashire, England
C-0018	Kock Light Alloys, Ltd., London, England
C-0019	Krupp Metall-und-Schmiedewerke, Fried. Krupp GmbH, Essen, W. Germany
C-0020	Ugine, Aciers Electriques de Ugine, (Div. of PUG), Savoie, France
C-0021	Avesta Jernverks Aktiebolag, Avesta, Sweden
C-0022	Howmet Corporation, Superalloy Group (Div. of PUG), Muskegon, Michigan
C-0023	Precision Castparts Corporation, Portland, Oregon
C-0024	REM Metals Corporation, Albany, Oregon
C-0025	Tiline, Subsidiary of Whittaker Corporation, Albany, Oregon
C-0026	Osaka Titanium Co., Ltd. (Osaka), Amagasaki, Japan
C-0027	Toho Titanium Co., Ltd. (Toho), Chigasaki Kangawa, Japan
C-0028	Shin Kinyoku (Affilliate of Japanese Chemical Concerns), Japan
C-0029	Titanium-Magnesium Plant, Zaporosh'ye, USSR
C-0030	Titanium-Magnesium Plant, Berezniki, USSR
C-0031	Titanium-Magnesium Plant, Usk' Kamenogorsk, USSR
C-0032	Titanium West, Inc., Reno, Nevada
C-0033	Pechiney-Ugine-Kuhlman (PUG), Paris, France
C-0034	Crucible Materials Research Cen., Colt Industries, Inc., Pittsburgh, Pennsylvania
C-0035	Non-Ferrous International Corporation, New York, New York
C-0036	Nuc. Materials Environment Corp. Div. of Babcock-Wilcox, Pittsburgh, Pennsylvania
C-0037	Nuclear Metals Division of Whittaker Corporation, West Concord, Massachusetts
C-0038	Penn. Nuclear Corporation, Pennsylvania, Pennsylvania
C-0039	Dynamet Technology, Burlington, Massachusetts
C-0040	Welded Carbide Company, Inc., Clifton, New Jersey
C-0041	Mallory-Sharon Titanium Corporation, (Now RMI Company), Niles, Ohio
C-0042	Carpenter Technology Corporation, Reading, Pennsylvania
C-0043	Sandvik Steel Works, Sandviken, Sweden
C-0044	Kobe Steel Co., Ltd., Kobe, Japan

APPENDIX 2. (Continued)

Company	Company Name and City
C-0045	Nippon Stainless Steel Co., (Orig. Sumitomo Light Met. Ind.), Tokyo, Japan
C-0046	Thyssen Edelstahlwerke, AG, Titanium Division. (Contimet), Krefeld, W. Germany
C-0047	Degussa, Frankfurt/Main, W. Germany
C-0048	Contimet GmbH (Now Thyssen Edelstahlwerke Ab, Titanium Division), Krefeld, W. Germany
C-0049	Chicago Development Corporation, Ashland, Virginia
C-0050	Dynamit Nobel AG, Troisdorf, W. Germany
C-0051	Standard Steel (Baldwin-Lime-Hamilton), (Div. of TMCA), Burnham, Pennsylvania
C-0052	Ventron Corporation, Alpha Products, Danvers, Massachusetts
C-0053	G.O. Carlson, Inc., Thorndale, Pennsylvania
C-0054	Otto Fuchs Metallwerke, Meinerzhagen, W. Germany
C-0055	Telydyne, Rodney Metals, New Bedford, Massachusetts
C-0056	H.M. Harper Company, Morton Grove, Illinois
C-0057	Consolidated Astronautics, Inc., Hauppauge, New York
C-0058	Shieldalloy Corp., Newfield, New Jersey
C-0059	Metal Hydrides, Inc., Beverly, Massachusetts
C-0060	Metals Disintegrating Company, Elizabeth, New Jersey
C-0061	Kawecki Berylco Industries, Inc., (Zirconium Tech. Div.), Albany, Oregon
C-0062	Techalloy Co., Inc., Rahns, Pennsylvania
C-0063	Vereinigte Deutsche Metallwerke, AG (VDM), Werdohl, W. Germany
C-0064	Electronics Space Products, Inc., Los Angeles, California
C-0065	Chemalloy Company, Inc., Bryn Mawr, Pennsylvania

APPENDIX 3. COMPANY CODE
(Alphabetical by Company)

Company Code	Company Name and City
C-0005	Armco Steel Corp., Advanced Materials Division (ARMCO), Middletown, Ohio
C-0021	Avesta Jernverks Aktiebolag, Avest, Sweden
C-0017	Blackwell's Metallurgical, Ltd., Lancashire, England
C-0042	Carpenter Technology Corporation, Reading, Pennsylvania
C-0065	Chemalloy Company, Inc., Bryn Mawr, Pennsylvania
C-0049	Chicago Development Corporation, Ashland, Virginia
C-0057	Consolidated Astronautics, Inc., Hauppauge, New York
C-0048	Contimet GmbH (Now Thyssen Edelstahwerke Ag, Titanium Division), Krefeld, W. Germany
C-0004	Crucible Inc., Specialty Metals, Colt Industries, Syracuse, New York
C-0034	Crucible Materials Research Cen., Colt Industries, Inc., Pittsburgh, Pennsylvania
C-0047	Degussa, Frankfurt/Main, W. Germany
C-0039	Dynamet Technology, Burlington, Massachusetts
C-0050	Dynamit Nobel Ag, Troisdorf, W. Germany
C-0064	Electronics Space Products, Inc., Los Angeles, California
C-0010	Gould Laboratories, Gould Inc., (Formerly Brush Beryllium Co.) Cleveland, Ohio
C-0053	G.O. Carlson Inc., Thorndale, Pennsylvania
C-0012	Harvey Aluminum Co. (Martin Marietta), Torrance, California
C-0022	Howmet Corporation, Superalloy Group (Div. of PUG), Muskegon, Michigan
C-0056	H.M. Harper Company, Morton Grove, Illinois
C-0014	Imperial Chemical Industries, (See Imperial Metal Industries)
C-0013	Imperial Metal Industries, Ltd. (IMI), (KYNOCH), Birmingham, England
C-0015	Jessop-Saville, Ltd., (Now Imperial Metal Industries), Birmingham, England
C-0061	Kawecki Berylco Industries, Inc., (Zirconium Tech. Div.), Albany, Oregon
C-0044	Kobe Steel So., Ltd., Kobe, Japan
C-0018	Kock Light Alloys, Ltd., London, England
C-0019	Krupp Metall-und-Schmiedewerke, Fried, Krupp Gmbh, Essen, W. Germany
C-0041	Mallory-Sharon Titanium Corporation, (Now RMI Company), Niles, Ohio
C-0002	Martin Marietta Aluminum, Titanium Division, Torrance, California
C-0060	Metals Disintegrating Company, Elizabeth, New Jersey
C-0059	Metal Hydrides, Inc., Beverly, Massachusetts
C-0045	Nippon Stainless Steel Co., (Orig. Sumitomo Light Met. Ind.), Tokyo, Japan
C-0035	Non-Ferrous International Corporation, New York, New York
C-0037	Nuclear Metals Division of Whittaker Corporation, West Concord, Massachusetts
C-0036	Nuc. Materials Environment Corp., Div. of Babcock-Wilcox, Pittsburgh, Pennsylvania
C-0009	Oregon Metallurgical Corporation (Oremet), Albany, Oregon
C-0026	Osaka Titanium Co., Ltd. (Osaka), Amagasaki, Japan
C-0054	Otto Fuchs Metallwerke, Meinerzhagen, W. Germany
C-0033	Pechiney-Ugine-Kuhlman (PUG), Paris, France
C-0038	Penn. Nuclear Corporation, Pennsylvania, Pennsylvania
C-0023	Precision Castparts Corporation, Portland, Oregon
C-0024	REM Metals Corporation, Albany, Oregon
C-0011	Republic Steel Corporation, Cleveland, Ohio
C-0003	RMI Company (Formerly Reactive Metals, Inc.) Niles, Ohio

APPENDIX 3. (Continued)

Company Code	Company Name and City
C-0043	Sandvik Steel Works, Sandviken, Sweden
C-0058	Shieldalloy Corp., Newfield, New Jersey
C-0028	Shin Kinyoku (Affilliate of Japanese Chemical Concerns), Japan
C-0051	Standard Steel (Baldwin-Lima-Hamilton), (Div. of TMCA), Burnham, Pennsylvania
C-0062	Techalloy Co., Inc., Rahns, Pennsylvania
C-0008	Teledyne Allvac (ALLVAC), Monroe, North Carolina
C-0007	Teledyne Titanium, Inc. (Teledyne Ti), Monroe, North Carolina
C-0055	Telydyne, Rodney Metals, New Bedford, Massachusetts
C-0046	Thyssen Edelstahlwerke Ag, Titanium Div. (Contimet), Krefeld, W. Germany
C-0025	Tiline, Subsidiary of Whittaker Corporation, Albany, Oregon
C-0001	Titanium Metals Corporation of American, Timet Div. (TMCA), Pittsburgh, Pennsylvania
C-0032	Titanium West, Inc., Reno, Nevada
C-0030	Titanium-Magnesium Plant, Berezniki, USSR
C-0031	Titanium-Magnesium Plant, Usk' Kamenogorsk, USSR
C-0029	Titanium-Magnesium Plant, Zaporosh'ye, USSR
C-0006	Titech International, Inc., (Titech), Pomona, California
C-0016	Ti Aluminum Co., Ltd., London, England
C-0027	Toho Titanium Co., Ltd. (Toho), Chigasaki Kangawa, Japan
C-0020	Ugine, Aciers Electriques de Ugine, (Div. of PUG), Savoie, France
C-0052	Ventron Corporation, Alpha Products, Danvers, Massachusetts
C-0063	Vereinigte Deutsche Metallwerke, Ag (VDM), Werdohl, W. Germany
C-0040	Welded Carbide Company, Inc., Clifton, New Jersey

APPENDIX 4. UNIFIED NUMBERING SYSTEM
(Numerical by UNS Number)[35]

Unified Numbering System (UNS)	Nominal Composition (Computerized Format)	ASTM Grade	Hydrogen Level, ppm
R50250	Ti-unalloyed-99.6,CP,-25 ksi YS	Grade 1	150 ppm hydrogen
R50251	Ti-unalloyed-99.6,CP,-25 ksi YS	Grade 1	125 ppm hydrogen
R50252	Ti-unalloyed-99.6,CP,-25 ksi YS	Grade 1	100 ppm hydrogen
R50400	Ti-unalloyed-99.5,CP,-40 ksi YS	Grade 2	150 ppm hydrogen
R50401	Ti-unalloyed-99.5,CP,-40 ksi YS	Grade 2	125 ppm hydrogen
R50402	Ti-unalloyed-99.5,CP,-40 ksi YS	Grade 2	100 ppm hydrogen
R50550	Ti-unalloyed-99.2,CP,-55 ksi YS	Grade 3	150 ppm hydrogen
R50551	Ti-unalloyed-99.2,CP,-55 ksi YS	Grade 3	125 ppm hydrogen
R50552	Ti-unalloyed-99.2,CP,-55 ksi YS	Grade 3	100 ppm hydrogen
R50700	Ti-unalloyed-99.0,CP,-70 ksi YS	Grade 4	150 ppm hydrogen
R50701	Ti-unalloyed-99.0,CP,-70 ksi YS	Grade 4	125 ppm hydrogen
R50702	Ti-unalloyed-99.0,CP,-70 ksi YS	Grade 4	100 ppm hydrogen
R52250	Ti-Pd0.15--0.20 -25 ksi YS	Grade 11	150 ppm hydrogen
R52251	Ti-Pd0.15--0.20 -25 ksi YS	Grade 11	125 ppm hydrogen
R52252	Ti-Pd0.15--0.20 -25 ksi YS	Grade 11	100 ppm hydrogen
R52253	Ti-Pd0.15--0.20 -25 ksi YS	Grade C8A	B367 casting
R52400	Ti-Pd0.25--0.20 -40 ksi YS	Grade 7	150 ppm hydrogen
R52401	Ti-Pd0.15--0.20 -40 ksi YS	Grade 7	125 ppm hydrogen
R52402	Ti-Pd0.15--0.20 -40 ksi YS	Grade 7	100 ppm hydrogen
R52403	Ti-Pd0.15--0.20 -40 ksi YS	Grade 7	B367, 0.12Pd min
R52552	Ti-Pd0.15--0.20 -55 ksi YS	Grade C8A	----------
R52702	Ti-Pd0.15--0.20 -70 ksi YS	Grade C8B	B367 casting
R54520	Ti-Al5-Sn2.5	Grade 6	200 ppm hydrogen
R54521	Ti-Al5-Sn2.5	Grade 6	125 ppm hydrogen
R54522	Ti-Al5-Sn2.5	Grade 6	100 ppm hydrogen
R54523	Ti-Al5-Sn2.5	Grade 6	IN B381
R56320	Ti-Al3-V2.5	Grade 9	IN B337, B338
R56400	Ti-Al6-V4	Grade 5	150 ppm hydrogen
R56401	Ti-Al6-V4	Grade 5	125 ppm hydrogen
R56402	Ti-Al6-V4	Grade 5	100 ppm hydrogen
R56403	Ti-Al6-V4	Grade 5C	IN B367 at 0.25 O
R58030	Ti-Mo 11.5-Sn4.5-Zr6	Grade 10	200 ppm hydrogen
R58031	Ti-Mo 11.5-Sn4.5-Zr6	Grade 10	150 ppm hydrogen

APPENDIX 5. STANDARD ORGANIZATIONS OF THE WORLD GENERATING TITANIUM AND TITANIUM ALLOY STANDARDS AND SPECIFICATIONS (Alphanumerical by Country)

Ctry Code	Country	Standard Acronym	Name and Address of Standard Organization
CZ	Czechoslovakia	CSN	CSN, ON: Urad Pro Normalizaci a Mereni, Nove Mesto Vaclavske Namesti C. 19, 11347 Praha 1, Czechoslovakia
FR	France	AFNOR	AFNOR, NF: Association Francaise de Normalisation, Tour Europe, Cedex 7, 920800 Paris-La Defense, France
FR	France	AIR	AIR: Ministere des Armees, Repertoire des Reglements AIR. Documents are available from the Center de Documentation de L'Armement (CEDOCAR), 26 BD Victor, 75996, Paris Armees, France
EU FR	Europe France	AECMA	AECMA: Association Europeene Constructeurs de Material Aerospatial, (European Association of Airframe Manufactures), (formerly AICMA: Association Internationale des Constructeurs de Material Aerospatial), BNAE, 8, Rue Moreau Vanthie, 92, Boulogne-Billancourt, Paris, France
GY	W. Germany	DIN	DNA, DIN: Deutscher Normenausschuss, 4-7 Burggrafenstrasse, Postfach 1107, 1 Berlin 30, West Germany
GY	W. Germany	L.W.	L.W.: Luftfahrt Werkstoffe Specifications: (also referred to as Aviation Aircraft Materials). These specifications are also referred to as (WL) Werkstoff-Leistungsblatter der Deutschen Luftfahrt (Material Properties for the German Aviation Industry). These specifications are also referred to as B.W.B. Bundesamt fur Wehrtechnik und Beschaffung (BWB), (Federal Defense Engineering and Procurement Deparment) 5400 Koblenz 1, Postfach 7360, West Germany
GY	W. Germany	VdTuV	VdTuV: Vereinigung der Technischen Uberwachungsvereine Ev, (German Association for Technical Supervision), Postfach 1790, Rottstrasse 17, 4300 Essen, West Germany
GE	E. Germany	DIN	DNA, DIN: Deutscher Normenausschuss, 4-7 Burggrafenstrasse, Postfach 1107, 1 Berlin 30, West Germany
UK	United Kingdom	BS	BSI, BS: British Standards Institution, 2 Park Street, London W1A 2BS, England

APPENDIX 5. (Continued)

Ctry Code	Country	Standard Acronym	Name and Address of Standard Organization
UK	United Kingdom	DTD*	DTD: Director of Materials Research and Development, Ministry of Defence, PE (Procurement Executive), St. Giles, Court 1-13 High Street, London, W. C. 2, England
XX	International	ISO	ISO: International Organization for Standardization, 1, Rue de Varembe, 1211 Geneve 20, Switzerland/Suisse
JA	Japan	JIS	JISC, JIS: Japanese Industrial Standards Committee, Agency of Industrial Science and Technology, Ministry of International Trade and Industry, 3-1 Kasumigasekil Chiyodaku, Tokyo, Japan
SP	Spain	INTA	INTA: Instituto Nacional de Tecnica Aerospacial Paseo Pintor Rosales, 34, Madrid 8, Spain
US	United States	AMS	AMS: Aerospace Material Specification, SAE, Society of Automotive Engineers Inc., 400 Commonwealth Drive, Warrendale, Pa 15096, USA
US	United States	ANSI**	ANSI: American National Standards Institute, 1430 Broadway, New York, NY 10018, USA
US	United States	ASTM	ASTM: American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pa 19103, USA
US	United States	AWS	AWS: American Welding Society, 2501 NW 7th Street, Miami, Fl 33125, USA
US	United States	MIL	MIL: US Military Specifications, Engineering Specifications and Standards Divisions Naval Air Engineering Center, Philadelphia, Pa 19112 USA
US	United States	NBS***	NBS: National Bureau of Standards, US Department of Commerce, Gaithersburg, Md 20234 USA
US	United States	NSA	NSA: National Standards Association, 1321 14th Street, NW, Washington, DC 20005 USA
US	United States	US	National Stockpile Purchase Specification, Executive Office of the President, Office of Emergency Preparedness, Specification Prepared and Issued by the Office of Industrial Materials Business and Defense Services Administration Department of Commerce, Between Constitution Avenue and E Street NW, Washington DC 20230 USA
UR	USSR	AMTU	AMTU: Aviation Metallurgical Specifications, address unconfirmed
UR	USSR	GOST	GOST: Gosudarstvennyi Komitet Standariov (State Standards) mer Izmeritel NYH Priborov PRI, 38 Kvartal Jugozapada, Lorpus 189-A, Pmoskva V-421, USSR

APPENDIX 5. (Continued)

Ctry Code	Country	Standard Acronym	Name and Address of Standard Organization
UR	USSR	OST1.	OST1.: Industrial Standards, address unconfirmed
UR	USSR	STU	STU: Technical Specifications of a Sovnakhoz, address unconfirmed
UR	USSR	TU	TU: Technical Specifications, address unconfirmed

* DTD: Director of Materials Research and Development, Ministry of Defence, (previously known as Ministry of Aviation and then later the Ministry of Technology), DTD formerly generated the majority of the Titanium Standards in UK, now the UK Titanium Standards are essentially the responsibility of the British Standards Institute (Aerospace Series).

** ANSI: American National Standards Institute an ISO Member is the centralized and sole agency in the US for the sale and distribution of the National Standards of the World.

*** NBS: National Bureau of Standards (Standards Library), is the centralized US repository, for reference purposes, of the National Standards of the World.

APPENDIX 6. NONCURRENT NATIONAL STANDARDS FOR TITANIUM AND TITANIUM ALLOYS WITH TITLES (Alphanumerical by Country and by National Standards)

Ctry Code	Standard Number	Date Mo.Yr	Title of Standard
UK	BS TA 17	12.68	Aerospace series specifications for titanium-aluminium-tin alloy forgings, (tensile strength 79-108 HBar), (max. section 150mm).
UK	BS TA 29	00.68	Aerospace series specifications for titanium-aluminium-molybdenum-tin-silicon alloy bars for machining, (tensile strength 114-136 HBar), (max. section 25mm).
UK	BS TA 30	07.69	Aerospace series specifications for titanium-aluminium-molybdenum-tin-silicon alloy forging stock, (tensile strength 114-136 HBar), (max. section 25mm), (partially supersedes DTD 5103).
UK	BS TA 31	07.69	Aerospace series specifications for titanium-aluminium-molybdenum-tin-silicon alloy forgings, (tensile strength 114-136 HBar), (max. section 25mm), (partially supersedes DTD 5153).
UK	BS TA 32	07.69	Aerospace series specifications for titanium-aluminium-molybdenum-tin-silicon alloy for machining, (tensile strength 105-127 HBar), (max. section 75mm), (partially supersedes DTD 5103).
UK	BS TA 33	07.69	Aerospace series specifications for titanium-aluminium-tin-silicon alloy forging stock, (tensile strength 105-127 HBar), (max. section 75mm), (partially supersedes DTD 5103).
UK	BS TA 34	07.69	Aerospace series specifications for titanium-aluminium-molybdenum-tin-silicon alloy forgings, (tensile strength 105-127 HBar), (max. section 75mm), (partially supersedes DTD 5153).
UK	BS TA 35	07.69	Aerospace series specifications for titanium-aluminium-molybdenum-tin-silicon alloy bars for machining, (tensile strength 100-124 HBar), (max. section 150mm), (partially supersedes DTD 5103).

APPENDIX 6. (Continued)

Ctry Code	Standard Number	Date Mo.Yr	Title of Standard
UK	BS TA 36	07.69	Aerospace series specifications for titanium-aluminium-molybdenum-tin-silicon alloy forging stock, (tensile strength 100-124 HBar), (max. section 150mm), (partially supersedes DTD 5103).
UK	BS TA 37	07.69	Aerospace series specifications for titanium-aluminium-molybdenum-silicon alloy forgings, (tensile strength 100-124 HBar), (max. section 150mm), (partially supersedes DTD 5153).
UR	AMTU 388	00.68	Soviet aviation metallurgical specifications for chemical composition of titanium alloys.
US	AMS 4923A	03.66	Aerospace material specificaitons for titanium alloy bars and forgings; Ti-2Cr-2Fe-2Mo, annealed-120,000 psi yield.
US	AMS 4925B	03.66	Aerospace material specifications for titanium alloy bars and forgings; Ti-4Al-4Mn, annealed-130,000 psi yield.
US	AMS 4927	07.56	Aerospace material specifications for titanium alloy bars and forgings; Ti-5Cr-3Al.
US	AMS 4929 (*Cancelled)	08.58	Aerospace material specifications for titanium alloy bars ≤ Ti-5.4Al-1.4Cr-1.3Fe-1.25Mo, annealed-135,000 psi yield.
US	AMS 4968A (*Cancelled)	03.66	Aerospace material specifications for titanium alloy bars and forgings; Ti-5Zr-5Al-5Sn annealed.
US	AMS 4969 (*Cancelled)	01.59	Aerospace material specifications for titanium alloy forgings; Ti-4Al-a.4Cr-1.3Fe-1.25Mo, annealed-135,000 psi yield.
US	ASTM B382-64	00.64	ASTM standard specifications for titanium and titanium alloy bare welding rods and electrodes; discontinued in 1969, see AWS A5.16-70.
US	MIL-T-009046G	10.70	U.S. Military specification, titanium alloy, alpha+beta, sheet, strip, and plate.
US	MIL-T-12118A	05.65	U.S. Military specification, titanium sponge.

APPENDIX 7. NATIONAL STANDARDS FOR TITANIUM AND TITANIUM ALLOYS WITH THE CORRESPONDING NOMINAL COMPOSITIONS (Alphanumerical by National Standards)

Standard Number	Related/Alloy Common Name	Ctry Code	Nominal Composition Wt % and Form
AECMA Ti-P.01	(IMI-115)	EU	Ti-unalloyed-99.6,CP,-25 ksi YS (all forms)
AECMA Ti-P.02	(IMI-125)	EU	Ti-unalloyed-99.5,CP,-40 ksi YS (all forms)
AECMA Ti-P.04	(IMI-155/160)	EU	Ti-unalloyed-99.0,CP,-70 ksi YS (all forms)
AECMA Ti-P.05	(IMI-130)	EU	Ti-unalloyed-99.2,CP,-55 ksi YS (rivet wire)
AECMA Ti-P.11	(IMI-230)	EU	Ti-Cu2.5 (all forms, annealed and heat treated)
AECMA Ti-P.62	(IMI-314)	EU	Ti-Al4-Mn4 (bar, forging)
AECMA Ti-P.63	(IMI-318)	EU	Ti-Al6-V4 (bar, forging, annealed, sheet)
AECMA Ti-P.64	(6-6-2)	EU	Ti-Al6-V6-Sn2 (bar, forging, annealed and heat treated)
AECMA Ti-P.65	(IMI-317)	EU	Ti-Al5-Sn2.5 (bar, forging)
AECMA Ti-P.66	(8-1-1)	EU	Ti-Al8-V1-Mo1 (bar, forging)
AECMA Ti-P.67	(IMI-685)	EU	Ti-Al6-Mo0.5-Zr5-Si0.3 (bar, forging)
AECMA Ti-P.68	(IMI-550)	EU	Ti-Al4-Mo4-Sn2-Si0.2 (bar, forging)
AIR T-D11ZR6E4	(Beta III)	FR	Ti-Mo 11.5-Sn4.5-Zr6
AIR T-D8C6DZRA	(Beta C)	FR	Ti-Al3-V8-Mo4-Zr4-Cr6
AIR T-A4DE2	(IMI-550)	FR	Ti-Al4-Mo4-Sn2-Si0.5
AIR T-A4DE	(IMI-550)	FR	Ti-Al4-Mo4-Sn2-Si0.5
AIR T-A5E	(A-110)	FR	Ti-Al5-Sn2.5
AIR T-A6VE	(6-6-2)	FR	Ti-Al6-V6-Sn2
AIR T-A6ZD	(IMI-685)	FR	Ti-Al6-Mo0.8-Zr5-Si0.25
AIR T-A7D	(7-4)	FR	Ti-Al7-Mo4
AIR T-A8DV	(8-1-1)	FR	Ti-Al8-V1-Mo1
AIR T-E11D4E	(IMI-680)	FR	Ti-Al2.25-Mo4-Sn 11-Si0.2
AIR T-TU2	(IMI-230)	FR	Ti-Cu2.5
AIR-9182 T-35	(IMI-115)	FR	Ti-unalloyed-99.6,CP,-25 ksi YS (sheet)
AIR-9182 T-40	(IMI-125)	FR	Ti-unalloyed-99.5,CP,-40 ksi YS (sheet)
AIR-9182 T-50	(IMI-130)	FR	Ti-unalloyed-99.2,CP,-55 ksi YS (sheet)
AIR-9182 T-60	(IMI-160)	FR	Ti-unalloyed-99.0,CP,-70 ksi YS (sheet)
AIR-9183 T-A4M	(IMI-314)	FR	Ti-Al4-Mn4 (bar, rod, forging)
AIR-9183 T-A6V	(IMI-318)	FR	Ti-Al6-V4 (bar, rod, forging)

APPENDIX 7. (Continued)

Standard Number	Related/Alloy	Ctry	Nominal Composition Wt % and Form
AIR-9184 T-A4M	(IMI-314)	FR	Ti-Al4-Mn4 (bolts, fasteners)
AIR-9184 T-A6V	(IMI-318)	FR	Ti-Al6-V4 (bolts, fasteners)
AMI 10(*2)	(IMI-694 alloy)	US	Ti-Al6-Zr5-W1-Si0.2
AMI 17(*2)	(Ti-6Al-2Cb-1Ta)	US	Ti-Al6-Mo1-Cb/Nb2-Ta1
AMS 4900D	(A55,65A)(grade 3)	US	Ti-unalloyed-99.2,CP,-55 ksi YS (sheet, strip, plate)(annealed)
AMS 4901E	(A70,75A)(grade 4)	US	Ti-unalloyed-99.0,CP,-70 ksi YS (sheet, strip, plate)(annealed)
AMS 4902B	(A40,55A)(grade 2)	US	Ti-unalloyed-99.5,CP,-40 ksi YS (sheet, strip, plate)(annealed)
AMS 4906	(6-4)	US	Ti-Al6-V4 (sheet, strip)(cont. rolled and annealed)
AMS 4907C	(6-4)ELI	US	Ti-Al6-V4 ELI (sheet, strip, plate)(annealed)
AMS 4908C	(C-110M)	US	Ti-Mn8 (sheet, strip)(annealed)
AMS 4909C	(A-110)ELI	US	Ti-Al5-Sn2.5 ELI (sheet, strip, plate)(annealed)
AMS 4910F	(A110AT)	US	Ti-Al5-Sn2.5 (sheet, strip, plate)(annealed)
AMS 4911C	(C120AV)(6-4)	US	Ti-Al6-V4 (sheet, strip, plate)(annealed)
AMS 4912A	(4-3-1)	US	Ti-Al4-V1-Mo3 (sheet, strip)(solution heat treated)
AMS 4913A	(4-3-1)	US	Ti-Al4-V1-Mo3 (sheet, strip)(solution and precipitation tr.)
AMS 4915C	(8-1-1)	US	Ti-Al8-V1-Mo1 (sheet, strip, plate)(single annealed)
AMS 4916C	(8-1-1)	US	Ti-Al8-V1-Mo1 (sheet, strip, plate)(duplex annealed)
AMS 4917B	(B120VCA)	US	Ti-Al3-V 13.5-Cr 11 (sheet, strip, plate)(solution heat treated)
AMS 4918D	(6-6-2)	US	Ti-Al6-V6-Sn2 (sheet, strip, plate)(annealed)
AMS 4921C	(A70,100A)	US	Ti-unalloyed-99.0,CP,-70 ksi YS (bar, forging, rod)(annealed)
AMS 4923A(*1)		US	Ti-Mo2-Cr2-Fe2 (bar, forging)(annealed)
AMS 4924C	(A-110)ELI	US	Ti-Al5-Sn2.5 ELI (bar, forging, rod)(annealed)
AMS 4925B(*2)	(C130M)	US	Ti-Al4-Mn4 (bar, forging)(annealed)
AMS 4926E	(A110AT)	US	Ti-Al5-Sn2.5 (bar, rod)(annealed)
AMS 4927(*1)		US	Ti-Al3-Cr5 (bar, forging, forging stock)
AMS 4928G	(C120AV)(6-4)	US	Ti-Al6-V4 (bar, forging)(annealed)
AMS 4929(*1)		US	Ti-Al5.4-Mo1.25-Cr1.4-Fe1.3 (bar)(annealed)
AMS 4930A	(6-4)ELI	US	Ti-Al6-V4 ELI (bar, forging, rod)(annealed)
AMS 4934	(6-4)	US	Ti-Al6-V4 (extrusion, flash weld, rings)(solution treated/aged)
AMS 4935C	(C120AV)(6-4)	US	Ti-Al6-V4 (extrusion, flash weld, rings)(annealed)
AMS 4936	(6-6-2)	US	Ti-Al6-V6-Sn2 (extrusion)

APPENDIX 7. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
AMS 4941A	(A40,55A)	US	Ti-unalloyed-99.5,CP,-40 ksi YS (welding tubing)(annealed)
AMS 4942A	(CP)(grade 2)	US	Ti-unalloyed-99.5,CP,-40 ksi YS (seamless tubing)(annealed)
AMS 4943	(3-2.5)	US	Ti-Al3-V2.5 (seamless tubing)(annealed)
AMS 4944	(3-2.5)	US	Ti-Al3-V2.5 (seamless hydraulic tubing)(cold worked) (stress relieved)
AMS 4951C	(CP)	US	Ti-unalloyed-99.5,CP,-40 ksi YS (welding wire)
AMS 4953	(A110AT)	US	Ti-Al5-Sn2.5 (wleding wire)
AMS 4954B	(C120AV)	US	Ti-Al6-V4 (welding wire)
AMS 4955	(8-1-1)	US	Ti-Al8-V1-Mo1 (welding wire)
AMS 4956	(6-4)ELI	US	Ti-Al6-V4 ELI (welding wire)(environment controlled)
AMS 4965C	(6-4)	US	Ti-Al6-V4 (bar, forging, rod)(sol. and precipitation heat tr.)
AMS 4966E	(A110AT)	US	Ti-Al5-Sn2.5 (forging)(annealed)
AMS 4967D	(6-4)	US	Ti-Al6-V4 (forging, bar)(annealed) heat treatable
AMS 4968A(*1)		US	Ti-Al5-Sn2-Zr5 (bar, forging)(annealed)
AMS 4969(*1)		US	Ti-Al5.4-Mo1.25-Cr1.4-Fe1.3 (forging stock, forging)(annealed)
AMS 4970C	(7-4)	US	Ti-Al7-Mo4 (bar, forging)(sol. and precipitation treated)
AMS 4971A	(6-6-2)	US	Ti-Al6-V6-Sn2 (bar, forging, rod)(annealed, heat treatable)
AMS 4972A	(8-1-1)	US	Ti-Al8-V1-Mo1 (bar, rod)(solution treated and stabilized)
AMS 4973A	(8-1-1)	US	Ti-Al8-V1-Mo1 (forging)(solution treated and stabilized)
AMS 4974		US	Ti-Al2.30Mo1-Sn 11-Zr5-Si0.2 (bar, forging)(sol. and prec. tr.)
AMS 4975B	(6-2-4-2)	US	Ti-Al6-Mo2-Sn2-Zr4 (bar, rod)(sol. and precipitation treated)
AMS 4976	(6-2-4-2)	US	Ti-Al6-Mo2-Sn2-Zr4 (forging)(sol. and precipitation treated)
AMS 4977A	(Beta III)	US	Ti-Mo 11.5-Sn4.5-Zr6 (bar, wire)(solution heat treated)
AMS 4978A	(6-6-2)	US	Ti-Al6-V6-Sn2 (bar, forging, rod)(annealed)
AMS 4979	(6-6-2)	US	Ti-Al6-V6-Sn2 (bar, forging, rod)(sol. and precipitation tr.)
AMS 4980A	(Beta III)	US	Ti-Mo 11.5-Sn4.5-Zr6 (bar, wire)(solution heat treated)
AMS 4981	(6-2-4-6)	US	Ti-Al6-Mo6-Sn2-Zr4 (bar, wire, forging, forging stock) (solution and precipitation treated)
AMS 4982		US	Ti-Cb/Nb 45 (bar, wire)(annealed)

APPENDIX 7. (Continued)

Standard Number		Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
AMTU 368(*1)			UR	Titanium, stampings and fittings
AMTU 386-59			UR	Titanium tubing
AMTU 388(*1)			UR	Titanium alloys, grades
AMTU 449(*1)			UR	Titanium welding wire
AMTU 451-59			UR	Titanium, rolled
AMTU 451-67	OT4		UR	Ti-Al4.25-Mn1.4 (bar)
AMTU 451-67	OT4-0		UR	Ti-Al0.8-Mn0.75 (bar)
AMTU 451-67	OT4-1		UR	Ti-Al1.75-Mn1.35 (bar)
AMTU 451-67	VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (bar)
AMTU 451-67	VT1-0	(B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ski YS (bar)
AMTU 451-67	VT3-1		UR	Ti-Al6.25-Mo2.5-Cr1.5 (bar)
AMTU 451-67	VT5		UR	Ti-Al5.25 (bar)
AMTU 451-67	VT5-1	(A-110)	UR	Ti-Al5-Sn2.5 (bar)
AMTU 451-67	VT6S		UR	Ti-Al5.75-V4 (bar)
AMTU 451-67	VT6		UR	Ti-Al6.25-V5.1 (bar)
AMTU 451-67	VT8		UR	Ti-Al6.65-Mo3.3 (bar)
AMTU 451-67	VT9		UR	Ti-Al6.4-Mo3.3-Zr1.4 (bar)
AMTU 451-67	VT14		UR	Ti-Al4.9-V1.4-Mo3.65 (bar)
AMTU 451-67	VT20		UR	Ti-Al6.5-V1.3-Mo1.25-Zr2 (bar)
AMTU 451-67	VT22		UR	Ti-Al5.15-V4.75-Mo4.75-Cr1.25 (bar)
AMTU 461-70	VT14		UR	Ti-Al4.9-V1.4-Mo3.65 (forging, stampings)
AMTU 475-67	OT4		UR	Ti-Al4.25-Mn1.4 (sheet)
AMTU 475-67	OT4-0		UR	Ti-Al0.8-Mn0.75 (sheet)
AMTU 475-67	OT4-1		UR	Ti-Al1.75-Mn1.35 (sheet)
AMTU 475-67	VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (sheet)
AMTU 475-67	VT1-0	(B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (sheet)
AMTU 475-67	VT5		UR	Ti-Al5.25 (sheet)
AMTU 475-67	VT6S		UR	Ti-Al5.75-V4 (sheet)
AMTU 475-67	VT6		UR	Ti-Al6.25-V5.1 (sheet)
AMTU 475-67	VT14		UR	Ti-Al4.9-V1.4-Mo3.65 (sheet)
AMTU 475-67	VT20		UR	Ti-Al6.5-V1.3-Mo1.25-Zr2 (sheet)

APPENDIX 7. (Continued)

Standard Number		Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
AMTU 476-61			UR	Titanium, sheet, mechanical properties
AMTU 487-20			UR	Titanium extruded and rolled
AMTU 552-69	VT16		UR	Ti-Al2.3-V4.5-Mo5 (bar for fasteners)
AMTU 553-63	VT3-1		UR	Ti-Al6.25-Mo2.5-Cr1.5 (ground bar for fasteners)
AMTU 553-63	VT16		UR	Ti-Al2.3-V4.5-Mo5 (ground bar for fasteners)
ANS H50.1			US	ANS titanium specification equivalent to ASTM B363-71
ANS H50.2			US	ANS titanium specification equivalent to ASTM B338-74
ANS Z179.13			US	ANS titanium specification equivalent to ASTM B299-74
ANS Z179.16			US	ANS titanium specification equivalent to ASTM B367-69(74)
ANS Z179.1			US	ANS titanium specification equivalent to ASTM B265-74
ANS Z179.2			US	ANS titanium specification equivalent to ASTM B348-74
ASTM B265-74	grade 1		US	Ti-unalloyed-99.6,CP,-25 ksi YS (sheet, strip, plate)
ASTM B265-74	grade 2		US	Ti-unalloyed-99.5,CP,-40 ksi YS (sheet, strip, plate)
ASTM B265-74	grade 3		US	Ti-unalloyed-99.2,CP,-55 ksi YS (sheet, strip, plate)
ASTM B265-74	grade 4		US	Ti-unalloyed-99.0,CP,-70 ksi YS (sheet, strip, plate)
ASTM B265-74	grade 5	(6-4)	US	Ti-Al6-V4 (sheet, strip, plate)
ASTM B265-74	grade 6	(A-110)	US	Ti-Al5-Sn2.5 (sheet, strip, plate)
ASTM B265-74	grade 7	(Pd alloy)	US	Ti-Pd0.15--0.25 (sheet, strip, plate)
ASTM B265-74	grade 10	(Beta III)	US	Ti-Mo 11.5-Sn4.5-Zr6 (sheet, strip, plate)
ASTM B265-74	grade 11	(Pd alloy)	US	Ti-Pd0.15--0.25 (sheet, strip, plate)
ASTM B299-74	GP-1		US	Ti-unalloyed-99.+ (sponge)
ASTM B299-74	MD-120		US	Ti-unalloyed-99.3 (sponge)
ASTM B299-74	ML-120		US	Ti-unalloyed-99.1 (sponge)
ASTM B299-74	SL-120		US	Ti-unalloyed-99.3 (sponge)
ASTM B299-74	Ti sponge		US	Ti-unalloyed (sponge), four grades
ASTM B337-74	grade 1		US	Ti-unalloyed-99.6,CP,-25 ksi YS (seamless welding pipe)
ASTM B337-74	grade 2		US	Ti-unalloyed-99.5,CP,-40 ksi YS (seamless welding pipe)
ASTM B337-74	grade 3		US	Ti-unalloyed-99.2,CP,-55 ksi YS (seamless welding pipe)
ASTM B337-74	grade 7	(Pd alloy)	US	Ti-Pd0.15--0.25 (seamless welding pipe)
ASTM B337-74	grade 9	(half 6-4)	US	Ti-Al3-V2.5 (seamless welding pipe)
ASTM B337-74	grade 10	(Beta III)	US	Ti-Mo 11.5-Sn4.5-Zr6 (seamless welding pipe)

APPENDIX 7. (Continued)

Standard Number		Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
ASTM B337-74	grade 11	(Pd alloy)	US	Ti-Pd0.15--0.25 (seamless welding pipe)
ASTM B338-74	grade 1		US	Ti-unalloyed-99.6,CP,-25 ksi YS (seamless welding pipe)
ASTM B338-74	grade 2		US	Ti-unalloyed-99.5,CP,-40 ksi YS (seamless weld. heat exch.)
ASTM B338-74	grade 3		US	Ti-unalloyed-99.2,CP,-55 ksi YS (seamless weld. heat exch.)
ASTM B338-74	grade 7	(Pd alloy)	US	Ti-Pd0.15--0.25 (seamless weld. heat exchanger tubing)
ASTM B338-74	grade 9	(half 6-4)	US	Ti-Al3-V2.5 (seamless weld. heat exchanger tubing)
ASTM B338-74	grade 10	(Beta III)	US	Ti-Mo 11.5-Sn4.5-Zr6 (seamless weld. heat exchanger tubing)
ASTM B338-74	grade 11	(Pd alloy)	US	Ti-Pd0.15--0.25 (seamless weld. heat exchanger tubing)
ASTM B348-74	grade 1		US	Ti-unalloyed-99.6,CP,-25 ksi YS (billet, bar)
ASTM B348-74	grade 2		US	Ti-unalloyed-99.5,CP,-40 ksi YS (billet, bar)
ASTM B348-74	grade 3		US	Ti-unalloyed-99.2,CP,-55 ksi YS (billet, bar)
ASTM B348-74	grade 4		US	Ti-unalloyed-99.0,CP,-70 ksi YS (billet, bar)
ASTM B348-74	grade 5	(6-4)	US	Ti-Al6-V4 (billet, bar)
ASTM B348-74	grade 6	(A-110)	US	Ti-Al5-Sn2.5 (billet, bar)
ASTM B348-74	grade 7	(Pd alloy)	US	Ti-Pd0.15--0.25 (billet, bar)
ASTM B348-74	grade 10	(Beta III)	US	Ti-Mo 1.5-Sn4.5-Zr6 (billet, bar)
ASTM B348-74	grade 11	(Pd alloy)	US	Ti-Pd0.15--0.25 (billet, bar)
ASTM B363-71	grade WPT1	(grade 1, C1)	US	Ti-unalloyed-99.6,CP,-25 ksi YS (fittings-welding/seamless)
ASTM B363-71	grade WPT2	(grade 2, C2)	US	Ti-unalloyed,99.5,CP,-40 ksi YS (fittings-welding/seamless)
ASTM B363-71	grade WPT3	(grade 3, C3)	US	Ti-unalloyed,99.2,CP,-55 ksi YS (fittings-welding/seamless)
ASTM B367-69	grade C-1		US	Ti-unalloyed-99.6,CP,-25 ksi YS (casting)
ASTM B367-69	grade C-2		US	Ti-unalloyed-99.5,CP,-40 ksi YS (casting)
ASTM B367-69	grade C-3		US	Ti-unalloyed-99.2,CP,-55 ksi YS (casting)
ASTM B367-69	grade C-4		US	Ti-unalloyed-99.0,CP,-70 ksi YS (casting)
ASTM B367-69	grade C-5	(6-4)	US	Ti-Al6-V4 (casting)
ASTM B367-69	grade C-6	(A-110)	US	Ti-Al5-Sn2.5 (casting)
ASTM B367-69	grade C-7A	(Pd alloy)	US	Ti-Pd0.15--0.25 (casting)
ASTM B367-69	grade C-7B	(Pd alloy)	US	Ti-Pd0.15--0.25 (casting)
ASTM B367-69	grade C-8A	(Pd alloy)	US	Ti-Pd0.15--0.25 (casting)
ASTM B367-69	grade C-8B	(Pd alloy)	US	Ti-Pd0.15--0.25 (casting)

APPENDIX 7. (Continued)

Standard Number		Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
ASTM B381-75	grade F-1		US	Ti-unalloyed-99.6,CP,-25 ksi YS (forging)
ASTM B381-75	grade F-2		US	Ti-unalloyed-99.5,CP,-40 ksi YS (forging)
ASTM B381-75	grade F-3		US	Ti-unalloyed-99.2,CP,-55 ksi YS (forging)
ASTM B381-75	grade F-4		US	Ti-unalloyed-99.0,CP,-70 ksi YS (forging)
ASTM B381-75	grade F-5	(6-4)	US	Ti-Al6-V4 (forging)
ASTM B381-75	grade F-6	(A-110)	US	Ti-Al5-Sn2.5 (forging)
ASTM B381-75	grade F-7	(Pd alloy)	US	Ti-Pd0.15--0.25 (forging)
ASTM B381-75	grade F-11	(Pd alloy)	US	Ti-Pd0.15--0.25 (forging)
ASTM F136-70		(6-4)ELI	US	Ti-Al6-V4 ELI (sheet, bar, forging)(surgical implants)
ASTM F67-74	grade 3		US	Ti-unalloyed-99.3,CP,-50 ksi YS (sheet, forging)(surgical impl.)
ASTM F67-74	grade 4		US	Ti-unalloyed-99.0,CP,-70 ksi YS (sheet, forging)(surgical impl.)
AWS A5.16-70	ERTI-0.2Pd	(Pd alloy)	US	Ti-Pd0.15--0.25 (bare welding rods)
AWS A5.16-70	ERTI-13V-11Cr-3	(B-120)	US	Ti-Al3-V 13-Cr 11 (bare welding rods)
AWS A5.16-70	ERTI-1		US	Ti-unalloyed-99.7,CP,- ksi YS (welding wire)
AWS A5.16-70	ERTI-2		US	Ti-unalloyed-99.6,CP,-25 ksi YS (welding wire)
AWS A5.16-70	ERTI-3Al-2.5V	(3-2.5)	US	Ti-Al3-V2.5 (bare welding rods)
AWS A5.16-70	ERTI-3Al-2.5V-1	(3-2.5)	US	Ti-Al3-V2.5 (very-high-purity compositions)(bare wire)
AWS A5.16-70	ERTI-3		US	Ti-unalloyed-99.6,CP,-25 ksi YS (bare wire)
AWS A5.16-70	ERTI-4		US	Ti-unalloyed-99.4,CP,- ksi YS (bare wire)
AWS A5.16-70	ERTI-5Al-2.5Sn	(A-110)	US	Ti-Al5-Sn2.5 (bare welding rods)
AWS A5.16-70	ERTI-5Al-2.5Sn	(A-110)	US	Ti-Al5-Sn2.5 (very-high-purity compositions)
AWS 5.16-70	ERTI-6Al-2Cb-1		US	Ti-Al6-Mo1-Cb/Nb2-Ta1 (bare welding rods)
AWS 5.16-70	ERTI-6Al-4V	(6-4)	US	Ti-Al6-V4 (bare welding rods)
AWS 5.16-70	ERTI-6Al-4V-1	(6-4)	US	Ti-Al6-V4 (very-high-purity compositions)(bare wire)
AWS 5.16-70	ERTI-8Al-1Mo-1V	(8-1-1)	US	Ti-Al8-V1-Mo1 (bare welding rods)
BS CP 3003(part 9)	grade 1	(IMI-115,125)	UK	Ti-unalloyed-99.6,CP,-25 ksi YS (for chemical linings)
BS TA.1	(see 2TA.1)	(IMI-115)	UK	Ti-Pd-0.15--0.25
BS TA.10(*1)	(see 2TA.10)	(IMI-318)	UK	Ti-Al6-V4 (sheet)
BS TA.11(*1)	(see 2TA.11)	(IMI-318)	UK	Ti-Al6-V4 (bar for machining)
BS TA.12(*1)	(see 2TA.12)	(IMI-318)	UK	Ti-Al6-V4 (forging stock)

APPENDIX 7. (Continued)

Standard Number		Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
BS TA.13(*1)	(see 2TA.13)	(IMI-318)	UK	Ti-Al6-V4 (forging)
BS TA.14(*1)		(IMI-317)	UK	Ti-Al5-Sn2.5 (sheet)
BS TA.15(*1)		(IMI-317)	UK	Ti-Al5-Sn2.5 (bar for machining)
BS TA.16(*1)		(IMI-317)	UK	Ti-Al5-Sn2.5 (forging stock)
BS TA.17(*1)		(IMI-317)	UK	Ti-Al5-Sn2.5 (forging)
BS TA.18		(IMI-679)	UK	Ti-Al2.25-Mo1-Sn 11-Zr5-Si0.3 (bar for machining)
BS TA.19		(IMI-679)	UK	Ti-Al2.25-Mo1-Sn 11-Zr5-Si0.3 (forging stock)
BS TA.20		(IMI-679)	UK	Ti-Al2.25-Mo1-Sn 11-Zr5-Si0.3 (forging)
BS TA.21(*1)	(see 2TA.21)	(IMI-230)	UK	Ti-Cu2.5
BS TA.22(*1)	(see 2TA.22)	(IMI-230)	UK	Ti-Ci2.5
BS TA.23(*1)	(see 2TA.23)	(IMI-230)	UK	Ti-Cu2.5
BS TA.24(*1)	(see 2TA.24)	(IMI-230)	UK	Ti-Cu2.5
BS TA.25	(seldom used)	(IMI-679)	UK	Ti-Al2.25-Mo1-Sn 11-Zr5-Si0.3 (bar for machining)
BS TA.26	(seldom used)	(IMI–679)	UK	Ti-Al2.25-Mo1-Sn 11-Zr5-Si0.3 (bar for machining)
BS TA.27	(seldom used)	(IMI–679)	UK	Ti-Al2.25-Mo1-Sn 11-Zr5-Si0.3 (forging)
BS TA.28(*1)	(see 2TA.28)	(IMI-318)	UK	Ti-Al6-V4 (forging stock)
BS TA.29(*1)	(see TA.45)	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (bar for machining)
BS TA.30(*1)	(see TA.47)	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging stock)
BS TA.31(*1)	(see TA.48)	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging)
BS TA.32(*1)	(see TA.46)	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (bar for machining)
BS TA.33(*1)	(see TA.47)	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging stock)
BS TA.34(*1)	(see TA.48)	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging)
BS TA.35(*1)	(see TA.49)	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (bar for machining)
BS TA.36(*1)	(see TA.36)	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging stock)
BS TA.37(*1)	(see TA.51)	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging)
BS TA.38		(IMI-551)	UK	Ti-Al4-Mo4-Sn4-Si0.5-Co0.2 (bar for machining)(heat treated)
BS TA.39		(IMI-551)	UK	Ti-Al4-Mo4-Sn4-Si0.5-Co0.2 (forging stock)
BS TA.40		(IMI-551)	UK	Ti-Al4-Mo4-Sn4-Si0.5-Co0.2 (bar for machining)(heat treated)
BS TA.41		(IMI-551)	UK	Ti-Al4-Mo4-Sn4-Si0.5-Co0.2 (forging stock)
BS TA.42		)(MI-551)	UK	Ti-Al4-Mo4-Sn4-Si0.5-Co0.2 (forging)(heat treated)

APPENDIX 7. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
BS TA.43	(IMI-685)	UK	Ti-Al6-Mo0.5-Zr5-Si0.3 (forging stock)
BS TA.44	(IMI-685)	UK	Ti-Al6-Mo0.5-Zr5-Si0.3 (forging)(heat treated)
BS TA.45	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (bar)(heat treated)
BS TA.46	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (bar for machining)(heat treated)
BS TA.47	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging stock)
BS TA.48	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging)(heat treated)
BS TA.49	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (bar for machining)(heat treated)
BS TA.50	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging stock)
BS TA.51	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging)(heat treated)
BS TA.52	(IMI-230)	UK	Ti-Cu2.5 (sheet, strip)(solution heat treated and aged)
BS TA.53	(IMI-230)	UK	Ti-Cu2.5 (bar for machining)
BS TA.54	(IMI-230)	UK	Ti-Cu2.5 (forging stock)
BS TA.55	(IMI-230)	UK	Ti-Cu.25 (forging)(solution heat treated and aged)
BS TA.56	(IMI-318)	UK	Ti-Al6-V4 (plate)(annealed)
BS TA.57	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (plate)(heat treated)
BS TA.58	(IMI-230)	UK	Ti-Cu2.5 (plate)(annealed)
BS 2TA.1	(IMI-115/260)	UK	Ti-unalloyed-99.6,CP,-25 ksi YS (sheet, strip)(annealed)
BS 2TA.2	(IMI-125)	UK	Ti-unalloyed-99.5,CP,-40 ksi YS (sheet, strip)(annealed)
BS 2TA.3	(IMI-125)	UK	Ti-unalloyed-99.5,CP,-40 ksi YS (bar for mach.)(annealed)
BS 2TA.4	(IMI-125)	UK	Ti-unalloyed-99.5,CP,-40 ksi YS (forging stock)
BS 2TA.5	(IMI-125)	UK	Ti-unalloyed-99.5,CP,-40 ksi YS (forging)(annealed)
BS 2TA.6	(IMI-155)	UK	Ti-unalloyed-99.0,CP,-70 ksi YS (sheet, strip)(annealed)
BS 2TA.7	(IMI-160)	UK	Ti-unalloyed-99.0,CP,-70 ksi YS (bar for mach.)(annealed)
BS 2TA.8	(IMI-160)	UK	Ti-unalloyed-99.0,CP,-70 ksi YS (forging stock)
BS 2TA.9	(IMI-160)	UK	Ti-unalloyed-99.0,CP,-70 ksi YS (forging)(annealed)
BS 2TA.10	(IMI-318)	UK	Ti-Al6-V4 (sheet, strip)(annealed)
BS 2TA.11	(IMI-318)	UK	Ti-Al6-V4 (bar for machining)(annealed)
BS 2TA.12	(IMI-318)	UK	Ti-Al6-V4 (forging stock)
BS 2TA.13	(IMI-318)	UK	Ti-Al6-V4 (forging)(annealed)
BS 2TA.21	(IMI-230)	UK	Ti-Cu2.5 (sheet, strip)(annealed)

APPENDIX 7. (Continued)

Standard Number		Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
BS 2TA.22		(IMI-230)	UK	Ti-Cu2.5 (bar for machining)(annealed)
BS 2TA.23		(IMI-230)	UK	Ti-Cu2.5 (forging stock)
BS 2TA.24		(IMI-230)	UK	Ti-Cu2.5 (forging)(annealed)
BS 2TA.28		(IMI-318)	UK	Ti-Al6-V4 (forging stock, wire)(fasteners)
BS 2TA.100			UK	Inspection and testing of titanium alloys
BS 3003(part 9)	grade 2	(IMI-125)	UK	Ti-unalloyed-99.5,CP,-40 ski YS (for chemical linings)
BS 3003(part 9)	grade 3	(IMI-130)	UK	Ti-unalloyed-99.2,CP,-55 ksi YS (for chemical linings)
BS 3003(part 9)	grade 4	(IMI-155)	UK	Ti-unalloyed-99.0,CP,-70 ksi YS (for chemical linings)
BS 3003(part 9)	grade 5	(IMI-160)	UK	Ti-unalloyed-99.0,CP,-70 ksi YS (for chemical linings)
NS 3003(part 9)	TP.1	(Pd alloy)	UK	Ti-Pd0.15--0.25
BS 3531/1.5		(IMI-115,125,130)	UK	Ti-unalloyed-99.6,CP,-25 ksi YS (surgical implant)
CSN 42 1490			CZ	Ti-unalloyed-99.5,CP (dimensions)(sheet, strip)
CSN 42 1491			CZ	Ti-unalloyed-99.5,CP,-40 ksi US (wire)
CSN 42 1492			CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (bar)
CSN 42 1493			CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (tubing)
CSN 42 4655			CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (ingot)
CSN 42 7390			CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (dimensions)(sheet, strip)
CSN 42 7391			CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (dimensions)(sheet, strip)
CSN 42 7490			CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (wire)
CSN 42 7590			CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (dimensions)(bar)
CSN 42 7591			CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (dimensions)(bar for mach.)
CSN 42 7790			CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (dimensions)(tubing)
DIN 17850			GY	Ti-unalloyed-99.+,CP, all grades
DIN 17851		(6-4)(A-110)	GY	Ti-Al6-V4 and Ti-Al5-Sn2 (extrusion)(annealed)
DIN 17860		(CP)	GY	Ti-unalloyed-99.+,CP, all grades (sheet, strip)
DIN 17862		(CP)	GY	Ti-unalloyed-99.+,CP, all grades (bar)(annealed)
DIN 17863		(CP)	GY	Ti-Unalloyed-99.+,CP, all grades (wire)(annealed)
DIN 17864		(CP)	GY	Ti-unalloyed, Ti-Al6-V4, Ti-Al5-Sn2 (forging)(annealed)
DIN 3.7025	Werkstoff	(IMI-115)	GY	Ti-unalloyed-99.6,CP,-25 ksi YS
DIN 3.7030(*5)	Werkstoff	(Pd alloy)	GY	Ti-Pd0.15--0.25 (all forms)

APPENDIX 7. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
DIN 3.7035 Werkstoff	(IMI-125)	GY	Ti-unalloyed-99.5,CP,-40 ksi YS
DIN 3.7040(*5) Werkstoff	(Pd alloy)	GY	Ti-Pd0.15--0.25 (all forms)
DIN 3.7055 Werkstoff	(IMI-130)	GY	Ti-unalloyed-99.2,CP,-55 ksi YS
DIN 3.7056(*5) Werkstoff	(Pd alloy)	GY	Ti-Pd0.15--0.25 (all forms)
DIN 3.7065 Werkstoff	(IMI-155/160)	GY	Ti-unalloyed-99.0,CP,-70 ksi YS
DIN 3.7070(*5) Werkstoff	(Pd alloy)	GY	Ti-Pd0.15--0.25 (all forms)
DIN 3.7115 Werkstoff	(A-110)	GY	Ti-Al5-Sn2.5 (all forms)
DIN 3.7165 Werkstoff	(6-4)	GY	Ti-Al6-V4 (all forms)
DTD 5273 (5003)	(IMI-130)	UK	Ti-unalloyed-99.2,CP,-55 ksi YS
DTD 5283 (5003)	(IMI-130)	UK	Ti-unalloyed-99.2,CP,-55 ksi YS
DTD 5303	(IMI-318)	UK	Ti-Al6-V4 (bar for machining)
DTD 5303	(IMI-318)	UK	Ti-Al6-V4 (bar for machining)
DTD 5313	(IMI-318)	UK	Ti-Al6-V4 (forging stock)
DTD 5313	(IMI-318)	UK	Ti-Al6-V4 (forging stock)
DTD 5323	(IMI-318)	UK	Ti-Al6-V4 (forging)
DTD 5323	(IMI-318)	UK	Ti-Al6-V4 (forging)
DTD 5333	(IMI-550	UK	Ti-Al4-Mn4 (bar for machining)
DTD 5333	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (bar for machining)
DTD 5343	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging stock to 100 mm)
DTD 5343	(IMI-550)	UK	Ti-Al4-Mn4 (forging stock)
DTD 5353	(IMI-550)	UK	Ti-Al4-Mn4 (forging)
DTD 5353	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging to 100 mm)
DTD M200(*1)		UK	Ti-Al6-Zr5-W1-Si0.3
DTD M201(*1)		UK	Ti-Al6-Mo4-Zr5-Cu1-Si0.2
DTD 5003B(*1) (see 2TA.1)	(IMI-115)	UK	Ti-unalloyed-99.6,CP,-25 ksi YS (bar)
DTD 5013B(*1)	(IMI-115)	UK	Ti-unalloyed-99.6,CP,-25 ksi YS (bar)
DTD 5023C(*1)	(IMI-130)	UK	Ti-unalloyed-99.2,CP,-55 ksi YS (sheet)
DTD 5033B(*1) (see 2TA.1)	(IMI-115)	UK	Ti-unalloyed-99.6,CP,-25 ksi YS (sheet)
DTD 5043B(*1)	(IMI-315)	UK	Ti-Al2-Mn2 (bar)
DTD 5053(*1)	(IMI-550)	UK	Ti-Al4-Mn4 (bar)

APPENDIX 7. (Continued)

Standard Number		Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
DTD 5054B(*1)			UK	Ti-Al1.5-Mn1.5 (bar)
DTD 5063A(*1)			UK	Ti-unalloyed-99.7,CP (sheet)
DTD 5073(*1)			UK	Ti-unalloyed-99.7,CP, C0.1, Fe0.2
DTD 5083(*1)	(see TA.15)	(IMI-317)	UK	Ti-Al5-Sn2.5 (bar)
DTD 5093(*1)	(see TA.14)	(IMI-317)	UK	Ti-Al5-Sn2.5 (sheet)
DTD 5103(*1)	(see TA.35,296)		UK	Ti-Al4-Mo4-Sn2-Si0.5 (bar)
DTD 5113(*1)			UK	Ti-Al2.2-Mo1-Sn 11-Zr5-Si0.4 (bar)
DTD 5123(*1)			UK	Ti-Cu2.5 (bar)
DTD 5133(*1)			UK	Ti-Cu2.5 (sheet)
DTD 5143(*1)			UK	Ti-Al4-Mn4 (forging)
DTD 5153(*1)	(see TA.31,34)		UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging)
DTD 5163(*1)	(see 2TA.10)	(IMI-318)	UK	Ti-Al6-V4 (sheet)
DTD 5173(*1)	(see 2TA.11)	(IMI-318)	UK	Ti-Al6-V4 (bar)
DTD 5183(*1)			UK	Ti-unalloyed (sheet, strip)
DTD 5193(*1)			UK	Ti-unalloyed (sheet, strip)
DTD 5203(*1)	(see TA.38)	(IMI-551)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (billet, bar)
DTD 5213(*1)		(IMI-680)	UK	Ti-Al2.25-Mo4-Sn 11-Si0.2 (bar)
DTD 5223(*1)	(see TA.42)	(IMI-551)	UK	Ti-Al4-Mo4-Sn4-Si0.5 (forging)
DTD 5233(*1)	(see TA.52)	(IMI-230)	UK	Ti-Cu2.5 (sheet, strip)
DTD 5243(*1)	(see TA.53)	(IMI-230)	UK	Ti-Cu2.5 (bar for machining)
DTD 5253(*1)	(see TA.54)	(IMI-230)	UK	Ti-Cu2.5 (forging stock)
DTD 5263(*1)	(see TA.55)	(IMI-230)	UK	Ti-Cu2.5 (forging)
DTD 5273		(IMI-130)	UK	Ti-unalloyed-99.2,CP,-55 ksi YS (bar for machining)
DTD 5283		(IMI-130)	UK	Ti-unalloyed-99.2,CP,-55 ksi YS (forging stock)
EMO Ti-110		(B348 grade 1)	GE	Ti-unalloyed-99.6,CP,-25 ksi YS
EMO Ti-140		(B348 grade 2)	GE	Ti-unalloyed-99.5,CP,-40 ksi YS
GOST 5303-69			UR	Ti-unalloyed sponge, quality requirements
INTA L-7001(*5)			SP	Ti-unalloyed
INTA L-7002(*5)			SP	Ti-unalloyed
INTA L-7003(*5)			SP	Ti-unalloyed

APPENDIX 7. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
INTA L-7004(*5)		SP	Ti-unalloyed
INTA L-7021(*5)	(Pd alloy)	SP	Ti-Pd0.12--0.25
INTA L-7301(*5)	(6-4)	SP	Ti-Al6-V4
INTA L-7501(*5)	(IMI-230)	SP	Ti-Cu2.5
INTA L-7701(*5)	(13-11-3)	SP	Ti-Al3-V 13-Cr 11
ISO Draft Std.(alloy)	(IMI-318)	XX	Ti-Al6-V4 (surgical implant)
ISO Draft Std.(ductile Ti)	(IMI-115)	XX	Ti-unalloyed-99.6,CP,-25 ksi YS (surgical implant)
ISO Draft Std.(resiliant Ti)	(IMI-155,160)	XX	Ti-unalloyed-99.0,CP,-70 ksi YS (surgical implant)
ISO T119/SC5		XX	Titanium (powder)
JIS H 2151 class 1 TS-105		JA	Ti-unalloyed-99.6 (sponge)
JIS H 4600 class 1 TP 28		JA	Ti-unalloyed-99.6,CP,-25 ksi YS (plate)
JIS H 4600 class 2 TP 35		JA	Ti-unalloyed-99.5,CP,-40 ksi YS (plate)
JIS H 4600 class 3 TP 49		JA	Ti-unalloyed-99.2,CP,-55 ksi YS (plate)
JIS H 4630 class 1 TTP 28		JA	Ti-unalloyed-99.6,CP,-25 ksi YS (ordinary pipe)
JIS H 4630 class 2 TTP 35		JA	Ti-unalloyed-99.5,CP,-40 ksi YS (ordinary pipe)
JIS H 4630 class 3 TTP 49		JA	Ti-unalloyed-99.2,CP,-55 ksi YS (ordinary pipe)
JIS H 4631 class 1 TTH 28		JA	Ti-unalloyed-99.6,CP,-25 ksi YS (heat exchanger tubing)
JIS H 4631 class 2 TTH 35		JA	Ti-unalloyed-99.5,CP,-40 ksi YS (heat exchanger tubing)
JIS H 4631 class 3 TTH 49		JA	Ti-unalloyed-99.2,CP,-55 ksi YS (heat exchanger tubing)
JIS H 4650 class 1 TB 28		JA	Ti-unalloyed-99.6,CP,-25 ksi YS (bar)
JIS H 4650 class 2 TB 35		JA	Ti-unalloyed-99.5,CP,-40 ksi YS (bar)
JIS H 4650 class 3 TB 49		JA	Ti-unalloyed-99.2,CP,-55 ksi YS (bar)
JIS H 4670 class 1 TW 28		JA	Ti-unalloyed-99.6,CP,-25 ksi YS (wire)
JIS H 4670 class 2 TW 35		JA	Ti-unalloyed-99.5,CP,-40 ksi YS (wire)
JIS H 4670 class 3 TW 49		JA	Ti-unalloyed-99.2,CP,-55 ksi YS (wire)
LW 3.7024.1 (Werkstoff)	(IMI-115)	GY	Ti-unalloyed-99.6,CP,-25 ksi YS (sheet, welding wire)
LW 3.7034.1 (Werkstoff)	(IMI-125)	GY	Ti-unalloyed-99.5,CP,-40 ksi YS (sheet, rod, forging, weld. w)
LW 3.7064.1 (Werkstoff)	(IMI-155/160)	GY	Ti-unalloyed-99.0,CP,-70 ksi YS (sheet, rod, forging)
LW 3.7114 (draft)	(IMI-317)	GY	Ti-Al5-Sn2.5 (all forms)
LW 3.7124 (draft)	(IMI-230)	GY	Ti-Cu2.5 (all forms)
LW 3.7134 Werkstoff	(8-1-1)	GY	Ti-Al8-V1-Mo1

APPENDIX 7. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
LW 3.7144 Werkstoff	(6-2-4-2)	GY	Ti-Al6-Mo2-Sn2-Zr4
LW 3.7154 Werkstoff	(IMI-685)	GY	Ti-Al6-Mo0.8-Zr5-Si0.3
LW 3.7154 (draft)	(IMI-685)	GY	Ti-Al6-Mo0.5-Zr5-Si0.25 (bar, billet)
LW 3.7164 Werkstoff	(6-4)	GY	Ti-Al6-V4
LW 3.7164.1 Werkstoff	(IMI-318)	GY	Ti-Al6-V4 (sheet, rod, forging)
LW 3.7164.7 Werkstoff	(IMI-318)	GY	Ti-Al6-V4 (bolt stock)
LW 3.7174 Werkstoff	(6-6-2)	GY	Ti-Al6-V6-Sn2
LW 3.7184 (draft)	(IMI-550)	GY	Ti-Al4-Mo4-Sn2-Si0.5 (bar, billet)
L-7101	(A-110)	SP	Ti-Al5-Sn2.5
MIL-F-83142A composition 1		US	Ti-unalloyed-99.9,CP,-70 ksi YS (forging premium quality)
MIL-F-83142A composition 2	(A-110)	US	Ti-Al5-Sn2.5 (forging premium quality)
MIL-F-83142A composition 3	(A-110) ELI	US	Ti-Al5-Sn2.5 ELI (forging premium quality)
MIL-F-83142A composition 4		US	Ti-Al5-Sn5-Zr5 (not used) (forging premium quality)
MIL-F-83142A composition 5	(8-1-1)	US	Ti-Al8-V1-Mo1 (forging premium quality)
MIL-F-83142A composition 6	(6-4)	US	Ti-Al6-V4 (forging premium quality)
MIL-F-83142A composition 7	(6-4) ELI	US	Ti-Al6-V4 ELI (forging premium quality)
MIL-F-83142A composition 8	(6-6-2)	US	Ti-Al6-V6-Sn2 (forging premium quality)
MIL-F-83142A composition 9	(7-4)	US	Ti-Al7-Mo4 (forging premium quality)
MIL-F-83142A composition 10	(679)	US	Ti-Al2-Mo1-Sn 11-Zr5 (forging premium quality)
MIL-F-83142A composition 11	(6-2-4-2)	US	Ti-Al6-Mo2-Sn2-Zr4 (forging premium quality)
MIL-F-81342A composition 12	(13-11-3)	US	Ti-Al3-V 13-Cr 11 (forging premium quality)
MIL-F-83142A composition 13	(Beta III)	US	Ti-Mo 11.5-Sn4.5-Zr6 (forging premium quality)
MIL-HDBK-697A		US	Ti and Ti alloys, US Military Handbook
MIL-H-81200A		US	Ti-unalloyed and alloyed, heat treatment
MIL-R-81558 type III alpha+beta		US	Ti-alpha+beta alloys (welding rod wire)
MIL-R-81558 type III composition A	(6-4)	US	Ti-Al6-V4 (welding rod wire)
MIL-R-81558 type III composition B	(6-4) ELI	US	Ti-Al6-V4 ELI (welding rod wire)
MIL-R-81558 type II alpha alloys		US	Ti-alpha alloys (welding rod wire)
MIL-R-81558 type II composition A	(A-110)	US	Ti-Al5-Sn2.5 (welding rod wire)
MIL-R-81558 type II composition B	(A-110) ELI	US	Ti-Al5-Sn2.5 ELI (welding rod wire)

APPENDIX 7. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
MIL-R-81558 type II composition C	(8-1-1)	US	Ti-Al8-V1-Mo1 (welding rod wire)
MIL-R-81558 type II composition D	(6-6-2-1)	US	Ti-Al6-Mo0.8-Cb/Nb2-Ta1 (welding rod wire)
MIL-R-81558 type IV beta alloys		US	Ti-beta alloys (welding rod wire)
MIL-R-81558 type IV composition A	(13-11-3)	US	Ti-Al3-V 13-Cr 11 (welding rod wire)
MIL-R-81558 type I composition A	(CP)	US	Ti-unalloyed-99.+,CP,- ksi YS (welding rod wire)
MIL-R-81558 type I composition B	(CP)	US	Ti-unalloyed-99.+,CP,- ksi YS (welding rod wire)
MIL-R-81558 type I CP Titanium	(CP)	US	Ti-unalloyed-99.+,CP,- ksi YS (welding rod wire)
MIL-T-009046G composition 6(*3)	(6-4)	US	Ti-Al6-V4 (sheet, strip, plate)
MIL-T-009046G composition 7(*3)	(6-4) ELI	US	Ti-Al6-V4 ELI (sheet, strip, plate)
MIL-T-009046G composition 8(*3)	(6-6-2)	US	Ti-Al6-V6-Sn2 (sheet, strip, plate)
MIL-T-009046G composition 11(*3)	(6-2-4-2)	US	Ti-Al6-Mo2-Sn2-Zr4 (sheet, strip, plate)
MIL-T-009047F composition 1(*4)		US	Ti-unalloyed-99.0,CP,-70 ksi YS (bar, forging stock)
MIL-T-009047F composition 2(*4)	(A-110)	US	Ti-Al5-Sn2.5 (bar, forging stock)
MIL-T-009047F composition 3(*4)	(A-110) ELI	US	Ti-Al5-Sn2.5 ELI (bar, forging stock)
MIL-T-009047F composition 5(*4)	(8-1-1)	US	Ti-Al8-V1-Mo1 (bar, forging stock)
MIL-T-009047F composition 6(*4)	(6-4)	US	Ti-Al6-V4 (bar, forging stock)
MIL-T-009047F composition 7(*4)	(6-4) ELI	US	Ti-Al6-V4 ELI (bar, forging stock)
MIL-T-009047F composition 8(*4)	(6-6-2)	US	Ti-Al6-V6-Sn2 (bar, forging stock)
MIL-T-009047F composition 9(*4)	(7-4)	US	Ti-Al7-Mo4 (bar, forging stock)
MIL-T-009047F composition 10(*4)	(679)	US	Ti-Al2-Mo1-Sn 11-Zr5 (bar, forging stock)
MIL-T-009047F composition 11(*4)	(6-2-4-2)	US	Ti-Al6-Mo2-Sn2-Zr4 (bar, forging stock)
MIL-T-009047F composition 12(*4)	(13-11-3)	US	Ti-Al3-V 13-Cr 11 (bar, forging stock)
MIL-T-009047F composition 13(*4)	(Beta III)	US	Ti-Mo 11.5-Sn4.5-Zr6 (bar, forging stock)
MIL-T-009047F composition 14(*4)	(6-2-4-6)	US	Ti-Al6-Mo6-Sn2-Zr4 (bar, forging stock)
MIL-T-12118A(*1)		US	Ti-sponge
MIL-T-13405C		US	Ti-powder (pyrotechnic use)
MIL-T-46035A (MR)		US	Ti-alloys, high-strength wrought for critical component
MIL-T-46038A Grade EL1		US	Ti-alloys with extra-low impurities (billet, bar, rod)
MIL-T-46038A Grade L1		US	Ti-alloys with low impurities (billet, bar, rod)
MIL-T-46038A Grade N1		US	Ti-alloys with normal impurities (billet, bar, rod)

APPENDIX 7. (Continued)

Standard Number	Related Alloys/ Common Name	Ctry Code	Nominal Composition Wt % and Form
MIL-T-46077B	(6-4)	US	Ti-Al6-V4 (weldable armor plate)
MIL-T-81556 type III alpha-beta II		US	Ti-alpha+beta alloys (extrusion, bar)
MIL-T-81556 type III composition A	(6-4)	US	Ti-Al6-V4 (extrusion, bar)
MIL-T-81556 type III composition B	(6-4) ELI	US	Ti-Al6-V4 ELI (extrusion, bar)
MIL-T-81556 type III composition C	(6-6-2)	US	Ti-Al6-V6-Sn2 (extrusion, bar)
MIL-T-81556 type III composition D	(7-4)	US	Ti-Al7-Mo4 (extrusion, bar)
MIL-T-81556 type II alpha alloys		US	Ti-alpha alloys (extrusion, bar)
MIL-T-81556 type II composition A	(A-110)	US	Ti-Al5-Sn2.5 (extrusion, bar)
MIL-T-81556 type II composition B	(A-110) ELI	US	Ti-Al5-Sn2.5 LEI (extrusion, bar)
MIL-T-81556 type II composition C	(8-1-1)	US	Ti-Al8-V1-Mo1 (extrusion, bar)
MIL-T-81556 type I composition A		US	Ti-unalloyed-99.6,CP,-30 ksi YS (extrusion, bar)
MIL-T-81556 type I composition B		US	Ti-unalloyed-99.5,CP,-40 ksi YS (extrusion, bar)
MIL-T-81556 type I composition C		US	Ti-unalloyed-99.2,CP,-55 ksi YS (extrusion, bar)
MIL-T-81556 type I composition D		US	Ti-unalloyed-99.0,CP,-70 ksi YS (extrusion, bar)
MIL-T-81556 type I CP Titanium		US	Ti-unalloyed-99. ,CP (extrusion, bar)
MIL-T-81915 type III alpha+beta		US	Ti-alpha+beta alloys (investment castings)
MIL-T-81915 type III composition A	(6-4)	US	Ti-Al6-V4 (investment castings)
MIL-T-81915 type III composition B	(6-2-4-2)	US	Ti-Al6-Mo2-Sn2-Zr4 (investment castings)
MIL-T-81915 type II alpha alloys		US	Ti-alpha alloys (investment castings)
MIL-T-81915 type II composition A	(A-110)	US	Ti-Al5-Sn2.5 (investment castings)
MIL-T-81915 type I composition A		US	Ti-unalloyed-99.6,CP,-25 ksi YS (investment castings)
MIL-T-81915 type I CP Titanium		US	Ti-unalloyed-99.+,CP,- ksi YS (investment castings)
MIL-T-9046H type III composition C	(6-4)	US	Ti-Al6-V4 (sheet, strip, plate)
MIL-T-9046H type III composition D	(6-4) ELI	US	Ti-Al6-V4 ELI (sheet, strip, plate)
MIL-T-9046H type III composition E	(6-6-2)	US	Ti-Al6-V6-Sn2 (sheet, strip, plate)
MIL-T-9046H type III composition G	(6-2-4-2)	US	Ti-Al6-Mo2-Sn2-Zr4 (sheet, strip, plate)
MIL-T-9046H type III composition H	(6-4) SPL	US	Ti-Al6-V4 SPL (sheet, strip, plate)
MIL-T-9046H type II composition A	(A-110)	US	Ti-Al5-Sn2.5 (sheet, strip, plate)
MIL-T-9046H type II composition B	(A-110) ELI	US	Ti-Al5-Sn2.5 ELI (sheet, strip, plate)
MIL-T-9046H type II composition F	(8-1-1)	US	Ti-Al8-V1-Mo1 (sheet, strip, plate)

APPENDIX 7. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
MIL-T-9046H type II composition G	(6-2-1-1)	US	Ti-Al6-Mo0.8-Cb/Nb2-Ta1 (sheet, strip, plate)
MIL-T-9046H type IV beta alloys		US	Ti-beta alloys (sheet, strip, plate)
MIL-T-9046H type IV composition A	(13-11-3)	US	Ti-Al3-V 13-Cr 11 (sheet, strip, plate)
MIL-T-9046H type IV composition B	(Beta III)	US	Ti-Mo 11.5-Sn4.5-Zr6 (sheet, strip, plate)
MIL-T-9046H type IV composition C	(8-8-2-3)	US	Ti-Al3-V8-Mo8-Fe2 (sheet, strip, plate)
MIL-T-9046H type IV composition C	(Beta C)	US	Ti-Al3-V8-Mo4-Zr4-Cr6 (sheet, strip, plate)
MIL-T-9046H type I composition A		US	Ti-unalloyed-99.5,CP,-40 ksi YS (sheet, strip, plate)
MIL-T-9046H type I composition B		US	Ti-unalloyed-99.0,CP,-70 ksi YS (sheet, strip, plate)
MIL-T-9046H type I composition C		US	Ti-unalloyed-99.2,CP,-55 ksi YS (sheet, strip, plate)
MIL-T-9046H type I CP alloys		US	Ti-unalloyed commercially pure titanium
MIL-T-9047E composition 1	alpha	US	Ti-unalloyed-99.0,PC,-70 ksi YS (sheet, strip, plate)
MIL-T-9047E composition 2	alpha	US	Ti-Al5-Sn2.5 (bar, forging stock)
MIL-T-9047E composition 3	alpha	US	Ti-Al5-Sn2.5 ELI (bar, forging stock)
MIL-T-9047E composition 5	alpha	US	Ti-Al8-V1-Mo1 (bar, forging stock)
MIL-T-9047E composition 6	alpha+beta	US	Ti-Al6-V4 (bar, forging stock)
MIL-T-9047E composition 7	alpha+beta	US	Ti-Al6-V4 ELI (bar, forging stock)
MIL-T-9047E composition 7	alpha+beta	US	Ti-Al6-V4 ELI (bar, forging stock)
MIL-T-9047E composition 8	alpha+beta	US	Ti-Al6-V6-Sn2 (bar, forging stock)
MIL-T-9047E composition 8	alpha+beta	US	Ti-Al6-V6-Sn2 (bar, forging stock)
MIL-T-9047E composition 9	alpha+beta	US	Ti-Al7-Mo4 (bar, forging stock)
MIL-T-9047E composition 9	alpha+beta	US	Ti-Al7-Mo4 (bar, forging stock)
MIL-T-9047E composition 10	alpha+beta	US	Ti-Al2-Mo1-Sn 11-Zr5 (bar, forging stock)
MIL-T-9047E composition 13	(Beta III)	US	Ti-Mo 11.5-Sn4.5-Zr6 (bar, forging stock)
MIL-T-9047E composition 12	(13-11-3)	US	Ti-Al3-V 13-Cr 11 (bar, forging stock)
MIL-T-9047E composition 14	(6-2-4-6)	US	Ti-Al6-Mo6-Sn2-Zr4 (bar, forging stock)
MIL-T-9047E composition 11	(6-2-4-2)	US	Ti-Al6-Mo2-Sn2-Zr4 (bar, forging stock)
MIL-T-9096H type II alpha alloys		US	Ti-alpha alloys (sheet, strip, plate)
MIL-T- 046H type III alpha+beta		US	Ti-alpha+beta alloys (sheet, strip, plate)
MIL-W-6858C		US	Ti-alloys, welding, resistance, spot, and seam
NFL 21-107 T-40		FR	Ti-unalloyed-99.5,CP,-40 ksi YS (rivet wire)

APPENDIX 7. (Continued)

Standard Number		Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
NFL 21-271	T-A6V	(6-4)	FR	Ti-Al6-V4 (rivet, cylindrical head)
NFL 21-272	T-A6V	(6-4)	FR	Ti-Al6-V4 (rivet, 100 degree milled head)
NFL 21-170	T 40		FR	Ti-unalloyed-99.5,CP,-40 ksi YS (rivet wire)
NFL 15-130			FR	Ti-unalloyed-99.+,CP (dimensions)(sheet)
ON 42 1496			CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (ingot)
ON 42 4656			CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (ingot)
OST1. 90000-70	OT4		UR	Ti-Al4.25-Mn1.4 (forging, stampings)
OST1. 90000-70	OT4-0		UR	Ti-Al0.8-Mn0.75 (forging, stampings)
OST1. 90000-70	OT4-1		UR	Ti-Al1.75-Mn1.35 (forging, stampings)
OST1. 90000-70	VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (forging, stampings)
OST1. 90000-70	VT1-0	(B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (forging, stampings)
OST1. 90000-70	VT3-1		UR	Ti-Al6.25-Mo2.5-Cr1.5 (forging, stampings)
OST1. 90000-70	VT5		UR	Ti-Al5.25 (forging, stampings)
OST1. 90000-70	VT5-1		UR	Ti-Al5-Sn2.5 (forging, stampings)
OST1. 90000-70	VT6S		UR	Ti-Al5.75-V4 (forging, stampings)
OST1. 90000-70	VT8		UR	Ti-6.65-Mo3.3 (forging, stampings)
OST1. 90000-70	VT9		UR	Ti-Al6.4-Mo3.3-Zr1.4 (forging, stampings)
OST1. 90000-70	VT14		UR	Ti-Al4.9-V1.4-Mo3.65 (forging, stampings)
OST1. 90000-70	VT20		UR	Ti-Ai6.5-V1.3-Mo1.25-Zr2 (forging, stampings)
OST1. 90002-70	(supersedes AMTU 368)		UR	Ti alloys blade forging
OST1. 90006-70	(supersedes AMTU 518)		UR	Ti alloys, bar for blade forging
OST1. 90013-71	(supersedes AMTU 388)		UR	Ti alloys, grades and designations
OST1. 90015-71	OT4		UR	Ti-Al4.25-Mn1.4 (welding wire)
OST1. 90015-71	OT4-1		UR	Ti-Al1.75-Mn1.35 (welding wire)
OST1. 90015-71	VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (welding wire)
OST1. 90015-71	(supersedes AMTU 449)		UR	Titanium welding wire
OST1. 90024-71	OT4		UR	Ti-Al4.25-Mn1.4 (plate)
OST1. 90024-71	OT4-0		UR	Ti-Al0.8-Mn0.75 (plate)
OST1. 90024-71	OT4-1		UR	Ti-Al1.75-Mn1.35 (plate)
OST1. 90024-71	VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (plate)
OST1. 90024-71	VT1-0	(B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (plate)

APPENDIX 7. (Continued)

Standard Number		Realted Alloys/ Common Name	Ctry Code	Nominal Composition Wt % and Form
OST1. 90024-71	VT5-1		UR	Ti-Al5-Sn2.5 (plate)
OST1. 90024-71	VT6S		UR	Ti-Al5.75-V4 (plate)
OST1. 90024-71	VT14		UR	Ti-Al4.9-V1.4-Mo3.65 (plate)
OST1. 90027-71	OT4-0		UR	Ti-Al0.8-Mn0.75 (band=narrow strip)
OST1. 90027-71	VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (band=narrow strip)
OST1. 90027-71	VT1-0	(B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (band=narrow strip)
OST1. 90050-72	OT4		UR	Ti-Al4.25-Mn1.4 (pipe)
OST1. 90050-72	OT4-0		UR	Ti-Al0.8-Mn0.75 (pipe)
OST1. 90050-72	OT401		UR	Ti-Al1.75-Mn1.35 (pipe)
OST1. 90050-72	VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (pipe)
OST1. 90050-72	VT1-0	(B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (pipe)
OST1. 90051-72	OT4-0		UR	Ti-Al0.8-Mn0.75 (welded pipe)
OST1. 90051-72	VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (welded pipe)
OST1. 90051-72	VT1-0	(B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (welded pipe)
OST1. 90065-72	OT4-0		UR	Ti-Al0.8-Mn0.75 (pipe, high quality)
OST1. 90065-72	VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (pipe, high quality)
OST1. 90065-72	VT1-0	(B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (piep, high quality)
OST1. 90107-73	OT4		UR	Ti-Al4.25-Mn1.4 (round/square bar)
OST1. 90107-73	OT4-0		UR	Ti-Al0.8-Mn0.75 (round/square bar)
OST1. 90107-73	OT4-1		UR	Ti-Al1.75-Mn1.35 (round/square bar)
OST1. 90107-73	VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (round/square bar)
OST1. 90107-73	VT1-0	(B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (round/square bar)
OST1. 90107-73	VT3-1		UR	Ti-Al6.25-Mn2.5-Cr1.5 (round/square bar)
OST1. 90107-73	VT5		UR	Ti-Al5.25 (round/square bar)
OST1.90107-73	VT5-1		UR	Ti-Al5-Sn2.5 (round/square bar)
OST1. 90107-73	VT6S		UR	Ti-Al5.75-V4 (round/square bar)
OST1. 90107-73	VT6		UR	Ti-Al6.25-V5.1 (round/square bar)
OST1. 90107-73	VT8		UR	Ti-Al6.65-Mo3.3 (round/square bar)
OST1. 90107-73	VT9		UR	Ti-Al6.4-Mo3.3-Zr1.4 (round/square bar)
OST1. 90107-73	VT14		UR	Ti-Al4.9-V1.4-Mo3.65 (round/square bar)
OST1. 90107-73	VT20		UR	Ti-Al6.5-V1.3-Mo1.25-Zr2 (round/square bar)

APPENDIX 7. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
OST1. 90107-73	VT22	UR	Ti-Al5.15-V4.75-Mo4.75-Cr1.25 (round/square bar)
OST1. 90145-74	VT1-00 (B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (foil)
OST1. 90145-74	VT1-0 (B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (foil)
TU1-5-054-72	AT3	UR	Ti-Al2.75-Cr0.35 (sheet)
TU1-5-055-72	AT3	UR	Ti-Al2.75-Cr0.35 (bar, rolled/wrought)
TU1-5-058-72	AT3	UR	Ti-Al2.75-Cr0.35 (forging)
TU1-5-107-73	OT4	UR	Ti-Al4.25-Mn1.4 (pipe, extruded)
TU1-5-107-73	VT1-00 (B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (pipe, extruded)
TU1-5-107-73	VT1-0 (B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (pipe, extruded)
TU1-5-107-73	OT4-0	UR	Ti-Al0.8-Mn0.75 (pipe, extruded)
TU1-5-107-73	OT4-1	UR	Ti-Al1.75-Mn1.35 (pipe, extruded)
TU1-5-111-73	VT1-00 (B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (strip, wide)
TU1-5-111-73	VT1-0 (B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (strip, wide)
TU1-83-21-72	OT4	UR	Ti-Al4.25-Mn1.4 (large rolled bar)
TU1-83-21-72	OT4-0	UR	Ti-Al0.8-Mn0.75 (large rolled bar)
TU1-83-21-72	OT4-1	UR	Ti-Al1.75-Mn1.35 (large rolled bar)
TU1-83-21-72	VT1-00 (B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (large rolled bar)
TU1-83-21-72	VT1-0 (B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (large rolled bar)
TU1-83-21-72	VT3-1	UR	Ti-Al6.25-Mo2.5-Cr1.5 (large rolled bar)
TU1-83-21-72	VT5	UR	Ti-Al5.25 (large rolled bar)
TU1-83-21-72	VT5-1	UR	Ti-Al5-Sn2.5 (large rolled bar)
TU1-83-21-72	VT6S	UR	Ti-Al5.75-V4 (large rolled bar)
TU1-83-21-72	VT8	UR	Ti-Al6.65-Mo3.3 (large rolled bar)
TU1-83-21-72	VT9	UR	Ti-Al6.4-Mo3.3-Zr1.4 (large rolled bar)
TU1-83-21-72	VT14	UR	Ti-Al4.9-V1.4-Mo3.65 (large rolled bar)
TU1-92-2-72	VT22	UR	Ti-Al5.15-V4.75-Mo4.75-Cr1.25 (stampings and forgings)
TU1-92-6-72	OT4	UR	Ti-Al4.25-Mn1.4 (large round/square bar)
TU1-92-6-72	OT4-0	UR	Ti-Al0.8-Mn0.75 (large round/square bar)
TU1-92-6-72	OT4-1	UR	Ti-Al1.75-Mn1.35 (large round/square bar)
TU1-92-6-72	VT1-00 (B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (large round/square bar)

APPENDIX 7. (Continued)

Standard Number		Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
TU1-92-6-72	VT1-0	(B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (large round/square bar)
TU1-82-6-72	VT3-1		UR	Ti-Al6.25-Mo2.5-Cr1.5 (large round/square bar)
TU1-92-6-72	VT5		UR	Ti-Al5.25 (large round/square bar)
TU1-92-6-72	VT5-1		UR	Ti-Al5-Sn2.5 (large round/square bar)
TU1-92-6-72	VT6S		UR	Ti-Al5.75-V4 (large round/square bar)
TU1-92-6-72	VT6		UR	Ti-Al6.25-V5.1 (large round/square bar)
TU1-92-6-72	VT8		UR	Ti-Al6.65-Mo3.3 (large round/square bar)
TU1-92-6-72	VT9		UR	Ti-Al6.4-Mo3.3-Zr1.4 (large round/square bar)
TU1-92-6-72	VT14		UR	Ti-Al4.9-V1.4-Mo3.65 (large round/square bar)
TU1-92-6-72	VT20		UR	Ti-Al6.4-V1.3-Mo1.25-Zr2 (large round/square bar)
TU1-92-6-72	VT22		UR	Ti-Al5.15-V4.75-Mo4.75-Cr1.25 (large round/square bar)
TU 48-05-30-71			UR	Titanium powder, electrolytic
VdTuV 230	Group III	(IMI-130)	GY	Ti-unalloyed-99.2,CP,-55 ksi YS (sheet, solid forms)
VdTuV 230	Group II	(IMI-125)	GY	Ti-unalloyed-99.5,CP,-40 ksi YS (sheet, solid forms)
VdTuV 230	Group IV	(IMI-155/160)	GY	Ti-unalloyed-99.0,CP,-70 ksi YS (sheet, solid forms)
VdTuV 230	Group I	(IMI-115)	GY	Ti-unalloyed-99.6,CP,-25 ksi YS (sheet, solid forms)
VTU IT-10-68(*1)			UR	Titanium powder, electrolytic
VTU 3-30-60(*1)			UR	Titanium powder, electrolytic
VTU 9-3-67(*1)			UR	Titanium powder, electrolytic

Note: AMI=Advanced Material Information(SAE), ANS=American National Standard Institute.

(*1) Non current specification.

(*2) Non current but widely used in the past and may be required on some existing designs in the future-AMS does not recommend as standard material for future use in new designs.

(*3) Non current uncoordinated specification.

(*4) Current uncoordinated specification.

(*5) Proposed specification.

APPENDIX 8. NATIONAL STANDARDS FOR TITANIUM AND TITANIUM ALLOYS WITH THE CORRESPONDING NOMINAL COMPOSITION (Alphanumerical by Nominal Composition)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
MIL-H-81200A		US	Ti-unalloyed and alloyed, heat treatment
MIL-T-9046H Type I CP Alloys		US	Ti-unalloyed commercially pure titanium
GOST 5303-69		UR	Ti-unalloyed sponge, quality requirements
INTA L-7004(*5)		SP	Ti-unalloyed
INTA L-7001(*5)		SP	Ti-unalloyed
INTA L-7003(*5)		SP	Ti-unalloyed
INTA L-7002(*5)		SP	Ti-unalloyed
DTD 5193(*1)		UK	Ti-unalloyed (sheet, strip)
DTD 5183(*1)		UK	Ti-unalloyed (sheet, strip)
ASTM B299-74 Ti sponge		US	Ti-unalloyed (sponge) four grades
ISO Draft Std. (resiliant Ti)	(IMI-155,160)	XX	Ti-unalloyed-99.0,CP,-70 ksi YS (surgical implant)
DIN 3.7065 Werkstoff	(IMI-155/160)	GY	Ti-unalloyed-99.0,CP,-70 ksi YS
BS 2TA.7	(IMI-160)	UK	Ti-unalloyed-99.0,CP,-70 ksi YS (bar for machining)(annealed)
AMS 4921C	(A70,100A)	US	Ti-unalloyed-99.0,CP,-70 ksi YS (bar, forging, rod)(annealed)
MIL-T-009047F Composition 1(*4)		US	Ti-unalloyed-99.0,CP,-70 ksi YS (bar, forging stock)
ASTM B348-74 grade 4		US	Ti-unalloyed-99.0,CP,-70 ksi YS (billet, bar)
ASTM B367-69 grade C-4		US	Ti-unalloyed-99.0,CP,-70 ksi YS (casting)
MIL-T-81556 type I composition D		US	Ti-unalloyed-99.0,CP,-70 ksi YS (extrusion, bar)
ASTM B381-75 grade F-4		US	Ti-unalloyed-99.0,CP,-70 ksi YS (forging)
BS 2TA.9	(IMI-160)	UK	Ti-unalloyed-99.0,CP,-70 ksi YS (forging)(annealed)
BS 2TA.8	(IMI-160)	UK	Ti-unalloyed-99.0,CP,-70 ksi YS (forging stock)
MIL-F-83142A Composition 1		US	Ti-unalloyed-99.0,CP,-70 ksi YS (forging premium quality)
BS 3003(part 9) grade 5	(IMI-160)	UK	Ti-unalloyed-99.0,CP,-70 ksi YS (for chemical linings)
BS 3003(part 9) grade 4	(IMI-155)	UK	Ti-unalloyed-99.0,CP,-70 ksi YS (for chemical linings)
ASTM F67-74 grade 4		US	Ti-unalloyed-99.0,CP,-70 ksi YS (sheet, forging)(surgical impl.)
LW 3.7064.1 (Werkstoff)	(IMI-155/160)	GY	Ti-unalloyed-99.0,CP,-70 ksi YS (sheet, rod, forging)
BS 2TA.6	(IMI-155)	UK	Ti-unalloyed-99.0,CP,-70 ksi YS (sheet, strip)(annealed)
MIL-T-9046H Type I Composition B		US	Ti-unalloyed-99.0,CP,-70 ksi YS (sheet, strip, plate)
ASTM B265-74 grade 4		US	Ti-unalloyed-99.0,CP,-70 ksi YS (sheet, strip, plate)

APPENDIX 8. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
MIL-T-9047E Composition 1	Alpha	US	Ti-unalloyed-99.0,CP,-70 ksi YS (sheet, strip, plate)
AMS 4901E	(A70,75A)(grade 4)	US	Ti-unalloyed-99.0,CP,-70 ksi YS (sheet, strip, plate)(annealed)
VdTuV 230 Group IV	(IMI-155/160)	GY	Ti-unalloyed-99.0,CP,-70 ksi YS (sheet, solid forms)
AECMA Ti-P.04	(IMI-155/160)	EU	Ti-unalloyed-99.0,CP,-70 ksi YS (all forms)
AIR-9182 T-60	(IMI-160)	FR	Ti-unalloyed-99.0,CP,-70 ksi YS (sheet)
ASTM B299-74 ML-120		US	Ti-unalloyed-99.1 (sponge)
DTD 5273 (5003)	(IMI-130)	UK	Ti-unalloyed-99.2,CP,-55 ksi YS
DIN 3.7055 Werkstoff	(IMI-130)	GY	Ti-unalloyed-99.2,CP,-55 ksi YS
DTD 5283 (5003)	(IMI-130)	UK	Ti-unalloyed-99.2,CP,-55 ksi YS
DTD 5273	(IMI-130)	UK	Ti-unalloyed-99.2,CP,-55 ksi YS (bar for machining)
JIS H 4650 class 3 TB 49		JA	Ti-unalloyed-99.2,CP,-55 ksi YS (bar)
ASTM B348-74 grade 3		US	Ti-unalloyed-99.2,CP,-55 ksi YS (billet, bar)
ASTM B367-69 grade C-3		US	Ti-unalloyed-99.2,CP,-55 ksi YS (casting)
MIL-T-81556 type I composition C		US	Ti-unalloyed-99.2,CP,-55 ksi YS (extrusion, bar)
DTD 5283	(IMI-130)	UK	Ti-unalloyed-99.2,CP,-55 ksi YS (forging stock)
ASTM B381-75 grade F-3		US	Ti-unalloyed-99.2,CP,-55 ksi YS (forging)
BS 3003(part 9) grade 3	(IMI-130)	UK	Ti-unalloyed-99.2,CP,-55 ksi YS (for chemical linings)
JIS H 4631 class 3 TTH 49		JA	Ti-unalloyed-99.2,CP,-55 ksi YS (heat exchanger tubing)
JIS H 4630 class 3 TTP 49		JA	Ti-unalloyed-99.2,CP,-55 ksi YS (ordinary pipe)
JIS H 4600 class 3 TP 49		JA	Ti-unalloyed-99.2,CP,-55 ksi YS (plate)
ASTM B337-74 grade 3		US	Ti-unalloyed-99.2,CP,-55 ksi YS (seamless welding pipe)
ASTM B265-74 grade 3		US	Ti-unalloyed-99.2,CP,-55 ksi YS (sheet, strip, plate)
MIL-T-9046H type I Composition C		US	Ti-unalloyed-99.2,CP,-55 ksi YS (sheet, strip, plate)
AMS 4900D	(A55,65A)	US	Ti-unalloyed-99.2,CP,-55 ksi YS (sheet, strip, plate)
VdTuV 230 group III	(IMI-130)	GY	Ti-unalloyed-99.2,CP,-55 ksi YS (sheet, solid forms)
JIS H 4670 class 3 TW 49		JA	Ti-unalloyed-99.2,CP,-55 ksi YS (wire)
ASTM B363-71 grade WPT3	(grade 3, C3)	US	Ti-unalloyed-99.2,CP,-55 ksi YS (fittings-weld. seamless)
AECMA Ti-P.05	(IMI-130)	EU	Ti-unalloyed-99.2,CP,-55 ksi YS (rivet wire)
ASTM B338-74 grade 3		US	Ti-unalloyed-99.2,CP,-55 ksi YS (seamless/weld. heat exch.)
AIR-9182 T-50	(IMI-130)	FR	Ti-unalloyed-99.2,CP,-55 ksi YS (sheet)

APPENDIX 8. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
DTD 5023C(*1)	(IMI-130)	UK	Ti-unalloyed-99.2,CP,-55 ksi YS (sheet)
ASTM B299-74 SL-120		US	Ti-unalloyed-99.3 (sponge)
ASTM B299-74 MD-120		US	Ti-unalloyed-99.3 (sponge)
ASTM F67-74 grade 3		US	Ti-unalloyed-99.3,CP,-50 ksi YS (sheet, forging)(surgical impl)
AWS A5.16-70 ERTI-4		US	Ti-unalloyed-99.4,CP,- ksi YS (welding wire)
CSN 42 1490		CZ	Ti-unalloyed-99.5,CP (dimensions)(sheet, strip)
DIN 3.7035 Werkstoff	(IMI-125)	GY	Ti-unalloyed-99.5,CP,-40 ksi YS
EMO Ti-140	(B348 grade 2)	GE	Ti-unalloyed-99.5,CP,-40 ksi YS
OST1. 90027-71 VT1-0	(B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (band=narrow strip)
BS 2TA.3	(IMI-125)	UK	Ti-unalloyed-99.5,CP,-40 ksi YS (bar for machining)(annealed)
CSN 42 1492		CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (bar)
JIS H 4650 class 2 TB 35		JA	Ti-unalloyed-99.5,CP,-40 ksi YS (bar)
AMTU 451-67 VT1-0	(B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (bar)
ASTM B348-74 grade 2		US	Ti-unalloyed-99.5,CP,-40 ksi YS (billet, bar)
ASTM B367-69 grade C-2		US	Ti-unalloyed-99.5,CP,-40 ksi YS (casting)
CSN 42 7790		CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (dimensions)(tubing)
CSN 42 7591		CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (dimensions)(bar/machining)
CSN 42 7590		CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (dimensions)(bar)
CSN 42 7391		CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (dimensions)(strip, sheet)
CSN 42 7390		CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (dimensions)(strip, sheet)
MIL-T-81556 type I Composition B		US	Ti-unalloyed-99.5,CP,-40 ksi YS (extrusion, bar)
ASTM B381-75 grade F-2		US	Ti-unalloyed-99.5,CP,-40 ksi YS (forging)
BS 2TA.5	(IMI-125)	UK	Ti-unalloyed-99.5,CP,-40 ksi YS (forging)(annealed)
OST1. 90000-70 VT1-0	(B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (forging, stampings)
BS 2TA.4	(IMI-125)	UK	Ti-unalloyed-99.5,CP,-40 ksi YS (forging stock)
BS 3003(part 9) grade 2	(IMI-125)	UK	Ti-unalloyed-99.5,CP,-40 ksi YS (for chemical linings)
OST1. 90145-74 VT1-0	(B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (foil)
JIS H 4631 class 2 TTH 35		JA	Ti-unalloyed-99.5,CP,-40 ksi YS (heat exchanger tubing)
ON 42 4656		CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (ingot)
ON 42 1496		CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (ingot)

APPENDIX 8. (Continued)

Standard Number		Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
CSN 42 4655			CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (ingot)
TU1-83-21-72	VT1-0	(B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (large rolled bar)
TU1-92-6-72	VT1-0	(B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (large round/square bar)
JIS H 4630 class 2	TTP 35		JA	Ti-unalloyed-99.5,CP,-40 ksi YS (ordinary pipe)
OST1. 90050-72	VT1-0	(B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (pipe)
TU1-5-107-73	VT1-0	(B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ksi &S (pipe, extruded)
OST1. 90065-72	VT1-0	(B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (pipe, high quality)
OST1. 90024-71	VT1-0	(B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (plate)
JIS H 4600 class 2	TP 35		JA	Ti-unalloyed-99.5,CP,-40 ksi YS (plate)
OST1. 90107-73	VT1-0	(B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (round/square bar)
ASTM B337-74 grade 2			US	Ti-unalloyed-99.5,CP,-40 ksi YS (seamless/welding pipe)
LW 3.7034.1 (Werkstoff)		(IMI-125)	GY	Ti-unalloyed-99.5,CP,-40 ksi YS (sheet, rod, forging, welding wire)
AMTU 475-67 (Werkstoff)		(B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (sheet)
BS 2TA.2		(IMI-125)	UK	Ti-unalloyed-99.5,CP,-40 ksi YS (sheet, strip)(annealed)
MIL-T-9046H type I	Composition A		US	Ti-unalloyed-99.5,CP,-40 ksi YS (sheet, strip, plate)
ASTM B265-74 grade 2			US	Ti-unalloyed-99.5,CP,-40 ksi YS (sheet, strip, plate)
AMS 4902B		(A40,55A)(grade 2)	US	Ti-unalloyed-99.5,CP,-40 ksi YS (sheet, strip, plate)(annealed)
VdTuV 230	group II	(IMI-125)	GY	Ti-unalloyed-99.5,CP,-40 ksi YS (sheet, solid forms)
TU1-5-111-73	VT1-0	(B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (strip, wire)
CSN 42 1493			CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (tubing)
OST1. 90051-72	VT1-0	(B348 grade 2)	UR	Ti-unalloyed-99.5,CP,-40 ksi YS (welded pipe)
AMS 4951C		(CP)	US	Ti-unalloyed-99.5,CP,-40 ksi YS (welding wire)
CSN 42 1491			CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (wire)
CSN 42 7490			CZ	Ti-unalloyed-99.5,CP,-40 ksi YS (wire)
JIS H 4670 class 2	TW 35		JA	Ti-unalloyed-99.5,CP,-40 ksi YS (wire)
AECMA Ti-P.02		(IMI-125)	EU	Ti-unalloyed-99.5,CP,-40 ksi YS (all forms)
ASTM B363-71	grade WPT2	(grade 2, C2)	US	Ti-unalloyed-99.5,CP,-40 ksi YS (fittings-welding/seamless)
NFL-21-170	T-40		FR	Ti-unalloyed-99.5,CP,-40 ksi YS (rivet wire)
NFL-21-107	T-40		FR	Ti-unalloyed-99.5,CP,-40 ksi YS (rivet wire)

APPENDIX 8. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
AMS 4942A	(CP)(grade 2)	US	Ti-unalloyed-99.5,CP,-40 ksi YS (seamless tubing)(annealed)
ASTM B338 74 grade 2		US	Ti-unalloyed-99.5,CP,-40 ksi YS (seamless/weld. heat exch.)
AIR-9182 T-40	(IMI-125)	FR	Ti-unalloyed-99.5,CP,-40 ksi YS (sheet)
AMS 4941A	(A40,55A)	UD	Ti-unalloyed-99.5,CP,-40 ksi YS (weld. tubing)(annealed)
EMO Ti-110	(B348 grade 1)	GE	Ti-unalloyed-99.6,CP,-25 ksi YS
DIN 3.7025 Werkstoff	(IMI-115)	GY	Ti-unalloyed-99.6,CP,-25 ksi YS
OST1. 90027-71 VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (band=narrow strip)
AWS A5.16-70 ERTI-3		US	Ti-unalloyed-99.6,CP,-25 ksi YS (bare wire)
JIS H 4650 class 1 TB 28		JA	Ti-unalloyed-99.6,CP,-25 ksi YS (bar)
AMTU 451-67 VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (bar)
ASTM B348-74 grade 1		US	Ti-unalloyed-99.6,CP,-25 ksi YS (billet, bar)
ASTM B367-69 grade C-1		US	Ti-unalloyed-99.6,CP,-25 ksi YS (casting)
ASTM B381-75 Grade F-1		US	Ti-unalloyed-99.6,CP,-25 ksi YS (forging)
OST1. 90000-70 VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (forging, stampings)
OST1. 90145-74 VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (foil)
JIS H 4631 class 1 TTH 28		JA	Ti-unalloyed-99.6,CP,-25 ksi YS (heat exchanger tubing)
TU1-83-21-72 VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (large rolled bar)
TU1-92-6-72 VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (large round/square bar)
JIS H 4630 class 1 TTP 28		JA	Ti-unalloyed-99.6,CP,-25 ksi YS (ordinary pipe)
OST1. 90050-72 VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (pipe)
TU1-5-107-73 VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (pipe, extruded)
OST1. 90065-72 VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (pipe, high quality)
OST1. 90024-71 VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (plate)
JIS H 4600 class 1 TP 28		JA	Ti-unalloyed-99.6,CP,-25 ksi YS (plate)
OST1. 90107-73 VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (round/square bar)
ASTM B338-74 grade 1		US	Ti-unalloyed-99.6,CP,-25 ksi YS (seamless/welding pipe)
ASTM B337-74 grade 1		US	Ti-unalloyed-99.6,CP,-25 ksi YS (seamless/welding pipe)
LW 3.7024.1 (Werkstoff)	(IMI-115)	GY	Ti-unalloyed-99.6,CP,-25 ksi YS (sheet, welding wire)
AMTU 475-67 VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (sheet)
BS 2TA.1	(IMI-115/160)	UK	Ti-unalloyed-99.6,CP,-25 ksi YS (sheet, strip)(annealed)

APPENDIX 8. (Continued)

Standard Number		Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
ASTM B265-74	grade 1		US	Ti-unalloyed-99.6,CP,-25 ksi YS (sheet, strip, plate)
VdTuV 230	group I	(IMI-115)	GY	Ti-unalloyed-99.6,CP,-25 ksi YS (sheet, solid forms)
TU1-5-111-73	VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (strip, wide)
BS 3531/1.5		(IMI-115,125,130)	UK	Ti-unalloyed-99.6,CP,-25 ksi YS (surgical implant)
OST1. 90051-72	VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (welded pipe)
OST1. 90015-71	VT1-00	(B348 grade 1)	UR	Ti-unalloyed-99.6,CP,-25 ksi YS (welding wire)
AWS A5.16-70	ERTI-2		US	Ti-unalloyed-99.6,CP,-25 ksi YS (welding wire)
JIS H 4670 class 1	TW 28		JA	Ti-unalloyed-99.6,CP,-25 ksi YS (wire)
AECMA Ti-P.01		(IMI-115)	EU	Ti-unalloyed-99.6,CP,-25 ksi YS (all forms)
DTD 5013B(*1)		(IMI-115)	UK	Ti-unalloyed-99.6,CP,-25 ksi YS (bar)
DTD 5003B(*1)	(see 2TA.1)	(IMI-115)	UK	Ti-unalloyed-99.6,CP,-25 ksi YS (bar)
ASTM B363-71	grade WPT1	(grade 1, C1)	US	Ti-unalloyed-99.6,CP,-25 ksi YS (fittings-weld./seamless)
BS CP 3003(part 9)	grade 1	(IMI-115,125)	UK	Ti-unalloyed-99.6,CP,-25 ksi YS (for chemical linings)
AIR-9182 T-35		(IMI-115)	FR	Ti-unalloyed-99.6,CP,-25 ksi YS (sheet)
DTD 5033B(*1)	(see 2TA.1)	(IMI-115)	UK	Ti-unalloyed-99.6,CP,-25 ksi YS (sheet)
ISO Draft Std. (Ductile Ti)		(IMI-115)	XX	Ti-unalloyed-99.6,CP,-25 ksi YS (surgical implant)
MIL-T-81915 type I	Composition A		US	Ti-unalloyed-99.6,CP,-25 ksi YS (investment castings)
MIL-T-81556 type I	Composition A		US	Ti-unalloyed-99.6,CP,-25 ksi YS (extrusion, bar)
JIS H 2151 class 1	TS-105		JA	Ti-unalloyed-99.6 (sponge)
DTD 5073(*1)			UK	Ti-unalloyed-99.7,CP, C0.1,Fe0.2
DTD 5063A(*1)			UK	Ti-unalloyed-99.7,CP (sheet)
AWS A5.16-70	ERTI-1		US	Ti-unalloyed-99.7,CP,- ksi YS (welding wire)
ASTM B299-74	group 1		US	Ti-unalloyed-99.+ (sponge)
DIN 17862		(CP)	GY	Ti-unalloyed-99.+,CP, all grades (bar)(annealed)
DIN 17860		(CP)	GY	Ti-unalloyed-99.+,CP, all grades (sheet, strip)
DIN 17863		(CP)	GY	Ti-unalloyed-99.+,CP, all grades (wire)(annealed)
MIL-R-81558 type I	CP Titanium	(CP)	US	Ti-unalloyed-99.+,CP,- ksi YS (welding rod, wire)
MIL-T-81915 type I	CP Titanium		US	Ti-unalloyed-99.+,CP,- ksi YS (investment castings)
DIN 17850			GY	Ti-unalloyed-99.+,CP, all grades
NF L 15-130			FR	Ti-unalloyed-99.+,CP (dimensions)(sheet)

APPENDIX 8. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
MIL-R-81558 type I Composition A	(CP)	US	Ti-unalloyed-99.+,CP,- ksi YS (welding rod, wire)
MIL-R-81558 type I Composition B	(CP)	US	Ti-unalloyed-99.+,CP,- ksi YS (welding rod, wire)
MIL-T-81556 type I CP Titanium		US	Ti-unalloyed-99. ,CP (extrusion, bar)
DIN 17864	(CP)	GY	Ti-unalloyed, Ti-Al6-V4, Ti-Al5-Sn2 (forging)(annealed)
ANS Z179.1		US	ANS Titanium specifications equivalent to ASTM B265-74
ANS Z179.13		US	ANS Titanium specifications equivalent to ASTM B299-74
ANS H50.2		US	ANS Titanium specifications equivalent to ASTM B338-74
ANS Z179.2		US	ANS Titanium specifications equivalent to ASTM B348-74
ANS H50.1		US	ANS Titanium specifications equivalent to ASTM B363-71
ANS Z179.16		US	ANS Titanium specifications equivalent to ASTM B367-69(74)
BS 2TA.100		UK	Inspection and testing of titanium alloys
OST1. 90002-70 (supersedes AMTU 368)		UR	Titanium alloys blade forging
OST1. 90006-70 (supersedes AMTU 518)		UR	Titanium alloys, bar, for blade forging
OST1. 90013-71 (supersedes AMTU 388)		UR	Titanium alloys, grades and designations
AMTU 388(*1)		UR	Titanium alloys, grades
MIL-HDBK-697A		US	Titanium and Titanium alloys, US Military Handbook
VTU 9-3-67(*1)		UR	Titanium powder, electrolytic
VTU IT-10-68(*1)		UR	Titanium powder, electrolytic
VTU 3-30-69(*1)		UR	Titanium powder, electrolytic
TU 48-05-30-71		UR	Titanium powder, electrolytic
AMTU 386-59		UR	Titanium tubing
AMTU 499(*1)		UR	Titanium welding pipe
OST1. 90015-71 (supersedes AMTU 449)		UR	Titanium welding wire
ISO T119/SC5		XX	Titanium (powder)
AMTU 487-20		UR	Titanium, extruded and rolled
AMTU 451-59		UR	Titanium, rolled
AMTU 476-61		UR	Titanium, sheet, mechanical properties
AMTU 368(*1)		UR	Titanium, stampings and fittings
MIL-T-46038A grade EL1		US	Ti-alloys with extra-low impurities (billet, bar, rod)
MIL-T-46038A grade L1		US	Ti-alloys with low impurities (billet, bar, rod)
MIL-T-46038A grade N1		US	Ti-alloys with normal impurities (billet, bar, rod)
MIL-T-46035A (MR)		US	Ti-alloys, high-strength wrought for (critical component)

APPENDIX 8. (Continued)

Standard Numbers	Related Alloys/ Common Name	Ctry Code	Nominal Composition Wt % and Form
MIL-W-6858C		US	Ti-alloys, welding, resistance, spot, and seam
MIL-R-81558 type III alpha+beta		US	Ti-alpha+beta alloys (welding rod wire)
MIL-T-81915 type III alpha+beta		US	Ti-alpha+beta alloys (investment castings)
MIL-T-046H type III alpha+beta		US	Ti-alpha+beta alloys (sheet, strip, plate)
MIL-T-81556 type III alpha-beta Ti		US	Ti-alpha+beta alloys (extrusion, bar)
MIL-R-81558 type II alpha alloys		US	Ti-alpha alloys (welding rod wire)
MIL-T-81915 type II alpha alloys		US	Ti-alpha alloys (investment castings)
MIL-T-9096H type II alpha alloys		US	Ti-alpha alloys (sheet, strip, plate)
MIL-T-81556 type II alpha alloys		US	Ti-alpha alloys (extrusion, bar)
OST1. 90027-71	OT4-0	UR	Ti-Al0.8-Mn0.75 (band=narrow strip)
AMTU 451-67	OT4-0	UR	Ti-Al0.8-Mn0.75 (bar)
OST1. 90000-70	OT4-0	UR	Ti-Al0.8-Mn0.75 (forging, stampings)
TU1-83-21-72	OT4-0	UR	Ti-Al0.8-Mn0.75 (large rolled bar)
TU1-92-6-72	OT4-0	UR	Ti-Al0.8-Mn0.75 (large round/square bar)
OST1. 90050-72	OT4-0	UR	Ti-Al0.8-Mn0.75 (pipe)
TU1-5-107-73	OT4-0	UR	Ti-Al0.8-Mn0.75 (pipe, extruded)
OST1. 90065-72	OT4-0	UR	Ti-Al0.8-Mn0.75 (pipe, high quality)
OST1. 90024-71	OT4-0	UR	Ti-Al0.8-Mn0.75 (plate)
OST1. 90107-73	OT4-0	UR	Ti-Al0.8-Mn0.75 (round/square bar)
AMTU 475-67	OT4-0	UR	Ti-al0.8-Mn0.75 (sheet)
OST1. 90051-72	OT4-0	UR	Ti-Al0.8-Mn0.75 (welded pipe)
DTD 5054B(*1)		UK	Ti-Al1.5-Mn1.5 (bar)
AMTU 451-67	OT4-1	UR	Ti-Al1.75-Mn1.35 (bar)
OST1. 90000-70	OT4-1	UR	Ti-Al1.75-Mn1.35 (forging, stampings)
TU1-83-21-72	OT4-1	UR	Ti-Al1.75-Mn1.35 (large rolled bar)
TU1-92-6-72	OT4-1	UR	Ti-Al1.75-Mn1.35 (large round/square bar)
OST1. 90050-72	OT4-1	UR	Ti-Al1.75-Mn1.35 (pipe)
TU1-5-107-73	OT4-1	UR	Ti-Al1.75-Mn1.35 (pipe, extruded)

APPENDIX 8. (Continued)

Standard Number		Related Alloys/ Common Name	Ctry Code	Nominal Composition Wt % and Form
OST1. 90024-71	OT4-1		UR	Ti-Al1.75-Mn1.35 (plate)
OST1. 90107-73	OT4-1		UR	Ti-Al1.75-Mn1.35 (round/square bar)
AMTU 475-67	OT4-1		UR	Ti-Al1.75-Mn1.35 (sheet)
OST1. 90015-71	OT4-1		UR	Ti-Al1.75-Mn1.35 (welding wire)
DTD 5043B(*1)		(IMI-315)	UK	Ti-Al2-Mn2 (bar)
MIL-T-009047F Composition 10(*4)		(679)	US	Ti-Al2-Mo1-Sn 11-Zr5 (bar, forging stock)
MIL-F-83142A Composition 10		(679)	US	Ti-Al2-Mo1-Sn 11-Zr5 (forging/premium quality)
MIL-T-9047E Composition 10		alpha+beta	US	Ti-Al2-Mo1-Sn 11-Zr5 (bar, forging stock)
BS TA.26 (seldom used)		(IMI-679)	UK	Ti-Al2.25-Mo1-Sn 11-Zr5-Si0.3 (bar for machining)
BS TA.25 (seldom used)		(IMI-679)	UK	Ti-Al2.25-Mo1-Sn 11-Zr5-Si0.3 (bar for machining)
BS TA.18		(IMI-679)	UK	Ti-Al2.25-Mo1-Sn 11-Zr5-Si0.3 (bar for machining)
BS TA.19		(IMI-679)	UK	Ti-Al2.25-Mo1-Sn 11-Zr5-Si0.3 (forging stock)
BS TA.20		(IMI-679)	UK	Ti-Al2.25-Mo1-Sn 11-Zr5-Si0.3 (forging)
BS TA.27 (seldom used)		(IMI-679)	UK	Ti-Al2.25-Mo1-Sn 11-Zr5-Si0.3 (forging)
AIR T-E11D4E		(IMI-680)	FR	Ti-Al2.25-Mo4-Sn 11-Si0.2
DTD 5213(*1)		(IMI-680)	UK	Ti-Al2.25-Mo4-Sn 11-Zi0.2 (bar)
DTD 5113(*1)			UK	Ti-Al2.2-Mo1-Sn 11-Zr5-Si0.4 (bar)
AMS 4974			US	Ti-Al2.30Mo1-Sn 11-Zr5-Si0.2 (bar, forging)(sol. and precipitation treated)
AMTU 552-69	VT16		UR	Ti-Al2.3-V4.5-Mo5 (bar for fasteners)
AMTU 553-63	VT16		UR	Ti-Al2.30V4.5-Mo5 (ground bar for fasteners)
TU1-5-055-72	AT3		UR	Ti-Al2.75-Cr0.35 (bar, rolled/wrought)
TU1-5-058-72	AT3		UR	Ti-Al2.75-Cr0.35 (forging)
TU1-5-054-72	AT3		UR	Ti-Al2.75-Cr0.35 (sheet)
AMS 4927(*1)			US	Ti-Al3-Cr5 (bar, forging, forging stock)
AWS A5.16-70	ERTI-3Al-2.5V	(3-2.5)	US	Ti-Al3-V2.5 (bare welding rods)
AMS 4944		(3-2.5)	US	Ti-Al3-V2.5 (seamless hydraulic treated)(cold work, stress relieved)
AMS 4943		(3-2.5)	US	Ti-Al3-V2.5 (seamless tubing)(annealed)
ASTM B338-74	grade 9	(half 6-4)	US	Ti-Al3-V2.5 (seamless/weld. heat exchanger tubing)

APPENDIX 8. (Continued)

Standard Number	Related Alloys/ Common Name	Ctry Code	Nominal Composition Wt. % and Form
ASTM B337-74 grade 9	(half 6-4)	US	Ti-Al3-V2.5 (seamless/welding pipe)
AWS A5.16-70 ERTI-3Al-2.5V-1	(3-2.5)	US	Ti-Al3-V2.5 (very high purity compositions)(bare wire)
AIR T-D8C6DZRA	(beta C)	FR	Ti-Al3-V8-Mo4-Zr4-Cr6
MIL-T-9046H type IV Composition C	(beta C)	US	Ti-Al3-V8-Mo4-Zr4-Cr6 (sheet, strip, plate)
MIL-T-9046H type IV Composition C	(8-8-2-3)	US	Ti-Al3-V8-Mo8-Fe2 (sheet, strip, plate)
INTA L-7701(*5)	(13-11-3)	SP	Ti-Al3-V 13-Cr 11
MIL-T-009047F Composition 12(*4)	(13-11-3)	US	Ti-Al3-V 13-Cr 11 (bar, forging stock)
MIL-F-83142A Composition 12	(13-11-3)	US	Ti-Al3-V 13-Cr 11 (forging/premium quality)
MIL-R-81558 type IV Compostion A	(13-11-3)	US	Ti-Al3-V 13-Cr 11 (welding rod, wire)
MIL-T-9046H type IV Compostion A	(13-11-3)	US	Ti-Al3-V 13-Cr 11 (sheet, strip, plate)
MIL-T-9047E Composition 12	(13-11-3)	US	Ti-Al3-V 13-Cr 11 (bar, forging stock)
AWS A5.16-70 ERTI-13V-11Cr-3	(B-120)	US	Ti-Al3-V 13-Cr 11 (bare welding rods)
AMS 4917B	(B120VCA)	US	Ti-Al3-V 13.5-Cr 11 (sheet, strip, plate)(solution heat treated)
DTD 5053(*1)	(IMI-550)	UK	Ti-Al4-Mn4 (bar)
DTD 5143(*1)		UK	Ti-Al4-Mn4 (forging)
DTD 5343	(IMI-550)	UK	Ti-Al4-Mn4 (forging stock)
DTD 5353	(IMI-550)	UK	Ti-Al4-Mn4 (forging)
AECMA Ti-P.62	(IMI-314)	EU	Ti-Al4-Mn4 (bar, forging)
AMS 4025B(*2)	(C130AM)	US	Ti-Al4-Mn4 (bar, forging)(annealed)
AIR-9183 T-A4M	(IMI-314)	FR	Ti-Al4-Mn4 (bar, rod, forging)
AIR-9184 T-A4M	(IMI-314)	FR	Ti-Al4-Mn4 (bolts, fasteners)
AECMA Ti-P.68	(IMI-550)	EU	Ti-Al4-Mo4-Sn2-Si0.2 (bar, forging)
AIR T-A4DE	(IMI-550)	FR	Ti-Al4-Mo4-Sn2-Si0.5
AIR T-A4DE2	(IMI-550)	FR	Ti-Al4-Mo4-Sn2-Si0.5
DTD 5103(*1) (see TA.35,296)		UK	Ti-Al4-Mo4-Sn2-Si0.5 (bar)
DTD 5203(*1) (see TA.38)	(IMI-551)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (billet, bar)
DTD 5153(*1) (see TA.31,34)		UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging)
DTD 5333	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (bar for machining)
BS TA.32(*1) (see TA.46)	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (bar for machining)
BS TA.29(*1) (see TA.45)	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (bar for machining)

APPENDIX 8. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
BS TA.35(*1) (see TA.49)	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (bar for machining)
BS TA.46	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (bar for machining)(heat treated)
BS TA.49	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (bar for machining)(heat treated)
BS TA.45	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (bar)(heat treated)
LW 3.7184 (draft)	(IMI-550)	GY	Ti-Al4-Mo4-Sn2-Si0.5 (bar, billet)
DTD 5343	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging stock to 100 mm)
BS TA.47	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging stock)
BS TA.36(*1) (see TA.36)	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging stock)
BS TA.33(*1) (see TA.47)	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging stock)
BS TA.50	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging stock)
BS TA.30(*1) (see TA.47)	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging stock)
DTD 5353	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging to 100 mm)
BS TA.31(*1) (see TA.48)	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging)
BS TA.34(*1) (see TA.48)	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging)
BS TA.37(*1) (see TA.51)	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging)
BS TA.48	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging)(heat treated)
BS TA.51	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (forging)(heat treated)
BS TA.57	(IMI-550)	UK	Ti-Al4-Mo4-Sn2-Si0.5 (plate)(heat treated)
DTD 5223(*1) (see TA.42)	(IMI-551)	UK	Ti-Al4-Mo4-Sn4-Si0.5 (forging)
BS TA.38	(IMI-551)	UK	Ti-Al4-Mo4-Sn4-Si0.5-C0.2 (bar for machining)(heat treated)
BS TA.40	(IMI-551)	UK	Ti-Al4-Mo4-Sn4-Si0.5-C0.2 (bar for machining)(heat treated)
BS TA.39	(IMI-551)	UK	Ti-Al4-Mo4-Sn4-Si0.5-C0.2 (forging stock)
BS TA.41	(IMI-551)	UK	Ti-Al4-Mo4-Sn4-Si0.5-C0.2 (forging stock)
BS TA.42	(IMI-551)	UK	Ti-Al4-Mo4-Sn4-Si0.5-C0.2 (forging)(heat treated)
AMS 4913A	(4-3-1)	US	Ti-Al4-V1-Mo3 (sheet, strip)(sol. and precipitation treated)
MAS 4912A	(4-3-1)	US	Ti-Al4-V1-Mo3 (sheet, strip)(solution heat treated)
AMTU 451-67 OT4		UR	Ti-Al4.25-Mn1.4 (bar)
OST1. 90000-70 OT4		UR	Ti-Al4.25-Mn1.4 (forging, stampings)
TU1-83-21-72 OT4		UR	Ti-Al4.25-Mn1.4 (large rolled bar)
TU!-92-6-72 OT4		UR	Ti-Al4.25-Mn1.4 (large round/square bar)

APPENDIX 8. (Continued)

Standard Number	Related Alloys/ Common Name	Ctry Code	Nominal Composition Wt % and Form
OST1. 90050-72 OT4		UR	Ti-Al4.25-Mn1.4 (pipe)
TU1-5-107-73 OT4		UR	Ti-Al4.25-Mn1.4 (pipe, extruded)
OST1. 90024-71 OT4		UR	Ti-Al4.25-Mn1.4 (plate)
OST1. 90107-73 OT4		UR	Ti-Al4.25-Mn1.4 (round/square bar)
AMTU 475-67 OT4		UR	Ti-Al4.25-Mn1.4 (sheet)
OST1. 90015-71 OT4		UR	Ti-Al4.25-Mn1.4 (welding wire)
AMTU 451-67 VT14		UR	Ti-Al4.9-V1.4-Mo3.65 (bar)
AMTU 461-70 VT14		UR	Ti-Al4.9-V1.4-Mo3.65 (forging, stampings)
OST1. 90000-70 VT14		UR	Ti-Al4.9-V1.4-Mo3.65 (forging, stampings)
TU1-83-21-72 VT14		UR	Ti-Al4.9-V1.4-Mo3.65 (large rolled bar)
TU1-92-6-72 VT14		UR	Ti-Al4.9-V1.4-Mo3.65 (large round/square bar)
OST1. 90024-71 VT14		UR	Ti-Al4.9-V1.4-Mo3.65 (plate)
OST1. 90107-73 VT14		UR	Ti-Al4.9-V1.4-Mo3.65 (round/square bar)
AMTU 475-67 VT14		UR	Ti-Al4.9-V1.4-Mo3.65 (sheet)
AMS 4968A(*1)		US	Ti-Al5-Sn2-Zr5 (bar, forging)(annealed)
MIL-T-009047F Composition 3(*4)	(A-110)ELI	US	Ti-Al5-Sn2.5 ELI (bar, forging stock)
MIL-F-83142A Composition 3	(A-110)ELI	US	Ti-Al5-Sn2.5 ELI (forging premium quality)
MIL-R-81558 type II Composition B	(A-110)ELI	US	Ti-Al5-Sn2.5 ELI (welding rod wire)
MIL-T-9046H type II Compostion B	(A-110)ELI	US	Ti-Al50Sn2.5 ELI (sheet, strip, plate)
MIL-T-9047E Composition 3	alpha	US	Ti-Al5-Sn2.5 (bar, forging stock)
MIL-T-81556 type II Composition B	(A-110)ELI	US	Ti-Al5-Sn2.5 ELI (extrusion, bar)
AMS 4924C	(A-110) ELI	US	Ti-Al5-Sn2.5 ELI (bar, forging, rod)(annealed)
AMS 4909C	(A-110)ELI	US	Ti-Al5-Sn2.5 ELI (sheet, strip, plate)(annealed)
AIR T-A5E	(A-110)	FR	Ti-Al5-Sn2.5
L-7101	(A-110)	SP	Ti-Al5-Sn2.5
AMTU 451-67 VT5-1	(A-110)	UR	Ti-Al5-Sn2.5 (bar)
MIL-T-009047F Composition 2(*4)	(A-110)	US	Ti-Al5-Sn2.5 (bar, forging stock)
OST1. 90000-70 VT5-1		UR	Ti-Al5-Sn2.5 (forging, stampings)
MIL-F-83142A Composition 2	(A-110)	US	Ti-Al5-Sn2.5 (forging premium quality)
TU1-83-21-72 VT5-1		UR	Ti-Al5-Sn2.5 (large rolled bar)

APPENDIX 8. (Continued)

Standard Number		Related Alloys/ Common Name	Ctry Code	Nominal Composition Wt % and Form
TU1-92-6-72	VT5-1		UR	Ti-Al5-Sn2.5 (large round/square bar)
OST1. 90024-71	VT5-1		UR	Ti-Al5-Sn2.5 (plate)
OST1. 90107-73	VT5-1		UR	Ti-Al5-Sn2.5 (round/square bar)
MIL-R-81558 type II Composition A		(A-110)	US	Ti-Al5-Sn2.5 (welding rod wire)
DTD 5083(*1) (see TA.15)		(IMI-317)	UK	Ti-Al5-Sn2.5 (bar)
DTD 5093(*1) (see TA.14)		(IMI-317)	UK	Ti-Al5-Sn2.5 (sheet)
MIL-T-81915 type II Composition A		(A-110)	US	Ti-Al5-Sn2.5 (investment castings)
MIL-T-9046H type II Composition A		(A-110)	US	Ti-Al5-Sn2.5 (sheet, strip, plate)
MIL-T-9047E Composition 2		alpha	US	Ti-Al5-Sn2.5 (bar, forging stock)
MIL-T-81556 type II Composition A		(A-110)	US	Ti-Al5-Sn2.5 (extrusion, bar)
DIN 3.7115 Werkstoff		(A-110)	GY	Ti-Al5-Sn2.5 (all forms)
LW 3.7114 (draft)		(IMI-317)	GY	Ti-Al5-Sn2.5 (all forms)
AWS A5.16-70	ERTI-5Al-2.5Sn	(A-110)	US	Ti-Al5-Sn2.5 (bare welding rods)
BS TA.15(*1)		(IMI-317)	UK	Ti-Al5-Sn2.5 (bar for machining)
AECMA Ti-P.65		(IMI-317)	EU	Ti-Al5-Sn2.5 (bar, forging)
AMS 4926E		(A110AT)	US	Ti-Al5-Sn2.5 (bar, rod)(annealed)
ASTM B348-74	grade 6	(A-110)	US	Ti-Al5-Sn2.5 (billet, bar)
ASTM B367-69	grade C-6	(A-110)	US	Ti-Al5-Sn2.5 (casting)
BS TA.16(*1)		(IMI-317)	UK	Ti-Al5-Sn2.5 (forging stock)
BS TA.17(*1)		(IMI-317)	UK	Ti-Al5-Sn2.5 (forging)
ASTM B381-75	grade F-6	(A-110)	US	Ti-Al5-Sn2.5 (forging)
AMS 4966E		(A110AT)	US	Ti-Al5-Sn2.5 (forging)(annealed)
BS TA.14(*1)		(IMI-317)	UK	Ti-Al5-Sn2.5 (sheet)
ASTM B265-74	grade 6	(A-110)	US	Ti-Al5-Sn2.5 (sheet, strip, plate)
AMS 4910F		(A110AT)	US	Ti-Al5-Sn2.5 (sheet, strip, plate)(annealed)
AWS A5.16-70	ERTI-5Al-2.5Sn	(A-110)	US	Ti-Al5-Sn2.5 (very high purity compositions)
AMS 4953		(A110AT)	US	Ti-Al5-Sn2.5 (welding wire)
MIL-F-93142A Composition 4			US	Ti-Al5-Sn5-Zr5 (not used)(forging premium quality)
AMTU 451-67	VT22		UR	Ti-Al5.15-V4.75 Mo4.75 Cr1.25 (bar)
TU1-92-6-72	VT22		UR	Ti-Al5.15-V4.75-Mo4.75-Cr1.25 (large round/square bar)

APPENDIX 8. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
OST1. 90107-73 VT22		UR	Ti-Al5.15-V4.75-Mo4.75-Cr1.25 (round/square bar)
TU1-92-2-72 VT22		UR	Ti-Al5.15-V4.75-Mo4.75-Cr1.25 (stampings and forgings)
AMTU 451-67 VT5		UR	Ti-Al5.25 (bar)
OST1. 90000-70 VT5		UR	Ti-Al5.25 (forgings, stampings)
TU1-83-21-72 VT5		UR	Ti-Al5.25 (large rolled bar)
TU1-92-6-72 VT5		UR	Ti-Al5.25 (large round/square bar)
OST1. 90107-73 VT5		UR	Ti-Al5.25 (round/square bar)
AMTU 475-67 VT5		UR	Ti-Al5.25 (sheet)
AMS 4929(*1)		US	Ti-Al5.4-Mo1.25-Cr1.4-Fe1.3 (bar)(annealed)
AMS 4969(*1)		US	Ti-Al5.4-Mo1.25-Cr1.4-Fe1.3 (forging, forging stock)(annealed)
AMTU 451-67 VT6S		UR	Ti-Al5.75-V4 (bar)
OST1. 90000-70 VT6S		UR	Ti-Al5.75-V4 (forgings, stampings)
TU1-83-21-72 VT6S		UR	Ti-Al5.75-V4 (large rolled bar)
TU1-92-6-72 VT6S		UR	Ti-Al5.75-V4 (large round/square bar)
OST1. 90024-71 VT6S		UR	Ti-Al5.75-V4 (plate)
OST1. 90107-73 VT6S		UR	Ti-Al5.75-V4 (round/square bar)
AMTU 475-67 VT6S		UR	Ti-Al5.75-V4 (sheet)
LW 3.7154 (draft)	(IMI-685)	GY	Ti-Al6-Mo0.5-Zr5-Si0.25 (bar, billet)
AECMA Ti-P.67	(IMI-685)	EU	Ti-Al6-Mo0.5-Zr5-Si0.3 (bar, forging)
BS TA.43	(IMI-685)	UK	Ti-Al6-Mo0.5-Zr5-Si0.3 (forging stock)
BS TA.44	(IMI-685)	UK	Ti-Al6-Mo0.5-Zr5-Si0.3 (forging)(heat treated)
MIL-R-81558 type II Composition D	(6-6-2-1)	US	Ti-Al6-Mo0.8-Cb/Mb2-Ta1 (welding rod wire)
MIL-T-9046H type II Composition G	(6-2-1-1)	US	Ti-Al6-Mo0.8-Cb/Nb2-Ta1 (sheet, strip, plate)
AIR T-A6ZD	(IMI-685)	FR	Ti-Al6-Mo0.8-Zr5-Si0.25
LW 3.7154 Werkstoff	(IMI-685)	GY	Ti-Al6-Mo0.8-Zr5-Si0.3
AMI 17(*2)	(Ti-6Al-2Cb-1Ta)	US	Ti-Al6-Mo1-Cb/Nb2-Ta1
AWS A5.16-70 ERTI-6Al-2Cb-1		US	Ti-Al6-Mo1-Cb/Nb2-Ta1 (bare welding rods)
LW 3.7144 Werkstoff	(6-2-4-2)	GY	Ti-Al6-Mo2-Sn2-Zr4
MIL-T-009047F Composition 11(*4)	(6-2-4-2)	US	Ti-Al6-Mo2-Sn2-Zr4 (bar, forging stock)
MIL-F-93142A Composition 11	(6-2-4-2)	US	Ti-Al6-Mo2-Sn2-Zr4 (forging/premium quality)
MIL-T-009046G Composition 11(*3)	(6-2-4-2)	US	Ti-Al6-Mo2-Sn2-Zr4 (sheet, strip, plate)
MIL-T-81915 type III Composition B	(6-2-4-2)	US	Ti-Al6-Mo2-Sn2-Zr4 (invertment castings)

APPENDIX 8. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
MIL-T-9046H type III Composition G	(6-2-4-2)	US	Ti-Al6-Mo2-Sn2-Zr4 (sheet, strip, plate)
MIL-T-9047E Composition 11	(6-2-4-2)	US	Ti-Al6-Mo2-Sn2-Zr4 (bar, forging stock)
AMS 4975B	(6-2-4-2)	US	Ti-Al6-Mo2-Sn2-Zr4 (bar, rod)(sol. and precipitation treated)
AMS 4976	(6-2-4-2)	US	Ti-Al6-Mo2-Sn2-Zr4 (forging)(sol. and precipitation treated)
DTD M201(*1)		UK	Ti-Al6-Mo4-Zr5-Cu1-Si0.2
MIL-T-009047F Composition 14(*4)	(6-2-4-6)	US	Ti-Al6-Mo6-Sn2-Zr4 (bar, forging stock)
MIL-T-9047E Composition 14	(6-2-4-6)	US	Ti-Al6-Mo6-Sn2-Zr4 (bar, forging stock)
AMS 4981	(6-2-4-6)	US	Ti-Al6-Mo6-Sn2-Zr4 (bar, wire, forging, forging stock) (solution and precipitation treated)
DIN 17851	(6-4)(A-110)	GY	Ti-Al6-V4 and Ti-Al5-Sn2 (extrusion)(annealed)
MIL-T-009047F Composition 7(*4)	(6-4) ELI	US	Ti-Al6-V4 ELI (bar, forging stock)
MIL-F-83142A Composition 7	(6-4) ELI	US	Ti-Al6-V4 ELI (forging premium quality)
MIL-T-009046G Composition 7(*3)	(6-4) ELI	US	Ti-Al6-V4 ELI (sheet, strip, plate)
MIL-R-81558 type III Composition B	(6-4) ELI	US	Ti-Al6-V4 ELI (welding rod wire)
MIL-T-9046H type III Composition D	(6-4) ELI	US	Ti-Al6-V4 ELI (sheet, strip, plate)
MIL-T-9047E Composition 7	alpha+beta	US	Ti-Al6-V4 ELI (bar, forging stock)
MIL-T-9047E Composition 7	alpha+beta	US	Ti-Al6-V4 ELI (bar, forging stock)
MIL-T-81556 type III Composition B	(6-4) ELI	US	Ti-Al6-V4 ELI (extrusion, bar)
AMS 4930A	(6-4) ELI	US	Ti-Al6-V4 ELI (bar, forging, rod)(annealed)
ASTM F136-70	(6-4) ELI	US	Ti-Al6-V4 ELI (sheet, bar, forging)(surgical implants)
AMS 4907C	(6-4) ELI	US	Ti-Al6-V4 ELI (sheet, strip, plate)(annealed)
AMS 4956	(6-4) ELI	US	Ti-Al6-V4 ELI (welding wire)(environment controlled)
MIL-T-9046H type III Composition H	(6-4) SPL	US	Ti-Al6-V4 SPL (sheet, strip, plate)
INTA L-7301(*5)	(6-4)	SP	Ti-Al6-V4
LW 3.7164 Werkstoff	(6-4)	GY	Ti-Al6-V4
MIL-T-009047F Composition 6(*4)	(6-4)	US	Ti-Al6-V4 (bar, forging stock)
MIL-F-83142A Composition 6	(6-4)	US	Ti-Al6-V4 (forging premium quality)
MIL-T-009046G Composition 6(*3)	(6-4)	US	Ti-Al6-V4 (sheet, strip, plate)
MIL-R-81558 type III Composition A	(6-4)	US	Ti-Al6-V4 (welding rod wire)
ISO Draft Std. (alloy)	(IMI-318)	XX	Ti-Al6-V4 (surgical implant)

APPENDIX 8. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
DTD 5173(*1) (see 2TA.11)	(IMI-318)	UK	Ti-Al6-V4 (bar)
DTD 5163(*1) (see 2TA.10)	(IMI-318)	UK	Ti-Al6-V4 (sheet)
MIL-T-81915 type III Composition A	(6-4)	US	Ti-Al6-V4 (investment castings)
MIL-T-9046H type III Composition C	(6-4)	US	Ti-Al6-V4 (sheet, strip, plate)
MIL-T-9047E Composition 6	alpha+beta	US	Ti-Al6-V4 (bar, forging stock)
MIL-T-81556 type III Composition A	(6-4)	US	Ti-Al6-V4 (extrusion, bar)
DIN 3.7165 Werkstoff	(6-4)	GY	Ti-Al6-V4 (all forms)
DTD 5303	(IMI-318)	UK	Ti-Al6-V4 (bar for machining)
DTD 5313	(IMI-318)	UK	Ti-Al6-V4 (forging stock)
DTD 5323	(IMI-318)	UK	Ti-Al6-V4 (forging)
AIR-9184 T-A6V	(IMI-318)	FR	Ti-Al6-V4 (bolts, fasteners)
AWS A5.16-70 ERTI-6Al-4V	(6-4)	US	Ti-Al6-V4 (bare welding rods)
AECMA Ti-P.63	(IMI-318)	EU	Ti-Al6-V4 (bar, forging, annealed, sheet)
DTD 5303	(IMI-318)	UK	Ti-Al6-V4 (bar for machining)
BS TA.11(*1) (see 2TA.11)	(IMI-318)	UK	Ti-Al6-V4 (bar for machining)
BS 2TA.11	(IMI-318)	UK	Ti-Al6-V4 (bar for machining)(annealed)
AMS 4928G	(C120AV)(6-4)	US	Ti-Al6-V4 (bar, forging)(annealed)
AMS 4965C	(6-4)	US	Ti-Al6-V4 (bar, forging, rod)(sol. and precipitation treated)
AIR-9183 T-A6V	(IMI-318)	FR	Ti-Al6-V4 (bar, rod, forging)
ASMT B348-74 grade 5	(6-4)	US	Ti-Al6-V4 (billet, bar)
LW 3.7164.7 Werkstoff	(IMI-318)	GY	Ti-Al6-V4 (bolt stock)
ASTM B367-69 grade C-5	(6-4)	US	Ti-Al6-V4 (castings)
AMS 4934	(6-4)	US	Ti-Al6-V4 (extrusion, flash weld, rings)(sol. treated/aged)
AMS 4935C	(C120AV)(6-4)	US	Ti-Al6-V4 (extrusion, flash weld, rings)(annealed)
BS TA.12(*1) (see 2TA.12)	(IMI-318)	UK	Ti-Al6-V4 (forging stock)
BS TA.28(*1) (see 2TA.28)	(IMI-318)	UK	Ti-Al6-V4 (forging stock)
BS 2TA.12	(IMI-318)	UK	Ti-Al6-V4 (forging stock)
DTD 5313	(IMI-318)	UK	Ti-Al6-V4 (forging stock)
BS 2TA.28	(IMI-318)	UK	Ti-Al6-V4 (forging stock, wire)(fasteners)
BS TA.13(*1) (see 2TA.13)	(IMI-318)	UK	Ti-Al6-V4 (forging)
ASTM B381-75 grade F-5	(6-4)	US	Ti-Al6-V4 (forging)

APPENDIX 8. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
BS 2TA.13	(IMI-318)	UK	Ti-Al6-V4 (forging)(annealed)
AMS 4967D	(6-4)	US	Ti-Al6-V4 (forging, bar)(annealed)(heat treatable)
DTD 5323	(IMI-318)	UK	Ti-Al6-V4 (forgings)
BS TA.56	(IMI-318)	UK	Ti-Al6-V4 (plate)(annealed)
BS TA.10(*1) (see 2TA.10)	(IMI-318)	UK	Ti-Al6-V4 (sheet)
LW 3.7164.1 Werkstoff	(IMI-318)	GY	Ti-Al6-V4 (sheet, rod, forging)
BS 2TA.10	(IMI-318)	UK	Ti-Al6-V4 (sheet, strip)(annealed)
AMS 4906	(6-4)	US	Ti-Al6-V4 (sheet, strip)(continuous rolled and annealed)
ASTM B265-74 grade 5	(6-4)	US	Ti-Al6-V4 (sheet, strip, plate)
AMS 4911C	(C120AV)(6-4)	US	Ti-Al6-V4 (sheet, strip, plate)(annealed)
AWS I5.16-70 ERTI-6Al-4V-1	(6-4)	US	Ti-Al6-V4 (very high purity compositions)(bare wire)
MIL-T-46077B	(6-4)	US	Ti-Al6-V4 (weldable armor plate)
AMS 4954B	(C120AV)	US	Ti-Al6-V4 (welding wire)
NFL 21-271 T-A6V	(6-4)	FR	Ti-Al6-V4 (rivet, cylindrical head)
NFL 21-272 T-A6V	(6-4)	FR	Ti-Al6-V4 (rivet, 100 degree milled head)
AIR T-A6VE	(6-6-2)	FR	Ti-Al6-V6-Sn2
LW 3.7174 Werkstoff	(6-6-2)	GY	Ti-Al6-V6-Sn2
MIL-T-009047F Composition 8(*4)	(6-6-2)	US	Ti-Al6-V6-Sn2 (bar, forging stock)
MIL-F-83142A Composition 8	(6-6-2)	US	Ti-Al6-V6-Sn2 (forging/premium quality)
MIL-T-009046G Composition 8(*3)	(6-6-2)	US	Ti-Al6-V6-Sn2 (sheet, strip, plate)
MIL-T-9046H type III Composition E	(6-6-2)	US	Ti-Al6-V6-Sn2 (sheet, strip, plate)
MIL-T-9047E Composition 8	alpha+beta	US	Ti-Al6-V6-Sn2 (bar, forging stock)
MIL-T-9047E Composition 8	alpha+beta	US	Ti-Al6-V6-Sn2 (bar, forging stock)
MIL-T-81556 type III Composition C	(6-6-2)	US	Ti-Al6-V6-Sn2 (extrusion, bar)
AECMA Ti-P.64	(6-6-2)	EU	Ti-Al6-V6-Sn2 (bar, forging, annealed, heat treated)
AMS 4978A	(6-6-2)	US	Ti-Al6-V6-Sn2 (bar, forging, rod)(annealed)
AMS 4971A	(6-6-2)	US	Ti-Al6-V6-Sn2 (bar, forging, rod)(annealed, heat treated)
AMS 4979	(6-6-2)	US	Ti-Al6-V6-Sn2 (bar, forging, rod)(sol. and precipitation treated)
AMS 4936	(6-6-2)	US	Ti-Al6-V6-Sn2 (extrusion)
AMS 4918D	(6-6-2)	US	Ti-Al6-V6-Sn2 (sheet, strip, plate)(annealed)

APPENDIX 8. (Continued)

Standard Number		Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
AMI 10(*2)		(IMI-684 alloy)	US	Ti-Al6-Zr5-W1-Si0.2
DTD M200(*1)			UK	Ti-Al6-Zr5-W1-Si0.3
AMTU 451-67	VT3-1		UR	Ti-Al6.25-Mo2.5-Cr1.5 (bar)
OST1. 90000-70	VT3-1		UR	Ti-Al6.25-Mo2.5-Cr1.5 (forging, stampings)
AMTU 553-63	VT3-1		UR	Ti-Al6.25-Mo2.5-Cr1.5 (ground bar for fasteners)
TU1-83-21-72	VT3-1		UR	Ti-Al6.25-Mo2.5-Cr1.5 (large rolled bar)
TU1-92-6-72	VT3-1		UR	Ti-Al6.25-Mo2.5-Cr1.5 (large round/square bar)
OST1.90107-73	VT3-1		UR	Ti-Al6.25-Mo2.5-Cr1.5 (round/square bar)
AMTU 451-67	VT6		UR	Ti-Al6.25-V5.1 (bar)
TU1-92-6-72	VT6		UR	Ti-Al6.25-V5.1 (large round/square bar)
OST1.90107-73	VT6		UR	Ti-Al6.25-V5.1 (round/square bar)
AMTU 475-67	VT6		UR	Ti-Al6.25-V5.1 (sheet)
AMTU 451-67	VT9		UR	Ti-Al6.4-Mo3.3-Zr1.4 (bar)
OST1. 9000-70	VT9		UR	Ti-Al6.4-Mo3.3-Zr1.4 (forging, stampings)
TU1-83-21-72	VT9		UR	Ti-Al6.4-Mo3.3-Zr1.4 (large rolled bar)
TU1-92-6-72	VT9		UR	Ti-Al6.4-Mo3.3-Zr1.4 (large round/square bar)
OST1. 90107-73	VT9		UR	Ti-Al6.4-Mo3.3-Zr1.4 (round/square bar)
AMTU 451-67	VT20		UR	Ti-Al6.5-V1.3-Mo1.25-Zr2 (bar)
OST1.90000-70	VT20		UR	Ti-Al6.5-V1.3-Mo1.25-Zr2 (forging, stampings)
TU1-92-6-72	VT20		UR	Ti-Al6.5-V1.3-Mo1.25-Zr2 (large round/square bar)
OST1.90107-73	VT20		UR	Ti-Al6.5-V1.3-Mo1.25-Zr2 (round/square bar)
AMTU 475-67	VT20		UR	Ti-Al6.5-V1.3-Mo1.25-Zr2 (sheet)
AMTU 451-67	VT8		UR	Ti-Al6.65-Mo3.3 (bar)
OST1. 90000-70	VT8		UR	Ti-Al6.65-Mo3.3 (forging, stampings)
TU1-83-21-72	VT8		UR	Ti-Al6.65-Mo3.3 (large rolled bar)
TU1-92-5-72	VT8		UR	Ti-Al6.65-Mo3.3 (large round/square bar)
OST1.90107-73	VT8		UR	Ti-Al6.65-Mo3.3 (round/square bar)
AIR T-A7D		(7-4)	FR	Ti-Al7-Mo4
MIL-T-009047F Composition 9(*4)		(7-4)	US	Ti-Al7-Mo4 (bar, forging stock)
MIL-F-83142A Composition 9		(7-4)	US	Ti-Al7-Mo4 (forging/premium quality)
MIL-T-9047E Composition 9		alpha+beta	US	Ti-Al7-Mo4 (bar, forging stock)

APPENDIX 8. (Continued)

Standard Number	Related Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
MIL-T-9047E Composition 9	alpha+beta	US	Ti-Al7-Mo4 (bar, forging stock)
MIL-T-81556 type III Composition D	(7-4)	US	Ti-Al7-Mo4 (extrusion, bar)
AMS 4970C	(7-4)	US	Ti-Al7-Mo4 (bar, forging)(sol. and precipitation treated)
AIR T-A8DV	(8-1-1)	FR	Ti-Al8-V1-Mo1
LW 3.7134 Werkstoff	(8-1-1)	GY	Ti-Al8-V1-Mo1
MIL-T-009047F Composition 5(*4)	(8-1-1)	US	Ti-Al8-V1-Mo1 (bar, forging stock)
MIL-F-83142A Composition 5	(8-1-1)	US	Ti-Al8-V1-Mo1 (forging premium quality)
MIL-R-81558 type II Composition C	(8-1-1)	US	Ti-Al8-V1-Mo1 (welding rod wire)
MIL-T-9046H type II Composition F	(8-1-1)	US	Ti-Al8-V1-Mo1 (sheet, strip, plate)
MIL-T-9047E Composition 5	alpha	US	Ti-Al8-V1-Mo1 (bar, forging stock)
MIL-T-81556 type II Composition C	(8-1-1)	US	Ti-Al8-V1-Mo1 (extrusion, bar)
AWS A5.16-70 ERTI-8Al-1Mo-1V	(8-1-1)	US	Ti-Al8-V1-Mo1 (bare welding rods)
AECMA Ti-P.65	(8-1-1)	EU	Ti-Al8-V1-Mo1 (bar, forging)
AMS 4972A	(8-1-1)	US	Ti-Al8-V1-Mo1 (bar, rod)(solution treated and stabilized)
AMS 4973A	(8-1-1)	US	Ti-Al8-V1-Mo1 (forging)(solution treated and stabilized)
AMS 4916C	(8-1-1)	US	Ti-Al8-V1-Mo1 (sheet, strip, plate)(duplex annealed)
AMS 4915C	(8-1-1)	US	Ti-Al8-V1-Mo1 (sheet, strip, plate)(singel annealed)
AMS 4955	(8-1-1)	US	Ti-Al8-V1-Mo1 (welding wire)
MIL-R-81558 type IV beta alloys		US	Ti-beta alloys (welding rod wire)
MIL-T-9046H type IV beta alloys		US	Ti-beta alloys (sheet, strip, plate)
AMS 4982		US	Ti-Cb/Nb 45 (bar, wire)(annealed)
AIR T-TU2	(IMI-230)	FR	Ti-Cu2.5
BS TA.24(*1) (see 2TA.24)	(IMI-230)	UK	Ti-Cu2.5
BS TA.23(*1) (see 2TA.23)	(IMI-230)	UK	Ti-Cu2.5
BS TA.22(*1) (see 2TA.22)	(IMI-230)	UK	Ti-Cu2.5
BS TA.21(*1) (see 2TA.21)	(IMI-230)	UK	Ti-Cu2.5
INTA L-7501(*5)	(IMI-230)	SP	Ti-Cu2.5
DTD 5123(*1)		UK	Ti-Cu2.5 (bar)
DTD 5133(*1)		UK	Ti-Cu2.5 (sheet)
LW 3.7124 (draft)	(IMI-230)	GY	Ti-Cu2.5 (all forms)

APPENDIX 8. (Continued)

Standard Number	Realted Alloy/ Common Name	Ctry Code	Nominal Composition Wt % and Form
AECMA Ti-P.11	(IMI-230)	EU	Ti-Cu2.5 (all forms, annealed and heat treated)
BS 2TA.22	(IMI-230)	UK	Ti-Cu2.5 (bar for machining)(annealed)
BA TA.53	(IMI-230)	UK	Ti-Cu2.5 (bar for machining)
DTD 5243(*1) (see TA.53)	(IMI-230)	UK	Ti-Cu2.5 (bar for machining)
DTD 5253(*1) (see TA.54)	(IMI-230)	UK	Ti-Cu2.5 (forging stock)
BS TA.54	(IMI-230)	UK	Ti-Cu2.5 (forging stock)
BS 2TA.23	(IMI-230)	UK	Ti-Cu2.5 (forging stock)
DTD 5263(*1) (see Ta.55)	(IMI-230)	UK	Ti-Cu2.5 (forging)
BS 2TA.24	(IMI-230)	UK	Ti-Cu2.5 (forging)(annealed)
BS TA.55	(IMI-230)	UK	Ti-Cu2.5 (forging)(solution heat treated and aged)
BS TA.58	(IMI-230)	UK	Ti-Cu2.5 (plate)(annealed)
DTD 5233(*1) (see TA.52)	(IMI-230)	UK	Ti-Cu2.5 (sheet, strip)
BS 2TA.21	(IMI-230)	UK	Ti-Cu2.5 (sheet, strip)(annealed)
BS TA.52	(IMI-230)	UK	Ti-Cu2.5 (sheet, strip)(solution heat treated and aged)
AMS 4908C	(C-110M)	US	Ti-Mn8 (sheet, strip)(annealed)
AMS 4923A(*1)		US	Ti-Mo2-Cr2-Fe2 (bar, forging)(annealed)
AIR T-D11ZR6E4	(Beta III)	FR	Ti-Mo 11.5-Sn4.5-Zr6
MIL-T-009047F Composition 13(*4)	(Beta III)	US	Ti-Mo 11.5-Sn4.5-Zr6 (bar, forging stock)
MIL-F-83142A Composition 13	(Beta III)	US	Ti-Mo 11.5-Sn4.5-Zr6 (forging/premium quality)
MIL-T-9046H type IV Composition B	(Beta III)	US	Ti-Mo 11.5-Sn4.5-Zr6 (sheet, strip, plate)
AMS 4977A	(Beta III)	US	Ti-Mo 11.5-Sn4.5-Zr6 (bar, wire)(solution heat treated)
AMS 4980A	(Beta III)	US	Ti-Mo 11.5-Sn4.5-Zr6 (bar, wire)(solution heat treated)
MIL-T-9047E Composition 13	(Beta III)	US	Ti-Mo 11.5-Sn4.5-Zr6 (bar, forging stock)
ASTM B348-74 Grade 10	(Beta III)	US	Ti-Mo 11.5-Sn4.5-Zr6 (billet, bar)
ASTM B338-74 Grade 10	(Beta III)	US	Ti-Mo 11.5-Sn4.5-Zr6 (seamless/weld. heat exchanger treated)
ASTM B337-74 Grade 10	(Beta III)	US	Ti-Mo 11.5-Sn4.5-Zr6 (seamless/welding pipe)
ASTM B265-74 Grade 10	(Beta III)	US	Ti-Mo 11.5-Sn4.5-Zr6 (sheet, strip, plate)
BS 3003(part 9) TP.1	(Pd alloy)	UK	Ti-Pd0.15-0.25
BS TA.1(*1) (see 2TA.1)	(IMI-115)	UK	Ti-Pd0.15--0.25
DIN 3.7070(*5) Werkstoff	(Pd alloy)	GY	Ti-Pd0.15--0.25 (all forms)

APPENDIX 8. (Continued)

Standard Number		Related Alloys/ Common Name	Ctry Code	Nominal Composition Wt % and Form
DIN 3.7056(*5)	Werkstoff	(Pd alloy)	GY	Ti-Pd0.15--0.25 (all forms)
DIN 3.7040(*5)	Werkstoff	(Pd alloy)	GY	Ti-Pd0.15--0.25 (all forms)
DIN 3.7030(*5)	Werkstoff	(Pd alloy)	GY	Ti-Pd0.15--0.25 (all forms)
AWS A5.16-70	ERTI-0.2Pd	(Pd alloy)	US	Ti-Pd0.15--0.25 (bare welding rods)
ASTM B348-74	grade 11	(Pd alloy)	US	Ti-Pd0.15--0.25 (billet, bar)
ASTM B348-74	grade 7	(Pd alloy)	US	Ti-Pd0.15--0.25 (billet, bar)
ASTM B367-69	grade C-7B	(Pd alloy)	US	Ti-Pd0.15--0.25 (casting)
ASTM B367-69	grade C-7A	(Pd alloy)	US	Ti-Pd0.15--0.25 (casting)
ASTM B367-69	grade C-8B	(Pd alloy)	US	Ti-Pd0.15--0.25 (casting)
ASTM B367-69	grade C-8A	(Pd alloy)	US	Ti-Pd0.15--0.25 (casting)
ASTM B381-75	grade F-11	(Pd alloy)	US	Ti-Pd0.15--0.25 (forging)
ASTM B381-75	grade F-7	(Pd alloy)	US	Ti-Pd0.15--0.25 (forging)
ASTM B338-74	grade 11	(Pd alloy)	US	Ti-Pd0.15--0.25 (seamless/weld. heat exchanger tubing)
ASTM B338-74	grade 7	(Pd alloy)	US	Ti-Pd0.15--0.25 (seamless/weld. heat exchanger tubing)
ASTM B337-74	grade 11	(Pd alloy)	US	Ti-Pd0.15--0.25 (seamless/welding pipe)
ASTM B337-74	grade 7	(Pd alloy)	US	Ti-Pd0.15--0.25 (seamless/welding pipe)
ASTM B265-74	grade 7	(Pd alloy)	US	Ti-Pd0.15--0.25 (sheet, strip, plate)
ASTM B265-74	grade 11	(Pd alloy)	US	Ti-Pd0.15--0.25 (sheet, strip, plate)
MIL-T-13405C			US	Ti-powder (pyrotechnic use)
MIL-T-12118A(*1)			US	Ti-sponge
INTA L-7021(*5)		(Pd alloy)	SP	Ti-Pd0.12--0.25
DTD 5333		(IMI-550)	UK	Ti-Al4-Mn4 (bar for machining)

Note: AMI=Advanced Material Information(SAE), ANS-American National Standard Institute.

(*1) Non current specification.

(*2) Non current but widely used in the past and may be required on some existing designs in the future-AMS does not recommend as standard material for future use in new design.

(*3) Non current uncoordinated specification.

(*4) Current uncoordinated specification.

(*5) Proposed specification.

APPENDIX 9. CORRELATION DATA COMPILED BY IMPERIAL METAL INDUSTRIES LTD. (KYNOCH), BIRMINGHAM, ENGLAND; COVERING THE IMI AND DTD ALLOY DESIGNATIONS AND COMPARING COMPOSITION WITH FORM AND MECHANICAL PROPERTIES[6]

British Standard	IMI Equivalent	Composition	Forms	0.2% PS N/mm²	UTS N/mm²	Elongation (mm) 50mm % 5D %	RA %	Bend Radius	Creep Test : Max T.P.S. in 100h.
BS 2 TA1	115 260	Commercially pure Ti - 0.15 Pd.	Sheet and strip, annealed) Sheet)	200 min	290-420	25		≤1.83 mm 1t ≤3.25 mm 2t	
2 TA2	125	Commercially pure	Sheet and strip, annealed	290 min	390-540	22		≤2 mm 1.5t ≤3 mm 2t	
2 TA3 2 TA4	125 125	Commercially pure " "	Machining bar, annealed) Forging stock)	290 min	390-540	20			
2 TA5	125	Commercially pure	Forgings, annealed	290 min	390-540	20			
2 TA6	155	Commercially pure	Sheet and strip, annealed	460 min	570-730	15		≤2 mm 2½t	
2 TA7 2 TA8	160 160	Commercially pure " "	Machining bar, annealed) Forging stock)	430 min	540-740	16			
2 TA9	160	Commercially pure	Forgings, annealed	430 min	540-740	16			
2 TA10	318	Ti-6Al-4V	Sheet and strip, annealed	900 min	960-1260	8		5t	
2 TA11 2 TA12 2 TA13	318 318 318	Ti-6Al-4V " " " "	Machining bar, annealed) Forging stock) Forgings, annealed)	830 min	900-1160	8	25		
TA14	317	Ti-5Al-2½Sn	Sheet, annealed	760 min	820-1080	10		≤2 mm 2t ≤3 mm 4½t	
TA15 TA16 TA17	317 317 317	Ti-5Al-2½Sn " " " "	Machining bar, annealed) Forging stock) Forgings, annealed)	760 min	790-1080	9	25		
TA18 TA19 TA20	679 679 679	Ti-11Sn-2¼Al-5Zr-1Mo-0.2Si " " " "	Machining bar heat treated) Forging stock) Forgings, heat treated)	970 min	1110-1340	8	25		0.1% in 100h 368 N/mm² at 450 C

APPENDIX 9. (Continued)

British Standard	IMI Equivalent	Composition	Forms	0.2% PS N/mm²	UTS N/mm²	Elongation (mm) 50mm % 5d %	RA %	Bend Radius	Creep Test Max T.P.S. in 100h.
2 TA21	230	Ti 2%Cu	Sheet and strip, annealed	460-570	540-700	18		2t	
2 TA22	230	"	Machining bar, annealed	400 min	540-770	16	35		
2 TA23	230	"	Forging stock						
2 TA24	230	"	Forgings, annealed						
TA25	679	Ti-11Sn-2.5Al-5Zr-1Mo-0.25Si	Machining bar, heat treated	880 min	1030-1270	8	30		0.1% in 100h 368 N/mm² at 450 C
TA26	679	"	Forging stock						
TA27	679	"	Forgings, heat treated						
2 TA28	318	Ti-6Al-4V	Forging stock	970 min	1100-1300	8	20		
TA29-37 superseded				1085 min	1250-1420	8	20		
TA38	551	Ti-4Al-4Mn-1Mo-1S	Machining bar, heat treated ≤ 25mm						
TA39	551	"	Forging stock						
TA40	551	"	Machining bar, heat treated ≤ 75mm	1085 min	1205-1375	8	20		
TA41	551	"	Forging stock up to 75mm						
TA42	551	"	Forgings, heat treated	1085 min	1205-1375	8	20		
TA43	685	Ti-6Al-5Zr-1Mo-0.5Si	Forging stock	850 min	990-1140	6	15		0.1% in 100h 300 N/mm² at 520 C
TA44	685	"	Forgings, heat treated						
TA45	550	Ti-4Al-2Sn-4Mo-0.5Si	Machining bar, heat treated ≤ 25mm	980 min	1100-1280	9	25		0.1% in 100h 465 N/mm² at 400 C
TA46	550	"	≤100mm	920 min	1050-1220	9	20		
TA47	550	"	Forging stock 25 - 100mm	920 min	1050-1220	9	20		
TA48	550	"	Forgings, heat treated ≤ 100mm	920 min	1050-1200	9	20		
TA49	550	"	Machining bar, heat treated ≤ 150mm	870 min	1000-1200	9	20		
TA50	550	"	Forging stock 100 - 150mm	870 min	1000-1200	9	20		
			≤12.5mm sheet	980 min	1100-1280	9	20		
TA51	550	"	Forgings, heat treated ≤ 150mm	870 min	1000-1200	9	20		

APPENDIX 9. (Continued)

British Standard	IMI Equivalent	Composition	Forms	0.2% PS N/mm²	UTS N/mm²	Elongation (mm) 50mm % 5D %	RA %	Bend Radius	Creep Test . Max T.P.S. in 100h.
TA52	230	Ti-2½Cu	Sheet and strip, S.H.T. and aged	550 min	690-920	10		2t as S.H.T.	
TA53	230	"	Machining bar)	525 min	650-880	10			
TA54	230	"	Forging stock)						
TA55	230	"	Forgings S.H.T. and aged	525 min	650-880	10	25		
TA56	318	Ti-6Al-4V	Plate, annealed ≤ 10mm	825 min	895-1150	10			
			≤ 25mm	"	" "	8	25		
			≤100mm	"	" "	8	20		
TA57	550	Ti-4Al-2Sn-4Mo-½Si	Plate, heat treated						
			≤10mm long	900 min	1030-1220	9			
			LT	920 min	1050-1220	9			
			≤25mm long	900 min	1030-1220	9	20		
			LT	920 min	1050-1220	9	20		
			≤65mm long	900 min	1030-1220	9	20		
			LT	920 min	1050-1220	9	20		
			ST	900 min	1030-1220	7	20		
TA58	230	Ti-2½Cu	Plate, annealed	420 min	520-640	20			

APPENDIX 9. (Continued)

DTD Specification	IMI Equivalent	Composition	Forms	0.2% PS N/mm²	UTS N/mm²	Elongation (mm) 50mm % 5D %	RA %	Bend Radius	Creep Test Max T.P.S. in 100h.
DTD 5013 B	115	Commercially pure	Bar and billet	200 min	463 min	25 on $4\sqrt{A}$			
" 5023 C	130	" "	Sheet and strip	340 min (0.1% PS)	463-618	20		≤1.8 mm 2t ≤3.2 mm 2½t	
" 5043 B	315	Ti-2Al-2Mn	Bar and billet	463 min (0.1% PS)	650-804	20 on $4\sqrt{A}$			
" 5213	680	Ti-11Sn-2¼Al-4Mo-0.2Si	Heat treated bar ≤1 in	1097 min	1236 min	8			
			≤3 in	1066 min	1236 min	8			
			≤6 in	1066 min	1205 min	4½			
			Forging stock ≤6 in	1097 min	1236 min	8			
			>6 in	1097 min	1236 min	6			
" 5273	130	Commercially pure	Machining bar	310 min	460-615	16			
" 5283	130	" "	Forging stock	310 min	460-615	16			
" 5303	318	Ti-6Al-4V	Machining bar, annealed up to 150 mm	830 min	930-1160	8	25		
" 5313	318	"	Forging stock up to 150 mm	830 min	930-1160	8	25		
" 5333	550	Ti-4Al-4Mo-2Sn-½Si	Machining bar up to 100 mm	940 min	1080-1260	9	20		(0.1% TPS in 100h ((465 N/mm² at 400 C ((
" 5343	550	"	Forging stock up to 100 mm	"	"	"	"		
" 5353	550	"	Forging up to 100 mm	"	"	"	"		

APPENDIX 9.1. CORRELATION DATA COMPILED BY IMPERIAL METAL INDUSTRIES LTD.; COMPARING VARIOUS INTERNATIONAL STANDARDS WITH THE CORRESPONDING BRITISH STANDARDS, DTD SPECIFICATIONS, AND IMI ALLOY DESIGNATIONS[7]

CUSTOMER	SPECIFICATION NUMBER		IMI COMPOSITION	FORM
NATIONAL SPECIFICATIONS				
Ministry of Defence	DTD 5013B		115	Bar and billet
	DTD 5023C		130	Sheet and strip
	DTD 5043B		315	Bar and billet
	DTD 5213		680	Bar and billet
	DTD 5273	Superseding	130	Machining bar
	DTD 5283	DTD 5003	"	Forging stock
	DTD 5303		318	Machining bar ≤150mm (60 ksi UTS)
	DTD 5313		318	Forging stock
	DTD 5323		"	Forgings
	DTD 5333		550	Machining bar ≤100mm (70 ksi UTS)
	DTD 5343		"	Forging stock
	DTD 5353		"	Forgings
BRITISH STANDARDS (AEROSPACE SERIES)		Superseding		
	2TA 1	DTD 5033	115	Sheet and strip (annealed)
	2TA 2		125	Sheet and strip (")
	2TA 3		"	Machining bar (")
	2TA 4		"	Forging stock (")
	2TA 5		"	Forgings (")
	2TA 6		155	Sheet and strip (")
	2TA 7		160	Machining bar (")
	2TA 8		"	Forging stock (")
	2TA 9		"	Forgings (")
	2TA 10	DTD 5163	318	Sheet (")
	2TA 11	DTD 5173	"	Machining bar (")
	2TA 12	DTD 5173	"	Forging stock
	2TA 13		"	Forgings (annealed)
	TA 14	DTD 5093	317	Sheet (")
	TA 15	DTD 5083	"	Bar (")
	TA 16	DTD 5083	"	Forging stock (")
	TA 17		"	Forgings (")
	TA 18		679	Bar
	TA 19		"	Forging stock
	TA 20		"	Forgings
	2TA 21		230	Sheet (annealed)
	2TA 22		"	Bar (")
	2TA 23		"	Forging stock (")
	2TA 24	Superseding	"	Forgings (")
	TA 25		679	Bar
	TA 26		679	Forging stock
	TA 27		679	Forgings
	2TA 28		318	Bolt stock
	TA 38	DTD 5203	551	Bar FHT } Sections up
	TA 39	DTD 5203	"	Forging stock } to 25mm
	TA 40	DTD 5203	"	Bar FHT } Sections up
	TA 41	DTD 5203	"	Forging stock } to 75mm
	TA 42	DTD 5223	"	Forgings
	TA 43		685	Forging stock } 65mm LRS
	TA 44		"	Forgings }
	TA 45	TA 29 to TA 37	550	Bar FHT LRS 25mm
	TA 46		"	Bar FHT LRS 100mm
	TA 47		"	Forging stock " "
	TA 48		"	Forgings " "
	TA 49		"	Bar FHT LRS 150mm
	TA 50		"	Forging stock " "
	TA 51		"	Forgings " "
	TA 52	DTD 5233	230	Sheet, strip
	TA 53	DTD 5243	for	Machining bar
	TA 54	DTD 5253	STA	Forging stock
	TA 55	DTD 5263	condition	Forgings
(OTHERS)				
BS 3531 Part 1 Ti Metal Implants used For Bone Surgery	T 115, 125, 130, 155, 160, 318, 550 and 680		115, 125, 130, 155, 160, etc respectively	
BS CP 3003 Part 9 1970 Lining of Vessels and Equipment for Chemical Processes	Grade 1		115	
	" 2		125	
	" 3		130	
	" 4		155	
	" 5		160	
	Alloy T P 1		260	
Draft ISO Standards for Surgical Implants	Ductile Ti		115	
	Resilient Ti		155/160	
	Alloy		318	

APPENDIX 9.1. (Continued)

CUSTOMER	SPECIFICATION NUMBER	IMI COMPOSITION	FORM
NATIONAL SPECIFICATIONS			
FRANCE			
A.E.C.M.A.	Ti P.01 DRAFT	115	All forms
	Ti P.02 "	125	All forms
	Ti P.04 "	155/160	All forms
	Ti P.05 "	130	Rivet wire
	Ti P.11 "	230	All forms, annealed and FHT
	Ti P.62 "	314	Bar, Forgings
	Ti P.63 "	318	Bar, Forgings, annealed sheet
	Ti P.64 "	6-6-2	Bar, Forgings, annealed and FHT
	Ti P.65 "	317	All forms
	Ti P.66 "	8-1-1	All forms
	Ti P.67 "	685	Bar, Forgings
	Ti P.68 "	550	Bar, Forgings
	AIR 9182 (T35)	115	Sheet
	" (T40)	125	Sheet
	" (T50)	130	Sheet
	" (T60)	160	Sheet
	AIR 9183 (TA4M)	314	Rod, Bar and Forgings
	" (TA6V)	318	"
	AIR 9184 (TA4M)	314	Bolts
	" (TA6V)	318	"
NATIONAL SPECIFICATIONS			
GERMANY			
B.W.B. or LW	3.7024.1	115	Sheet, welding wire
	3.7034.1	125	Sheet, rod, forgings, welding wire
	3.7064.1	155/160	Sheet, rod, forgings
	3.7114 (Draft)	317	All forms
	3.7124 (Draft)	230	All forms
	3.7154 (Draft)	685	Bar, billet
	3.7164.1	318	Sheet, rod, forgings
	3.7164.7	318	Bolt stock
	3.7174	6-6-2	
	3.7184 (Draft)	550	Bar, billet
D.I.N.	17850	C.P	All grades
	17860	C.P	Sheet, strip, annealed, all grades
	17862	C.P	Bar annealed, all grades
	17863	C.P	Wire annealed, all grades
	17864	C.P	Forgings annealed, all grades
	3.7025	115	
	3.7035	125	
	3.7055	130	
	3.7065	155/160	
T.U.V.	230-1-68 Group I	115	Sheet and solid forms
	" II	125	"
	" III	130	"
	" IV	155/160	"

APPENDIX 9.1. (Continued)

CUSTOMER	SPECIFICATION NUMBER	IMI COMPOSITION	FORM
U.S. AERONAUTICAL MATERIAL SPECIFICATIONS	AMS 4900D	130	Sheet and strip
	" 4901E	155	" " "
	" 4902B	125	" " "
	" 4906	318	Continuously rolled sheet, annealed
	" 4907B	318 (ELI)	Sheet and strip
	" 4908B	Ti-8Mn	" "
	" 4909B	317 (ELI)	" " "
	" 4910F	317	" " "
	" 4911C	318	" " "
	" 4912A	Ti-4Al-3Mo-1V	Sheet and strip (SHT)
	" 4913A	Ti-4Al-3Mo-1V	" " (Fully H.T)
	" 4915B	8-1-1	Mill annealed sheet, strip & plate
	" 4916B	8-1-1	Duplex annealed sheet, strip & plate
	" 4917B	Ti-13V-11Cr-3Al	Sheet and strip (SHT)
	" 4918C	Ti-6Al-6V-2Sn	Sheet and strip
	" 4921B	160	Bars, forgings
	" 4923A	Ti-2Cr-2Fe-2Mo	" "
	" 4924B	317 (ELI)	Bars, forgings, rings
	" 4925B	314	Bars, forgings
	" 4926D	317	" "
	" 4927	Ti-5Cr-3Al	" "
	" 4928G	318	" "
	" 4929	Ti-5.4Al-1.4Cr-1.3Fe-1.25Mo	" "
	" 4930A	318 (ELI)	Bars, forgings, rings
	" 4935B	318	Bar, rod, shapes, extrusions annealed
	" 4936	6-6-2	Extrusions
	" 4941	125	Welded tubing
	" 4942	125	Seamless tubing
	" 4943	3Al-2.5V	Hydraulic tubing
	" 4951C	125	Wire, welding
	" 4953	317	" "
	" 4954B	318	" "
	" 4955	Ti-8-1-1	" "
	" 4956	318 (ELI)	Welding wire ELI
	" 4965B	318	Bars, forgings, STA
	" 4966D	317	Forgings and forging stock
	" 4967D	318	Forgings and forging stock for full Headin
	" 4968A	Ti-5Al-5Zr-5Sn	Bars, billets
	" 4969	Ti-5.4Al-1.4Cr-1.3Fe	Forgings
	" 4970C	Ti-7Al-4Mo	Bars, forgings, fully H.T
	" 4971A	Ti-6Al-6V-2Sn	Bars, forgings, annealed, heat treatable
	" 4972A	8-1-1	Bars and rings
	" 4973A	8-1-1	Forgings
	" 4974	679	Bars and forgings (A.C.aged)
	" 4975B	6-2-4-2	Bars STA
	" 4976	6-2-4-2	Forgings STA
	" 4977A	Beta III	Bars and wire
	" 4978A	6-6-2	Bars, forgings, rings, annealed
	" 4979	6-6-2	Bars, forgings, rings, STA
	" 4980A	Beta III	Bars and wire
U.S. MILITARY SPECIFICATIONS	Superseding		
MIL-T-9046F	Type 1A Class 5	125	Sheet, strip, plate
	" 1B Class 6	155	" " "
	" 1C Class 7	130	" " "
	" IIA Class 3	317	" " "
	" IIB	317 (ELI)	" " "
	" IIF	8Al-1Mo-1V	" " "
	" IIG	6Al-2Nb-1Ta-0.8Mo	" " "
	" IIIA Class 1	8Mn	" " "
	" IIIB	4Al-3Mo-1V	" " "
	" IIIC Class 2	318	" " "
	" IIID	318 (ELI)	" " "
	" IIIE	6Al-6V-2Sn	" " "
	" IIIG	6-2-4-2	" " "
	" IVA	13V-11Cr-3Al	" " "
MIL-T-9011		CP	Bar, forgings
MIL-T-14577		Various	"
MIL-T-46038		6-6-2	Bar, billet
MIL-T-46077		318	Bar, plate
OS-10737		318	Bar, billet, wire extrusions
MIL-T-9047E(General)	Comp 1 IA & I2	160	Bar, billet, forgings
MIL-T-9047F(USAF)	Comp 2 IIA & II2	317	" " "
	Comp 3 IIB & II3	317 (ELI)	" " "
	Comp 5 IID & II5	8-1-1	" " "
	Comp 6 IIIA & III6	318	" " "
	Comp 7 IIIB & III7	318 (ELI)	" " "
	Comp 8 IIIC & III8	6-6-2	" " "
	Comp 9 IIID & III9	7-4	" " "
	Comp 10 IIIG & III10	679	" " "
	Comp 11 IIII & III11	6-2-4-2	" " "
	Comp 12 IVA & IV12	13-11-3	" " "
	Comp 13 IV13	Beta III	" " "
	Comp 14	6-2-4-6	" " "

APPENDIX 9.1. (Continued)

CUSTOMER	SPECIFICATION NUMBER	IMI COMPOSITION	FORM
A.S.T.M. SPECS.	B.265-72 Grade 1	115	Sheet, strip, plate
	" " 2	125	" " "
(Note. ASME specs	" " 3	130	" " "
for the same products	" " 4	155	" " "
prefix the ASTM	" " 5	318	" " "
numbers with "S"	" " 6	317	" " "
e.g. SB265-71)	" " 7	260	" " "
SB337-65)	B.337-73 Grade 1	115	Seamless & welded unalloyed Ti pipe
	" " 2	125	
	" " 3	130	
	" " 4	160	
	" " 7)	260	
	" " 8)		
	B.338-73 Grade 1	115	Seamless & welded unalloyed Ti tubing
	" " 2	125	
	" " 3	130	
	" " 4	160	
	" " 7)	260	
	" " 8)		
	B.348-72 Grade 1	115	Bar and billet
	" " 2	125	
	" " 3	130	
	" " 4	160	
	" " 5	318	
	" " 6	317	
	" " 7	314	
	B.363-71		Fittings
	B.367.69	130/150	Castings C1-C4 C.P
	"	318	" C5 318
	"	317	" C6 317
	B.381-69 F1	115	Forgings C7A-8B Ti Pd
	" F2	125	"
	" F3	130	"
	" F4	160	"
	" F5	318	"
	" F6	317	"
	" F7	Ti-Pd	"
	" F8	6-6-2	"
	" F9	7Al-4Mo	"
	B.382-61T)		Welding rods and electrodes
	AWS A5 16.70)		
	F67-69 Grade 3	130	Surgical implants
	F67-69 Grade 4	160	" "
	F136-70 6/4 alloy	318 (ELI)	" "

APPENDIX 9.2. CORRELATION DATA COMPILED BY IMPERIAL METAL INDUSTRIES LTD.; SUMMARIZING APPLICATION AND USAGE PATTERNS FOR IMI TITANIUM AND TITANIUM ALLOYS[8]

SECTION A : GENERAL CHEMICAL PLANT : COMMERCIALLY PURE TITANIUM[8]

Environment	Type of Plant	Reason for Use
A1 Chlorine	Plate and tube-in-shell type heat exchangers, coils, valves, pumps, pipework and vessels. Noble metal coated titanium anodes.	Excellent corrosion resistance in wet chlorine and sodium chloride brine. Unique electrochemical properties.
A2 Chlorides : Sea water	Plate and tube-in-shell type heat exchangers in chemical plants and the oil industry. Marine and power station condensers, pumps, valves, super-cavitation propellers. Platinised titanium anodes for cathodic protection and electrodialysis. Desalination applications.	Unique corrosion and erosion resistance in pure and polluted sea water, even with high solids content.
A3 Chlorides : Metal chlorides	Plate and tube-in-shell type heat exchangers, vessels, pumps, valves, etc., in ferric chloride and other metal chlorides. heat exchangers, coils, baskets, jigs and pumps for nickel chloride plating. Sodium and calcium chloride brine evaporators and heat exchangers. Platinised titanium anodes.	Chemical and electro-chemical corrosion resistance.
A4 Oxidising acids : Nitric Acid	Plate and tube-in-shell type heat exchangers. vessels, pipework, valves, pumps and coolers.	Corrosion resistance in all concentrations, except red fuming, if titanium has an iron content less than 0.05%. Stainless steel is attacked by seawater and cupro-nickel by nitric acid; titanium resists both and is therefore ideal where seawater is used for cooling in nitric acid plants.
A5 Oxidising acids : Mixed nitric/sulphuric/ hydrochloric acid	Coils, tanks etc.	Corrosion resistant if nitric acid of high concentration.
A6 Oxidising acids Chromic acid	Plate and tube-in-shell type heat exchangers, vessels, coils, pumps, valves, jigs etc. Not recommended in fluoride catalysed chromium plating solutions.	Corrosion resistance
A7 Organic acids : acetic monochloracetic terephthallic propionic etc. and mixed organic acids	Vessels and all plant items.	Corrosion resistance, often at high temperatures.
A8 Reducing acids : Sulphuric acid	Coils, vessels, pumps and valves.	In very low concentration, or where inhibited by heavy metal ions, oxidising agents, or anodically protected.
A9 Reducing acids : Hydrochloric acid	Coils, vessels, pumps and valves.	In very low concentrations, or where inhibited by heavy metal ions, oxidising agents, or anodically protected.
A10 Reducing acids : Hydrobromic acid	Coils, vessels, pumps and valves.	When free bromine present in certain concentrations.
A11 Bleaching liquors : Hypochlorite Chlorine dioxide	Tanks, rollers and heating elements.	More corrosion resistant than stainless steel in paper pulp and textile bleaching plant.
A12 Urea	Complete plant in contact with urea and ammonium carbamate.	Corrosion resistance even at higher temperatures.
A13 Fertilisers/ Pesticides	Plant items.	Corrosion resistance in nitric acid/ ammonium nitrate and in complex organic pesticides and herbicides.
A14 Artificial fibres plants : e.g. Terylene) Spin Nylon) bath Rayon) liquors also cellophane production	Various plant items.	Corrosion resistance.
A15 Organic solvents : plain or mixed	Solvent recovery plant, heating applications.	Corrosion resistant, especially where chloride and traces of HCl contaminants as in dry cleaning and printing ink solvents.

APPENDIX 9.2. (Continued)

SECTION A : GENERAL CHEMICAL PLANT : COMMERCIALLY PURE TITANIUM (Continued)[8]

Environment	Type of Plant	Reason for Use
A16 Food industry : e.g. soups pickles organic juices cider etc.	Various plant items.	Corrosion resistant and prevents contamination of product.
A17 Nuclear chemical processing	Various plant.	Guaranteed corrosion resistance - nitric acid is commonly used. Low half life.
A18 Dyes	Vessels, coils and heat exchangers.	Corrosion resistance and avoidance of contamination. Use excluded where hydrochloric or sulphuric acid present.
A19 Carbon black production (sulphur based gases present)	Various plant.	Corrosion resistance.
A20 Sulphur Sulphur dioxide Sulphur trioxide	Gas scrubbers and reaction columns.	Corrosion resistance.
A21 Pharmaceutical products	Various plant. (there are also applications for zirconium)	Corrosion resistance and non-contamination of products. Wide spread use of hydrochloric and sulphuric acids limits applications.

SECTION B : GENERAL AND ENGINEERING APPLICATIONS : COMMERCIALLY PURE TITANIUM[8]

Environment	Type of Plant	Reason for Use
B1 Human body	Surgical implants.	Strength/weight ratio corrosion resistance, and non-toxicity.
B2 Corrosive gases e.g. Ammonia	Valve plates (Ti. 160, but more usually Ti 318)	Corrosion resistance.
B3 Various chemical plant	Centrifuges and instruments	Corrosion resistance, strength/ weight ratio.
B4 Sea water	Underwater weapons, yacht fittings, marine condensers, submersibles, fittings for mine-sweepers	Corrosion/erosion resistance, strength, non-magnetic properties.
B5 Plating solutions	Plate and tube-in-shell type heat exchangers, thermoplates, coils, jigs, baskets, tanks and pumps.	Electro-chemical corrosion resistance.
B6 Anodising solutions Polishing solutions	Jigs, coils and tanks	Electro-chemical corrosion resistance.
B7 Electronic equipment	Various parts such as getters, grid supports, vacuum ion pump components.	Non-magnetism and other electrical characteristics, plus affinity for oxygen.
B8 Armaments	Bullet proof vests and shields.	Mechanical properties.
B9 Sulphuric acid Steel pickling solutions	Zirconium coils Zirconium plate and tube-in-shell type heat exchangers.	Corrosion resistance.
B10 Miscellaneous	Fittings plant parts, press tools for chemicals, spray nozzles, filament spools and spindles, springs etc.	Corrosion resistance and strength.

APPENDIX 9.2. (Continued)

SECTION C : APPLICATIONS FOR TITANIUM ALLOYS IN CHEMICAL AND GENERAL ENGINEERING[8]

	Components	Reason for Use	IMI Titanium Alloy Grades
C1	Racing/sports car parts: connecting rods, suspension forgings, springs, nuts and bolts, etc.	High strength	(318 (550
C2	Valve plates	Corrosion resistance and strength	318
C3	Ultra centrifuges	High strength	(550 (680
C4	High speed pumps and propellers	Strength and corrosion/erosion resistance in seawater	318
C5	Steam turbine discs, blading, shroud bands, and facing wire	High strength	680 318
C6	Ultrasonic probes	Fatigue resistance, low density, and corrosion resistance	318
C7	Submersibles	High strength and corrosion resistance	318
C8	Miscellaneous high strength/ corrosion resistance applications in the chemical and allied industries		318
C9	Surgical implants	High strength and corrosion resistance	318

APPENDIX 9.2. (Continued)

SECTION D : APPLICATION FOR TITANIUM AND TITANIUM ALLOYS IN AEROSPACE ENGINEERING[8]

1. Unalloyed titanium and IMI 230 sheet are used in applications requiring cold or warm formability (temperatures up to about 350°C are commonly employed).
2. IMI alloy bar, billet, plate and sheet is used in applications requiring
   (a) High strength/weight ratio (IMI 230, 318, 550, 551,680)
   (b) Creep resistance at temperatures up to about 500°C (IMI 318, 550, 679, 685).

Typical components made from the various grades of titanium and its alloys are shown in the tables below:

Components	IMI Alloys Used
Aero Engines	
Fan discs, intermediate and high pressure compressor discs.	318 up to 325°C 550 up to 400°C 679 up to 450°C 685 up to 500°C
Fan blades, intermediate and high pressure compressor blades (stator and rotor)	315 318 550 679 685
Spacer rings, stub shafts, cones.	318 550 679 685
Engine casings and bypass ducts	Unalloyed titanium 230
Casing Rings	230 318
Engine inlet ducts, nose cones, cowlings, noise reduction linings.	Unalloyed titanium
Engine mounting brackets Pylon attachment brackets	318 550

Components	IMI Alloys Used
Airframes	
Firewalls, bulkheads, fuselage panels, wing fairings, de-icing and air conditioning ducts.	Unalloyed Titanium 230 318
Fuselage keel	230
Attachment brackets	318 550 551
Flap and slat tracks and associated brackets	550
Wing ribs, supports, brackets	318 550 551
Engine tunnel skins	318
Arrester hooks and brackets	318 550
Undercarriage components	550 551
Brake Components	318 550
Helicopter rotor heads, tail rotor shafts, brackets, engine support plates	318
Accessories and Fittings	
Pitot tube heads	Unalloyed Titanium
Refuelling probe attachments Hydraulic pump casings	551
Particle filter casings	230
Fasteners	230 318

APPENDIX 10. CORRELATION DATA COMPILED BY FRIED. KRUPP GMBH, KRUPP METALL-UND SCHMIEDEWERKE, ESSEN, WEST GERMANY; COMPARING VARIOUS INTERNATIONAL STANDARDS WITH KRUPP TIKRUTAN TITANIUM ALLOYS[21,23]

International Specifications for Commercially Pure Titanium Grades[21]

KRUPP Brand TIKRUTAN®	WEST GERMANY			U S A			Great Britain	France	GDR	USSR	Europe
	DIN	VdTüV	LW	ASTM	AMS	MIL-T	BS-TA	AIR	EMO	GOST	AECMA
RT 12	3.7025	Gr. I	3.7024	grade 1	–	–	–	T 35	Ti 110	VT 1-00	Ti-PO1
RT 12 Pd	(3.7030)[1]	Gr. I	–	–	–	–	–	–	–	–	–
RT 15	3.7035	Gr. II	3.7034	grade 2	4902 4941	9046, IA	2, 3, 4, 5	T 40	Ti 140	VT 1-0	Ti-PO2
RT 15 Pd	(3.7040)[1]	Gr. II	–	grade 7	–	–	–	–	–	–	–
RT 18	3.7055	Gr. III	–	grade 3	4900	9046, IC	–	T 50	–	VT 1-1	–
RT 18 Pd	(3.7056)[1]	Gr. III	–	grade 8	–	–	–	–	–	–	–
RT 20	3.7065	Gr. IV	3.7064	grade 4	4901 4921	9046, IB	6, 7, 8, 9	T 60	–	VT 1-2	Ti-PO4
RT 20 Pd	(3.7070)[1]	Gr. IV	–	–	–	–	–	–	–	–	–

[1] Proposed
VdTüV = Vereinigung Der Technischen Uberwachungsvereine Ev
(German Association for Technical Supervision)

International Specifications for Titanium Alloys[21]

KRUPP Brand TIKRUTAN	Designation	WEST GERMANY		U S A			Great Britain	France	USSR	Europe
		DIN	LW	ASTM	AMS	MIL-T	BS-TA	AIR	GOST	AECMA
LT 21	TiAl5Sn2,5	3.7115	3.7114	grade 6	4910, 4926 4966	9046, II A 9047,comp. 2	14, 15, 16	TA5E	VT5-1	Ti-P65
LT 22	TiAl8Mo1V1	–	3.7134	–	4915, 4916 4972, 4973	9046, II B 9047,comp 5	–	TA8DV	–	Ti-P66
LT 24	TiAl6Sn2Zr4Mo2	–	3.7144	–	4975, 4976	9046,III G 9047,comp.11	–	–	–	–
LT 25	TiCu2	–	3.7124	–	–	–	21, 22, 23, 24, 54, 55, 58	TU2	–	Ti-P11
LT 26	TiAl6Zr5MoSi	–	3.7154	–	–	–	43, 44	TA6ZD	–	Ti-P67
LT 31	TiAl6V4	3.7165	3.7164	grade 5	4906, 4911 4928, 4965	9046,III C 9047,comp. 6	10, 11, 12, 13, 56	TA6V	VT6S	Ti-P63
LT 32	TiAl7Mo4	–	–	–	4970	9047,comp. 9 9046,III E	–	TA7D	–	–
LT 33	TiAl6V6Sn2	–	3.7174	–	4918, 4971 4978, 4979	9047,comp. 8	–	TA6VE	–	Ti-P64
LT 34	TiAl4Mo4Sn2Si	–	3.7184	–	–	–	46, 47, 48, 49, 50, 51, 57	TA4DE	–	Ti-P68
LT 41	TiV13Cr11A13	–	–	–	4917	9046,IV A 9047,comp.12	–	–	–	

APPENDIX 10. (Continued)

Halbzeuge aus Titan und Titanlegierungen (Semiproducts made of Ti and Ti alloys)[23]

– Standard-Fertigungsprogramm –
(Program of Standard Fabrication)

Halbzeug-form (Semiproduct)	Art der Formgebung (Shaping Method)	KRUPP-Marke TIKRUTAN	Kurz-Bezeichnung (Brief Alloy Designation)	Norm-Bezeichnung (Standard Designation) Flieg-Werkstoff-Nr (Aircraft Material Number)	AECMA	Abmessungen (Dimensions)
Bleche (Sheet)	warmgewalzt (Hot Rolled)	RT 12 RT 15 RT 20 LT 25 LT 31	Ti99.8 Ti99.7 Ti99.5 TiCu2 TiAl6V4	3.7024 3.7034 3.7064 3.7124 3.7164	Ti–P01 Ti–P02 Ti–P04 Ti–P11 Ti–P63	(Minimum Sheet Thickness) min Blechdicke 1.5 mm 1.5 mm 1.5 mm 2.0 mm 1.0 mm Standardformat (Standard Sheet Size) 1000 x 2000 mm
	kaltgewalzt (Cold Rolled)	RT 12 RT 15 RT 20 LT 25	Ti99.8 Ti99.7 Ti99.5 TiCu2	3.7024 3.7034 3.7064 3.7124	Ti–P01 Ti–P02 Ti–P04 Ti–P11	(Minimum Sheet Thickness) min Blechdicke 0.4 mm Standardformat (Standard Sheet Size) 1000 x 2000 mm
Bänder (Band or Strip)	kaltgewalzt (Cold Rolled)	RT 12 RT 15 LT 25	Ti99.8 Ti99.7 TiCu2	3.7024 3.7034 3.7124	Ti–P01 Ti–P02 Ti–P11	(Minumum Band Thickness) min Banddicke 0.4 mm
Platten (Plate)	warmgewalzt (Hot Rolled)	RT 12 RT 15 RT 20	Ti99.8 Ti99.7 Ti99.5	3.7024 3.7034 3.7064	Ti–P01 Ti–P02 Ti–P04	(Maximum Size) max Format 2000 x 9000 mm
		LT 31 LT 33	TiAl6V4 TiAl6V6Sn2	3.7164 3.7174	Ti–P63 Ti–P64	(Maximum Width) max Breite 1300 mm
	geschmiedet (Forged)	LT 31 LT 33 LT 34	TiAl6V4 TiAl6V6Sn2 TiAl4Mo4Sn2	3.7164 3.7174 3.7184	Ti–P63 Ti–P64 Ti–P68	(Minimum Thickness) min Dicke 30 mm
Stäbe (Rod)	geschmiedet (Forged)	RT 12 RT 15 RT 20 LT 22 LT 25 LT 26 LT 31 LT 33 LT 34	Ti99.8 Ti99.7 Ti99.5 TiAl8Mo1V1 TiCu2 TiAl6Zr5MoSi TiAl6V4 TiAl6V6Sn2 TiAl4Mo4Sn2	3.7024 3.7034 3.7064 3.7134 3.7124 3.7154 3.7164 3.7174 3.7184	Ti–P01 Ti–P02 Ti–P04 Ti–P66 Ti–P11 Ti–P67 Ti–P63 Ti–P64 Ti–P68	(Diameter) Durchmesser 20 – 350 mm min Kantenlänge bei Flachstaben 20 mm (Minimum Edge Length, Wide Flat Bars) max Breite Dicke 8 1 (Maximum Width/Thickness)
	warmgewalzt, gezogen (Hot Rolled, Drawn)	RT 12 RT 15 RT 20 LT 22 LT 25 LT 31 LT 33	Ti99.8 Ti99.7 Ti99.5 TiAl8Mo1V1 TiCu2 TiAl6V4 TiAl6V6Sn2	3.7024 3.7034 3.7064 3.7134 3.7124 3.7164 3.7174	Ti–P01 Ti–P02 Ti–P04 Ti–P66 Ti–P11 Ti–P63 Ti–P64	(Diameter) Durchmesser 6 – 24 mm
Draht (Wire)	(Hot Rolled, Drawn) warmgewalzt, gezogen	RT 12 RT 15	Ti99.8 Ti99.7	3.7024 3.7034	Ti–P01 Ti–P02	(Diameter) Durchmesser 0.5 – 6.0 mm
Schmiede-stücke (Forging)	geschmiedet (Forged)	alle Qualitäten (All Types)				(Minimum Forged Thickness) Kleinste Schmiededicke 30 mm max Gewicht 3000 kg (Maximum Weight)
Ringe (Ring)	gewalzt (Rolled)	alle Qualitäten (All Types)				

APPENDIX 10.1. TABULAR DATA COMPILED BY KRUPP METALL-UND SCHMIEDEWERKE; SUMMARIZING CHEMICAL COMPOSITION, PHYSICAL AND MECHANICAL PROPERTIES OF THE KRUPP TIKRUTAN ALLOYS[20]

Table 1: Chemical Composition of Commercially Pure TIKRUTAN® Grades

Krupp Brand TIKRUTAN®	Code Nr. DIN[1])	Code Nr. Aircraft industry	Standards TA	Standards ASTM	Chemical composition in per cent by weight: Iron max.	Oxygen approx.	Nitrogen max	Carbon max.	Hydrogen max.	(Ti balance) (Palladium)
RT 12 (Pd)	3.7025	3.7024	–	Grade 1	0.20	0.10	0.05	0.08	0.013[2])	(0.15-0.25)
RT 15 (Pd)	3.7035	3.7034	TA 2-5	Grade 2	0.25	0.20	0.06	0.08	0.013[2])	(0.15-0.25)
RT 18 (Pd)	3.7055	–	–	Grade 3	0.30	0.25	0.06	0.10	0.013[2])	(0.15-0.25)
RT 20	3.7065	3.7064	TA 6-9	Grade 4	0.35	0.30	0.07	0.10	0.013[2])	–

[1]) In addition to the code numbers listed in the above table, we also supply titanium to meet various end-user requirements. A low Fe-content can be guaranteed for material exposed to particular chemical attack.

[2]) For sheet less than 2 mm thick and other semis less than 2 mm in diameter or comparable cross-section, hydrogen may be present in amounts up to 0.015 %.

Table 2: Physical Properties of Commercially Pure Titanium

Density	4.5 g/cm³	4.5 kg/dm³
Modulus of elasticity	11000 kp/mm²	10800 hbar
Modulus of rigidity	4500 kp/mm²	4400 hbar
Melting point	1700 °C	1975 K
Boiling point	3660 °C	3935 K
Transformation temperature (alpha/beta)	885 °C	1160 K
Crystal structure > 885 °C : > 1160 K < 885 °C : < 1160 K	Body-centered cubic hexagonal	
Heat of transformation	16 cal/g	67 kJ/kg
Thermal neutron-capture cross-section	5.8 barn	$5.8 \cdot 10^{-22}$ dm²
Specific heat at 15 °C/290 K	0.125 cal/g/°C	0.52 kJ/kg/K
Mean specific heat between 0 and 500 ° C/ 275–775 K	0.139 cal/g/°C	0.58 kJ/kg/K
Heat of fusion	100 cal/g	419 kJ/kg
Thermal conductivity at room temperature	0.04 cal/cm/s	17 J/m/s/K
Mean coefficient of linear thermal expansion between 20 and 200° C/295–475 K	$9.1 \cdot 10^{-6}$/°C	$9.1 \cdot 10^{-6}$/K
Electrical resistivity at 20 °C/295 K	0.50 Ω · mm²/m	0.50 μm · W/A²
Temperature coefficient of resistivity	$0.43 \cdot 10^{-2}$/°C	$0.43 \cdot 10^{-2}$/K
Magnetic properties	Paramagnetic	
Magnetic susceptibility	$3.4 \cdot 10^{-6}$ cm³/g	$3.4 \cdot 10^{-6}$ dm³/kg

Table 3: Mechanical Properties of Commercially Pure TIKRUTAN® Grades

KRUPP Brand TIKRUTAN®	Code No. DIN	Standards TA	Standards ASTM	Condition	0.2% proof stress min. hbar	Tensile strength hbar	Elongation min. % 1)	Elongation min. % 2)	Reduction of area min. % 2)	Brinell hardness 30 kg load approx.	DVM impact value A_V 3) min. J	Bend radius (105° bend) Gauges t ≤ 2 mm	Bend radius (105° bend) Gauges 2–5 mm
RT 12 (Pd)	3,7025,10	–	grade 1	annealed, free from scale	18	29-41	30	25	35	120	60	1 t	1.5 t
RT 15 (Pd)	3,7035,10	TA 2-5	grade 2		25	39-54	22	20	30	150	35	1.5 t	2 t
RT 15 (Pd)	3,7055,10	–	grade 3		32	46-59	18	16	30	170	25	2 t	2.5 t
RT 20	3,7065,10	TA 6-9	grade 4		39	54-74	16	15	25	200	20	2.5 t	3 t

1) Sheet and strip as well as 2) forgings and bar stock: transverse specimens
3) Notched-bar impact test is carried out from gauges above 5 mm

Table 4: Chemical Composition of TIKRUTAN® Alloys

KRUPP Brand TIKRUTAN®	Designation	Type of alloy	Chemical composition in per cent by weight (Ti balance) Interstitial elements Fe max.	O max.	H max.	N max.	C max.	Al	V	Substitutional elements Mo	Sn	Cr	Zr	Cu	Si
LT 21 1)	TiAl5Sn2.5	α	0.25	0.20	0.020	0.07	0.08	4.0–6.0	–	–	1.5–3.0	–	–	–	–
LT 22	TiAl8Mo1V1	$\alpha(+\beta)$	0.30	0.15	0.015	0.05	0.08	7.5–8.5	0.75–1.25	0.75–1.25	–	–	–	–	–
LT 23	TiAl5Sn5Zr5	α	0.15	0.12	0.015	0.03	0.04	4.5–5.5	–	–	4.3–5.3	–	4.7–5.7	–	–
LT 24	TiAl6Sn2Zr4Mo2	$\alpha(+\beta)$	0.25	0.12	0.015	0.05	0.05	5.5–6.5	–	1.8–2.2	1.8–2.2	–	3.6–4.4	–	–
LT 25	TiCu2	α	0.20	(0.20)	0.010	0.05	0.1	–	–	–	–	–	–	2–3	–
LT 26	TiAl6Zr5MoSi	$\alpha(+\beta)$	0.20	–	0.015	–	0.08	5.25–6.75	–	0.25–1.25	–	–	4.0–6.0	–	0.1–0.4
LT 31 1)	TiAl6V4	$\alpha+\beta$	0.25	0.20	0.013	0.07	0.08	5.5–6.5	3.5–4.5	–	–	–	–	–	–
LT 32	TiAl7Mo4	$\alpha+\beta$	0.25	0.20	0.013	0.07	0.08	6.5–7.3	–	3.5–4.5	–	–	–	–	–
LT 33	TiAl6V6Sn2	$\alpha+\beta$	0.35–1.0	0.20	0.015	0.04	0.05	5.0–6.0	5.0–6.0	–	1.5–2.5	–	–	–	–
LT 34	TiAl4Mo4Sn2	$\alpha+\beta$	0.2	–	0.015	–	0.08	3–5	–	3–5	1.5–2.5	–	–	–	0.3–0.7
LT 41	TiV13Cr11Al3	β	0.30	0.20	0.025	0.05	0.05	2.5–3.5	12.5–14.5	–	–	10–12	–	–	–

1) These alloys are made with low percentages of interstitial elements for special low-temperature applications.

APPENDIX 10.1. (Continued)

Table 5: Physical Properties of TIKRUTAN® Alloys

Characteristic	Unit	TIKRUTAN® Grade LT 21	LT 22	LT 23	LT 24	LT 25
Density	g/cm³ kg/dm³	4.46	4.37	4.59	4.55	4.56
Modulus of elasticity	kp/mm² hbar	11,700 11,500	13,800 13,500	11,200 11,000	11,600 11,400	11,500 11,300
Thermal conductivity at room temperature	cal/cm/s/°C J/m/s/K	$2.0 \cdot 10^{-2}$ 8.4	$1.5 \cdot 10^{-2}$ 6.3	$1.5 \cdot 10^{-2}$ 6.3	— —	$3.1 \cdot 10^{-2}$ 13
Mean coefficient of thermal expansion between 20 and 100 °C/293–373 K	m/m/°C m/m/K	$9.4 \cdot 10^{-6}$	$8.5 \cdot 10^{-6}$	$9.0 \cdot 10^{-6}$	$9.5 \cdot 10^{-6}$	$9.0 \cdot 10^{-6}$
Specific heat at 20° C/293 K	cal/g/° C kJ/kg/K	0.127 0.53	0.127 0.53	0.121 0.51	— —	— —
Phase type at room temperature		α	$\alpha(+\beta)$	α	$\alpha(+\beta)$	α
Transformation temperature (alpha + beta)/beta	°C K	1,020 1,295	1,040 1,315	990 1,265	990 1,265	880 1,155
Electrical resistivity	$\Omega \cdot mm^2/m$ $\mu m \cdot W/A^2$	1.57	2.0	—	—	0.65

Characteristic	Unit	TIKRUTAN® Grade LT 26	LT 31	LT 32	LT 33	LT 34
Density	g/cm³ kg/dm³	4.45	4.43	4.48	4.54	4.60
Modulus of elasticity	kp/mm² hbar	12,300 12,100	11,000 10,800	11,400 11,200	11,600 11,400	11,900 11,700
Thermal conductivity at room temperature	cal/cm/s/°C J/m/s/K	— —	$1.54 \cdot 10^{-2}$ 6.5	$1.53 \cdot 10^{-2}$ 6.4	$1.7 \cdot 10^{-2}$ 7.1	$1.8 \cdot 10^{-2}$ 7.5
Mean coefficient of thermal expansion between 20 and 100 °C/293–373 K	m/m/°C m/m/K	$10 \cdot 10^{-6}$	$8.6 \cdot 10^{-6}$	$8.85 \cdot 10^{-6}$	$9.4 \cdot 10^{-6}$	$8.8 \cdot 10^{-6}$
Specific heat at 20°C/293 K	cal/g/°C kJ/kg/K	— —	0.134 0.56	0.123 0.515	0.155 0.65	— —
Phase type at room temperature		$\alpha+\beta$	$\alpha+\beta$	$\alpha+\beta$	$\alpha+\beta$	$\alpha+\beta$
Transformation temperature (alpha + beta)/beta	°C K	1,030 1,305	980 1,255	1,010 1,285	945 1,220	975 1,250
Electrical resistivity	$\Omega \cdot mm^2/m$ $\mu m \cdot W/A^2$	1.57	1.66	1.75	1.57	1.58

Table 6: Mechanical Properties of TIKRUTAN® Alloys

KRUPP Brand	Code No.	Condition	Dimensions mm	0.2 % proof stress min	Tensile strength min hbar	Tensile strength max hbar	Elongation min %	Reduction of area min %
TIKRUTAN® LT 21[1] (TiAl5Sn2.5)	3.7114	annealed	0.4–5.0	78	83	–	10	–
		annealed	< 100	76	79	–	10	–
TIKRUTAN® LT 22 (TiAl8Mo1V1)		annealed	0.6–5.0	86	93	–	10	–
		annealed	< 65	82	89	–	10	20
TIKRUTAN® LT 23 (TiAl5Sn5Zr5)		annealed	35–100	76	82	–	10	25
TIKRUTAN® LT 24 (TiAl6Sn2Zr4Mo2)	3.7144	aged	< 80	83	90	–	8	25
TIKRUTAN® LT 25[2] (TiCu2)	3.7124	annealed	0.4–5.0	46	54	–	15	–
		annealed	< 80	40	54	–	16	35
		aged	0.4–5.0	55	69	–	10	–
		aged	< 80	54	65	–	10	30
TIKRUTAN® LT 26 (TiAl6Zr5MoSi)	3.7154	aged	< 65	85	99	–	6	15
TIKRUTAN® LT 31[3] (TiAl6V4)	3.7164	annealed	0.6–2.0	87	93	–	8	–
		annealed	2.0–5.0	87	93	–	10	–
		annealed	< 80	83	90	–	10	25
		annealed	< 160	83	90	–	8	20
		aged	< 12.5	107	114	–	8	20
TIKRUTAN® LT 32 (TiAl7Mo4)		annealed	< 100	92	99	–	10	20
		aged	< 25	103	118	–	10	20
TIKRUTAN® LT 33 (TiAl6V6Sn2)	3.7174	annealed	0.6–5.0	100	107	–	6	10
		annealed	< 100	93	100	–	8	–
		aged	< 25	117	124	–	6	15
TIKRUTAN® LT 34[4] (TiAl4Mo4Sn2)	3.7184	aged	< 25	96	110	128	9	20
		aged	25–100	92	105	122	9	20
		aged	100–150	87	100	120	9	20
TIKRUTAN® LT 41 (TiV13Cr11Al3)		annealed	< 6.5	82	89	–	10	20
		aged	< 6.5	117	131	–	4	10

[1] British Standards TA 14–TA 16
[2] British Standards TA 21–TA 24
[3] British Standards TA 10–TA 13
[4] British Standards TA 29–TA 37 (TA 45–TA 51)

All alloys can be supplied in accordance with official standards and specifications as well as customer specifications

APPENDIX 11. CORRELATION DATA COMPILED BY THYSSEN EDELSTAHLWERKE AG, TITANIUM DIVISION, (CONTIMET) KREFELD, WEST GERMANY; COMPARING VARIOUS INTERNATIONAL STANDARDS WITH THE CONTIMET BRAND OF TITANIUM ALLOYS[18]

Table 2 Specifications

CONTIMET® titanium and titanium alloys meet all international, national and customer specifications.

Grade (DIN Mat. No.)	Sheet, Strip Plate	Bars Forgings	Others
CONTIMET 30 (3.7025)	LW 3.7024 DIN 17 860 AICMA Ti-P 01 AIR 9182 T 35 VdTUV 230/I ASTM B 265 Gr. 1 DTD 5033	LW 3.7024 [4] DIN 17 862 [1] DIN 17 864 [2] VdTUV 230/I ASTM B 348 Gr. 1 [1] ASTM B 381 Gr. F 1 [2]	DIN 17 863 [3] VdTUV 230/I [5] ASTM B 337 Gr. 1 [6] ASTM B 382 ERTi [4] DTD 5073 [9]
CONTIMET 35 (3.7035)	LW 3.7034 DIN 17 860 AICMA Ti-P 02 AIR 9182 T 40 VdTUV 230/II ASTM B 265 Gr. 2 DTD 5023 AMS 4902 MIL-T-9046, I/A	LW 3.7034 DIN 17 862 [1] DIN 17 864 [2] AICMA Ti-P 02 VdTUV 230/II ASTM B 348 Gr. 2 [1] ASTM B 381 Gr. F 2 [2] DTD 5003 MIL-T-9047, 1	DIN 17 863 [3] VdTUV 230/II [5] ASTM B 337 Gr. 2 [6] ASTM B 382 ERTi [4] AMS 4953 [3] AMS 4941 [4] AMS 4942 [7]
CONTIMET 35D (3.7055)	DIN 17 860 AICMA Ti-P 03 AIR 9182 T 50 VdTUV 230/III ASTM B 265 Gr. 3 AMS 4900 MIL-T-9046, I/C	DIN 17 862 [1] DIN 17 864 [2] VdTUV 230/III ASTM B 348 Gr. 3 [1] ASTM B 381 Gr. F 3 [2] MIL-T-9047, 1	DIN 17 863 [3] VdTUV 230/III [5] ASTM B 337 Gr. 3 [6] ASTM B 382 ERTi [4]
CONTIMET 55 (3.7065)	LW 3.7064 DIN 17 860 AICMA Ti-P 04 AIR 9182 T 60 VdTUV 230/IV ASTM B 265 Gr. 4 DTD 5063 AMS 4901 MIL-T-9046, I/B BS TA 6	LW 3.7064 DIN 17 862 [1] DIN 17 864 [2] AICMA Ti-P 04 VdTUV 230/IV ASTM B 348 Gr. 4 ASTM B 381 Gr. F 4 [2] AMS 4921 MIL-T-9047, 1	DIN 17 863 [3] VdTUV 230/IV [5] ASTM B 337 Gr. 4 [6] ASTM B 382 ERTi [4]
CONTIMET Cu 2	LW 3.7124 [9] AICMA Ti-P 11 BS TA 21 DTD Spec. 5233	LW 3.7124 [9] AICMA Ti-P 11 BS TA 22/23/24 DTD 5243/5253/5262	
CONTIMET AlSn 52 (3.7115)	LW 3.7114 [9] ASTM B 265 Gr. 6 AMS 4910 MIL-T-9046, II/A	LW 3.7114 [9] ASTM B 348 Gr. 6 [1] ASTM B 381 Gr. F 6 [2] AMS 4926 [3] AMS 4966 [3] MIL-T-9047, 2	ASTM B 382 ERTi-5 Al-2.5 Sn [4] AMS 4953 [4]
CONTIMET AlMoV 8-1-1	AMS 4915 MIL-T-9046, II/E	AMS 4923 MIL-T-9047, 5	AMS 4955 [4]
CONTIMET 685		LW 3.7154 [9]	
CONTIMET AlSnZrMo 6-2-4-2	MIL-T-9046, III/G	MIL-T-9047, 11 AMS 4975 [3] LW 3.7144 [9]	
CONTIMET AlV 64 (3.7165)	LW 3.7164 AICMA Ti-P 63 ASTM B 265 Gr. 5 AMS 4911 MIL-T-9046, III/C BS TA 10	LW 3.7164 AICMA Ti-P 63 AIR 9183 ASTM B 348 Gr. 5 [1] ASTM B 381 Gr. F 5 [2] AMS 4928 MIL-T-9047, 6 BS TA 11/12/13	ASTM B 382 ERTi-6 Al-4 V [4] AMS 4954 [4] AMS 4935 [8] AMS 4967 [10]
CONTIMET AlMo 74		MIL-T-9047, 9 AMS 4970	
CONTIMET AlVSn 6-6-2	LW 3.7174 [9] AMS 4918 MIL-T-9046, III/E	LW 3.7174 [9] AMS 4971/4978 [2] MIL-T-9047, 8	AMS 4929 [10]
CONTIMET VCrAl 13-11-3	AMS 4917 MIL-T-9046, IV/A	MIL-T-9047, 12	
CONTIMET AlSn 52 ELI	MIL-T-9046, II/B AMS 4909	MIL-T-9047, 3 AMS 4924	
CONTIMET AlV 64 ELI	MIL-T-9046, III/D AMS 4907	MIL-T-9047, 7 AMS 4930	

1) Bars 2) Forgings 3) Plate over 5.0 mm thickness 4) Welding Rods 5) Wire 6) Tubes 7) Seamless Tubes 8) Extrusions 9) In preparation 10) Bars and Forgings, Heat Treatable

APPENDIX 11.1. TABULAR DATA COMPILED BY THYSSEN EDELSTAHLWERKE AG, TITANIUM DIVISION (CONTIMET); SUMMARIZING CHEMICAL COMPOSITION, PHYSICAL AND MECHANICAL PROPERTIES, CORROSION PROPERTIES, TYPICAL HEAT TREATMENTS, AND TYPICAL CHARACTERISTICS AND USAGE OF CONTIMET BRAND TITANIUM ALLOYS(18)

Table 1 CONTIMET Mill Products

Grade	Sheet and Strip	Plate	Bars	Wire	Forgings	Extrusions[1]	Seamless Tubes	Cold-Weld Tubes	Other Welded Tubes	Explosion-bonded Claddings[2]
CONTIMET 30	×	×	×	×	×	×	×	—	×	×
CONTIMET 35	×	×	×	×	×	×	×	×	×	—
CONTIMET 35 D	×	×	×	×	×	×	×	—	×	—
CONTIMET 55	×	×	×	×	×	×	× [3]	—	×	—
CONTIMET Pd 02/30	×	×	×	×	×	×	×	—	×	×
CONTIMET Pd 02/35	—	—	—	—	—	—	—	×	—	—
CONTIMET Pd 02/35 D	×	×	×	×	×	×	×	—	×	—
CONTIMET Cu 2	×	×	×	×	×	—	× [3]	—	×	—
CONTIMET AlSn 52	×	×	×	×	×	×	× [3]	—	—	—
CONTIMET AlMoV 8-1-1	×	×	×	×	×	×	× [3]	—	—	—
CONTIMET 685	—	—	×	—	×	—	—	—	—	—
CONTIMET AlSnZrMo 6-2-4-2	×	×	×	×	×	×	× [3]	—	—	—
CONTIMET AlV 64	×	×	×	×	×	×	× [3]	—	—	—
CONTIMET AlVSn 6-6-2	×	×	×	×	×	×	× [3]	—	—	—
CONTIMET AlSn 52 ELI	×	×	×	×	×	×	× [3]	—	—	—
CONTIMET AlV 64 ELI	×	×	×	×	×	×	× [3]	—	—	—

[1] *In cooperation with ITT Harper Inc., Morton Grove, ILL., USA*
[2] *Trade mark "Dynaplat", produced in cooperation with Dynamit Nobel AG, Troisdorf, West Germany*
[3] *90 to 220 mm o. d. and 6 mm minimum wall thickness*

Table 3 Chemical Composition

Unless specified otherwise, only the hydrogen content will be determined on the finished mill product. The analysis of the other elements is performed on the ingot.

Grade	Fe	C	N	O	H	Al	V	Others	Ti
	Maximum Content or Nominal Range in Weight Percent								
CONTIMET 30	0.20	0.08	0.05	(0.10)	0.0125[1]				Balance
CONTIMET 35	0.25	0.08	0.06	(0.20)	0.0125[1]				Balance
CONTIMET 35 D	0.30	0.10	0.06	(0.25)	0.0125[1]				Balance
CONTIMET 55	0.35	0.10	0.07	(0.30)	0.0125[1]				Balance
CONTIMET Pd 02/30	0.20	0.08	0.05	(0.10)	0.0125[1]			> 0.15 Pd	Balance
CONTIMET Pd 02/35	0.25	0.08	0.06	(0.20)	0.0125[1]			> 0.15 Pd	Balance
CONTIMET Pd 02/35 D	0.30	0.10	0.06	(0.25)	0.0125[1]			> 0.15 Pd	Balance
CONTIMET Cu 2	0.20	0.10	0.05	0.20	0.0100			2.0—3.0 Cu	Balance
CONTIMET AlSn 52	0.50	0.08	0.05	(0.30)	0.0200	4.5—5.75		2.0—3.0 Sn	Balance
CONTIMET AlMoV 8-1-1	0.30	0.08	0.05	0.12	0.0150	7.5—8.5	0.75—1.25	0.75—1.25 Mo	Balance
CONTIMET 685	0.20	0.08	0.05	0.15	0.0100	5.7—6.3		4.0—6.0 Zr 0.25—0.75 Mo 0.10—0.40 Si	Balance
CONTIMET AlSnZrMo 6-2-4-2	0.25	0.05	0.05	0.12	0.0125[2]	5.5—6.5		1.8—2.2 Sn 3.6—4.4 Zr 1.8—2.2 Mo	Balance
CONTIMET AlV 64	0.25	0.08	0.06	0.20	0.0150	5.5—6.75	3.5—4.5	3.0—3.6 Mo	Balance
CONTIMET AlMo Sn 4-4-2	0.20	0.08	0.05	0.25	0.0125	3.0—5.0		1.5—2.5 Sn	Balance
CONTIMET AlVSn 6-6-2	0.35—1.0	0.05	0.04	0.20	0.0125[2]	5.0—6.0	5.0—6.0	1.5—2.5 Sn 0.35—1.0 Cu	Balance
CONTIMET AlSn 52 ELI	0.15	0.08	0.05	0.12	0.0125	4.7—5.6		2.0—3.0 Sn	Balance
CONTIMET AlV 64 ELI	0.15	0.08	0.05	0.13	0.0125	5.5—6.75	3.5—4.5		Balance

[1] Sheet below 2 mm thickness and wire below 2 mm diameter max. 0.015 % H
[2] Sheet max. 0.015 % H
[3] Sheet below 0.81 mm thickness max. 0.010 % H

Table 4 Physical Properties

Typical Values

Grade	Coefficient of Linear Thermal Expansion between 20 and 400°C 10^{-6} °C	Specific Heat between 20 and 400°C kcal/kg · °C	Thermal Conductivity at 20°C cal/cm · s · °C	Specific Electrical Resistivity at 20°C ohms · mm²/m	Modulus of Elasticity at 20°C N/mm²	Density at 20°C kg/m³	Relative Magnetic Permeability at 20°C
CONTIMET 30	9.4	0.125	0.037	0.56	105 000	4505	
CONTIMET 35	9.4	0.125	0.039	0.57	105 000	4505	1.000178
CONTIMET 35 D	9.4	0.125	0.039	0.57	105 000	4505	1.000179
CONTIMET 55	9.4	0.129	0.040	0.60	105 000	4505	1.000174
CONTIMET Pd 02/30	9.4	0.125	0.037	0.56	105 000	4505	
CONTIMET Pd 02/35	9.4	0.125	0.039	0.57	105 000	4505	
CONTIMET Pd 02/35 D	9.4	0.125	0.039	0.57	105 000	4505	
CONTIMET Cu 2	9.3		0.031	0.66	105 000	4560	
CONTIMET AlSn 52	9.5	0.125	0.019	1.57	110 000	4480	1.000172
CONTIMET AlMoV 8-1-1	9.4	0.127	0.014	1.99	130 000	4370	
CONTIMET 685	9.8		0.010	1.67	120 000	4450	
CONTIMET AlSnZrMo 6-2-4-2	9.6	0.128	0.014	1.91	115 000	4540	
CONTIMET AlV 64	9.3	0.135	0.017	1.71	115 000	4430	1.000178
CONTIMET AlVSn 6-6-2	9.4	0.155	0.017	1.57	115 000	4540	
CONTIMET AlSn 52 ELI	9.5	0.125	0.017	1.71	110 000	4480	1.000172
CONTIMET AlV 64 ELI	9.3	0.135	0.017	1.71	115 000	4450	1.000178

1 kal = 6.90 N/mm²
****onfin² = 18.48 N/mm²***

Melting range between 1550 and 1700°C

Table 5 Guaranteed Mechanical Properties - Annealed - at 20° C

Grade	Ultimate Tensile Strength N/mm²		0.2 % Yield Strength N/mm²		Elongation %		Reduction of Area %	Hardness HB 10/3	Minimum Bend Radius 105° Sheet Thickness	
	Sheet[1]	Bars[2]	Sheet[1]	Bars[3]	Sheet[1]	Bars[2]	Bars[2]		≤ 2 mm	2.5 mm
CONTIMET 30	295 — 410		195		32	25	35	140	1.0	1.5
CONTIMET 35	395 — 540		275		22	20	30	180	1.5	2.0
CONTIMET 35 D	460 — 590		350		18	16	30	200	2.0	2.5
CONTIMET 55	540 — 735		440		16	15	30	220	2.5	3.0
CONTIMET Pd 02/30	295 — 410		195		32	25	35	140	1.0	1.5
CONTIMET Pd 02/35	395 — 540		275		22	20	30	180	1.5	2.0
CONTIMET Pd 02/35 D	460 — 590		350		18	16	30	200	2.0	2.5
CONTIMET Cu 2	540	540	450	400	15	16	35		2.0	
CONTIMET AlSn 52	930	830	760	795	10	10 L 8 T	20	320	4.0	4.5
CONTIMET AlMoV 8-1-1[4] CONTIMET 685[4]	930	900	830	830	10	10	20	310	4.0	4.5
CONTIMET AlSnZrMo 6-2-4-2	930	900	860	830	10	10	20		4.0	5.0
CONTIMET AlV 64	930	900	830	830	10	10	25 L 20 T	310	4.5	5.0
CONTIMET AlVSn 6-6-2	1070	1035	1000	965	10	10 L 8 T	20 L 15 T		4.0	4.5
CONTIMET Alsn 52 ELI	725	690	655	620	10	10	20	290	4.0	4.5
CONTIMET AlV 64 ELI	930	900	870	830	10	10	20	320	4.5	5.0

[1] Thickness 0.5 mm to 4 mm
[2] Up to 50 mm diameter. Longitudinal direction only, unless specified otherwise.
[3] Gauge length L_o = 50 mm or 4 D. Longitudinal direction only, unless specified otherwise.
[4] Duplex or triplex annealing
[5] Typical value
[6] No application in the annealed condition

APPENDIX 11.1. (Continued)

Table 5 (Continued)

CONTIMET AlMoSn 4-4-2 with following properties should be supplemented

Guaranteed minimum mechanical properties at RT in the STA condition (1H, 900 C/AC " 24H, 500 C/AC) are:

	BARS		PLATES	
from MM		25		5
to MM	25	100		65
Direction	L	L	L	L
UTS N/MM2	1100	1050	1030	1050
0,2YS N/MM2	960	920	900	920
EL 0/0	9	9	9	9
R of A0/0	25	20	20	20

Table 6 Tensile Properties - Annealed - at Elevated Temperatures

Typical Values

Grade	Ultimate Tensile Strength N/mm²					0.2% Yield Strength N/mm²					Elongation %				
Temperature in °C	20	100	200	300	350	20	100	200	300	350	20	100	200	300	350
CONTIMET 30	385	275	165	135	100	245	165	125	100	90	55	60	75	75	65
CONTIMET 35	450	365	245	165	125	315	245	155	120	90	35	48	62	65	60
CONTIMET 35 D	530	450	325	210	175	365	275	165	130	100	32	40	55	60	58
CONTIMET 55	665	550	365	235	195	560	440	235	165	145	27	25	40	50	48

Grade	Ultimate Tensile Strength N/mm²					0.2% Yield Strength N/mm²					Elongation %				
Temperature in °C	20	200	300	400	500	20	200	300	400	500	20	200	300	400	500
CONTIMET Cu 2	610	430	400	390	380	490	310	270	245	210	23	32	30	29	31
CONTIMET AlSn 53	935	725	645	540	490	835	590	500	420	390	12	15	15	15	18
CONTIMET AlMoV 8-1-1	980	825	765	705	620	910	670	610	550	490	15	15	17	17	19
CONTIMET AlSnZrMo 6-2-4-2	930	885	845	785	735	920	720	655	610	570	13	14	14	14	14
CONTIMET AlV 64	1000	775	715	640	590	920	640	610	550	440	14	17	17	17	23
CONTIMET AlV5n 6-6-2	1140	990	930	900		1060	865	785	755		13	13	13	13	
CONTIMET AlSn 52 ELI	805		540			715		410			16		20		
CONTIMET AlV 64 ELI	930		755			865		620			13		12		

1 ksi = 6.90 N/mm²
1 ton/in² = 15.45 N/mm²

Table 7 Tensile Properties - Solution Treated and Aged

Guaranteed Minimum for Bars at 20°C

Grade	Product	For Dimensions before mm	Ultimate Tensile Strength N/mm²	0.2% Yield Strength N/mm²	Elongation ($l_0 = 4D$) %	Reduction of Area %
CONTIMET Cu 2	Bars	80	650	540	10	30
CONTIMET Cu 2	Sheet	5	690	550	10	
CONTIMET 685	Bars	65	990	850	6	15
CONTIMET AlV 64	Bars	25	1100	1030	10	20
CONTIMET AlV5n 6-6-2	Bars	25	1240	1170	8	20
CONTIMET VCrAl 3-3-2	Bars	50	1170	1100	4	10

Typical Values at Elevated Temperatures

Grade	Ultimate Tensile Strength N/mm²					0.2% Yield Strength N/mm²					Elongation %				
Temperature in °C	20	200	300	400	500	20	200	300	400	500	20	200	300	400	500
CONTIMET Cu 2	795	685	655	590	490	635	500	490	410	360	24	27	25	26	32
CONTIMET 685	1010	845	785	735	700	890	710	645	600	520	10	13	15	18	19
CONTIMET AlV 64 [1]	1180	1000	910	855	735	1070	785	735	685	590	12	14	13	13	18
CONTIMET AlV5n 6-6-2 [1]	1315	1110	1000	795		1250	1060	940	735		9	9	9	10	

[1] Bars < 25 mm diameter

Table 7 (contd.)

Guaranteed Minimum at 20°C. Depending on Section Size

CONTIMET AlV 64

Thickness mm	Width mm	Ultimate Tensile Strength N/mm²	0.2% Yield Strength N/mm²	Elongation %	Reduction of Area %
12.5—25	< 100	1070	1000	10	20
"	100—200	1030	960	10	20
25—40	< 100	1030	960	10	20
"	100—200	1000	930	10	20
40—50	< 100	1000	930	10	20
"	100—200	960	890	10	20
50—75	< 100	935	875	10	20

CONTIMET AlV5n 6-6-2

Thickness as rolled or forged mm	Thickness as heat treated mm	Ultimate Tensile Strength N/mm²	0.2% Yield Strength N/mm²	Elongation % L	Elongation % T	Reduction of Area % L	Reduction of Area % T
< 25	< 25	1240	1170	8	6	20	15
25 — 50	< 25	1240	1170	8	6	20	15
"	25 — 50	1170	1100	8	6	20	15
50 — 75	< 25	1170	1100	8	6	20	15
"	25 — 50	1140	1070	8	6	20	15
"	50 — 75	1070	1000	8	6	20	15
75 —100	< 25	1140	1070	8	6	20	15
"	25 — 50	1100	1030	8	6	20	15
"	50 — 75	1070	1000	8	6	20	15
"	75 —100	1030	960	8	6	20	15

L = Longitudinal T = Transverse direction

1 ksi = 6.90 N/mm²
1 ton/in² = 15.45 N/mm²

APPENDIX 11.1. (Continued)

Table 8 Tensile Properties at Cryogenic Temperatures

Typical Values

Grade	Ultimate Tensile Strength N/mm²				0.2 % Yield Strength N/mm²				Elongation %			
Temperature in °C	+ 20	− 54	− 196	− 253	+ 20	− 54	− 196	− 253	+ 20	− 54	− 196	− 253
CONTIMET AlSn 52 ELI	805		1350	1580	715		1160	1420	16		16	15
CONTIMET AlV 64 ELI	930		1500	1810	865		1390	1710	13		13	6

Grade	Ratio Notched Tensile Strength : Ultimate Tensile Strength σ_{BK} / σ_B				Stress Concentration Factor α_k
Temperature in °C	+ 20	− 54	− 196	− 253	
CONTIMET AlSn 52 ELI	1.38		1.26	1.01	6.3
CONTIMET AlV 64 ELI	1.20		0.95	0.90	6.3

Table 9 Design Allowables for Pressure Vessels and Tubes

Preliminary values in N/mm² approved by VdTÜV (German Association for Technical Supervision). Design allowables for the temperature range of 250 to 350 °C should be agreed upon.

Load Time	10 000 hours						100 000 hours					
Temperature in °C	20	50	100	150	200	250	20	50	100	150	200	250
CONTIMET 35	245	220	175	165	155	120	215	190	155	145	135	110
CONTIMET 35 D	295	260	205	180	165	135	255	225	180	165	155	130
CONTIMET 55	325	280	220	195	180	155	285	245	196	175	165	135

Table 10 Creep Strength of Titanium Alloys

0.1 % — Creep Strength for 150 and 300 hours in N/mm²

Load Time	150 hours					300 hours				
Temperature in °C	350	400	450	500	550	350	400	450	500	550
CONTIMET AlMoV 8-1-1		(400)	305	185			390	280	165	
CONTIMET 685	530	490	460	404		520	480	450	370	
CONTIMET AlSnZrMo 6-2-4-2							490	380	245	60
CONTIMET AlV 64	490	255	110			450	225	95		

0.2 % — Creep Strength for 150 and 300 hours in N/mm²

Load Time	150 hours					300 hours				
Temperature in °C	350	400	450	500	550	350	400	450	500	550
CONTIMET AlSn 52	390	325	245	110		370	305	215	70	
CONTIMET AlMoV 8-1-1			370	255			345	255	205	
CONTIMET AlSnZrMo 6-2-4-2							490	440	295	145
CONTIMET AlV 64	600	345	165			550	305	135		

Table 11 Corrosion Resistance

Typical Values

Medium	Concentration %	Temperature in °C	Corrosion Rate mm per year
Commercially Pure Titanium			
Formaldehyde	100	150	nil
Acetic Acid	100	100	< 0.02
Aluminium Chloride	25	65	< 0.02
Ammonium Carbonate	50	120	nil
Aqua Regia	(1 : 3)	25	< 0.02
Benzene + traces of HCl, $NaCl$, CS_2	sat. liquid	80	< 0.02
Boric Acid	10	boiling	< 0.02
Chromic Gas, Wet [1]	—	75	< 0.02
Chromyl Chloride	1.3 g/l	80	< 0.02
Chromic Acid	50	65	< 0.2
Citric Acid	50	100	< 0.02
Cupric Chloride	25	100	< 0.02
Cuprous Chloride	10	90	< 0.02
Formaldehyde	37	boiling	< 0.02
Formic Acid, Aerated	85	100	< 0.02
Formic Acid, Non Aerated	25	100	2.5
Hydrochloric Acid, Aerated	5	20	< 0.02
Hydrochloric Acid, Aerated	5	60	< 0.1
Hydrochloric Acid, Aerated	2.5	35	< 0.1
Hydrochloric Acid + 0.5 % $CuSO_4$	10	38	< 0.02
Hydrochloric Acid + 0.5 % $CuSO_4$	10	90	0.1
Hydrochloric Acid + 0.5 % CrO_3	10	38	0.1
Ferric Chloride	20	boiling	< 0.02
Magnesium Chloride	42	boiling	nil
Mixed Acids: 10 % HCl + 0.2 % HNO_3	—	60	< 0.02
10 % HCl + 1 % HNO_3	—	90	0.1
10 % HCl + 10 % HNO_3	—	35	< 0.05
10 % HCl + 30 % HNO_3	—	65	0.5
10 % HCl + 20 % HNO_3	—	35	< 0.2
10 % HCl + 15 % HNO_3	—	35	< 0.2
10 % HCl + 0.25 % HNO_3	—	30	0.1
Nitric Acid, Aerated	10	100	< 0.02
Nitric Acid, Aerated	65	boiling	< 0.1
Nitric Acid, Non Aerated	98	20	< 0.02
Oxalic Acid	10	35	< 0.02
Phosphoric Acid	10	35	< 0.05

Medium	Concentration %	Temperature in °C	Corrosion Rate mm per year
Sea Water	—	boiling	nil
Sea Air	—	—	nil
Sodium Chloride	saturated	boiling	< 0.02
Sodium Chlorate	saturated	20	< 0.2
Sodium Hydroxide	45	15	< 0.02
Sodium Perchlorate	15	20	nil
Sulfuric Acid	5	20	< 0.05
Sulfuric Acid	10	20	< 0.1
Sulfuric Acid + 0.5 % $CuSO_4$	65	38	< 0.1
Sulfur Trioxide	4	25	< 0.02
Urea	75	190	< 0.2
Titanium Alloys CONTIMET Pd 02			
Acetic Acid (trichloro)	50	boiling	nil
Aluminium Chloride	25	boiling	< 0.05
Aqua Regia	—	20	nil
Aqua Regia	—	60	< 0.05
Calcium Chloride	42	150	nil
Citric Acid	50	boiling	nil
Formaldehyde	37	boiling	nil
Formic Acid, Non Aerated	25	boiling	nil
Formic Acid, Non Aerated	85	boiling	nil
Hydrochloric Acid, Aerated	5	boiling	0.5
Hydrochloric Acid, Aerated	10	20	0.05
Hydrochloric Acid, Aerated	20	35	0.44
Tartaric Acid	65	boiling	0.2
Oxalic Acid	10	65	0.1
Oxalic Acid	10	65	0.5
Phosphoric Acid	10	boiling	0.1
Phosphoric Acid	25	65	0.5
Phosphoric Acid	50	35	0.2
Sodium Chloride	10	108	0.05
Sodium Hydroxide (chloridized)	15	20	nil
Sulfuric Acid, Non Aerated	5	boiling	5.5
Sulfuric Acid, Non Aerated	10	boiling	1.5
Sulfuric Acid, Aerated	10	20	nil
Sulfuric Acid, Aerated	10	50	0.2
Sulfuric Acid, Aerated	25	20	nil
Sulfuric Acid, Aerated	25	65	0.2
Sulfuric Acid, Aerated	47	75	0.9

[1] Over 2.5 vol. % water vapour.

Table 12 Heat Treatment

Grade	Stress Relieving	Annealing Recrystallization	Solution Treating and Aging or Stabilize Annealing [1]
CONTIMET 30 CONTIMET 35 CONTIMET 35 D CONTIMET 55	120—15 mins, 480—650 °C AC	30—120 mins, 700±20 °C AC	
CONTIMET Pd 02 30 CONTIMET Pd 02 35 CONTIMET Pd 02 35 D	120—15 mins, 480—650 °C AC	30—120 mins, 700±20 °C AC	
CONTIMET Cu 2	30 mins, 600 °C AC	1—8 h, 800 °C AC	60 mins, 810 °C AC + 24 h, 400 °C + 8 h, 475 °C AC
CONTIMET AlSn 52	60—15 mins, 540—650 °C AC	240—15 mins, 700—840 °C AC	
CONTIMET AlMoV 8-1-1	60—15 mins, 600—700 °C AC	790 °C A	1 h, 925–1010 °C AC or WQ + 8 h, 595 °C AC [2]
CONTIMET 685	4—1 h, 480 °C—650 °C AC		15—60 mins, 1050 °C WQ + 24 h, 550 °C AC
CONTIMET AlSnZrMo 6-2-4-2	4—1 h, 480—650 °C AC	8—1 h, 700—840 °C AC	1 h, 925—955 °C AC + 8 h, 595 °C AC
CONTIMET AlV 64	4—1 h, 480—650 °C AC	8—1 h, 700—800 °C AC	60—15 mins, 820—840 °C WQ + 8—2 h, 480—650 °C AC
CONTIMET AlVSn 6-6-2	4—2 h, 480—600 °C AC	8—1 h, 650—730 °C AC	800—870 °C WQ + 8—2 h, 440—600 °C AC
CONTIMET AlSn 52 ELI	60—15 mins, 540—650 °C AC	240—15 mins, 700—800 °C AC	
CONTIMET AlV 64 ELI	6—4 h, 480—650 °C AC	8—1 h, 700—800 °C AC	not recommended

[1] We recommend to ask CONTIMET for optimum heat treatment conditions. AC = air cooling. WQ = water quenching. HQ = oil quenching.
[2] Stabilize Annealing.

APPENDIX 12. CORRELATION DATA COMPILED BY OTTO FUCHS METALLWERKE, WEST GERMANY; COMPARING VARIOUS INTERNATIONAL STANDARDS WITH THE OTTO FUCHS BRAND TITANIUM ALLOYS[25]

Fuchs Type designation	Grade	Corresponding Material Designations											
		Company Specification	LN	DIN	AICMA	AMS	MIL-T-9047 D	France AIR 9183	DTD	BS	Cuntimet	IMI	Krupp
T 2	Ti 99.5		3.7024	3.7025	Ti-P 01	–	–	T 35	–	TA 5	30	115	RT 12
T 3	Ti 99.4		3.7034	3.7035	Ti-P 02	4902	–	T 40	5003 B	TA 5	35	125	RT 15
T 6	Ti 99.2		3.7064	3.7065	Ti-P 04	4921 A	Comp I A	T 60	–	TA 9	55	160	RT 20
TP 02	Ti Pd 0.15		–	–	–	–	–	–	–	–	Pd 02	260	RT Pd
TA 52	Ti Al5 Sn2.5		3.7114	3.7115	–	4966 B	Comp II A	TA 5E	5083	–	AlSn52	317	LT 21
TC 2	Ti Cu2		–	–	–	–	–	–	5123	TA 24	–	230	LT 25
TA 64	Ti Al6 V4		3.7164	3.7165	Ti-P 63	4928 E	Comp III A	TA 6V	5173	TA 13	AlV64	318	LT 31
TA 44	Ti Al4 Mo4 Sn2		–	–	–	–	–	–	5153	TA 34	–	550	LT 34
TA 74	Ti Al7 Mo4		–	–	–	4970 A	Comp III D	–	–	–	AlMo74	–	LT 32
TA 66	Ti Al6 V6 Sn2		3.7174	–	Ti-P 64	4971	Comp III C	–	–	–	AlVSn662	–	LT 33

APPENDIX 12.1. TABULAR DATA COMPILED BY OTTO FUCHS METALLWERKE; SUMMARIZING CHEMICAL COMPOSITION, PHYSICAL AND MECHANICAL PROPERTIES OF OTTO FUCHS BRAND TITANIUM ALLOY CHARACTERISTICS[25]

Physical Properties		Pure Titanium	Titanium Alloys					
		T 2, T 3, T 6 (TP 02)	TA 52	TC 2	TA 64	TA 44	TA 74	TA 66
Density	p/cm³	4.5	4.46	4.56	4.43	4.60	4.48	4.54
Modulus of Elasticity	kp/mm²	11,000	11,700	11,000	11,000	11,700	11,400	11,600
Thermal Conductivity (room temperature)	cal/cm s °C	0.04	0.02	0.031	0.015	0.015	0.015	0.017
Coefficient of Thermal Expansion (20–100° C)	m/m ° C x 10^{-6}	9.1	9.4	9.02	8.8	8.8	8.85	8.85
Specific Heat	cal/g ° C	0.125	0.127	0.15	0.134	0.15	0.123	0.155
Specific Electrical Resistance	Ω mm²/m	0.5	1.57	0.75	1.66	1.65	1.75	1.57
Transformation Temperature	° C	885	1020	895	980	975	1040	945
Rupture Length σ_B/γ (thickness below 12 mm)	m min	665 – 1670	1800	1200	2260	2520	2660	2780
Magnetic Behaviour		Paramagnetic						

APPENDIX 12.1. (Continued)

Transverse Mechanical Properties in the Heat-Treated Condition (STA)

(The mechanical properties are greatly affected by the actual cross-section and size of the material particularly if it is in the heat-treated condition. In the case of large sections, heat-treatment response will be inadequate)

Fuchs Designation	Thickness (mm)	Width (mm)	Tensile Strength[1] σ_B min kp/mm²	Proof Stress[1] $\sigma_{0.2}$ min kp/mm²	Elongation[1] δ_5 min %	Reduction in Area[1] ψ min %
TC 2	–	–	88	54	8	20
TA 64	Up to 12	Below 200	112	105	6	15
	12 – 25	Below 100	108	102	6	15
	12 – 25	100 – 200	105	98	6	15
	25 – 37	Below 100	105	98	6	15
	25 – 37	100 – 200	102	95	6	15
	37 – 50	Below 100	102	95	6	15
	37 – 50	100 – 200	98	92	6	15
	50 – 75	Below 200	95	87	6	15
	75 – 100	Below 200	91	84	5	15
TA 44	Up to 75 mm		107 – 130	92	9	20
TA 74	Below 25		119	117	6	20
	25 – 50		112	105	6	20
	50 – 100		105	98	6	20
TA 86	Below 25		126	119	5	12
	25 – 50		119	112	5	12
	50 – 75		116	102	5	12
	75 – 100		112	98	5	12

Note: Where no German standards are available yet the above minimum values have been taken from MIL-T-9047 D. (The figures for TA 44 and TC 2 have been provided by the producers). For converting δ_5 to δ_4 elongation values, a correction factor of approx. 0.8 was used.

[1]) For conversion into "hbar", reduce the kp/mm² values by approx. 2 %.

[2]) For a comparison with the δ_4 elongation values normally used in the U.S.A., increase the δ_5 figures by approx. 20 %.

* Mean value.

A12.1-2

Fuchs Designation	Grade	Mechanical Properties in the Annealed Condition: Tensile Strength[1] σ_B kp/mm²	Proof Stress[1] $\sigma_{0.2}$ kp/mm²	Elongation[1] δ_5 %	Reduction in Area ψ %	Brinell Hardness (approx.) H_B kp/mm²	Characteristics
T 3	Ti 99.5	30 – 42	min. 20	min. 25	min. 35	min. 100	Good weldability, high corrosion resistance and excellent formability
T 3	Ti 99.4	40 – 55	min. 28	min. 20	min. 30	min. 140	Slightly higher strength. Otherwise as above
T 6	Ti 99.2	55 – 75	min. 45	min. 15	min. 30	min. 170	Moderate weldability, highest strength of all unalloyed titanium grades. Otherwise as above
TP 99	Ti Pd 0.15	min. 45	min. 35	min. 18	min. 30	min. 140	The addition of palladium to this alloy gives excellent resistance to the corrosive attack of hydrochloric acid and other reducing media
TA 52	Ti Al5 Sn2.5	min. 80	min. 77	min. 10	min. 20	min. 270	Weldable alpha alloy of medium strength. Good elevated temperature strength, high creep resistance in the 200-500° C range and moderate formability
TC 2	Ti Cu2	min. 55	min. 38	min. 18	min. 35		Weldable, heat-treatable alloy of medium strength. Excellent forgeability. After heat treatment, its properties are similar to those of TA 52 material
TA 64	Ti Al6 V4	min. 90	min. 84	min. 10	min. 20	min. 300	Most widely used heat-treatable, high-strength titanium alloy for all applications. Limited weldability, good forgeability
TA 44	Ti Al4 Mo4 Sn2	This alloy is only used in the heat-treated condition (refer to table below)					Mainly used for British aircraft projects
TA 74	Ti Al5 Mo5	min. 102	min. 95	min. 10	min. 20	min. 330	This alloy offers higher strength than TA 64, and rather large sections can be heat-treated. For new projects the use of TA 64 or TA 86 is recommended
TA 86	Ti Al6 V6 Sn2	min. 102	min. 95	min. 8	min. 15	min. 330	Premium strength alloy of good heat-treatment response. Max. rupture length and good forgeability

APPENDIX 13. TABULAR DATA COMPILED BY USSR; SUMMARIZING DETAILED CHEMICAL COMPOSITION OF THE SOVIET TITANIUM AND TITANIUM ALLOYS AND SOVIET TITANIUM SPONGE

(From the 1975 book, "The Use of Titanium in the National Economy")[85]

Chemical Composition of Wrought Titanium Alloys, OST1. 90013-71

Alloy Designation		Chemical Composition*, %																
		Alloying Elements,							Impurities, not more than									
Latin	Cyrillic	Al	Mn	Mo	V	Zr	Cr	Sn	Si	Fe	C	Fe	Si	Zr	O_2	N_2	H_2	Total Other Impurities
VT1-00	BT1-00	–	–	–	–	–	–	–	–	–	0.05	0.20	0.08	–	0.10	0.04	0.008	0.10
VT1-0	BT1-0	–	–	–	–	–	–	–	–	–	0.07	0.30	0.10	–	0.20	0.04	0.010	0.30
OT4-0	OT4-0	0.2-1.4	0.2 -1.3	–	–	–	–	–	–	–	0.10	0.30	0.15	0.30	0.15	0.05	0.012	0.30
OT4-1	OT4-1	1.0-2.5	0.7 -2.0	–	–	–	–	–	–	–	0.10	0.30	0.15	0.30	0.15	0.05	0.012	0.30
OT4	OT4	3.5-5.0	0.8 -2.0	–	–	–	–	–	–	–	0.10	0.30	0.15	0.30	0.15	0.05	0.012	0.30
VT5-1	BT5-1	4.0-6.0	–	–	–	–	–	2.0-3.0	–	–	0.10	0.30	0.15	0.30	0.15	0.05	0.015	0.30
VT5	BT5	4.3-6.2	–	–	–	–	–	–	–	–	0.10	0.30	0.15	0.30	0.30	0.05	0.015	0.30
VT6C	BT6C	5.0-6.5	–	–	3.5-4.5	–	–	–	–	–	0.08	0.25	0.15	0.30	0.15	0.05	0.015	0.30
VT6	BT6	5.5-7.0	–	–	4.2-6.0	–	–	–	–	–	0.10	0.30	0.15	–	0.20	0.05	0.015	0.30
VT3-1	BT3-1	5.5-7.0	–	2.0- 3.0	–	–	0.8- 2.3	–	0.15-0.40	0.2 -0.7	0.10	–	–	0.50	0.18	0.05	0.015	0.30
VT8	BT8	6.0-7.3	–	2.8- 3.8	–	–	–	–	0.20-0.40	–	0.10	0.30	–	0.50	0.15	0.05	0.015	0.30
VT9	BT9	5.8-7.0	–	2.8- 3.8	–	0.8-2.0	–	–	0.20-0.35	–	0.10	0.25	–	–	0.15	0.05	0.015	0.30
VT14	BT14	3.5-6.3	–	2.5- 3.8	0.9-1.9	–	–	–	–	–	0.10	0.30	0.15	0.30	0.15	0.05	0.015	0.30
VT15	BT15	2.3-3.6	–	6.8- 8.0	–	–	9.5-11.5	–	–	–	0.10	0.30	0.15	–	0.12	0.05	0.012	0.30
VT16	BT16	1.6-3.0	–	4.5- 5.5	4.0-5.0	–	–	–	–	–	0.10	0.25	0.15	0.30	0.15	0.05	0.015	0.30
VT20	BT20	5.5-7.5	–	0.5- 2.0	0.8-1.8	1.5-2.5	–	–	–	–	0.10	0.30	0.15	–	0.15	0.05	0.015	0.30
VT22	BT22	4.4-5.9	–	4.0- 5.5	4.0-5.5	–	0.5- 2.0	–	–	0.5 -1.5	0.10	–	0.15	0.30	0.20	0.05	0.015	0.30
AT3**	AT3	2.0-3.5	–	–	–	–	0.2- 0.5	–	0.2 -0.4	0.2 -0.5	as specified by purchaser							
AT6**	AT6	5.0-6.5	–	–	–	–	0.3- 0.9	–	0.2 -0.4	0.25-0.6								
4200**	4200	–	Pd 0.15-0.30	–	–	–	–	–			0.07	0.18	0.10	–	0.12	0.04	0.010	0.30
4201**	4201	–	–	31-35.0	–	–	–	–			0.10	0.25	0.10	0.30	0.12	0.04	0.012	–

Chemical Composition of Cast Titanium Alloys

Alloy Designation		Chemical Composition, %																	
		Alloying Elements,							Impurities, not more than										
Latin	Cyrillic	Al	Mn	Mo	V	Zr	Cr	Sn	Si	Fe	C	Fe	Si	Zr	W	O_2	N_2	H_2	Total Other Impurities
VT1L	BT1Л	–	–	–	–	–	–	–	–	–	0.15	0.3	0.15	–	0.20	0.20	0.05	0.015	0.3
VT5L	BT5Л	4.1-6.2	–	–	–	–	–	–	–	–	0.20	0.35	0.20	0.80	0.20	0.20	0.05	0.015	0.3
VT6L	BT6Л	5.0-6.5	–	–	3.5-4.5	–	–	–	–	–	0.10	0.3	0.15	0.30	0.20	0.15	0.05	0.015	0.3
VT3-1L	BT3-1Л	5.3-7.0	–	2.0-3.0	–	–	0.8-2.3	–	0.15-0.4	0.2-0.7	0.15	–	–	0.50	0.20	0.18	0.05	0.015	0.3
VT9L	BT9Л	5.6-7.0	–	2.8-3.8	–	0.8-2.0	–	–	0.20-0.35	–	0.15	0.30	–	–	0.20	0.15	0.05	0.015	0.3
VT14L	BT14Л	4.3-6.3	–	2.5-3.8	0.9-1.9	–	–	–	–	–	0.12	0.6	0.15	0.30	0.20	0.15	0.05	0.015	0.3

* Balance titanium.

** Chemical composition according to the literature.

APPENDIX 13. (Continued)

Chemical Composition of Sponge Titanium

Technical Standard	Titanium Sponge Designation		Chemical Composition, %							
				Impurities, not more than						
	Latin	Cyrillic	Ti	Fe	Si	Ni	C	Cl_2	N_2	O_2
GOST 17746-72	TG-90	ТГ-90	Balance	0.06	0.01	0.05	0.02	0.08	0.02	0.04
	TG-100	ТГ-100	"	0.07	0.02	0.05	0.03	0.08	0.02	0.04
	TG-110	ТГ-110	"	0.09	0.03	0.05	0.03	0.08	0.02	0.05
	TG-120	ТГ-120	"	0.11	0.03	0.05	0.04	0.08	0.03	0.06
	TG-130	ТГ-130	"	0.13	0.04	0.05	0.04	0.10	0.03	0.08
	TG-150	ТГ-150	"	0.2	0.04	0.05	0.05	0.12	0.04	0.10
	TG-TV	ТГ-ТВ	"	2.0	–	–	0.15	0.3	0.3	–
GOST 5,303-69	TG-100	ТГ-100	"	0.06	0.02	0.05	0.03	0.08	0.02	0.04
	TG-105	ТГ-105	"	0.07	0.02	0.05	0.03	0.08	0.02	0.05

ALLOY INDEX

(Alphanumeric by Alloy Designation)

ALLOY INDEX

The Alloy Index is the "key" to entering Table 1, which gives detailed information on each alloy. The Index shows the alloy designation and the index number where the alloy can be found in Table 1.

In a computer generated index the ordering may be different than one would ordinarily expect. For example, the use of a period, a hyphen or dash, or a blank space will change the mechanical ordering. See TA 44 through TA.58, page Index-7; T-A2M through T-60, page Index-9; and T3M through T 995, page Index-8.

ALLOY INDEX TO TABLE 1

ALLOY DESIGNATION	INDEX NO.
AB 102	814
AB 104	861
AB 105	955
AB 106	849
AB 203	566
AB 207	423
AB 209	650
AB 210	757
AECMA Ti P.05	257
AECMA Ti P.11	841
AECMA Ti P.63	662
AECMA Ti P.64	738
AECMA Ti P.65	505
AECMA Ti P.66	784
AECMA Ti P.67	572
AECMA Ti P.68	437
AIR-9182 (T40)	221
AIR-9182 (T50)	220
AIR-9182 (T60)	242
AIR-9182 (T35)	222
AIR-9183 (TA4M)	412
AIR-9183 (TA6V)	670
AIR-9184 (TA4M)	411
AIR-9184 (TA6V)	674
AK-3	316
Alloy	678
Allvac Ti-3-8-6-4-4	373
Allvac 13-11-3	388
Allvac 1-8-5*	294
Allvac 30	194
Allvac 3-2.5	366
Allvac 40+Pd	924
Allvac 40	102
Allvac 55	69
Allvac 5-2.5	544
Allvac 6-2-1.8	580
Allvac 6-2-4-2+Si*	609
Allvac 6-2-4-2	600
Allvac 6-2-4-6	614
Allvac 6-4	699
Allvac 6-4-3*	714
Allvac 6-6-2	739
Allvac 70	41
Allvac 8-1-1	793
Allvac 50	61
AlMoSn 4-4-2	430
AlMoV 8-1-1	783
AlMoV 8-1-1	803
AlMo 74	758
AlMo 74	761

ALLOY DESIGNATION	INDEX NO.
AlSnZrMo 6-2-4-2	611
AlSnZrMo 6-2-4-2	607
AlSn 52 ELI	509
AlSn 52	504
AlSn 52	512
AlVSn 6-6-2	567
AlV 64 ELI	634
AlV 64	679
AlV 64	680
AMS 4900D	83
AMS 4901E	51
AMS 4902B	127
AMS 4906	696
AMS 4907C	718
AMS 4908C	855
AMS 4909B	551
AMS 4910F	545
AMS 4911C	697
AMS 4912A	471
AMS 4913A	470
AMS 4915B	790
AMS 4916B	795
AMS 4917B	384
AMS 4918D	727
AMS 4921B	50
AMS 4923A*	860
AMS 4924B	550
AMS 4925B*	422
AMS 4926D	546
AMS 4927*	345
AMS 4928G	693
AMS 4929*	562
AMS 4930A	719
AMS 4934	695
AMS 4935C	694
AMS 4936	726
AMS 4941A	105
AMS 4942	104
AMS 4943	370
AMS 4944	368
AMS 4951C	2
AMS 4953	541
AMS 4954B	700
AMS 4955	799
AMS 4956	717
AMS 4965C	705
AMS 4966E	537
AMS 4967D	686
AMS 4968A*	499
AMS 4969*	563

ALLOY DESIGNATION	INDEX NO.
AMS 4970C	769
AMS 4971A	721
AMS 4972A	791
AMS 4973A	797
AMS 4974	327
AMS 4975B	601
AMS 4976	595
AMS 4977A	75
AMS 4978A	731
AMS 4979	722
AMS 4980A	872
AMS 4981	615
AMS 4982	811
AN5	857
Armco Beta 3*	866
Armco Ti-40	117
Armco Ti-5Al-2.5Sn*	521
Armco Ti-55*	78
Armco Ti-6Al-2Sn-4Zr-6Mo	619
Armco Ti-6Al-4V*	653
Armco Ti-6Al-6V-2Sn*	735
Armco Ti-70*	29
Armco Ti-8Al-1Mo-1V*	787
ASTM B265, Grade 10	869
ASTM B265, Grade 10	879
ASTM B265, Grade 11	888
ASTM B265, Grade 11	890
ASTM B265, Grade 1	133
ASTM B265, Grade 1	138
ASTM B265, Grade 2	110
ASTM B265, Grade 2	109
ASTM B265, Grade 3	63
ASTM B265, Grade 3	66
ASTM B265, Grade 4	46
ASTM B265, Grade 4	39
ASTM B265, Grade 5	687
ASTM B265, Grade 5	711
ASTM B265, Grade 6	533
ASTM B265, Grade 6	517
ASTM B265, Grade 7	893
ASTM B265, Grade 7	911
ASTM B299	282
ASTM B299, GP 1	283
ASTM B299, MD 120	285
ASTM B299, ML 120	284
ASTM B299, SL 120	286
ASTM B337, Grade 10	871
ASTM B337, Grade 10	874
ASTM B337, Grade 11	889
ASTM B337, Grade 11	887

* Noncurrent alloy.

ALLOY INDEX TO TABLE 1
(Continued)

ALLOY DESIGNATION	INDEX NO.
ASTM B337, Grade 1	135
ASTM B337, Grade 1	134
ASTM B337, Grade 2	99
ASTM B337, Grade 2	106
ASTM B337, Grade 3	75
ASTM B337, Grade 3	77
ASTM B337, Grade 7	905
ASTM B337, Grade 7	902
ASTM B337, Grade 9	365
ASTM B337, Grade 9	360
ASTM B338, Grade 10	868
ASTM B338, Grade 10	880
ASTM B338, Grade 11	913
ASTM B338, Grade 11	894
ASTM B338, Grade 1	132
ASTM B338, Grade 1	136
ASTM B338, Grade 2	100
ASTM B338, Grade 2	116
ASTM B338, Grade 3	72
ASTM B338, Grade 3	76
ASTM B338, Grade 7	898
ASTM B338, Grade 7	903
ASTM B338, Grade 9	363
ASTM B338, Grade 9	364
ASTM B348, Grade 10	877
ASTM B348, Grade 11	897
ASTM B348, Grade 1	139
ASTM B348, Grade 2	98
ASTM B348, Grade 3	67
ASTM B348, Grade 4	33
ASTM B348, Grade 5	692
ASTM B348, Grade 6	543
ASTM B348, Grade 7	901
ASTM B363, Grade WPT2	268
ASTM B363, Grade WPT2	264
ASTM B363, Grade WPT3	266
ASTM B363, Grade WPT3	269
ASTM B363, Grade WPT1	265
ASTM B363, Grade WPT1	267
ASTM B367, Grade C 1	143
ASTM B367, Grade C 1	142
ASTM B367, Grade C 2	123
ASTM B367, Grade C 2	122
ASTM B367, Grade C 3	84
ASTM B367, Grade C 3	82
ASTM B367, Grade C 4	48
ASTM B367, Grade C 4	49
ASTM B367, Grade C 5	712
ASTM B367, Grade C 5	713
ASTM B367, Grade C 6	552

ALLOY DESIGNATION	INDEX NO.
ASTM B367, Grade C-6	553
ASTM B367, Grade C 7A	925
ASTM B367, Grade C 7A	931
ASTM B367, Grade C 7B	930
ASTM B367, Grade C 7B	926
ASTM B367, Grade C 8A	927
ASTM B367, Grade C 8A	929
ASTM B367, Grade C 8B	932
ASTM B367, Grade C 8B	928
ASTM B381, Grade F 11	129
ASTM B381, Grade F 1	3
ASTM B381, Grade F 1	174
ASTM B381, Grade F 2	171
ASTM B381, Grade F 2	4
ASTM B381, Grade F 3	5
ASTM B381, Grade F 3	172
ASTM B381, Grade F 4	173
ASTM B381, Grade F 4	6
ASTM B381, Grade F 5	704
ASTM B381, Grade F 5	708
ASTM B381, Grade F 5	710
ASTM B381, Grade F 6	534
ASTM B381, Grade F 6	507
ASTM B381, Grade F 6	515
ASTM B381, Grade F 7	918
ASTM B381, Grade F 7	915
ASTM B381, Grade F 7	910
ASTM F136	631
ASTM F136	626
ASTM F67, Grade 3	40
ASTM F67, Grade 4	62
ATi Pd	934
ATi 24 Pd	921
ATi 24	151
ATi 30	137
ATi 35	108
ATi 45	209
ATi 45	190
ATN	304
AT1 1SV	176
AT1 2SV	175
AT2	305
AT2 1	956
AT2 2	858
AT2 3	957
AT2 4	959
AT3N	331
AT3V	401
AT3	399
AT3SV	358

ALLOY DESIGNATION	INDEX NO.
AT3 V	402
AT4	481
AT6	747
AT8	776
AT	477
AT 3 1	344
AT 3 2	343
AT 4 N	407
AT 4 S	408
AT-4 V	488
AT 6 V	754
AT 8 N	753
AT 9 S	755
Avesta ATi Pd	934
Avesta ATi 24 Pd	921
Avesta ATi 24	151
Avesta ATi 30	137
Avesta ATi 35	108
Avesta ATi 45	209
A 18	522
A 1	8
A 110AT	538
A 35	177
A 40	118
A 55	56
A-55	57
A 70	205
A 70	44
A 75	182
BA TA 25**	321
BA TA 26**	320
BA TA 27**	322
BA 2 TA 24	835
BA 2 TA 28	656
Beta III	878
Beta III	866
Blackwell's Titanium	17
BS CP 3003 Part 9, Grade 1	30
BS CP 3003 Part 9, Grade 2	27
BS CP 3003 Part 9, Grade 3	45
BS CP 3003 Part 9, Grade 4	31
BS CP 3003 Part 9, Grade 5	26
BS CP 3003 Part 9, TP 1	919
BS TA.10*	639
BS TA.11*	638
BS TA.12*	637
BS TA.13*	640
BS TA.14*	519
BS TA.15*	518
BS TA.16*	523

* Noncurrent alloy.

ALLOY INDEX TO TABLE 1
(Continued)

ALLOY DESIGNATION	INDEX NO.
BS TA.18**	325
BS TA.19**	324
BS TA.1*	165
BS TA.20**	323
BS TA.28*	641
BS TA.29*	452
BS TA.30*	431
BS TA.31*	432
BS TA.32*	435
BS TA.33*	440
BS TA.34*	443
BS TA.35*	444
BS TA.36*	445
BS TA.37*	442
BS TA.38	963
BS TA.39	962
BS TA.40	964
BS TA.41	965
BS TA.42	961
BS TA.43	569
BS TA.44	570
BS TA.45	449
BS TA.46	441
BS TA.47	439
BS TA.48	438
BS TA.49	434
BS TA.50	446
BS TA.51	436
BS TA.52	836
BS TA.53	839
BS TA.54	843
BS TA.55	846
BS TA.56	676
BS TA.57	448
BS TA.58	842
BS 2TA.10	666
BS 2TA.11	668
BS 2TA.12	667
BS 2TA.13	664
BS 2TA.1	158
BS 2TA.21	840
BS 2TA.22	837
BS 2TA.23	838
BS 2TA.2	157
BS 2TA.3	155
BS 2TA.4	156
BS 2TA.5	159
BS 2TA.6	162
BS 2TA.7	163
BS 2TA.8	161

ALLOY DESIGNATION	INDEX NO.
BS 2TA.9	160
BS 3531/1.5	52
BS 3531/1.5	36
B-120VCA	387
Carlson C-30/Pd	942
Carlson C 40/Pd	941
Carlson C-55/Pd	937
Carlson C 6Al-4V	675
Carlson 30	147
Carlson 40	112
Carlson 55	68
Carlson 70	47
Carpenter Titanium 6-4*	703
Carpenter Titanium 6-4*	660
Carpenter Titanium 6-6-2*	732
Carpenter Titanium 6-6-2*	723
CC Type	10
Commercial Purity	55
Commercial Purity	263
Commercial Purity	170
Commercial Purity	128
Commercial Purity	88
Contimet AlMoSn 4-4-2	430
Contimet AlMoV 8-1-1	783
Contimet AlMoV 8-1-1	803
Contimet AlMo 74*	758
Contimet AlMo 74*	761
Contimet AlSnZrMo 6-2-4-2	611
Contimet AlSnZrMo 6-2-4-2	607
Contimet AlSn 52 ELI	509
Contimet AlSn 52	504
Contimet AlSn 52	512
Contimet AlVSn 6-6-2	567
Contimet AlV 64 ELI	634
Contimet AlV 64	679
Contimet AlV 64	680
Contimet Cu 2	844
Contimet Cu 2	819
Contimet Pd 02/30	923
Contimet Pd 02/30	907
Contimet Pd 02/35D	920
Contimet Pd 02/35D	909
Contimet Pd 02/35	922
Contimet Pd 02/35	908
Contimet VCrAl 13-11-3	396
Contimet 30	125
Contimet 30	93
Contimet 35D	89
Contimet 35D	85
Contimet 35	92

ALLOY DESIGNATION	INDEX NO.
Contimet 35	95
Contimet 55	81
Contimet 55	58
Contimet 685	571
Contimet 685	575
CP 3003 Part 29, TP 1	919
CP 3003 P/9 Grade 4	31
CP 3003 P/9 Grade 5	26
CP 3003 P/9 Grade 1	30
CP 3003 P/9 Grade 2	27
CP 3003 P/9 Grade 3	45
Crucible A-110AT	538
Crucible A-40	118
Crucible A-55	56
Crucible A-70	205
Crucible A-70	44
Crucible Beta III	878
Crucible B 120VCA	387
Crucible C-110M	852
Crucible C-120AV	702
Crucible C-130AM	415
Crucible C-135AMO	770
Crucible TI 0.15Pd	906
Crucible 3Al-2.5V	362
Crucible 6Al-2Sn-4Zr-2Mo	603
Crucible 8Al-1Mo-1V	786
CSN 42 4655	969
CS Type	12
Cu 2	819
Cu 2	844
C 110M	852
C-120AV	702
C-130AM	415
C 135AMO	770
C 30	147
C 30/Pd	942
C 40	112
C 40/Pd	941
C 55	68
C-55/Pd	937
C 6Al-4V	675
C 70	47
Degussa Ti Powder	22
DIN 17850, 4 CP Grades	181
DIN 17851, TiAl5Sn2	506
DIN 17851, TiAl6V4	682
DIN 17860, TiAl5Sn2	528
DIN 17860, TiAl6V4	655
DIN 17860, 4 CP Grades	252
DIN 17862, TiAl5Sn2	527

* Noncurrent alloy.

ALLOY INDEX TO TABLE 1
(Continued)

ALLOY DESIGNATION	INDEX NO.
DIN 17862, TiAl6V4	658
DIN 17862, 4 CP Grades	251
DIN 17862, 4 CP Grades	179
DIN 17863, 4 CP Grades	180
DIN 17864, TiAl5Sn2	520
DIN 17864, TiAl6V4	651
DIN 17864, 4 CP Grades	178
DIN 3.7025	164
DIN 3.7030***	949
DIN 3.7035	152
DIN 3.7040***	946
DIN 3.7055	144
DIN 3.7056***	948
DIN 3.7065	126
DIN 3.7070***	947
DIN 3.7115	529
DIN 3.7165	659
DTD M159*	290
DTD M160*	289
DTD M200*	746
*DTD M201**	*612*
DTD 5003B*	146
DTD 5013B*	192
DTD 5023B*	150
DTD 5033B*	149
DTD 5043B*	310
DTD 5053*	420
DTD 5063A*	148
DTD 5073*	241
DTD 5083*	548
DTD 5093*	549
DTD 5103	456
DTD 5113	328
DTD 5123*	831
DTD 5133*	830
DTD 5143*	419
DTD 5153*	433
DTD 5163*	646
DTD 5173*	645
DTD 5183*	240
DTD 5193*	239
DTD 5203*	458
DTD 5213*	336
DTD 5223*	459
DTD 5233*	827
DTD 5243*	829
DTD 5253*	828
DTD 5263*	826
DTD 5273	271
DTD 5283	270
DTD 5303	649
DTD 5313	663
DTD 5333	450
DTD 5343	453
DTD 5353	447
Ductile Ti	212
Dynaplat Pd 02/03	914
Dynaplat 30	216
*Eltanit AB 102**	814
Eltanit AB 104*	861
Eltanit AB 105*	955
Eltanit AB 106*	849
Eltanit AB 203*	566
Eltanit AB 207*	423
Eltanit AB 209*	650
Eltanit AB 210*	757
Eltanit A 18*	522
Eltanit A 1*	8
EMO Ti 110	141
EMO Ti 140	153
EP 20-2	805
EP 90-10	817
EX-684	292
Fuchs TA 44	428
Fuchs TA 52	503
Fuchs TA 64	671
Fuchs TA 66	734
Fuchs TA 74	763
Fuchs TC 2	820
Fuchs TP 02	943
Fuchs T 2	119
Fuchs T 3	96
Fuchs T 6	79
Gr. NDA	145
HA 8116*	782
HA-Ti-0.15Pd*	900
HA-1940Pd*	899
HA-5158*	737
HA-7146*	762
HMH 55	121
HMH 75	28
Hylite 10*	20
Hylite 15H*	18
Hylite 15*	19
Hylite 1*	21
Hylite 20*	535
Hylite 25*	832
Hylite 30*	309
Hylite 40*	417
Hylite 45*	698
Hylite 48*	326
Hylite 50*	455
Hylite 51*	460
Hylite 55*	355
Hylite 60*	349
Hylite 65*	348
H Ti 18	169
H Ti 24	131
H Ti 72	166
IMI-EX-68*	292
IMI-115	195
IMI-125	113
IMI-130	215
IMI-130	270
IMI-130	271
IMI-155	201
IMI-160*	7
IMI-205*	881
IMI-230	833
IMI-260	944
IMI-261*	945
IMI-314*	416
IMI-315	308
IMI-317	536
IMI-318	707
IMI-318	649
IMI-318	663
IMI-550	447
IMI-550	450
IMI-550	453
IMI-550	454
IMI-551	461
IMI-679	319
IMI-680	338
IMI-684	744
IMI-685	574
IMI-700*	613
IMP-10	398
IMP-1	884
IMP-6-1	*847*
IMP-6-2	346
IMP-7	359
IMP-9	475
IRM1	405
IRM2	406
IRM3	427
IRM4	404
IRM5*	410
IRM6*	424
IRM7*	559

* Noncurrent alloy.

ALLOY INDEX TO TABLE 1
(Continued)

ALLOY DESIGNATION	INDEX NO.
IVT-1	350
JK 183 122	971
Koch-Light H Ti 18	169
Koch-Light H Ti 24	131
Koch-Light H Ti 72	166
Krupp 12	219
Krupp 15	243
Krupp 18S	224
KS 50	250
KS 70	249
LT 21 TiAl5Sn2.5	513
LT 22 TiAl8Mo1V1	789
LT 23 TiAl5Sn5Zr5	554
LT 24 TiAl6Sn2Zr4Mo2	606
LT 25 TiCu2	825
LT 26 TiAl6Zr5MoSi	588
LT 31 TiAl6V4	654
LT 32 TiAl7Mo4	768
LT 33 TiAl6V6Sn2	733
LT 34 TiAl4Mo4Sn2	451
LT 41 TiV13Cr11Al3	393
L 7001, Ti-99.5	120
L 7002, Ti-99.3	90
L 7003, Ti 99.2	59
L-7004, Ti-99.0	25
L 7021, Ti-99.3 Pd	891
L-7101, Ti-5Al-2.5Sn	502
L 7301, Ti-6Al-4V	665
L 7501, Ti-2.5Cu	845
L 7701, Ti-3Al-13V-11Cr	397
L.W. 3.7114	530
L.W. 3.7124	834
L.W. 3.7134	785
L.W. 3.7144	602
L.W. 3.7154	589
L.W. 3.7174	740
L.W. 3.7184	429
L.W. 3.7024 Werkstoff	235
L.W. 3.7034 Werkstoff	237
L.W. 3.7064 Werkstoff	236
L.W. 3.7164	683
MGMTS	856
MIL-F-83142 A, Composition 1	974
MIL-F-83142 A, Composition 2	989
MIL-F-83142 A, Composition 3	994
MIL-F-83142 A, Composition 4	998
MIL-F-83142 A, Composition 5	1027
MIL-F-83142 A, Composition 6	1002
MIL-F-83142 A, Composition 7	1008
MIL-F-83142 A, Composition 8	1073
MIL-F-83142 A, Composition 9	1023
MIL-F-83142 A, Composition 10	982
MIL-F-83142 A, Composition 11	1017
MIL-F-83142 A, Composition 12	985
MIL-F-83142 A, Composition 13	1032
MIL-R-81588, Type I, Composition A	
MIL-R-81588, Type I, Composition B	
MIL-R-81588, Type II, Composition A	991
MIL-R-81588, Type II, Composition B	997
MIL-R-81588, Type II, Composition C	1029
MIL-R-81588, Type II, Composition D	578, 1014
MIL-R-81588, Type III, Composition A	392, 1005
MIL-R-81588, Type III, Composition B	1010
MIL-R-81588, Type IV, Composition A	986
MIL-T-9046H, Type I, Composition A	115
MIL-T-9046H, Type I, Composition B	42
MIL-T-9046H, Type I, Composition C	74
MIL-T-9046H, Type II, Composition A	540
MIL-T-9046H, Type II, Composition B	624
MIL-T-9046H, Type II, Composition F	702
MIL-T-9046H, Type II, Composition G	581
MIL-T-9046H, Type III, Composition C	673
MIL-T-9046H, Type III, Composition D	630
MIL-T-9046H, Type III, Composition E	728
MIL-T-9046H, Type III, Composition G	608, 597
MIL-T-9046H, Type III, Composition H	632
MIL-T-9046H, Type IV, Composition A	391
MIL-T-9046H, Type IV, Composition B	870, 867
MIL-T-9046H, Type IV, Composition C	376, 377
MIL-T-9046H, Type IV, Composition D	381
MIL-T-9047E, Composition 1	972
MIL-T-9047E, Composition 2	987
MIL-T-9047E, Composition 3	992
MIL-T-9047E, Composition 5	1025
MIL-T-9047E, Composition 6	1000
MIL-T-9047E, Composition 7	1006
MIL-T-9047E, Composition 8	1011
MIL-T-9047E, Composition 9	1021
MIL-T-9047E, Composition 10	980
MIL-T-9047E, Composition 11	1015
MIL-T-9047E, Composition 12	983
MIL-T-9047E, Composition 13	1030
MIL-T-9047E, Composition 14	1019
MIL-T-009047F, Composition 1	973
MIL-T-009047F, Composition 2	988
MIL-T-009047F, Composition 3	993
MIL-T-009047F, Composition 5	1026
MIL-T-009047F, Composition 6	1001
MIL-T-009047F, Composition 7	1007
MIL-T-009047F, Composition 8	1011
MIL-T-009047F, Composition 9	1021
MIL-T-009047F, Composition 10	981
MIL-T-009047F, Composition 11	1016
MIL-T-009047F, Composition 12	984
MIL-T-009047F, Composition 13	1031
MIL-T-009047F, Composition 14	1020
MIL-T-13405C, Ti Powder	979
MIL-T-46035, ELI	1033
MIL-T-46035, LI	1034
MIL-T-46035, NI	1035
MIL-T-46038B, ELI	1036
MIL-T-46038B, LI	1037
MIL-T-46038B, NI	1038
MIL-T-46077B	999
MIL-T-81556, Type I, Composition A	
MIL-T-81556, Type I, Composition B	114
MIL-T-81556, Type I, Composition C	65, 977
MIL-T-81556, Type I, Composition D	43
MIL-T-81556, Type II, Composition A	531, 990
MIL-T-81556, Type II, Composition B	500, 996
MIL-T-81556, Type II, Composition C	796, 1028
MIL-T-81556, Type III, Composition A	690, 1003
MIL-T-81556, Type III, Composition B	627, 1009
MIL-T-81556, Type III, Composition C	724, 1014
MIL-T-81556, Type III, Composition D	578, 1024
MIL-T-81915, Type I, Composition A	976
MIL-T-81915, Type II, Composition A	995
MIL-T-81915, Type III, Composition A	1004
MIL-T-81915, Type III, Composition B	1018
MMA-1940	231
MMA-1942	904
MMA-1950	230
MMA-1970	229
MMA-3138	367
MMA-5137	525
MMA-5158	737
MMA-6246	617
MMA-6510	672
MMA-7146	762
MMA-8116	782
MMA-9744	605
MST Alloys* (See RMI List)	967
MST 881	804
M.D. 301	86
M.D. 68	15
OMC Ti-3Al-2.5V	354
OMC Ti-40	103
OMC Ti-5Al-2.5V	516
OMC Ti-6Al-2Sn-4Zr-2Mo	599
OMC Ti-6Al-4V	684

* Noncurrent alloy.

ALLOY INDEX TO TABLE 1
(Continued)

ALLOY DESIGNATION	INDEX NO.
OMC Ti-6Al-6V-2Sn	725
OMC Ti-7Al-4Mo	767
OMC Ti-8Al-1Mo-1V	800
OMC-Pd	933
OMC-Ti-1Al-8V-5Fe*	296
OMC-Ti-11Sn-5Zr-2.5Al-1Mo-0.25Si	334
OMC-Ti-11	584
OMC-Ti-11.5Mo-6Zr-4.5Sn	865
OMC-Ti-13V-11Cr-3Al	390
OMC-Ti-17	498
OMC-Ti-2Al-11V-2Sn-11Zr	315
OMC-Ti-2Cu*	821
OMC-Ti-3Al-8V-6Cr-4Mo-4Zr*	378
OMC-Ti-4Al-3Mo-1V*	465
OMC-Ti-5Al-1.5Cr-1.5Fe-1Mo*	493
OMC-Ti-5Al-2Zr-2Sn-4Mo-4Cr	498
OMC-Ti-5Al-2.75Cr-1.25Fe	490
OMC-Ti-5Al-5Sn-5Zr*	555
OMC-Ti-5Al-6Sn-2Zr-1Mo-0.25Si	494
OMC-Ti-6Al-2Cb-1Ta-0.8Mo	582
OMC-Ti-6Al-2Sn-1.5Zr-1Mo-0.35Bi-0.2Si	584
OMC-Ti-6Al-2Sn-4Zr-2Mo-Si0.2	610
OMC-Ti-6Al-2Sn-4Zr-6Mo	618
OMC-Ti-6Al-2Zr-2Sn-2Mo-2Cr-0.25Si	592
OMC-Ti-679	334
OMC-Ti-7Al-12Zr*	775
OMC-Ti-8Al-2Cb-1Ta*	778
OMC-Ti-8Mn*	848
OMC-Ti-8Mo-8V-2Fe-3Al*	379
OMC-VCA	386
OMC-VCA	390
OMC-103 (Casting)	935
OMC-105 (Casting)	34
OMC-164B (Casting)	689
OMC-166A (Casting)	508
OMC-55	64
ON 42 4656	970
OMC-70	37
OT4	347
OT4	341
OT4-K	307
OT4-0	293
OT4-1	301
OT4-1	306
OT4-2	743
OT5	330
Pd 02/03	907
Pd 02/30	923
Pd 02/35D	920
Pd 02/35D	909

ALLOY DESIGNATION	INDEX NO.
Pd 02/35	908
Pd 02/35	922
PI	274
PKHM3 TG	277
Pure Titanium	9
Republic RS-100*	299
Republic RS-110A*	851
Republic RS-110B*	333
Republic RS-110C*	479
Republic RS-110*	816
Republic RS-115*	463
Republic RS-120A*	661
Republic RS-120*	850
Republic RS-130*	418
Republic RS-135*	771
Republic RS-135*	760
Republic RS-140X*	489
Republic RS-140X*	491
Republic RS-40*	107
Republic RS-55*	73
Republic RS-6Al-4V*	681
Republic RS-70*	32
Republic RS-811X*	780
Resilient Ti	210
RMI 02Pd	892
RMI 0.2Pd	288
RMI 1Al-8V-5Fe	295
RMI 13V-11Cr-3Al	383
RMI 2Cu	822
RMI 3Al-2.5V	352
RMI 3Al-8V-6Cr-4Mo-4Zr	374
RMI 38-6-44	374
RMI 4Al-3Mo-1V	472
RMI 40	101
RMI 5Al-2.5Sn	542
RMI 5Al-5Sn-2Zr-2Mo-Si	496
RMI 55	71
RMI 6Al-2Cb-1Ta-0.8Mo	579
RMI 6Al-2Sn-2Zr-2Mo-2Cr+Si	593
RMI 6Al-2Sn-4Zr-2Mo	594
RMI 6Al-2Sn-4Zr-6Mo	616
RMI 6Al-4V	688
RMI 6Al-6V-2Sn	730
RMI 62222S	593
RMI 7Al-12Zr	773
RMI 7Al-4Mo	764
RMI 70	35
RMI 8Al-1Mo-1V	794
RMI 8Mn	853
RMI 6Al-2Cb-1Ta-1Mo	577

ALLOY DESIGNATION	INDEX NO.
RS-100*	299
RS-110A*	851
RS-110B*	333
RS-110C*	479
RS-110*	816
RS-115*	463
RS-120A*	661
RS-120	850
RS-130	418
RS-135	771
RS-135*	760
RS-140X*	491
RS-140X*	489
RS-40*	107
RS-55*	73
RS-6Al-4V*	681
RS-70*	32
RS-811X*	780
RT 12(Pd)	940
RT 15(Pd)	939
RT 18(Pd)	936
RT 20	211
Sandvik Titanium 20	1
Sandvik Titanium 9	193
ST-40	248
ST-50	247
ST-60	246
ST-70	245
ST-80	244
TAV13Ca	385
TA2M	311
TA3V2.5	371
TA3V	361
TA4DE	457
TA4D3V	469
TA4M	412
TA4M	414
TA4M	421
TA4M	411
TA5E L Grade	511
TA5E	510
TA5E	547
TA6AZ5W	745
TA6V4K3	715
TA6V6Sn2	742
TA6V	643
TA6V	670
TA6V	674
TA6V	685
TA6ZDE	596

* Noncurrent alloy.

ALLOY INDEX TO TABLE 1
(Continued)

ALLOY DESIGNATION	INDEX NO.
TA6ZD	573
TA6Zr4DE	598
TA6Zr5D	576
TA6ZW	561
TA6Z5D	587
TA7D	766
TA70	759
TA8DV	798
TA8DV	788
TA8DV	781
TA 44	428
TA 52	503
TA 64	671
TA 66	734
TA 74	763
TA 10*	639
TA 11*	638
TA 12*	637
TA 13*	640
TA 14*	519
TA 15*	518
TA 16*	523
TA 17*	524
TA 18**	325
TA 19**	324
TA 1**	165
TA 20**	323
TA 25	321
TA 26	320
TA 27	322
TA 28*	641
TA 29*	452
TA 30*	431
TA 31*	432
TA 32*	435
TA 33*	440
TA 34*	443
TA 35*	444
TA 36*	445
TA 37*	442
TA 38	963
TA 39	962
TA 40	964
TA 41	965
TA 42	961
TA 43	569
TA 44	570
TA 45	449
TA 46	441
TA 47	439

ALLOY DESIGNATION	INDEX NO.
TA 48	438
TA 49	434
TA 50	446
TA 51	436
TA 52	836
TA 53	839
TA 54	843
TA 55	846
TA 56	676
TA 57	448
TA 58	842
TC 2	820
TC	824
TD12ZrE	873
TEL-Ti-6Al-4V	701
TE11DA	337
TG-00	154
TG-0	280
TG-1000P	281
TG-1050P	279
TG-110	278
TG-1130P	276
TG-118	275
TG-130	273
TG-140	258
TG-155	259
TG-170	262
TG-190	261
TG-1-3	272
TG-2	87
TiAl5Sn2	520
TiAl5Sn2	506
TiAl6V4	682
TiAl6V4	655
TiAl6V4	658
TiAl6Vr	651
Tikrutan LT 21	513
Tikrutan LT 22	789
Tikrutan LT 23	554
Tikrutan LT 24	606
Tikrutan LT 25	825
Tikrutan LT 26	588
Tikrutan LT 31	654
Tikrutan LT 32	768
Tikrutan LT 33	733
Tikrutan LT 34	451
Tikrutan LT 41	393
Tikrutan RT 12(Pd)	940
Tikrutan RT 15(Pd)	939
Tikrutan RT 18(Pd)	936

ALLOY DESIGNATION	INDEX NO.
Tikrutan RT 20	211
TIL 100 Grade 2A	203
TIL 100 Grade 3	200
TIL 100 Grade 3	202
TIL 110 Grade 6	526
TIL 110 Grade 5	657
TIL 120 Grade 8	938
Ti-13V-11Cr-3Al	357
Titanium EP 20-2	805
Titanium EP 90-10	817
Titanium GR, NDA	145
Titanium Hydride Powder	287
Titanium Powder Grade CC	13
Titanium Powder Grade Z	14
Titanium 1Al-9V-5Fe	295
Titanium 20	1
Titanium 6Al-4V ELI	968
Titanium 6Al-4V	966
Titanium 6-4	703
Titanium 6-6-2	723
Titanium 9	193
Titanium	17
Titanium	54
Titanium-AA	124
Titanium-A	53
Titanium-115	195
Titanium-125	113
Titanium-130	215
Titanium-155	201
Titanium-160	7
Titanium-205*	881
Titanium-230*	833
Titanium-314*	416
Titanium-315	308
Titanium-317	536
Titanium-318	707
Titanium-550	454
Titanium-551	461
Titanium-679	319
Titanium-680	338
Titanium-684	744
Titanium-685*	574
Titanium-700*	613
TITECH 0.2Pd	912
Ti P.01	238
Ti P.02	233
Ti P.04	234
Ti P.05	257
Ti P.11	841
Ti P.62	421

* Noncurrent alloy.

ALLOY INDEX TO TABLE 1
(Continued)

ALLOY DESIGNATION	INDEX NO.
Ti P.63	662
Ti P.64	738
Ti P.65	505
Ti P.66	784
Ti P.67	572
Ti P.68	437
Ti-Al	342
Ti-Al-V	636
Ti-Brush 120-AM	413
Ti-Brush 40	217
Ti-Brush 50	809
Ti-Brush 65A	303
Ti-CO	813
Ti-LOY 90	677
Ti-LOY 92	514
Ti-LOY 99	16
Ti-Mo	884
Ti-Ni	886
Ti-P7	951
Ti-V	958
Ti-Zr	808
Ti-Zr-Fe-Mo	863
Ti-0.15Pd	950
Ti-0.20Pd	895
Ti-1Al-8V-5Fe*	296
Ti-100A	23
Ti-11	585
Ti-11.5Mo-6Zr-4.5Sn	865
Ti-13V-11Cr-3Al	386
Ti-13V-11Cr-3Al	389
Ti-140A*	859
Ti-150A*	815
Ti-155A*	565
Ti-17	497
Ti-2Al-11V-2Sn-11Zr	315
Ti-2Cu*	821
Ti-2Ni	885
Ti-20Cr	818
Ti-20Nb-10Ta	810
Ti-260	944
Ti-261	945
Ti-3Al-2.5V	369
Ti-3Al-8V-6Cr-4Mo-4Zr*	378
Ti-30Al-10Nb	806
Ti-35Al	807
Ti-35A	130
Ti-4Al-3Mo-1V*	474
Ti-4Al-3Mo-1V*	465
Ti-45-A*	208
Ti-5Al-1.5Cr-1.5Fe-1Mo*	493

ALLOY DESIGNATION	INDEX NO.
Ti-5Al-2.5Sn ELI	501
Ti-5Al-2.5Sn	539
Ti-5Al-2.5Sn	521
Ti-5Al-2.5Sn-2.5V-1Cb-1T	558
Ti-5Al-2.75Cr-1.25Fe	490
Ti-5Al-4FeCr	487
Ti-5Al-5Sn-5Zr*	556
Ti-5Al-5Sn-5Zr*	555
Ti-5Al-6Sn-2Zr-Mo-Si	495
Ti-5Al-6Sn-2Zr-1Mo	494
Ti-50A	97
Ti-55	78
Ti-55-A*	218
Ti-6Al-2Cb-1Ta-0.8Mo	583
Ti-6Al-2Cb-1Ta-0.8Mo	582
Ti-6Al-2Mo-2Sn-2Zr-2Cr-Si	592
Ti-6Al-2Sn-4Zr-2Mo	620
Ti-6Al-2Sn-4Zr-2Mo-Si	610
Ti-6Al-2Sn-4Zr-6Mo	618
Ti-6Al-2Sn-4Zr-6Mo	621
Ti-6Al-2Sn-6Mo-4Zr	619
Ti-6Al-4V ELI	628
Ti-6Al-4V ELI	629
Ti-6Al-4V	691
Ti-6Al-4V	652
Ti-6Al-4V	653
Ti-6Al-4V-3Co	716
Ti-6Al-6V-2Sn	729
Ti-6Al-6V-2Sn	735
Ti-6Co	812
Ti-65A	70
Ti-679	318
Ti-6.5-Al-2Cb-1Ta	748
Ti-7Al-12Zr	774
Ti-7Al-12Zr*	775
Ti-7Al-2Cb-1Ta	752
Ti-7Al-4Mo	765
Ti-70	29
Ti-75A	24
Ti-8Al-1Mo-1V	801
Ti-8Al-1Mo-1V	787
Ti-8Al-10V	802
Ti-8Al-2Cb-1Ta	779
Ti-8Al-2Cb-1Ta*	778
Ti-8Mn	854
Ti-8Mn*	848
Ti-8Mo-8V-2Fe-3Al	382
Ti-8Mo-8V-2Fe-3Al*	379
Ti-8Si	952
TP99	260

ALLOY DESIGNATION	INDEX NO.
TP-02	943
Transage 129(Experiment)	314
TS1	356
TS2	462
TS5	557
TS6	372
TTC 20B Casting	191
TTC 22B Casting	896
TTC 23 Investment Casting	635
TTC 30B Casting	644
TTC 31B Casting	642
TTC 33A Casting	648
TTC 34 Casting	647
TUV 230-1-68 Group III	91
TUV 230-1-68 Group II	94
TUV 230-1-68 Group IV	80
TUV 230-1-68 Group I	140
TU2	823
Type A-35	177
Type A-55	57
Type A-75	182
T3M*	862
T35	222
T35	225
T35	197
T35-02	916
140R	223
T40	221
T40	199
T40	228
T443*	395
T50	220
T50	232
T50	227
T60	226
T60	242
T60	204
T6242	604
T651A	586
T662	736
T684	960
T685	568
T713*	312
T 2	119
T 3	96
T 6	79
T 992	254
T 993	253
T 994	255
T 995	256

* Noncurrent alloy.

ALLOY INDEX TO TABLE 1
(Continued)

ALLOY DESIGNATION	INDEX NO.
T-A2M	311
T-A3V2.5	371
T-A4DE2	38
T-A4DE	457
T-A4D3V	469
T-A4M	414
T-A5E	547
T-A6Ve2Zr6	623
T-A6Ve	741
T-A6V4K3	715
T-A6V4	669
T-A6V6E2Zr	622
T-A6V	685
T-A6ZDE	596
T-A6ZD	573
T-A6Zr4DE	598
T-A6Zr5D	576
T-A6ZW	561
T-A6Z5D	587
T-A6Z5W	745
T-A7DE	756
T-A7	766
T-A8DV	788
T-D11Zr6E4	876
T-D8C6DZRA	375
T-E11DA	337
T-H3V2.5	353
T-U2	823
T-V13CA	385
T-V13-C11A	394
T-35	225
T-40	228
T-50	227
T-60	226
Ugine 35	198
Ugine 40	111
Ugine 50	60
UTA3V	361
UTA5E L Grade	511
UTA5E	510
UTA6V6Sn2	742
UTA6V	643
UTA7D	759
UTA8DV	781
UTA8DV	798
UTC	824
UT35	197
UT35.02	916
UT40R (Special Rivet Gr.)	223
UT40	199

ALLOY DESIGNATION	INDEX NO.
UT50	232
UT60	204
UT6242	604
UT651A	586
UT662	736
UT684	960
UT685	568
VCrAl 13-11-3	396
Ventron Pure Titanium	9
Ventron 88393, 65-35	807
Ventron 88394, 60-30-10	806
Ventron 88395, 90-6-4	652
Ventron 88396, 80-20	818
Ventron 88397, 94-6	812
Ventron 88398, 70-20-10	810
Ventron 88399, 92-8	952
VTL-1	486
VT1D-1	188
VT1L	213
VT12	426
VT13	425
VT14L	473
VT14M	480
VT14	467
VT14	468
VT14(A)	464
VT14(B)	466
VT14-1	313
VT15M	339
VT15	351
VT16	340
VT18	777
VT1	214
VT1-100	168
VT1-0	167
VT1-1	189
VT1-2	187
VT20	751
VT21L	625
VT22	560
VT2	298
VT3	482
VT3	492
VT3-1L	590
VT3-1	591
VT4	409
VT5D	485
VT5L	484
VT5	483
VT5-1	532

ALLOY DESIGNATION	INDEX NO.
VT6L	720
VT6S	706
VT6	709
VT7	291
VT8	772
VT9L	749
VT9	750
VT 1D	206
VT 1D-2	207
VT 10	564
W 35A	186
W 50A	185
W 65A	183
W 80A	184
Z Type	11
1T	378
120 AM	413
12	219
13-11-33	388
15	243
18S	224
2TA 10	666
2TA 11	668
2TA 12	667
2TA 13	664
2TA 1	158
2TA 21	840
2TA 22	837
2TA 23	838
2TA 24	835
2TA 28	656
2TA.2	157
2TA.3	155
2TA.4	156
2TA.5	159
2TA.6	162
2TA.7	163
2TA.8	161
2TA.9	160
2T	335
3Al-2.5V	362
3T	302
30	93
30	125
35D	85
35D	89
35	198
35	95
35	92
3-2.5	366

• Noncurrent alloy.

ALLOY INDEX TO TABLE 1
(Continued)

ALLOY DESIGNATION	INDEX NO.
4T	300
40	111
4200	917
4201	883
4203	882
4204	953
48T7*	317
48-OT3	403
48 T2*	329
48 T3*	400
48 T4*	476
48 T5*	478
48 T6*	954
5T*	297
50	60
555	81
55	58
6Al-2Sn-4Zr-2Mo	603
65A	303
685	575
685	571
6-6-2	739
8Al-1Mo-1V	786

* Noncurrent alloy.

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