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Thermophysical Properties of High Temperature Solid Materials

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C. Y. Lee	*Vapor Pressure, Density, and Heats of Transformation*
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Thermophysical Properties of High Temperature Solid Materials

VOLUME 3: FERROUS ALLOYS

Thermophysical Properties Research Center
PURDUE UNIVERSITY

Y. S. Touloukian, EDITOR

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PREFACE

The phenomenal growth of science and technology since the early forties has brought about a universal appreciation of the fact that present limitations in many technical developments are often a direct result of the paucity of knowledge on the properties of materials. Engineering developments in the years ahead will be closely linked to the research that is done today to contribute to a better understanding of the properties of matter, of which thermophysical properties constitute a major segment.

With a realization of the seriousness of this situation, a great deal of research effort has been made in recent years on the thermophysical properties of materials with the result that the volume of research literature has increased many fold. In spite of this fact, it is generally agreed that the present level of research on thermophysical properties still falls substantially short of existing needs and anticipated future demands. However, what is even more disturbing is the fact that engineering groups across the nation are using no more than a fraction of the information already available, either because it is in a form not directly useful to them or, often, because its existence is not generally known.

To partially remedy this situation concerning the thermophysical properties of high temperature materials, the Materials Laboratory of the U.S. Air Force at Wright-Patterson Air Force Base sponsored a project in 1957 to bring together a large portion of the then available data in a single work for easy reference. From this compilation, performed by the Armour Research Foundation, a four-volume work entitled *Handbook of Thermophysical Properties of Solid Materials* emerged. It was first published in 1960 as WADC TR58-476; in 1961 it was issued as a hard-bound set by The Macmillan Company.

Because of the favorable reception given to this original work, the Materials Laboratory of the U.S. Air Force requested the Thermophysical Properties Research Center (TPRC), in 1964, to update and revise this reference work in order to increase its usefulness and to put it on a more current basis. The present six-volume work, entitled *Thermophysical Properties of High Temperature Solid Materials*, consists of nine books totaling more than 8,500 pages. It is the result of a two-year project by TPRC. This new encyclopedic reference work cannot be called a revised edition of the earlier publication since nearly every page has been changed through major additions, corrections, and re-evaluation. An effort was made to adhere to the basic format of the earlier work. However, the organization of the material and the index to materials have been completely redesigned for greater ease in locating the information desired.

Inevitably, not all of the properties covered have received the same degree of attention. The material on thermal radiative properties, thermal diffusivity, and specific heat has been totally revised and rewritten. Materials on the coefficient of thermal expansion and thermal conductivity have received major revisions, and those on electrical resistivity, density, and melting point have had moderate revisions. Finally, lesser revisions were made to data concerning vapor pressure and heats of transformation. The new information incorporated into the work covered research conducted primarily during the years 1957 to 1964, although some major references are included from 1965 and some from as far back as 1910.

In processing the large amount of new and old data incorporated in these volumes, it was necessary that some degree of selectivity be exercised both from the standpoint of the references cited and the data extracted from them. It is hoped, however, that no major source of information has been omitted. Whenever possible, an effort was made to suggest recommended values of the properties. In the plots, recommended values are indicated by curves. It should be clear, however, that the designation of "recommended values" in no way implies that a critical analysis has been performed in all cases, nor does it suggest that they represent definitive values. Because most of the materials covered are not well-defined engineering materials, and because there is often a great paucity of information, any critical evaluation of these data is most difficult—if not impossible.

With a full appreciation of these inherent difficulties it is nevertheless hoped that the present compendia will prove to be of great usefulness to engineers seeking information on thermophysical properties. In spite of the extreme care exercised in processing the data and proofing the manuscript, it is possible that some errors might have been inadvertently overlooked. Should any instance of such oversight be uncovered, the Editor would be most indebted if it is brought to his attention.

The fact that such an enormous undertaking could be accomplished in such a short time is attributable primarily to TPRC's unique resources in the area of thermophysical properties information. Grateful acknowledgment is made to the Electronic Properties Information Center for assistance in providing bibliographic searches on electrical resistivity and to the Air Force Materials Laboratory for general assistance in bibliographic information. Extensive personal inquiries were made to the authors of research papers and reports requesting clarification and original data. The enthusiastic response to these inquiries (in the majority of the cases) is also gratefully acknowledged. The Editor and the contributing staff wish to give a special note of thanks in acknowledging the valuable assistance and cooperation they received individually and collectively from TPRC's Scientific Documentation Division personnel and the supporting staff of graphics and technical typists without whose painstaking and skillful contributions this work would not have been possible.

This work was performed under Contract No. AF33(615)1642, sponsored by the Air Force Materials Laboratory, Research and Technology Division, Air Force Systems Command, Wright-Patterson Air Force Base, Ohio. The personnel directly affiliated with this program were Mr. D. A. Shinn, Chief, Materials Information Branch; Mr. E. Dugger, Technical Manager, Information Processing; and Mr. J. H. Charlesworth, engineer in charge of this project. Their understanding cooperation has contributed much to the success of the program.

It is sincerely hoped that *Thermophysical Properties of High Temperature Solid Materials* will constitute an even more valuable contribution to technology than its predecessor. This work should prove to be an invaluable source of information on an important group of properties of materials to every engineer, providing him with reliable information of a scope that would be impossible for any one individual to master. If we have been able to approach these goals, the results will be highly gratifying.

June 1966

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EXPLANATORY TEXT

1. SCOPE OF COVERAGE

Thermophysical Properties of High Temperature Solid Materials comprises six volumes. Volumes 2, 4, and 6 each consist of two parts because of the large amount of material covered. The general contents of the respective volumes are as follows:

- Volume 1—Elements
- Volume 2—Nonferrous Alloys
    - PART I—Nonferrous Binary Alloys
    - PART II—Nonferrous Multiple Alloys
- Volume 3—Ferrous Alloys
- Volume 4—Oxides and Their Solutions and Mixtures
    - PART I—Simple Oxygen Compounds and Their Mixtures
    - PART II—Solutions and Their Mixtures of Simple Oxygen Compounds, Including Glasses and Ceramic Materials
- Volume 5—Nonoxides and Their Solutions and Mixtures, Including Miscellaneous Ceramic Materials
- Volume 6—Intermetallics, Cermets, Polymers, and Composite Systems
    - PART I—Intermetallics
    - PART II—Cermets, Polymers, and Composite Systems

The specific properties covered in each volume are:

1. Density (ρ)
2. Melting Point (M. P.)
3. Heat of Fusion (Δh_f)
4. Heat of Vaporization (Δh_v)
5. Heat of Sublimation (Δh_s)
6. Electrical Resistivity (r)
7. Specific Heat at Constant Pressure (c_p)
8. Thermal Conductivity (k)
9. Thermal Diffusivity (α)
10. Thermal Linear Expansion ($\Delta L/L$)
11. Thermal Radiative Properties:
    Absorptance (α), Emittance (ϵ), Reflectance (ρ), and Transmittance (τ)
12. Vapor Pressure (p)

Generally, only materials with melting points above 800°K (approximately 1000°F) are included, except for materials within the categories of polymers, plastics, and composites. A detailed discussion of the material classification procedure is presented in the following sections. A Material Index for the entire work is included at the end of each volume.

II. TPRC CLASSIFICATION OF MATERIALS

Materials are classified into the eight categories listed below. Whenever applicable, the compositions are reported in weight percent of the constitutents. For purposes of material classification TPRC considers the following elements as nonmetallic: H, He, C, N, O, F, Ne, P, S, Cl, A, Br, Kr, I, Xe, At, and Rn.

1. *Elements*: For the purpose of classification an element is specified as follows:
   A. For metallic elements, the limit of impurities is <0.20 percent for each foreign constituent and <0.50 percent total impurities.
   B. For nonmetallic elements (i.e., carbon including graphite and diamond), the limit of impurities is ≤2.0 percent for each foreign constituent and ≤5.0 percent total impurities.
2. *Nonferrous Alloys*: This category is for alloys in which the major constituent is other than iron. For the purpose of classification, nonferrous alloys are specified as follows:
   A. Nonferrous Binary Alloys: The sum of the binary constituents is ≥99.50 percent and other constituents ≤0.20 percent each.
   B. Nonferrous Multiple Alloys: The sum of the first two constituents is <99.50 percent and/or any other constituent >0.20 percent. Alternatively, the major constituent is ≤99.50 percent and each of the other constituents <0.20 percent (or not given).
3. *Ferrous Alloys*: This category is for alloys in which iron is greater than or equal to any other constituent. For the purpose of classification, ferrous alloys are specified as follows:
   A. Carbon Steels: Carbon ≤2.0 percent and carbon ≥ any other alloying constituent.
      a. Group I: Every other alloying constituent is ≤0.20 percent except for Mn, P, S, Si, which may be ≤0.60 percent each.
      b. Group II: At least one other alloying constituent >0.20 percent and/or any of Mn, P, S, Si >0.60 percent.
   B. Cast Irons: Carbon >2.0 percent and carbon ≥ any other alloying constituent.
      a. Group I: Every other alloying constituent ≤0.20 percent except for Mn, P, S, Si, which may be ≤0.60 percent each.
      b. Group II: At least one other alloying constituent >0.20 percent and/or any of Mn, P, S, Si >0.60 percent.
   C. Alloy Steels (including alloy cast iron): The major alloying constituent is other than carbon.
      a. Group I: Every other alloying constituent ≤0.20 percent except for Mn, P, S, Si, which may be ≤0.60 percent each, and C ≤2.0 percent.*
      b. Group II: At least one other alloying constituent >0.20 percent and/or any of Mn, P, S. Si >0.60 percent.*
4. *Nonmetallic Compounds and Their Mixtures and Solutions*: Ceramic materials such as oxides, bromides, carbides, carbonates, nitrides, silicates, etc., are included in this category. For the purpose of classification, they are specified as follows:
   A. For simple compounds and their solutions, the limit of impurities is ≤2.0 percent for each foreign constituent and ≤5.0 percent total impurities.

---

* Exception is made when Mn, P, S, or Si is the major alloying constituent. For instance, in the case of Fe + Mn + ΣX_i alloys the specifications corresponding to Groups I and II would be as follows:
   a. Group I: Every other alloying constituent ≤0.20 percent except for P, S, Si, which may be ≤0.60 percent each, and C ≤2.0 percent.
   b. Group II: At least one other alloying constituent >0.20 percent and/ any of P, S, Si >0.60 percent.

In the above example, Mn has a higher weight percentage than any of P, S, or Si but does not necessarily have a weight percentage higher than 0.60 percent. Thus, the limits of Mn percentage may be written:

Fe ≥ Mn > P, S, Si and any other alloying constituent and Mn ≥0.20.

The same guideline is applied to ferrous alloys containing P, S, or Si as major alloying constituents.

B. For mixtures of simple compounds and their solutions, the major constituent is <95.0 percent, or any other constituent is >2.0 percent.

5. *Intermetallics*: An intermetallic is a metal-metal compound formed by metallic elements in a fixed simple atomic ratio. For the purpose of classification, specifications are the same as those for Class 4.
6. *Cermets*: Cermets are ceramic materials such as carbides, oxides, etc., fused with or bonded by one or more pure metals. However, there are also metal-metal cermets, metal-intermetallic cermets, etc., which are also included in this category.
7. *Polymers*: Polymers are chemical compounds or mixtures of compounds formed by polymerization and consisting essentially of repeating molecular structural units.
8. *Composite Systems*: A composite system may consist of materials in combination, with clearly defined boundaries existing between components of the system, or a homogeneous material having a distinct configuration.

For the reader's convenience, the classification scheme for Classes 1 through 4, described above, is summarized in the following table.

SUMMARY TABLE OF TPRC CLASSIFICATION OF MATERIALS

Classification		Limits of Composition (weight percent)			
		X_1	$X_1 + X_2$	X_2	X_3
1. ELEMENTS	A. METALLIC	>99.50	--	<0.20	<0.20
	B. NONMETALLIC	≥ 95.0	--	≤ 2.0	≤ 2.0
2. NONFERROUS ALLOYS ($X_1 > Fe$)	A. BINARY ALLOYS	--	≥ 99.50	≥ 0.20	≤ 0.20
	B. MULTIPLE ALLOYS	--	≥ 99.50	>0.20	>0.20
		--	<99.50	≥ 0.20	≤ 0.20
		--	<99.50	>0.20	>0.20
		≤ 99.50	--	<0.20	<0.20

Classification			X_1	X_2	X_3	Mn, P S or Si
3. FERROUS ALLOYS ($X_1 = Fe \geq X_2$)	A. CARBON STEELS	GROUP I	Fe	$C \leq 2.0$	≤ 0.20	≤ 0.60
		GROUP II	Fe	$C \leq 2.0$	≤ 0.20	>0.60
			Fe	$C \leq 2.0$	>0.20	≤ 0.60
			Fe	$C \leq 2.0$	>0.20	>0.60
	B. CAST IRONS	GROUP I	Fe	$C > 2.0$	≤ 0.20	≤ 0.60
		GROUP II	Fe	$C > 2.0$	≤ 0.20	>0.60
			Fe	$C > 2.0$	>0.20	≤ 0.60
			Fe	$C > 2.0$	>0.20	>0.60
	C. ALLOYS* STEELS	GROUP I	Fe	$\neq C$	≤ 0.20 and $C \leq 2.0$	≤ 0.60
		GROUP II	Fe	$\neq C$	≤ 0.20	>0.60
			Fe	$\neq C$	>0.20	≤ 0.60
			Fe	$\neq C$	>0.20	>0.60

4. NONMETALLIC COMPOUNDS AND THEIR MIXTURES AND SOLUTIONS

	X_1	X_2
A. SIMPLE COMPOUNDS AND THEIR SOLUTIONS	≥ 95.0	≤ 2.0
B. MIXTURES OF SIMPLE COMPOUNDS AND THEIR SOLUTIONS	<95.0	≤ 2.0
	≥ 95.0	>2.0
	<95.0	>2.0

NOMENCLATURE:

X_1 = Major Constituent

X_2 = Second Highest Constituent

X_3 = Third Highest Constituent

Where: $X_1 \geq X_2 \geq X_3 \geq X_4 \geq \cdots\cdots$

*In case Mn, P, S, or Si represents X_2 this particular element is dropped from the last column.

III. PRESENTATION OF DATA

Each of the six volumes consists of seven sections arranged in the following order:

1. Preface
2. Table of Contents
3. Explanatory Text
4. Conversion Factors
5. Body of Data
6. References
7. Material Index.

In the following paragraphs a detailed description of Sections 5, 6, and 7 is given. The contents of the first four sections are self-explanatory.

BODY OF DATA

Data on each material are presented in graphical or tabular form for selected sets of measurements, and are accompanied by a Reference Information Table with corresponding specifications and remarks. The first five properties listed in Section I of this Explanatory Text are considered as *point values* and are grouped together in a single table in the same manner as the graphs for the other remaining properties. Furthermore, for a given material group, where several properties are reported, data are arranged in accordance with the order of the property list given in Section I of this text.

Graphic Presentation

Data extracted from various references on a given material and property are shown on a single graph by means of distinct plotting symbols, which are identified in the Reference Information Table on the page following the graph. Each set of symbols indicates the data of a given investigator, but does not necessarily imply actual measured points. In numerous instances authors present only smoothed values, either in graphical or tabular form, and it is frequently impossible to distinguish interpolated or smoothed values from actual observed data.

In reporting data on thermal linear expansion, investigators sometimes give a single average value of this property for a considerable temperature range. In such instances it is assumed that a linear relationship is implied. All data on thermal linear expansion were reduced to a datum of 293°K (20°C); i.e., $(\Delta L/L) = 0$ at 293°K (20°C). This point is identified by a cross (+) on each graph.

The definition of $(\Delta L/L)$ used in this work is

$$(\Delta L/L) = \frac{L_T - L_{293}}{L_{293}} \times 100$$

where L_T = length of specimen at temperature T.

L_{293} = length of specimen at 293°K (20°C).

To compute the "coefficient" of thermal linear expansion β from 293°K to any temperature T, the following relation may be used.*

$$\beta = \frac{1}{100\,(T-293)}\,\frac{\Delta L}{L}\text{, in } K^{-1}$$

* It is necessary to divide the right-hand side of this equation by 100 because the graphical presentation of $(\Delta L/L)$ is in percent expansion from 293°K.

In some instances the coefficient of thermal linear expansion is reported in tabular form.

Curves drawn through the plotted points are the "most probable" curves based on the data shown. As additional information becomes available in the future, these recommendations may well be modified.

Point Value Table

Data extracted from various references are identified by distinct symbols in the same manner as data points on a graph. "Most probable" values are given either at the top of the table or are indicated in a footnote. These selections are usually made solely on the basis of the data presented. Sometimes these point values are also reported as a function of temperature or composition, in which case they are shown in graphical form and placed immediately following the tabular values.

Reference Information Table

A table giving the reference information associated with each set of data obtained in the graph immediately follows the graph. The table contains the following information:

1. Symbol. The plotting symbols are identical with and correspond to those used in the graph.
2. Reference. References are identified by hyphenated numbers which serve to locate the bibliographic citation in the section of References at the end of each volume. The initial two digits indicate the year of publication and the last digits identify the specific reference within the given year. In those instances where a reference does not carry a date, the letter symbol ND is used in place of the year of publication. Undated references are listed at the end of the list of References.
3. Temperature Range. Range covered by the data in a given paper or report.
4. Reported Error. The author's estimated accuracy (or precision).
5. Sample Specification. This column contains all pertinent available information about the test sample. This information consists of the following:
   a. Commercial trade name, chemical formula, etc., followed by manufacturer's name, if it is necessary for correct identification.
   b. Composition of the sample, expressed in weight percent. Unless otherwise stated, the percent sign is omitted.
   c. Physical characteristics of the material, such as a single crystal, polycrystalline, density, crystal structures, etc.
   d. Specimen designation by the author is given in brackets at the end of the citation.
6. Remarks. This column contains information on:
   a. Special process used in fabrication of the sample, such as being sintered, chill-cast, etc.
   b. Sample history, such as cold-worked, hot-pressed, annealed, etc.
   c. Conditions under which the specimen was investigated, environment, etc.
   d. Other pertinent remarks.

REFERENCES

The section on Reference gives complete bibliographic citations for all the references from which data were extracted. They are arranged chronologically by year of publication, and in arbitary sequence within any given year.

For the preparation of the references, the following order and convention is used.

Periodicals

1. Author(s) name: Last name first, followed by initials.
2. Journal name: Standard TPRC journal name abbreviations are used.
3. Series, volume, and number.

a. If the series is represented by a letter, it is underlined together with the volume number.

b. If the series is represented by a number, then only the numeral representing the volume is underlined.

c. The numeral for the issue number is shown in parentheses.

4. Pages: Indicate the beginning and ending pages.

Reports

1. Author(s) name is given in the same form as for periodicals.
2. The name of the responsible organization, if any.
3. The name of sponsor.
4. Report, bulletin, or circular designation.
5. Number.
6. Part.
7. Pages (same as for periodicals).
8. AD and PB numbers or equivalents.

Books

The bibliographic citation for books lists: author(s), title, volume, edition, publisher, and page(s).

In general, private communications are not listed as references. However, if TPRC did obtain additional substantive information from an author through private communication, and if this information was used, the remark "additional data obtained from author(s)" is added at the end of the reference citation.

MATERIAL INDEX

The Material Index lists all the materials included in this work by their proper trade or commercial names arranged in alphabetical order and, for materials designated by number codes, the listing is in increasing numerical order. Location of information on a particular property for a particular material is specified by the volume number and page numbers indicated within the appropriate property column of the index. The page number always indicates the starting page of the graphs or point value tables. Chemical formulas are given in parentheses following the proper names of materials which can be chemically identified. However, for materials within a general group, e.g., different oxides of cerium, the entries are only by chemical formulas listed under the material group designation, such as "cerium oxides." Whenever applicable, an effort is made to list commercial materials under their several accepted names. In the case of broad classes of materials, such as steels, glasses, etc., the materials are listed under their common names as well as under the heading of their general class when the designation is merely a letter and number code.

Simpler inorganic compounds (e.g., aluminum oxide, tantalum boride) are named according to the convention given in the *Handbook of Chemistry and Physics* (The Chemical Rubber Co., 45th edition, 1964, and—if not available there—the 43rd edition, 1962). Other inorganic compounds are generally named in accordance with the convention given in the *Chemical Abstracts* by giving the more electropositive part of the name first and the more electronegative part second. For nonferrous and ferrous alloys, only the first two components are listed and ΣX_i is added to designate multiple alloys. An exception is made, however, for chromium-nickel and nickel-chromium ferrous alloys, in which cases, all three major constituents are listed. For other inorganic compounds and their mixtures and solutions, all components with weight percent greater than 2 percent are listed. Finally, for cermets, the name of the ceramic part is given first and the metal part second, each in their respective alphabetical order regardless of their weight percentages, with the exception of beryllium cermet (e.g., Beryllium YB-9052), in which case the name of the metal part is given first.

CONVERSION FACTORS

NOTE: In preparing the conversion factors, the following basic definitions were used:

1 in. = 2.54 cm*

1 lb. = 453.59237 g*

1 cal_{Th} = 4.184 (exactly) Joule*

1 cal_{IT} = 4.1868 (exactly) Joule*

1 $Btu_{IT} lb^{-1} F^{-1}$ = 1 $cal_{IT} g^{-1} C^{-1}$ ‡

The subscripts "Th" and "IT" denote "Thermochemical" and "International Steam Table" units, respectively.

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* *NBS Technical News Bulletin*, **47**(10), 1963.

‡ Mueller, E. F., and Rossini, F. D., *Am. J. Physics*, **12**(1), 4, 1944.

CONVERSION FACTORS FOR UNITS OF DENSITY

MULTIPLY ↓ by appropriate factor to OBTAIN →	$g\ cm^{-3}$	$g\ in.^{-3}$	$kg\ m^{-3}$	$kg\ ft^{-3}$	$lb\ in.^{-3}$	$lb\ ft^{-3}$
$g\ cm^{-3}$	1	1.63872×10	1.0×10^{3}	2.83170×10	3.61275×10^{-2}	6.24283×10
$g\ in.^{-3}$	6.10234×10^{-2}	1	6.10234×10	1.72800	2.20462×10^{-3}	3.80959
$kg\ m^{-3}$	1.0×10^{3}	1.63872×10^{-2}	1	2.83170×10^{-2}	3.61275×10^{-5}	6.24283×10^{-2}
$kg\ ft^{-3}$	3.51446×10^{-2}	5.78704×10^{-1}	3.53145×10	1	1.27582×10^{-3}	2.20462
$lb\ in.^{-3}$	2.76797×10	4.53592×10^{2}	2.76797×10^{4}	7.83808×10^{2}	1	1.72800×10^{3}
$lb\ ft^{-3}$	1.60184×10^{-2}	2.62496×10^{-1}	1.60184×10	4.53592×10^{-1}	5.78704×10^{-4}	1

CONVERSION FACTORS FOR UNITS OF LATENT HEAT

MULTIPLY ↓ by appropriate factor to OBTAIN →	$cal_{Th}g^{-1}$	$cal_{IT}g^{-1}$	$W\ sec\ g^{-1}$	$J_{Int}g^{-1}$	$Btu_{Th}lb^{-1}$	$Btu_{IT}lb^{-1}$
$cal_{Th}g^{-1}$	1	9.99331×10^{-1}	4.184	4.18331	1.8	1.79880
$cal_{IT}g^{-1}$	1.00067	1	4.1868	4.18611	1.30120	1.8
$W\ sec\ g^{-1}$	2.39006×10^{-1}	2.38846×10^{-1}	1	9.99835×10^{-1}	4.30210×10^{-1}	4.29923×10^{-1}
$J_{Int}g^{-1}$	2.39045×10^{-1}	2.38885×10^{-1}	1.00017	1	4.30281×10^{-1}	4.29994×10^{-1}
$Btu_{Th}lb^{-1}$	5.55556×10^{-1}	5.55184×10^{-1}	2.32444	2.32406	1	9.99331×10^{-1}
$Btu_{IT}lb^{-1}$	5.55927×10^{-1}	5.55556×10^{-1}	2.326	2.32562	1.00067	1

CONVERSION FACTORS FOR UNITS OF SPECIFIC HEAT

MULTIPLY ↓ by appropriate factor to OBTAIN →	$cal_{Th} g^{-1} C^{-1}$	$cal_{IT} g^{-1} C^{-1}$	$W\ sec\ g^{-1} K^{-1}$	$J_{Int} g^{-1} K^{-1}$	$Btu_{Th} lb^{-1} F^{-1}$	$Btu_{IT} lb^{-1} F^{-1}$
$cal_{Th} g^{-1} C^{-1}$	1	9.99331×10^{-1}	4.184	4.18331	1	9.99331×10^{-1}
$cal_{IT} g^{-1} C^{-1}$	1.00067	1	4.1868	4.18611	1.00067	1
$W\ sec\ g^{-1} K^{-1}$	2.390006×10^{-1}	2.38846×10^{-1}	1	9.99835×10^{-1}	2.39006×10^{-1}	2.38846×10^{-1}
$J_{Int} g^{-1} K^{-1}$	2.39045×10^{-1}	2.38885×10^{-1}	1.00017	1	2.39045×10^{-1}	2.38885×10^{-1}
$Btu_{Th} lb^{-1} F^{-1}$	1	9.99331×10^{-1}	4.184	4.18331	1	9.99331×10^{-1}
$Btu_{IT} lb^{-1} F^{-1}$	1.00067	1	4.1868	4.18611	1.00067	1

Note: To convert quantities per "gram" to "mol" basis multiply conversion factor by the molecular weight M.

CONVERSION FACTORS FOR UNITS OF THERMAL CONDUCTIVITY

MULTIPLY ↓ by appropriate factor to OBTAIN →	$Btu_{IT} hr^{-1} ft^{-1} F^{-1}$	$Btu_{IT} in. hr^{-1} ft^{-2} F^{-1}$	$cal_{IT} sec^{-1} cm^{-1} C^{-1}$	$cal_{Th} sec^{-1} cm^{-1} C^{-1}$	$kcal_{Th} hr^{-1} m^{-1} C^{-1}$	$W\ cm^{-1} K^{-1}$
$Btu_{IT} hr^{-1} ft^{-1} F^{-1}$	1	1.2×10	4.13379×10^{-3}	4.13656×10^{-3}	1.48916	1.73073×10^{-2}
$Btu_{IT} in. hr^{-1} ft^{-2} F^{-1}$	8.33333×10^{-2}	1	3.44482×10^{-4}	3.44713×10^{-4}	1.24097×10^{-1}	1.44228×10^{-3}
$cal_{IT} sec^{-1} cm^{-1} C^{-1}$	2.41909×10^{2}	2.90291×10^{3}	1	1.00067	3.60241×10^{2}	4.1868
$cal_{Th} sec^{-1} cm^{-1} C^{-1}$	2.41747×10^{2}	2.90096×10^{3}	9.99331×10^{-1}	1	3.6×10^{2}	4.184
$kcal_{Th} hr^{-1} m^{-1} C^{-1}$	6.71520×10^{-1}	8.05824	2.77592×10^{-3}	2.77778×10^{-3}	1	1.16222×10^{-2}
$W\ cm^{-1} K^{-1}$	5.77789×10	6.93347×10^{2}	2.38846×10^{-1}	2.39006×10^{-1}	8.60421×10	1

CONVERSION FACTORS FOR UNITS OF THERMAL DIFFUSIVITY

MULTIPLY ↓ by appropriate factor to OBTAIN →	cm^2sec^{-1}	cm^2hr^{-1}	m^2hr^{-1}	$in.^2sec^{-1}$	ft^2sec^{-1}	ft^2hr^{-1}
cm^2sec^{-1}	1	3.60×10^3	3.60×10^{-1}	1.550×10^{-1}	1.07639×10^{-3}	3.87501
cm^2hr^{-1}	2.77778×10^{-4}	1	1.0×10^{-4}	4.30556×10^{-5}	2.98998×10^{-7}	1.07639×10^{-3}
m^2hr^{-1}	2.77778	1.0×10^4	1	4.30556	2.98998×10^{-3}	1.07639×10
$in.^2sec^{-1}$	6.45160	2.32258×10^4	2.32258	1	6.94444×10^{-3}	2.50×10
ft^2sec^{-1}	9.29030×10^2	3.34451×10^6	3.34451×10^2	1.440×10^2	1	3.60×10^3
ft^2hr^{-1}	2.58064×10^{-1}	9.29030×10^2	9.29030×10^{-2}	4.0×10^{-2}	2.77778×10^{-4}	1

CONVERSION FACTORS FOR UNITS OF VAPOR PRESSURE

MULTIPLY ↓ by appropriate factor to OBTAIN →	dyne cm^{-2}	atm	kg cm^{-2}	mm Hg	in. Hg	lb in.$^{-2}$
dyne cm^{-2}	1	9.8690×10^{-7}	1.01970×10^{-6}	7.5010×10^{-4}	2.9530×10^{-5}	1.45040×10^{-5}
atm	1.01330×10^{6}	1	1.03320	7.60×10^{2}	2.9920×10	1.46960×10
kg cm^{-2}	9.8070×10^{5}	9.6780×10^{-1}	1	7.3560×10^{2}	2.8960×10	1.42230×10
mm Hg	1.33320×10^{3}	1.31580×10^{-3}	1.35950×10^{-3}	1	3.9370×10^{-2}	1.93370×10^{-2}
in. Hg	3.3860×10^{4}	3.3420×10^{-2}	3.4530×10^{-2}	2.540×10	1	4.9120×10^{-1}
lb in.$^{-2}$	6.89470×10^{4}	6.80460×10^{-2}	7.0310×10^{-2}	5.1710×10	2.0360	1

BODY OF DATA

FERROUS ALLOYS

CARBON STEELS

(Carbon ≤ 2.00 and carbon ≥ any other alloying constituent)

NOTE: For purposes of classification, carbon steels are divided into two groups specified as follows:

GROUP I: Every other alloy constituent ≤ 0.20 percent except for Mn, P, S, Si which may be ≤ 0.60 percent each.

GROUP II: At least one other alloying constituent > 0.20 percent and/or if any of Mn, P, S, Si > 0.60 percent.

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PROPERTIES OF IRON + CARBON + ΣX_i (C $\leq$ 2.00)

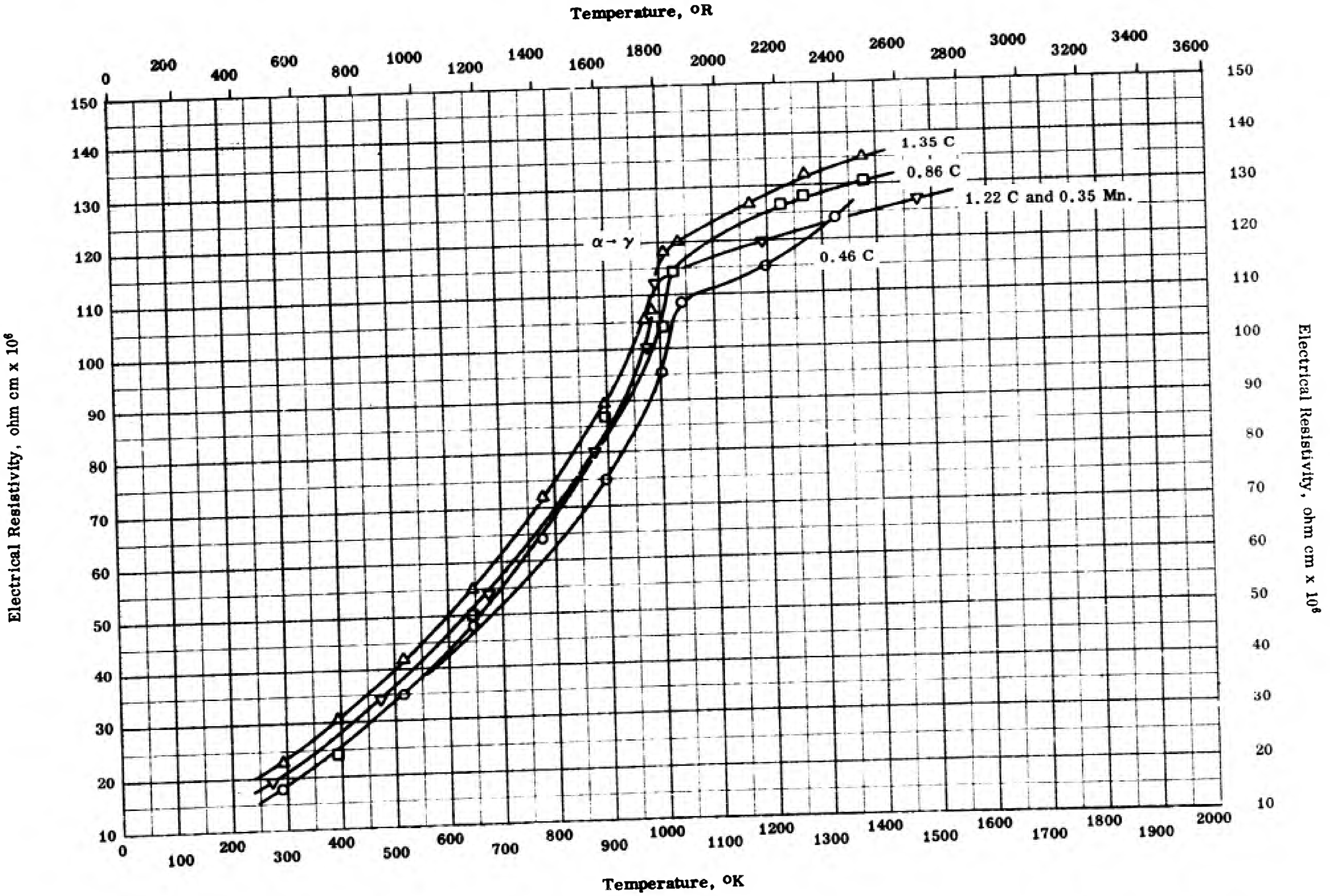
REPORTED VALUES

Heat of Sublimation	cal g^{-1}	Btu lb^{-1}
□ 0.59 C	1720_{1540K}	3100_{2770R}
△ 0.96 C	1640_{1540K}	2950_{2770R}
◇ 1.31 C	$816_{1370K} \pm 5$	$1470_{2470R} \pm 10$

PROPERTIES OF IRON + CARBON + ΣX_i (C ≤2.00)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
□	57-5	1540		0.59 C; austenite.	Δh_s from vapor pressure data.
△	57-5	1540		0.96 C; austenite.	Same as above.
◇	53-10	1370		1.31 C; austenite.	Same as above.

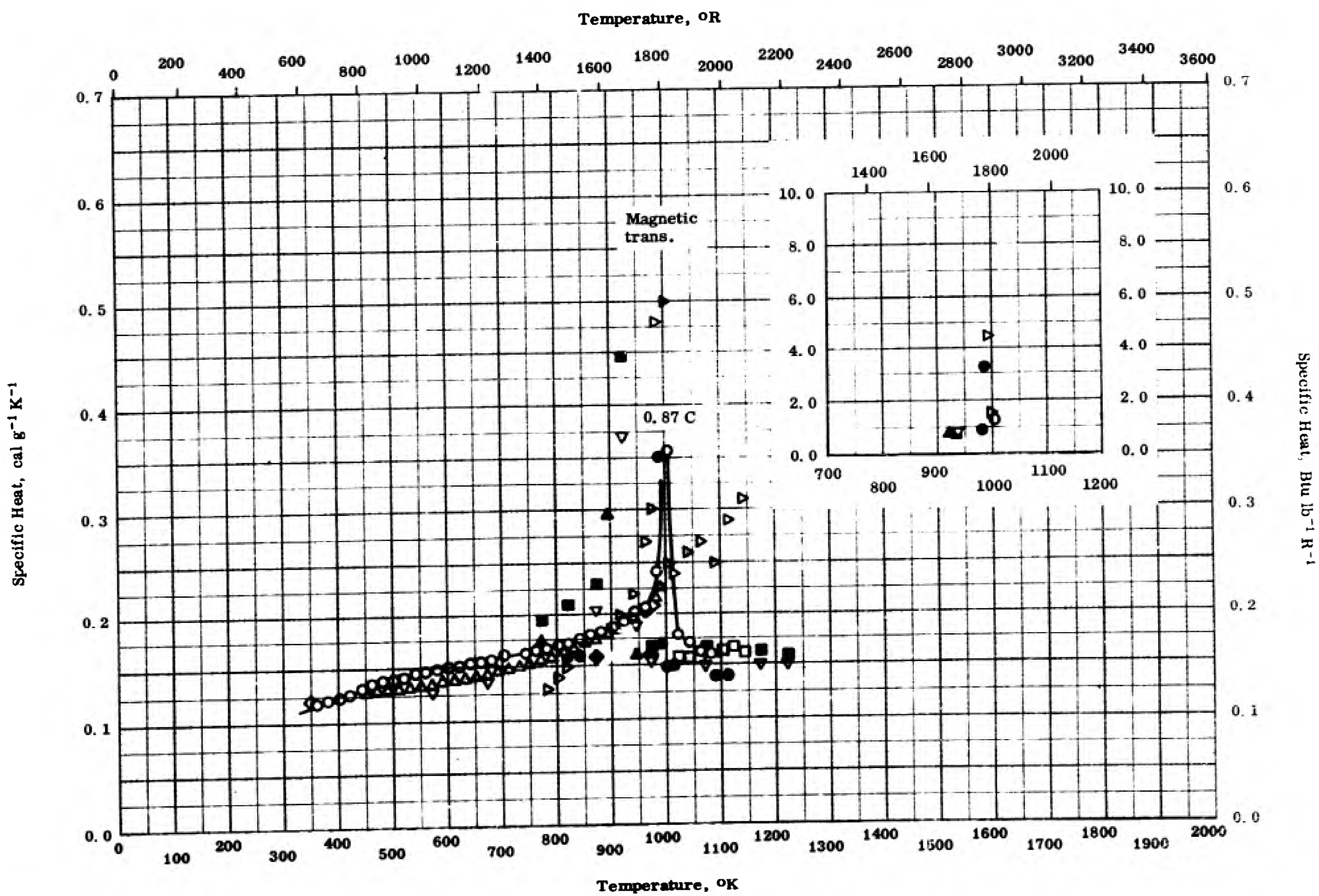


ELECTRICAL RESISTIVITY -- IRON + CARBON + ΣX_i ($C \leq 2.00$) GROUP I

ELECTRICAL RESISTIVITY -- IRON + CARBON + ΣX_i ($C \le 2.00$) GROUP I

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	47-2	293-1323	± 2	0.46 C (in the form of Fe_3C)	Exposed to high annealing to obtain granulated pearlite prior to testing; tested at 20 C/ min rise above 500 C.
□	47-2	293-1373	± 2	0.86 C (in the form of Fe_3C)	Same as above.
△	47-2	293-1373		1.35 C (in the form of Fe_3C)	Same as above.
▽	56-11	273-1473	± 2	1.22 C, 0.35 Mn, 0.16 Si, 0.13 Ni, 0.11 Cr, 0.077 Cu, 0.015 S, 0.01 Mo, and 0.0009 P.	Annealed at 800-930 C.



SPECIFIC HEAT -- IRON + CARBON + ΣX_i (C ≤2.00) GROUP I

SPECIFIC HEAT -- IRON + CARBON + ΣX_i (C ≤2.00) GROUP I

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-3	363-1083		0.87 C.	Furnace cooled from the homogenizing temperature of 1100 C.
□	54-3	750-870		0.87 C.	Cooled to 725 C.
△	57-6	353-993	≤0.9	>99.147 Fe, 0.77 C, 0.021 S, <0.001 Mn, <0.005 Si, <0.002 P.	Free cooled.
▽	40-2	573-1223		0.97 C 0.18 Mn, 0.120 Si, 0.028 S, and 0.018 P.	Cooling rate (C sec^{-1}) — C 13.3-14.5 — 900 7.0- 8.0 — 700 3.1- 3.8 — 500 1.5- 1.6 — 300 transformation temperature depressed by high cooling rates.
◇	57-6	353-993	≤0.9	>99.147 Fe, 0.77 C, 0.021 S, <0.01 Mn, <0.005 Si, <0.002 P, 0.0X Cu, and 0.00X Ni. [Author's design.: Steel B]	Slow cooled.
▷	61-8	785-1142		1.2 C, 0.21 Mn, 0.115 Si, 0.02 Cr, 0.023 P, 0.016 S, 0.01 Mo, and 0.01 Ni. [Author's design.: Steel B]	Annealed.
●	61-8	820-1117		1.53 C, 0.25 Mn, 0.067 Si, 0.021 P, and 0.018 S. [Author's design.: Steel C]	Same as above.

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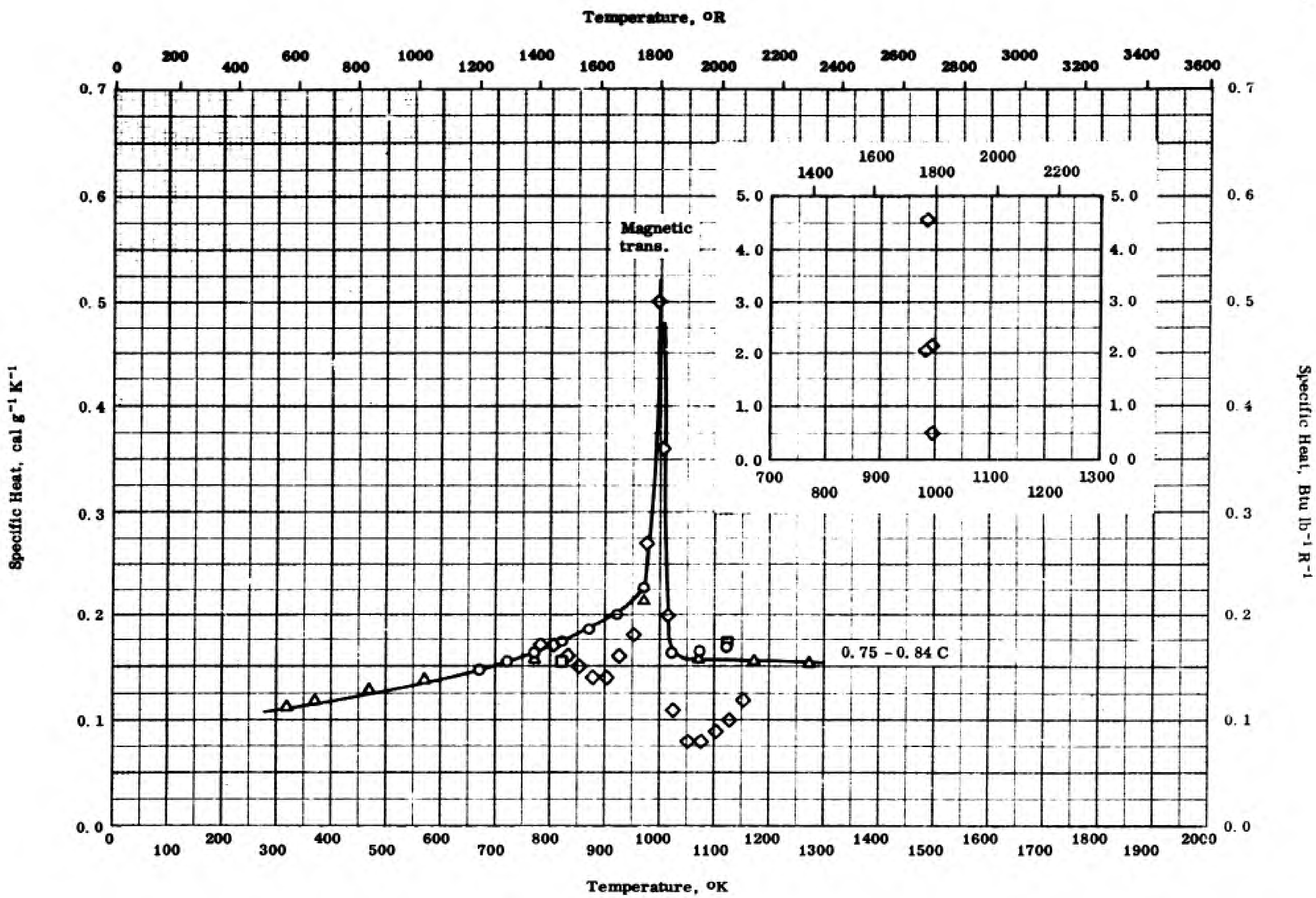
REFERENCE INFORMATION

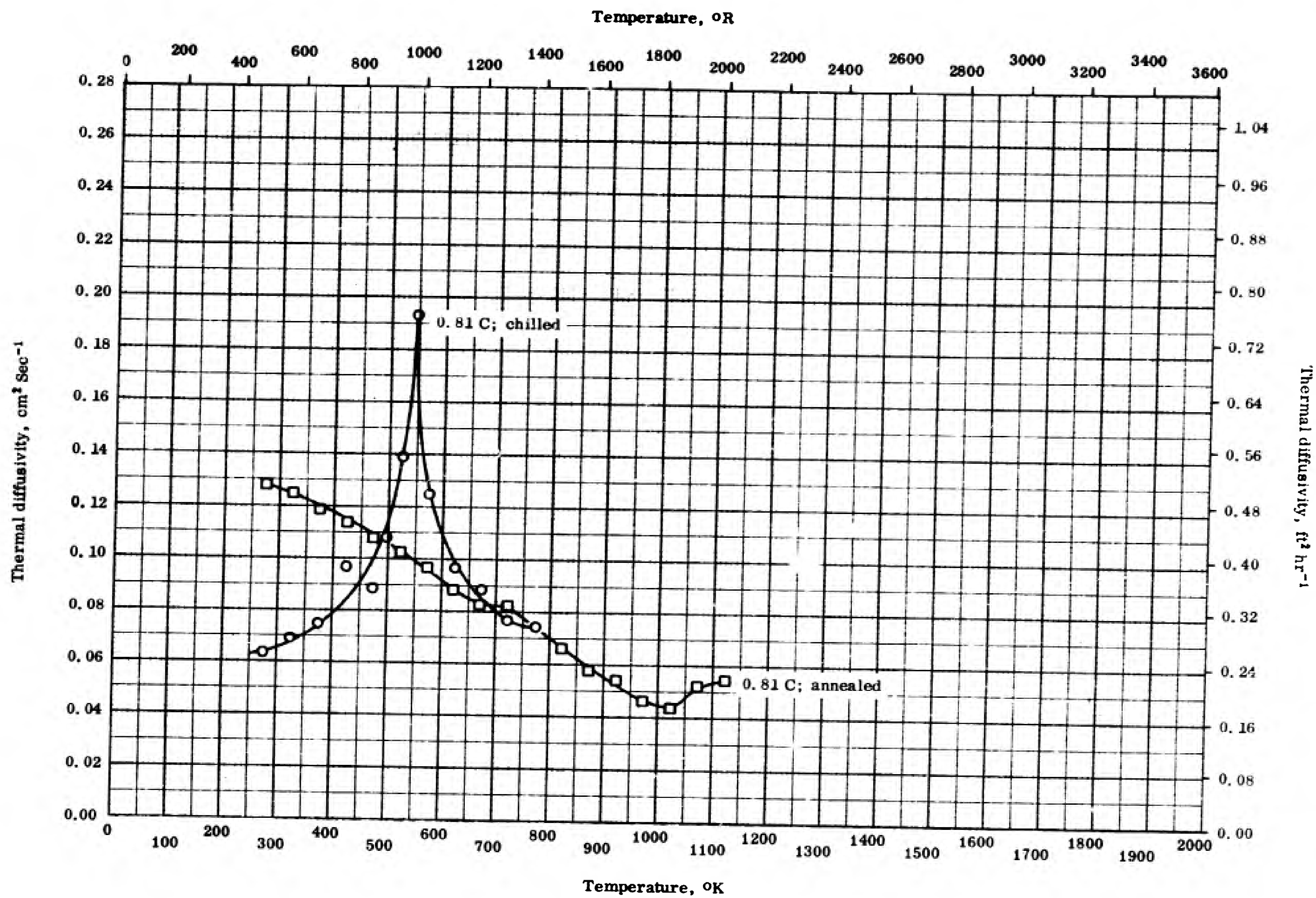
Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
■	40-2	573-1223		0.67 C, 0.31 Mn, 0.078 Si, 0.025 S, and 0.012 P.	Cooling rate (C sec^{-1}) C 13.3-14.5 900 7.0- 8.0 700 3.1- 3.8 500 1.5- 1.6 300 transformation temperature depressed by high cooling rates.
▲	40-2	573-1223		1.21 C, 0.25 Mn, 0.18 Si, 0.038 P, and 0.021 S.	Same as above.
◆	40-2	573-1223		0.81 C, 0.39 Si, 0.32 Mn, 0.008 P, and 0.008 S.	Same as above.



SPECIFIC HEAT -- IRON + CARBON + ΣX_i (C $\leq$2.00)   GROUP II

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-4	673-1023		Eutectoid steel, pearlite; 0.79 C, 0.51 Mo, 0.19 Si, 0.12 Mn, 0.005 P, and 0.005 S.	
□	54-4	823-1123		Eutectoid steel austenite; same composition as above.	
△	59-3	323-1273		Steel U-8; nominal composition: 0.75-0.84 C, 0.20-0.40 Mn, 0.15-0.35 Si, 0.25 Cu, 0.25 Ni, 0.20 Cr, 0.035 P, and 0.030 S.	
◇	61-8	773-1273		0.79 C, 0.64 Mn, 0.091 Si, 0.038 S, 0.031 P, 0.01 Cr, 0.01 Mn, and 0.01 Ni. [Author's design.; Hyper eutectoid steel A]	Annealed.

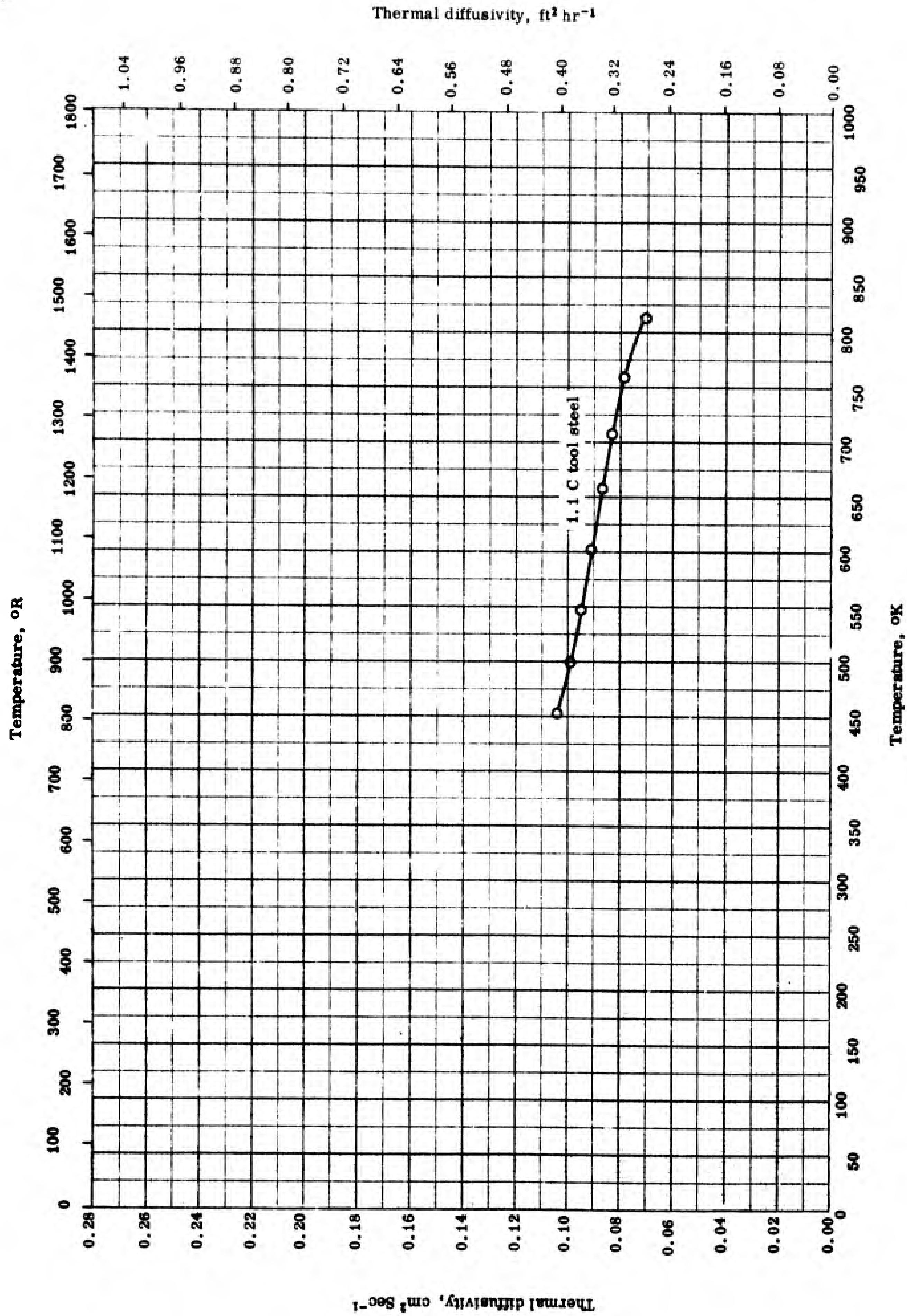


THERMAL DIFFUSIVITY -- IRON + CARBON + ΣX_i ($C \leq 2.00$) GROUP I

THERMAL DIFFUSIVITY -- IRON + CARBON + ΣX_i ($C \leq 2.00$) GROUP I

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-1	273-773	±2	U 8 (USSR design.); 0.81 C, 0.47 Mn, 0.22 Si, 0.020 P, and 0.020 S.	Chilled.
□	60-1	273-1123	±2	Same as above.	Annealed.

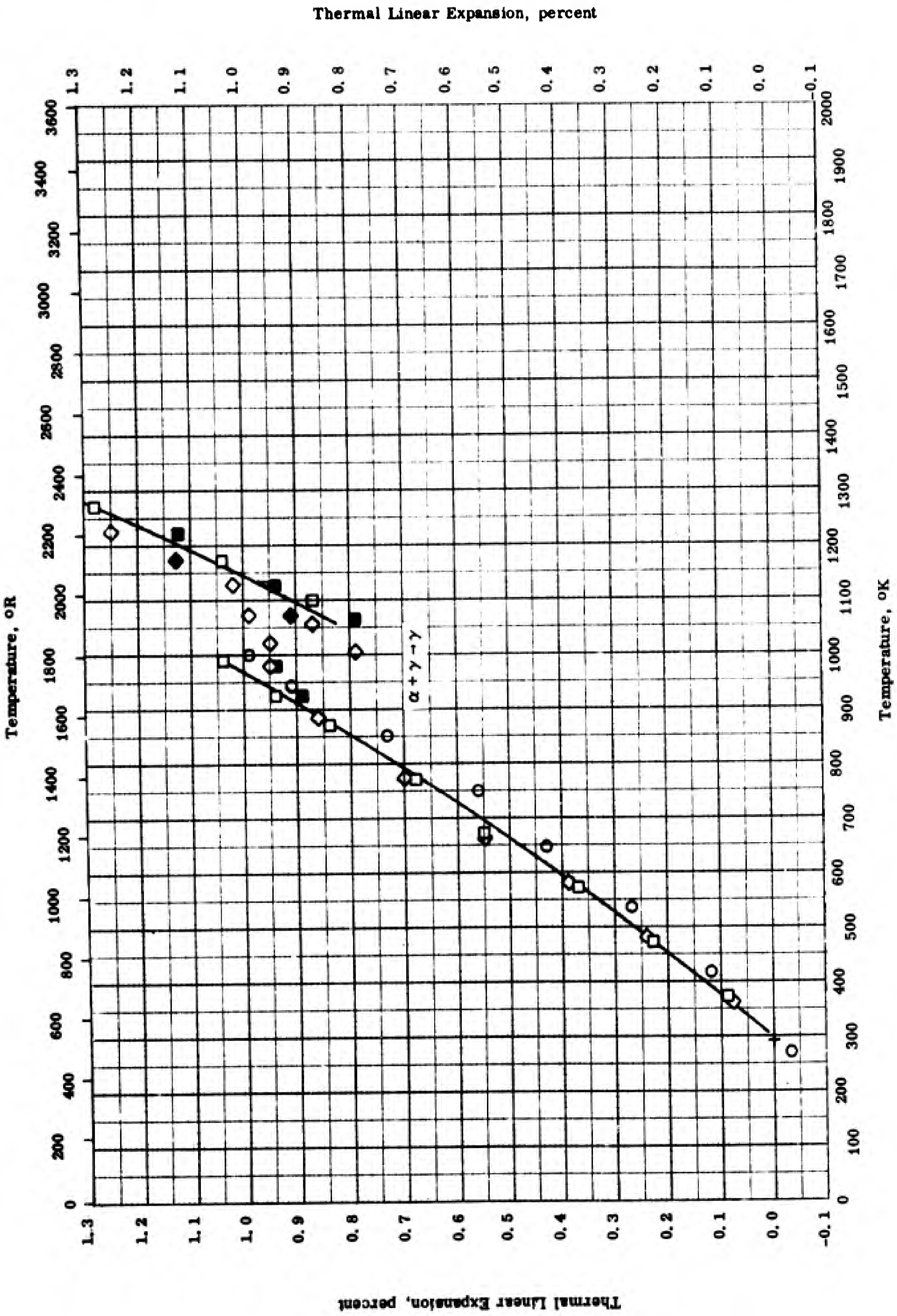


THERMAL DIFFUSIVITY -- IRON + CARBON + ΣX_i ($C \le 2.00$) GROUP II

THERMAL DIFFUSIVITY -- IRON + CARBON + ΣX_i (C $\leq$ 2.00) GROUP II

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	56-1	453-814		1.1 C tool steel; 1.1 C, 0.7 Mn, 0.25 Si, 0.04 > S, and 0.04 > P.	

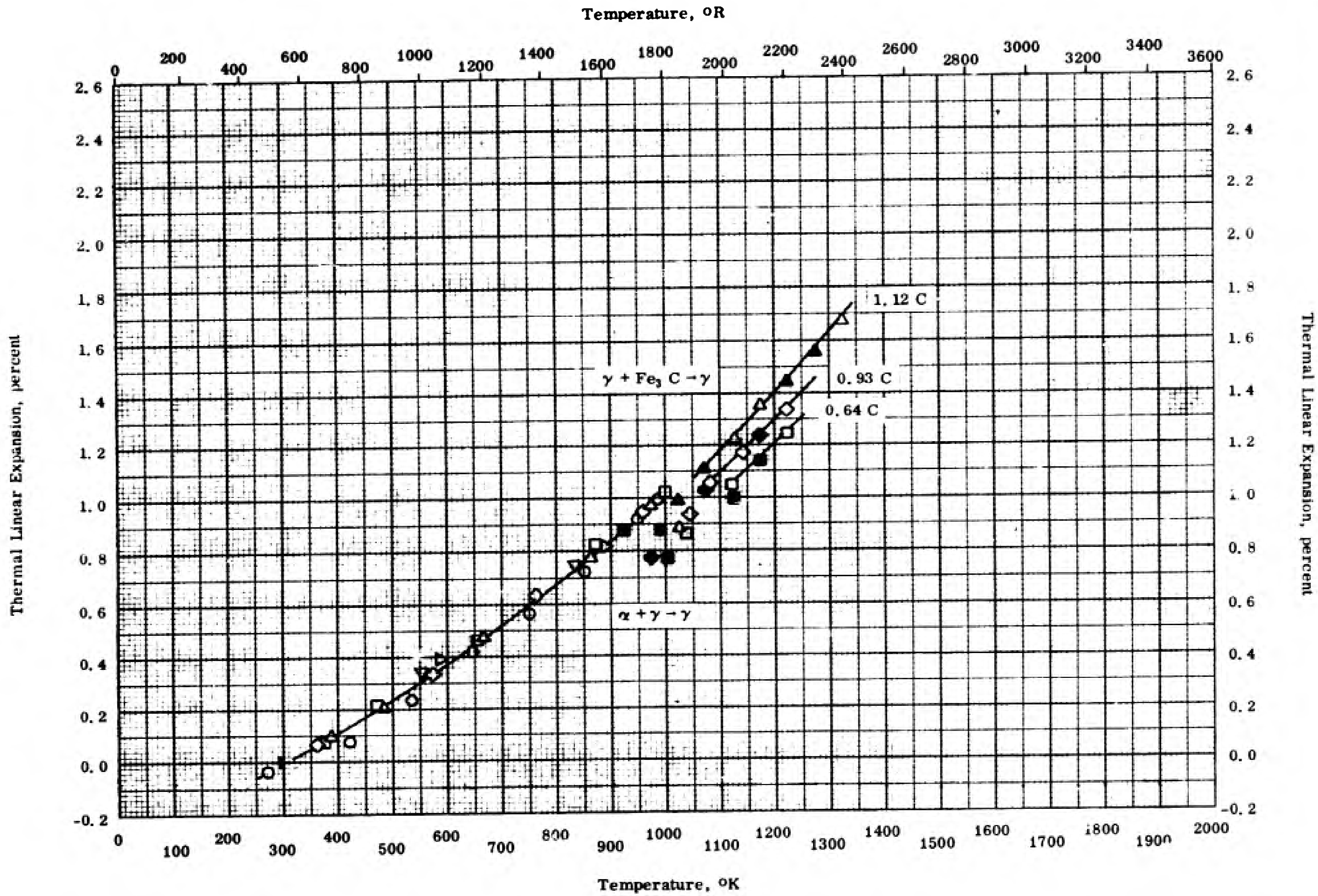


THERMAL LINEAR EXPANSION -- IRON + CARBON + ΣX_i (C $\leq$2.00) GROUP I
(C < 0.60)

THERMAL LINEAR EXPANSION -- IRON + CARBON + ΣX_i ($C \leq 2.00$) GROUP I
($C < 0.60$)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	50-3	272-1000		0.58 C, 0.033 Mn, and 0.10 Si.	Normalized so that initial structure is ferrite and lamellar pearlite.
□	41-1	293-1273		0.26 C, 0.03>O, 0.02> Mn, 0.004> Si, and 0.0024> S.	Annealed 1 hr at 700 C in vacuum; heating.
■	41-1	293-1273		Same as above.	The above sample cooling.
◇	41-1	293-1273		Same as above except 0.49 C.	Annealed 1 hr at 700 C in vacuum; heating.
◆	41-1	293-1273		Same as above.	The above sample cooling.

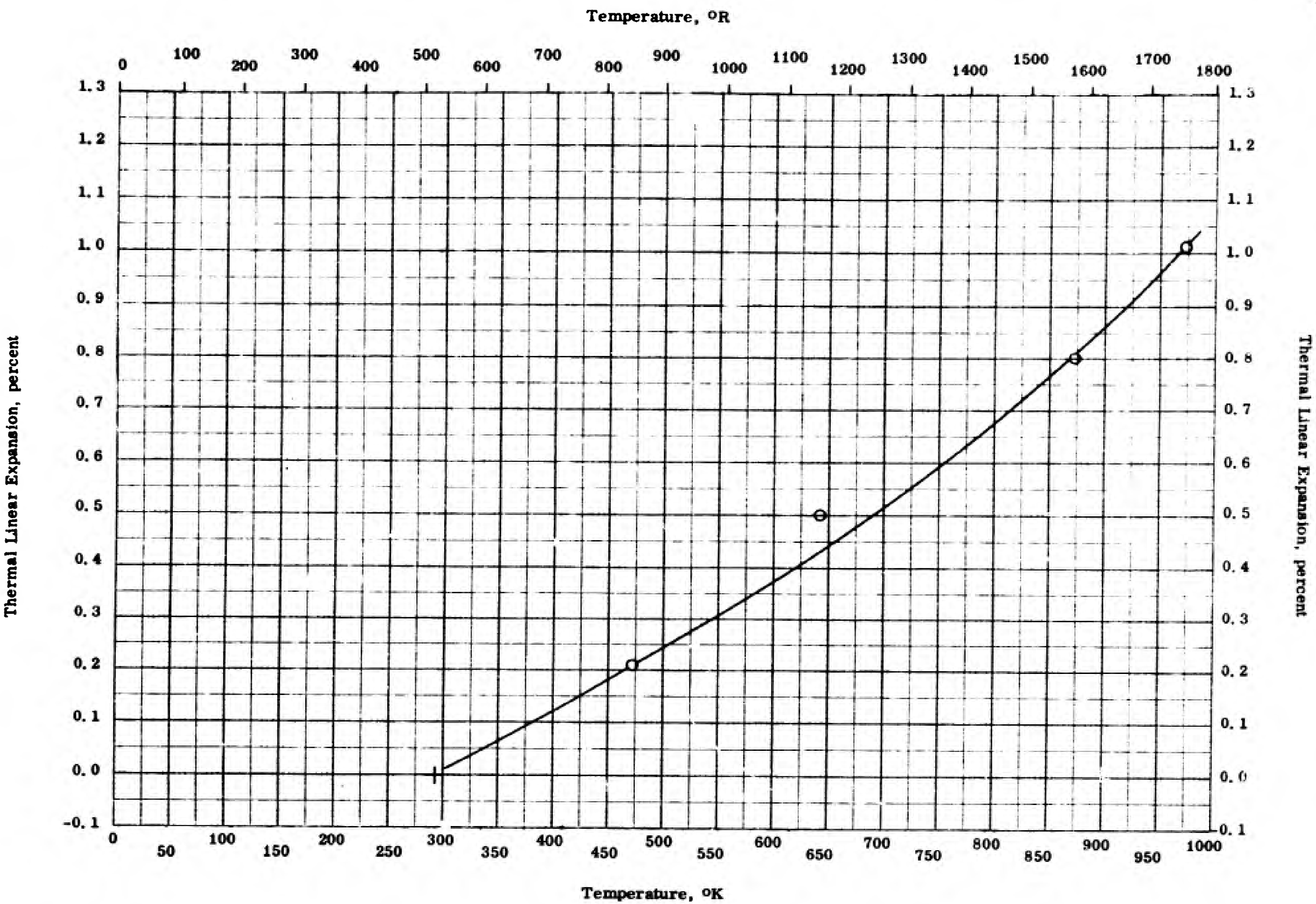


THERMAL LINEAR EXPANSION -- IRON + CARBON + ΣX_i ($C \leq 2.00$) GROUP I
($0.60 < C < 1.2$)

THERMAL LINEAR EXPANSION -- IRON + CARBON + ΣX_i ($C \le 2.00$) GROUP I
($0.60 < C < 1.2$)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	50-3	272-1006		0.81 C, 0.34 Mn, and 0.10 Si.	Normalized to initial structure of ferrite and lamellar pearlite.
□	41-1	293-1223		0.64 C, 0.03 > O_2, 0.02 > Mn, 0.004 > Si, and 0.0024 > S.	Annealed 1 hr at 700 C in vacuum and cooled slowly; heating measurement with Au as standard.
■	41-1	293-1223		Same as above.	Same as above; cooling curve.
◇	41-1	293-1223		Same as above except 0.93 C.	Same as above; heating curve.
◆	41-1	293-1223		Same as above.	Same as above; cooling curve.
△	41-1	293-1223		Same as above except 1.12 C.	Same as above; heating curve.
▲	41-1	293-1223		Same as above.	Same as above; cooling curve.
▽	43-1	293-1173		Two samples: (a) 0.62 C, 0.54 Mn, 0.20 Si, 0.021 S, and 0.015 P. (b) 0.77 C, 0.13 Si, 0.13 Mn, 0.015 S, and 0.006 P.	Mean data values reported with 0.75% max deviation.
▷	43-1	293-1173		0.65 C, 0.24 Mn, and 0.23 Si.	

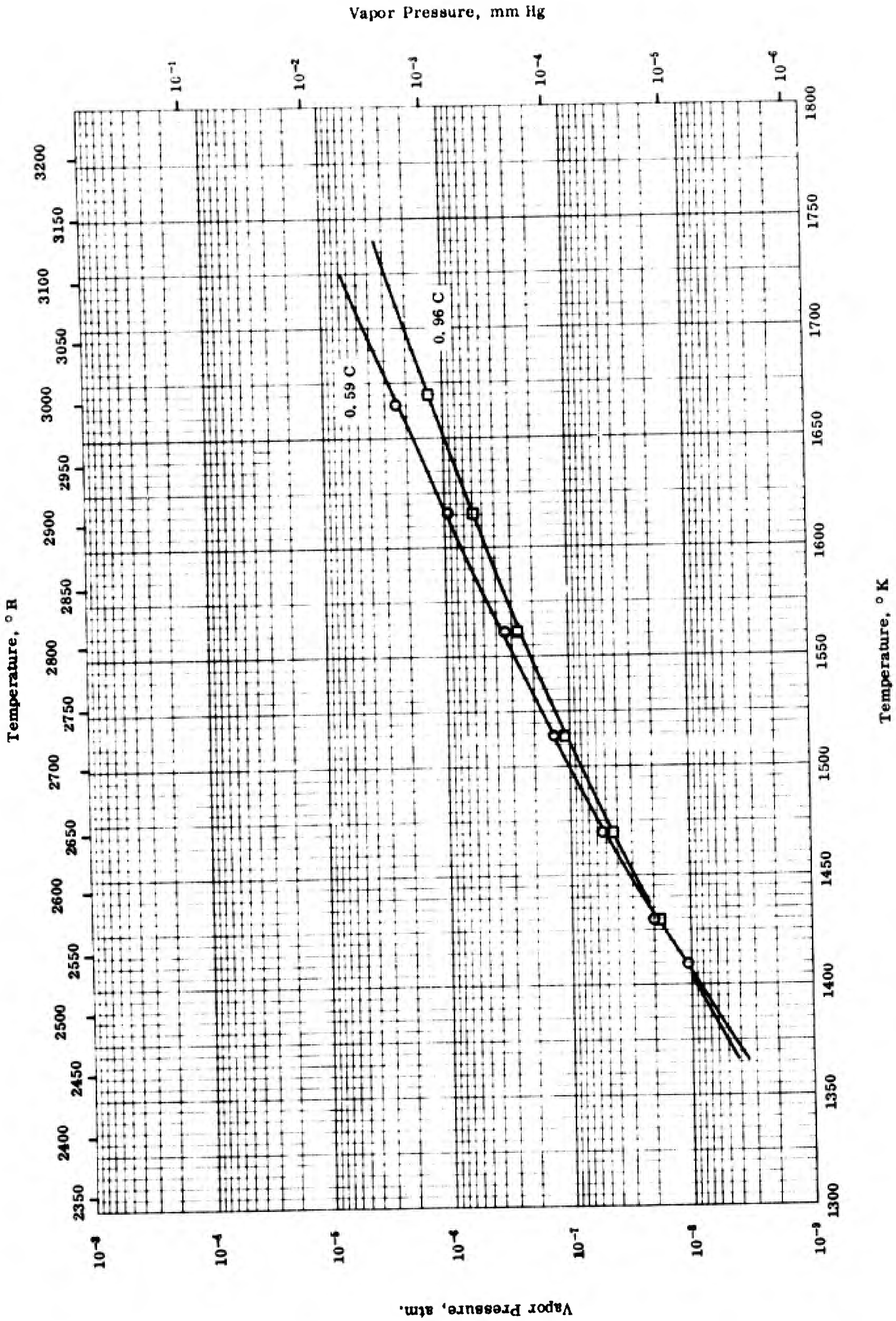


THERMAL LINEAR EXPANSION -- IRON + CARBON + ΣX_i (C ≤2.00) GROUP I
(1.2 < C < 1.5)

THERMAL LINEAR EXPANSION -- IRON + CARBON + ΣX_i ($C \leq 2.00$) GROUP 1
($1.2 < C < 1.5$)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	43-1	293-973		1.40 C, 0.18 Mn, 0.12 Si, 0.01 P, and 0.01 S.	



VAPOR PRESSURE -- IRON + CARBON + ΣX_i ($C \le 2.00$) GROUP I

VAPOR PRESSURE -- IRON + CARBON + ΣX_i ($C \leq 2.00$) GROUP I

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	57-5	1410-1670		Austenite; 0.59 C.	Prepared by fusion of "pure" Fe with cast Fe in He atmos.
□	57-5	1410-1670		Austenite; 0.96 C.	Same as above.

CAST IRONS

(Carbon >2.0 and carbon ≥ any other alloying constituent.)

NOTE: For purposes of classification, cast irons are divided into two groups specified as follows:

GROUP I: Every other alloy constituent ≤0.20 percent except for Mn, P, S, Si which may be ≤0.60 percent each.

GROUP II: At least one other alloying constituent >0.20 percent and/or if any of Mn, P, S, Si >0.60 percent.

PROPERTIES OF IRON + CARBON + ΣX_i (C > 2.00)

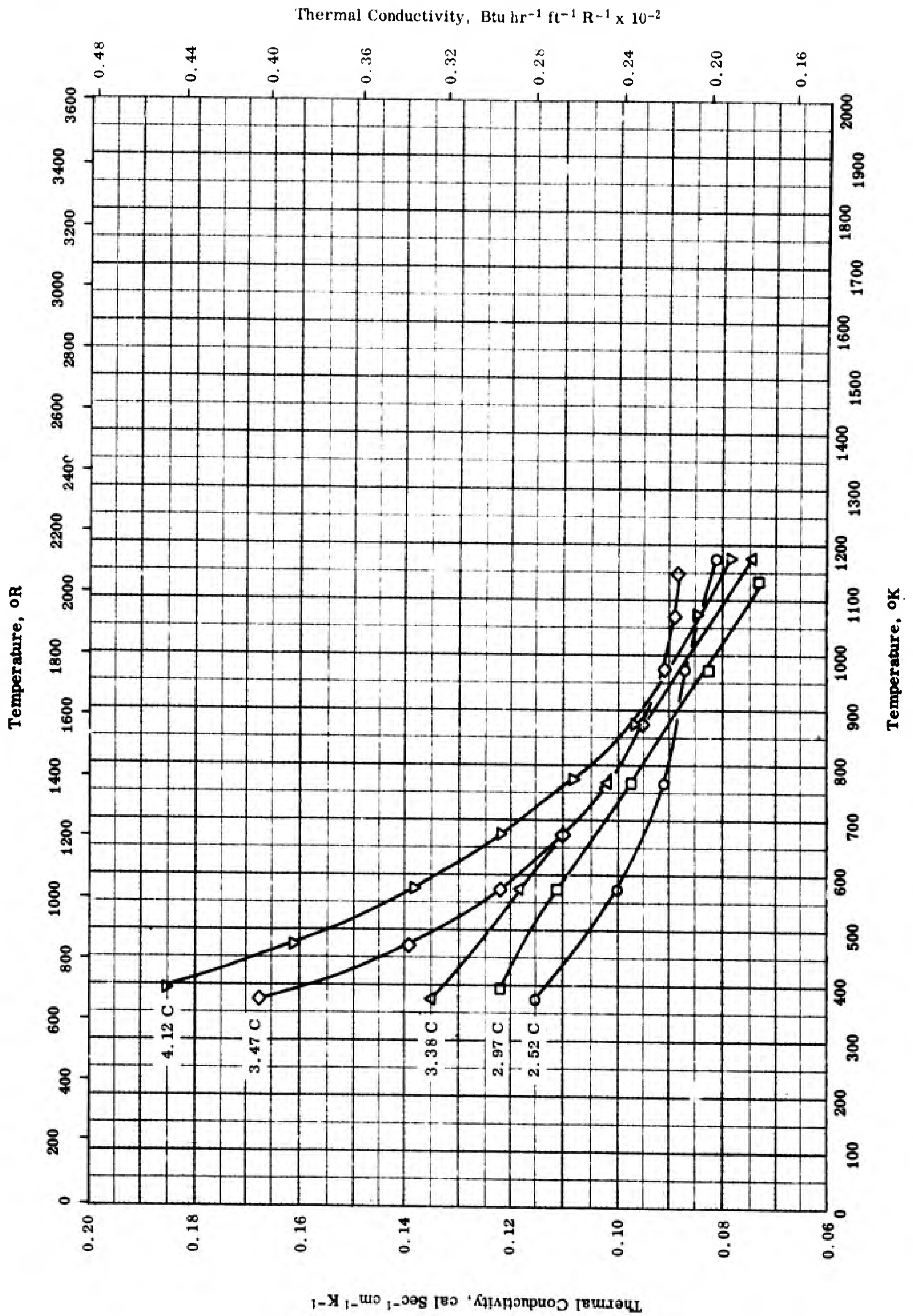
REPORTED VALUES

Density	g cm^{-3}	lb ft^{-3}
○ 3.25 C	7.97	498
□ 2.96 - 3.74 C	7.22 ± 0.1	451 ± 6

PROPERTIES OF IRON + CARBON + ΣX_i ($C > 2.00$)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	52-8	298		Nominal composition: 3.25 C, 1.75 Si, 0.6 Mn, 0.1 P, and 0.08 S.	Average density of 6 samples from weight and volume measurement.
□	57-12	298		2.96 - 3.74 C, 1.35 - 2.85 Si, 0.37 - 1.07 Mn, 0.18 - 1.01 P, and 0.02 - 0.13 S; containing no lamellar graphite.	Author correlates ρ with C by: $\rho = 6.4 + 0.2\,(C + 0.33\,Si + 0.33\,P)$ in g cm^{-3} and C, Si, and P in percent.

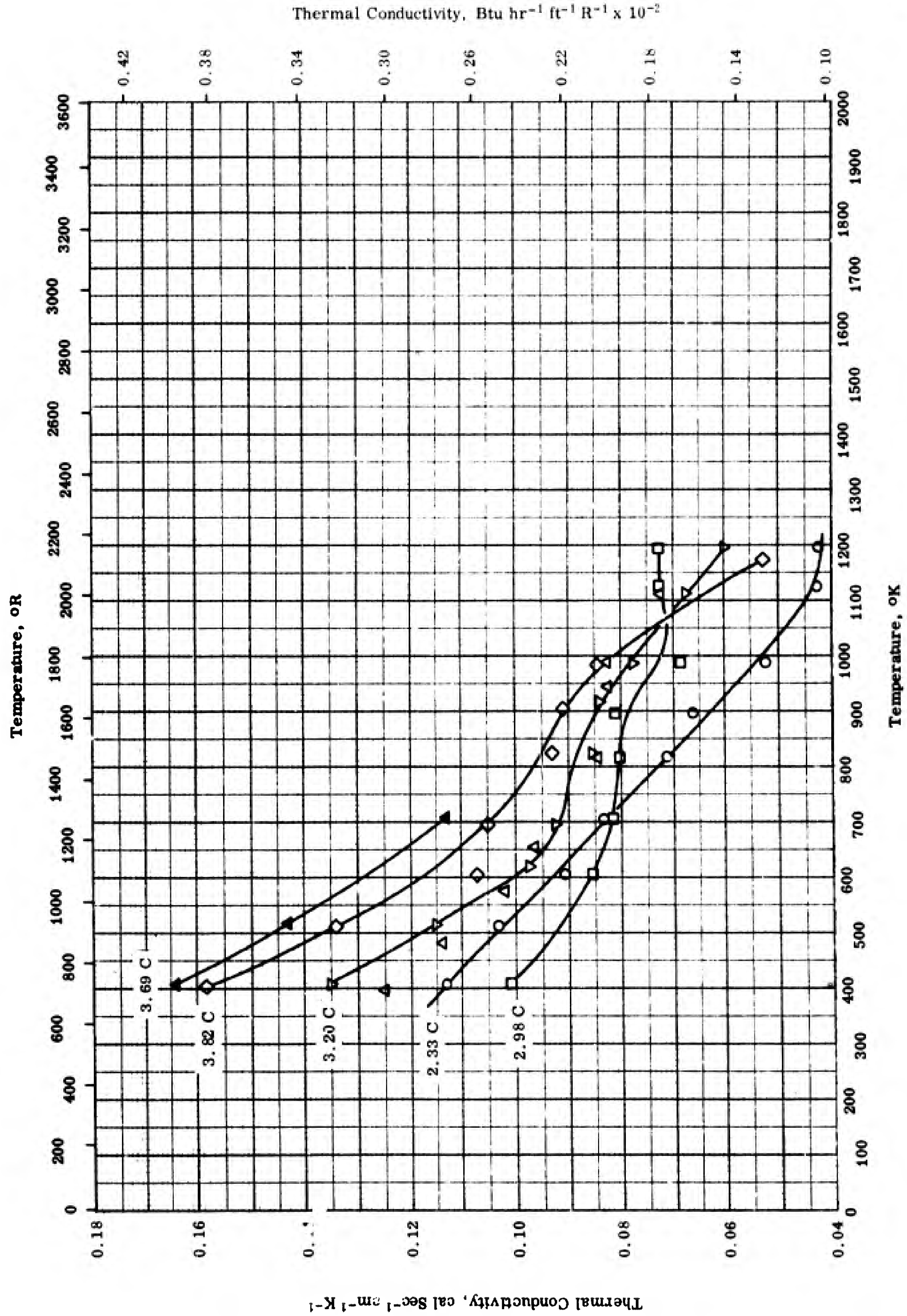


THERMAL CONDUCTIVITY -- IRON + CARBON + ΣX_i (C > 2.00) GROUP II
(Gray cast iron)

THERMAL CONDUCTIVITY -- IRON + CARBON + ΣX_i (C > 2.00) GROUP II
(Gray cast iron)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-5	373-1173	±5	2.52 C, 2.35 Si, 0.59 Mn, 0.17 Cr, 0.034 P, and 0.022 S.	Graphitized at a high temp to ferrite-graphite structure; containing lamellel form of graphite.
□	56-5	393-1133	±5	2.97 C, 2.35 Si, 0.61 Mn, 0.18 Cr, 0.034 P, and 0.023 S.	Same as above.
△	56-5	373-1173	±5	3.38 C, 2.33 Si, 0.59 Mn, 0.18 Cr, 0.032 P, and 0.020 S.	Same as above.
◇	56-5	373-1143	±5	3.47 C, 2.37 Si, 0.67 Mn, 0.06 Cr, 0.026 P, and 0.007 S.	Same as above.
▽	56-5	393-1173	±5	4.12 C, 2.18 Si, 0.58 Mn, 0.082 Cr, 0.024 S, and 0.022 P.	Same as above.

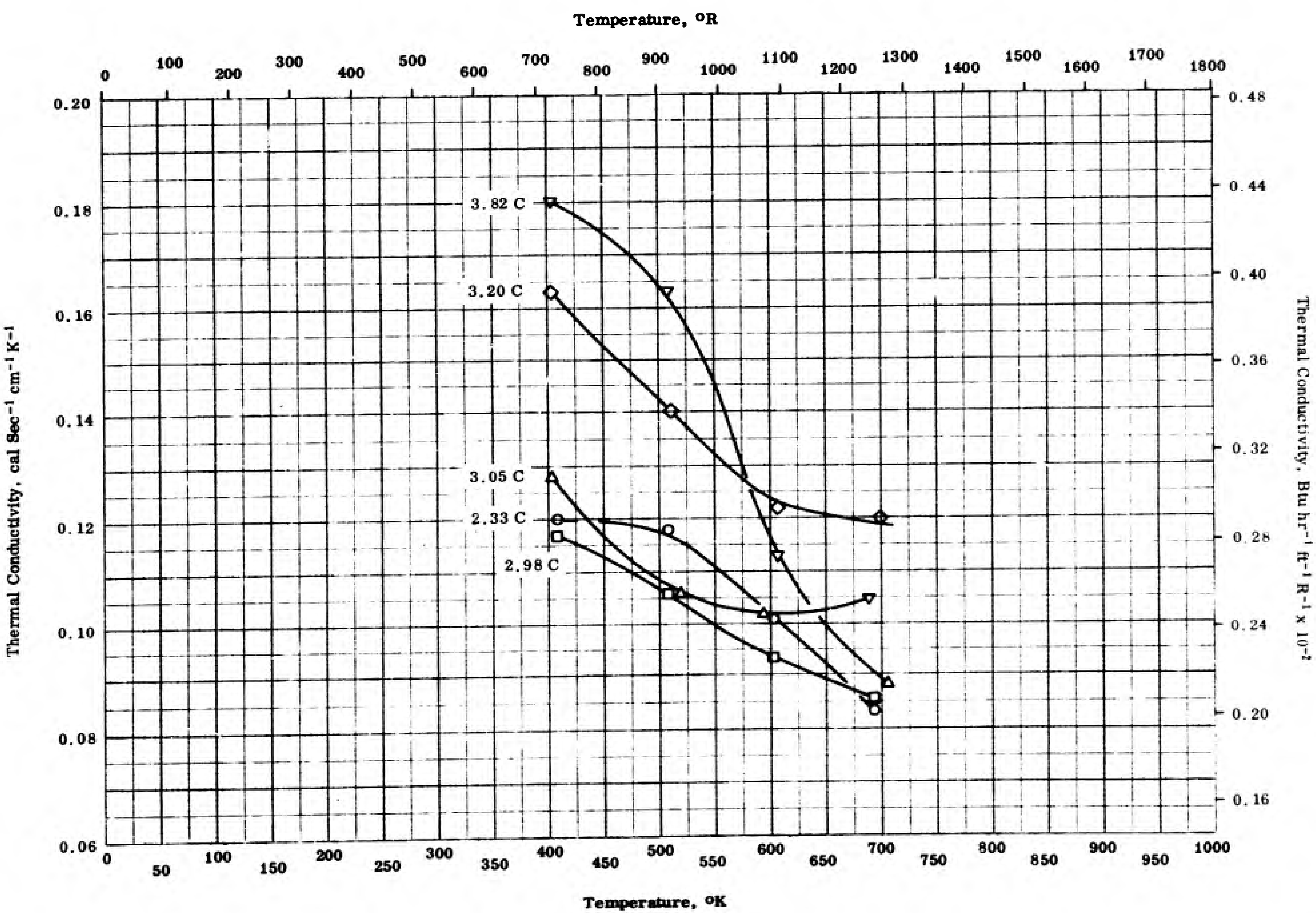


THERMAL CONDUCTIVITY -- IRON + CARBON + ΣX_i (C > 2.00) GROUP II
(Gray cast iron, pearlitic base)

THERMAL CONDUCTIVITY -- IRON + CARBON + ΣX_i (C> 2.00) GROUP II
(Gray cast iron, pearlitic base)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-5	408-1198	±5	2.33 C, 1.20 Si, 1.20 combined C, 0.36 Mn, 0.143 P, 0.10 Ni, 0.069 S, and 0.06 Cr.	
□	56-5	408-1193	±5	2.98 C, 1.94 Si, 1.5 Mn, 0.75 combined C. 0.490 Cr, 0.456 P, 0.130 Ni, and 0.077 S.	
△	56-5	393-1193	±5	3.05 C, 1.82 Si, 0.91 Mn, 0.85 combined C, 0.65 W, 0.509 P, 0.42 Cr, 0.090 Ni, and 0.083 S.	
◇	56-5	403-1173	±5	3.20 C, 2.25 Si, 0.88 Mn, 0.61 combined C, 0.143 P, 0.116 S, 0.10 Ni, and 0.09 Cr.	
▲	56-5	408-708	±5	3.69 C, 1.01 Si, 0.83 combined C, 0.69 Mn, 0.28 P, 0.079 S, 0.05 Cr, and 0.02 Ni.	
▽	56-5	408-1193	±5	3.82 C, 2.02 Si, 0.95 Mn, 0.65 combined C, 0.484 P, 0.19 Cr, 0.15 Ni, and 0.090 S.	

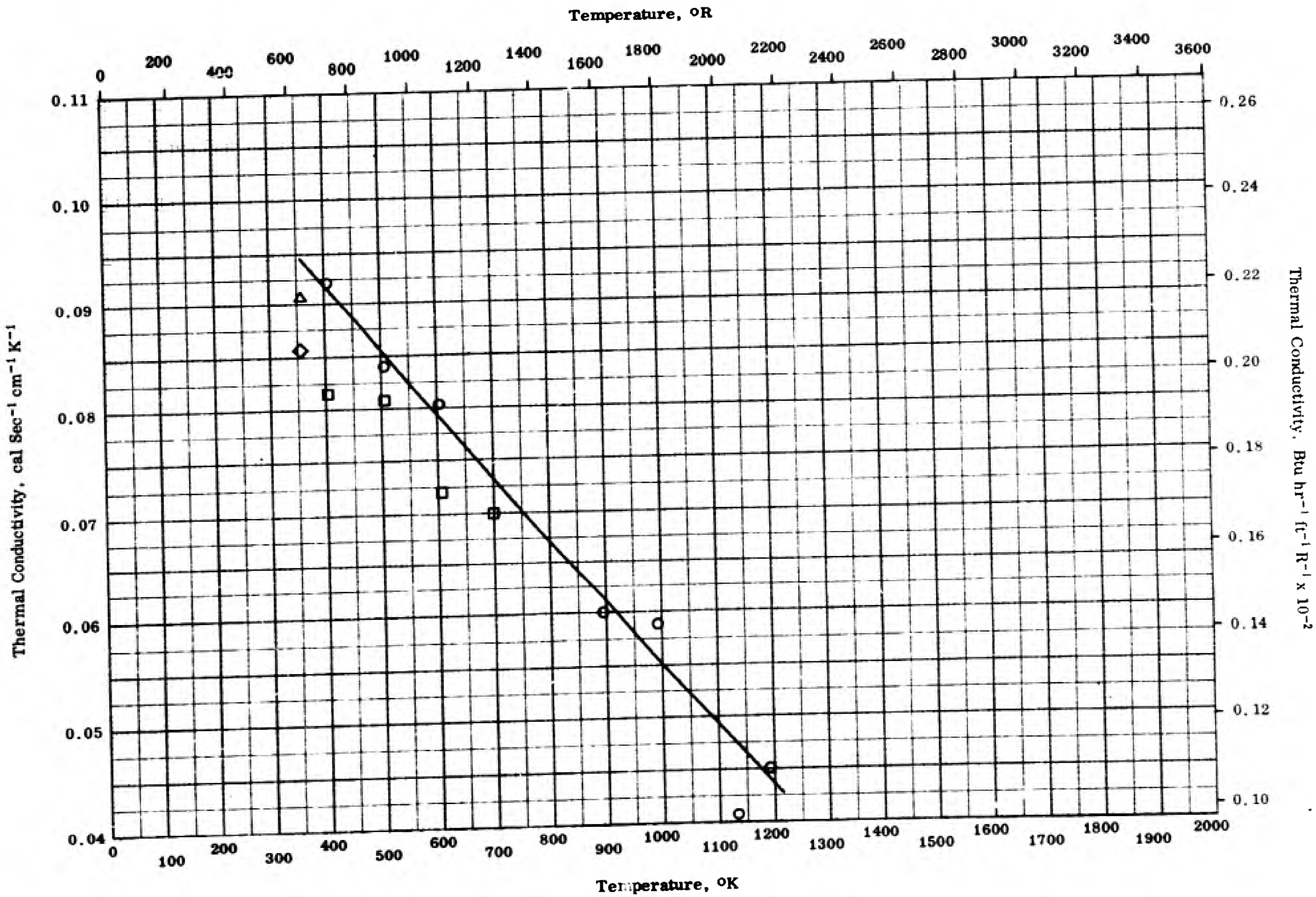


THERMAL CONDUCTIVITY -- IRON + CARBON + ΣX_i (C >2.00) GROUP II
(Gray cast iron, ferritic base)

THERMAL CONDUCTIVITY -- IRON + CARBON + ΣX_i (C > 2.00) GROUP II
(Gray cast iron, ferritic base)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-5	408-693	±5	2.33 C, 1.20 Si, 1.20 combined C, 0.36 Mn, 0.143 P, 0.10 Ni, 0.069 S, and 0.06 Cr.	
□	56-5	408-693	±5	2.98 C, 1.94 Si, 1.5 Mn, 0.75 combined C, 0.49 Cr, and 0.456 P	
△	56-5	403-703	±5	3.05 C, 1.82 Si, 0.91 Mn, 0.85 combined C, 0.65 W, 0.509 P, 0.42 Cr, 0.090 Ni, 0.083 S.	
◇	56-5	403-698	±5	3.20 C, 2.75 Si, 0.88 Mn, 0.61 combined C, 0.143 P, 0.116 S, 0.10 Ni, and 0.09 Cr.	
▽	56-5	408-688	±5	3.82, 2.02 Si, 0.95 Mn, 0.65 combined C, 0.484 P, 0.19 Cr, 0.15 Ni, and 0.090 S.	

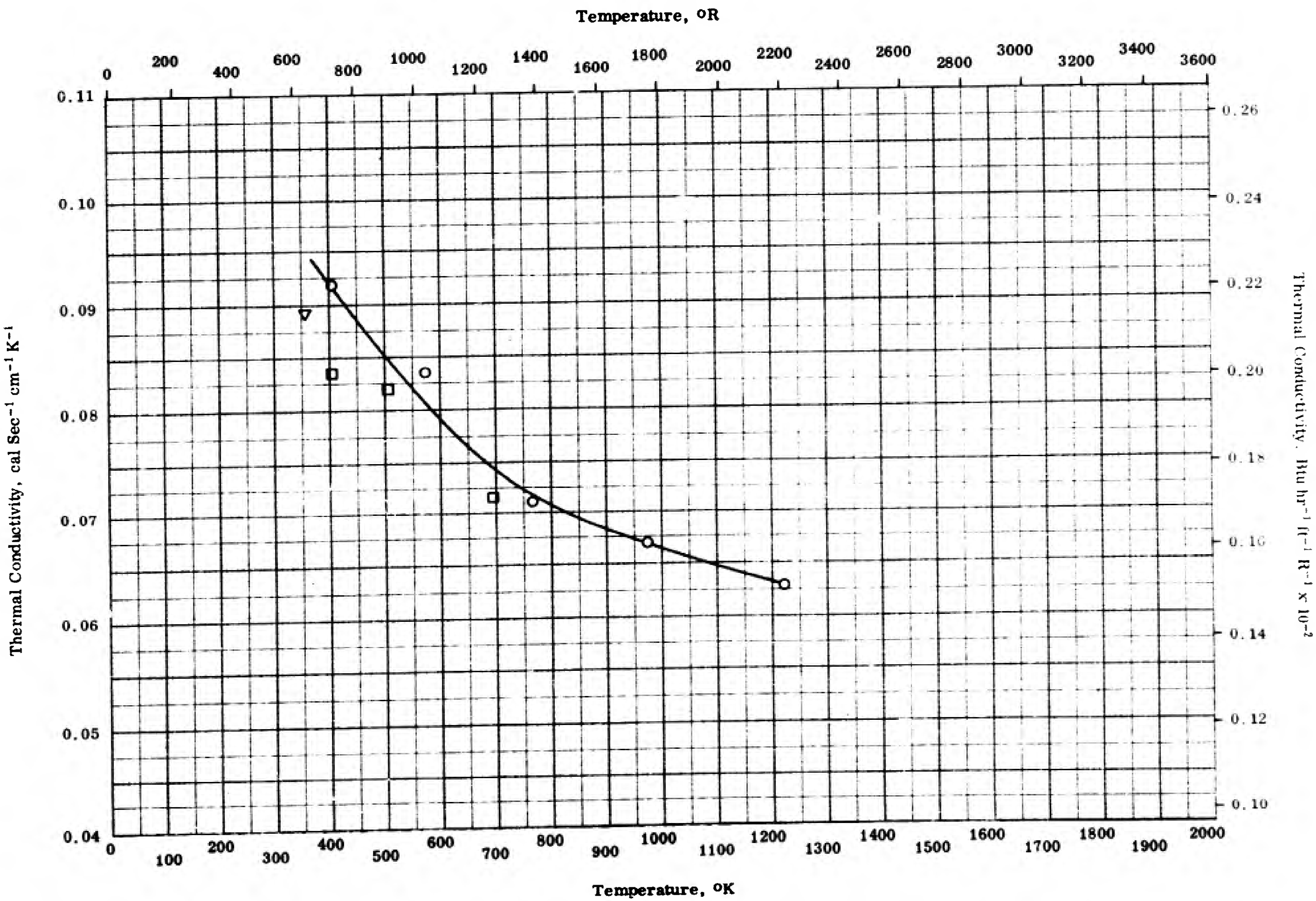


THERMAL CONDUCTIVITY -- IRON + CARBON + ΣX_i (C > 2.00) GROUP II
(Nodular cast iron, pearlitic base)

THERMAL CONDUCTIVITY -- IRON + CARBON + ΣX_i (C > 2.00) GROUP II
(Nodular cast iron, pearlitic base)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-5	403-1193	±5	3.13 C, 2.54 Si, 0.91 Mn, 0.81 combined C, 0.15 Ni, 0.122 P, 0.07 Mg, 0.02 Cr, and 0.01 S.	
□	56-5	403-698	±5	2.95 C, 2.90 Si, 1.08 Mn, 0.75 combined C, 0.18 Ni, 0.126 P, 0.08 Mg, 0.02 Cr, and 0.01 S.	
△	53-3	345-372		3.57 C, 1.33 Ni, 1.12 Si, 0.33 Mn, 0.035 P, 0.06 Mg (approx.), 0.004 S; 61 pearlite, 30 ferrite, and 9 graphite.	
◇	53-3	345-372		3.33 C, 2.28 Si, 1.12 Ni, 0.50 Mn, 0.06 Mg, 0.055 P, 0.010 S; 85 pearlite, 5 ferrite, and 10 graphite.	

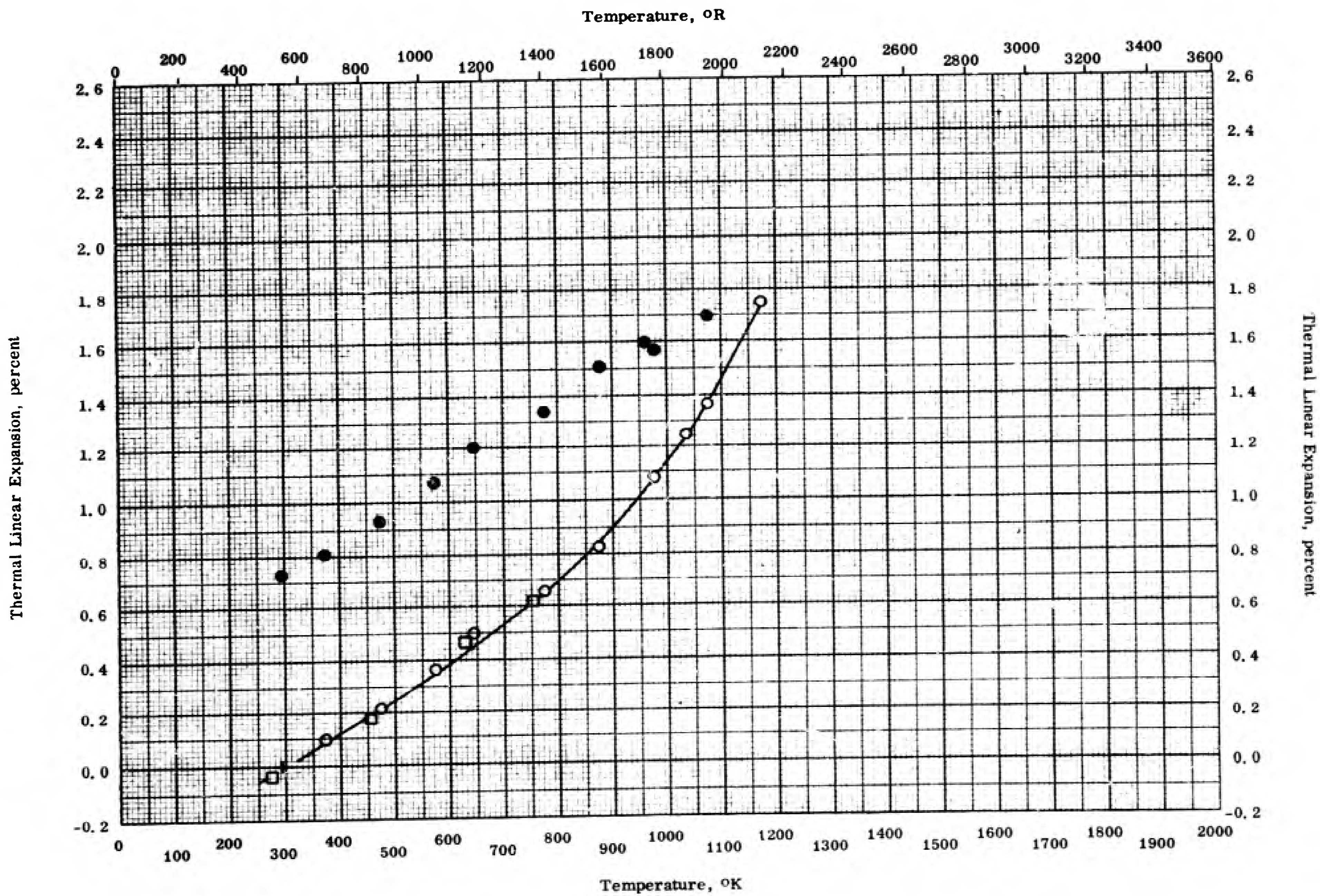


THERMAL CONDUCTIVITY -- IRON + CARBON + ΣX_i (C > 2.00) GROUP II
(Nodular cast iron, ferritic base)

THERMAL CONDUCTIVITY -- IRON + CARBON + ΣX_i (C > 2.00) GROUP II
(Nodular cast iron, ferritic base)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-5	403-1223	± 5	4 samples of following compositions: (1) 3.57 C, 2.44 Si, 0.61 Mn, 0.082 Cr, 0.02 P, 0.011 Mg, and 0.003 S. (2) 3.34 C, 2.53 Si, 1.0 Mg, 0.81 Mn, 0.10 Cr, 0.024 P, and 0.005 S. (3) 3.32 C, 2.49 Si, 0.59 Mn, 0.17 Cr, 0.035 P, 0.016 Mg, and 0.005 S. (4) 2.78 C, 2.48 Si, 0.63 Mn, 0.18 Cr, 0.033 P, 0.006 S, and 0.004 Mg.	Samples graphitized at high temp to ferrite-graphite structure and Mg modified; containing spheroidal form of graphite; same data for all samples.
□	56-5	403-693	± 5	2.95 C, 2.90 Si, 1.08 Mn, 0.75 combined C, 0.18 Ni, 0.126 P, 0.08 Mg, 0.02 Cr, and 0.01 S.	As cast; graphite size 0.000121 in.
▽	53-3	345-372		3.56 C, 2.27 Si, 1.30 Ni (approx.), 0.33 Mn, 0.06 Mg (approx), 0.025 P, 0.010 S; 50 ferrite, 40 pearlite, and 10 graphite.	

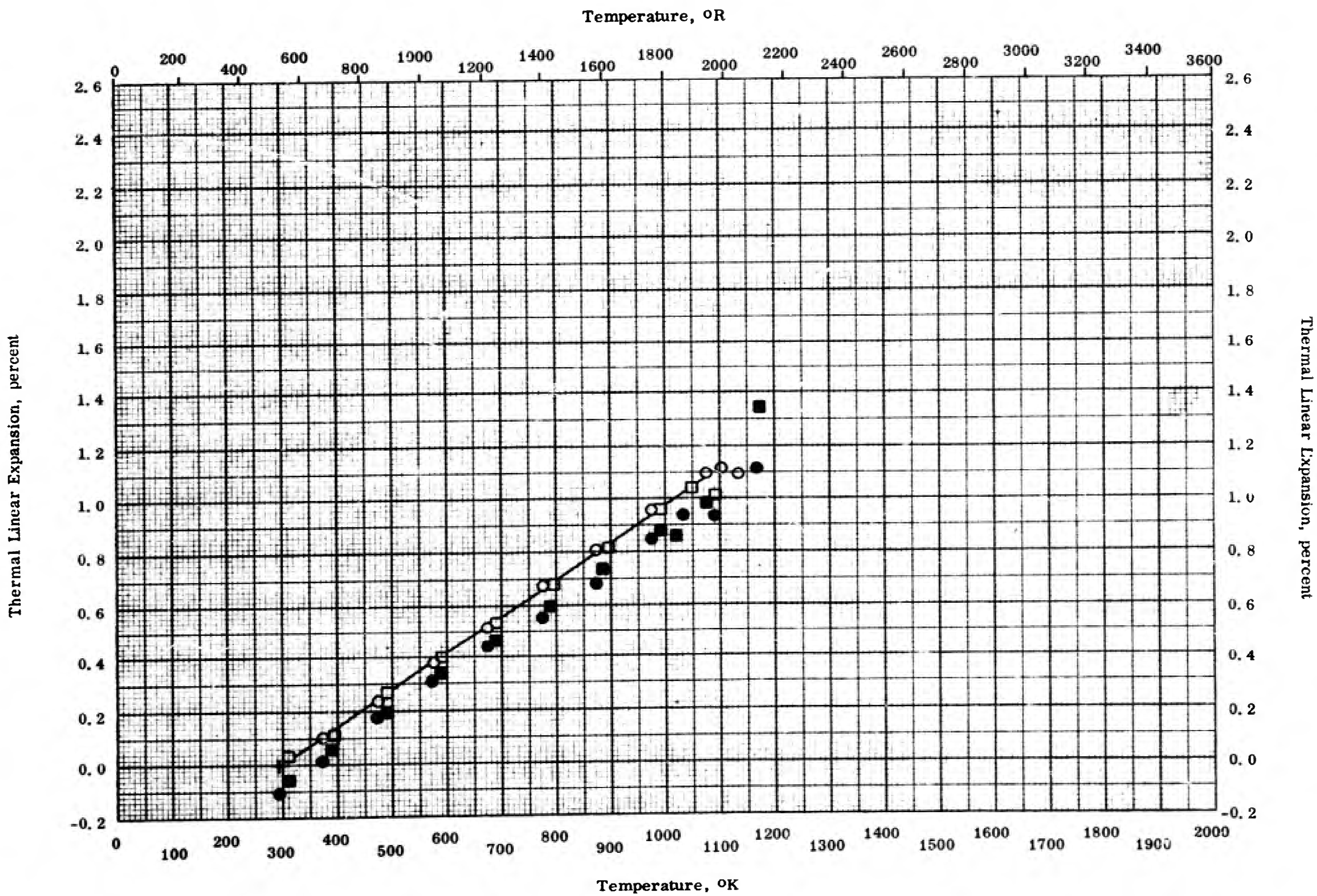


THERMAL LINEAR EXPANSION -- IRON + CARBON + ΣX_i ($C > 2.00$) GROUP II
(Gray cast iron)

THERMAL LINEAR EXPANSION -- IRON + CARBON + ΣX_i (C > 2.00) . GROUP II
(Gray cast iron)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-16	298-1173		93.74 Fe, 3.55 C, 2.00 Si, 3.55 Mn, 0.119 P, and 0.040 S.	Heating rate 2 C min^{-1} up to 600 C and then 1.5 C min^{-1}.
●	56-16	298-1173		Same as above.	The above specimen; cooling; cooling curves higher than heating curves due to internal oxidization and graphitization.
□	43-1	293-773		Three samples: a) 3.46 C, 2.21 Si, 0.97 Mn, 0.43 P, 0.38 Cr, 0.28 Ni, and 0.032 S. b) 3.59 C, 2.81 Si, 1.56 Cu, 0.93 Mo, 0.59 Mn, 0.55 Cr 0.51 P, 0.09 V, and 0.043 S. c) 3.97 C, 2.86 Si, 0.69 P, 0.65 Mn, 0.25 Mo, and 0.035 S.	Mean values with 1.0% max deviation.



THERMAL LINEAR EXPANSION -- IRON + CARBON + ΣX_i ($C > 2.00$) GROUP II
(Nodular cast iron, pearlite)

THERMAL LINEAR EXPANSION -- IRON + CARBON + ΣX_i ($C > 2.00$) GROUP II

(Nodular cast iron, pearlite)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-16	298-1168		93.95 Fe, 3.35 C, 2.00 Si, 0.56 Mn, 0.112 P, and 0.024 S.	Heating curve.
●	56-16	298-1168		Same as above.	The above sample, cooling curve; permanent contraction 0.090%.
□	56-16	298-1173		93.27 Fe, 3.25 C, 2.80 Si, 0.54 Mn, 0.112 P, and 0.024 S.	Heating curve.
■	56-16	298-1173		Same as above.	The above sample, cooling curve; permanent contraction 0.045%.

ALLOY STEELS - INCLUDING ALLOY CAST IRONS

(Iron is greater than or equal to any other constituent.)

NOTE: For purposes of classification, alloy steels are divided into two groups specified as follows:

GROUP I: Every other alloying constituent ≤ 0.20 percent except for Mn, P, S, Si which may be ≤ 0.60 percent each and C ≤ 2.0 percent.

GROUP II: At least one other alloying constituent > 0.20 percent and/or if any of Mn, P, S, Si > 0.60 percent.

With exception when Mn, P, S, or Si is the major alloying constituent. In the case of $Fe + Mn + \Sigma X_i$ alloys, the definition for Group I and Group II are written:

GROUP I: Every other alloying constituent ≤ 0.20 percent except for P, S, Si which may be ≤ 0.60 percent each and C ≤ 2.0 percent.

GROUP II: At least one other alloying element > 0.20 percent and/or if any of P, S, Si > 0.60 percent.

In the above example, the limit of Mn weight percentage may be written:

$Fe \geq Mn > P, S, Si$, and any other alloying element and $Mn \geq 0.20$.

The same principle can be applied to ferrous alloys containing P, S, or Si as major alloying constituents.

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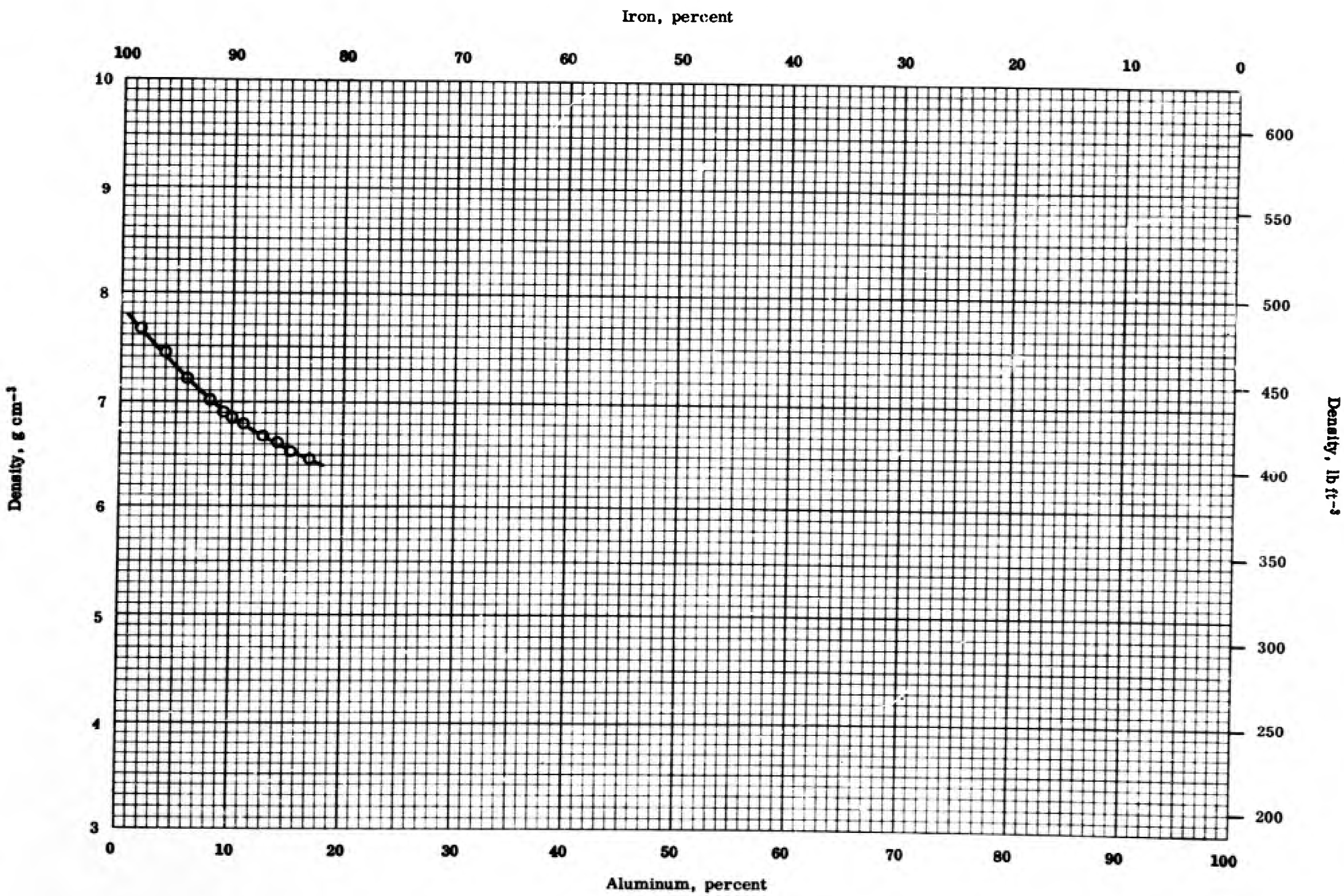
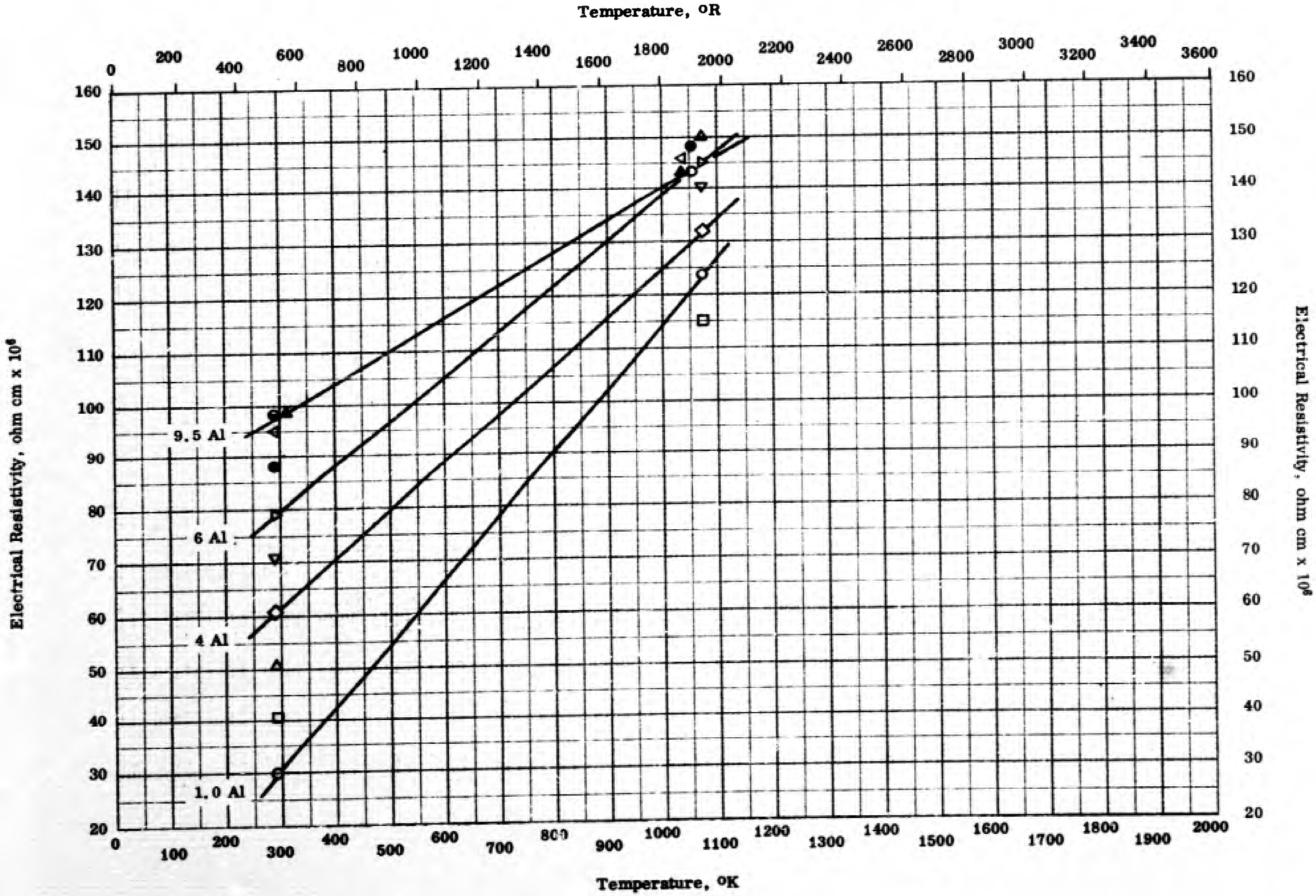


DENSITY -- IRON + ALUMINUM + ΣX_i GROUP I

DENSITY -- IRON + ALUMINUM + ΣX_i GROUP I

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	51-3	298		0-17 Al; made from electrolytic Fe and Al.	Forged, turned, annealed 1 hr at 1000 C, furnace cooled to 700 C, and then cooled to room temperature at 30 C hr^{-1}.

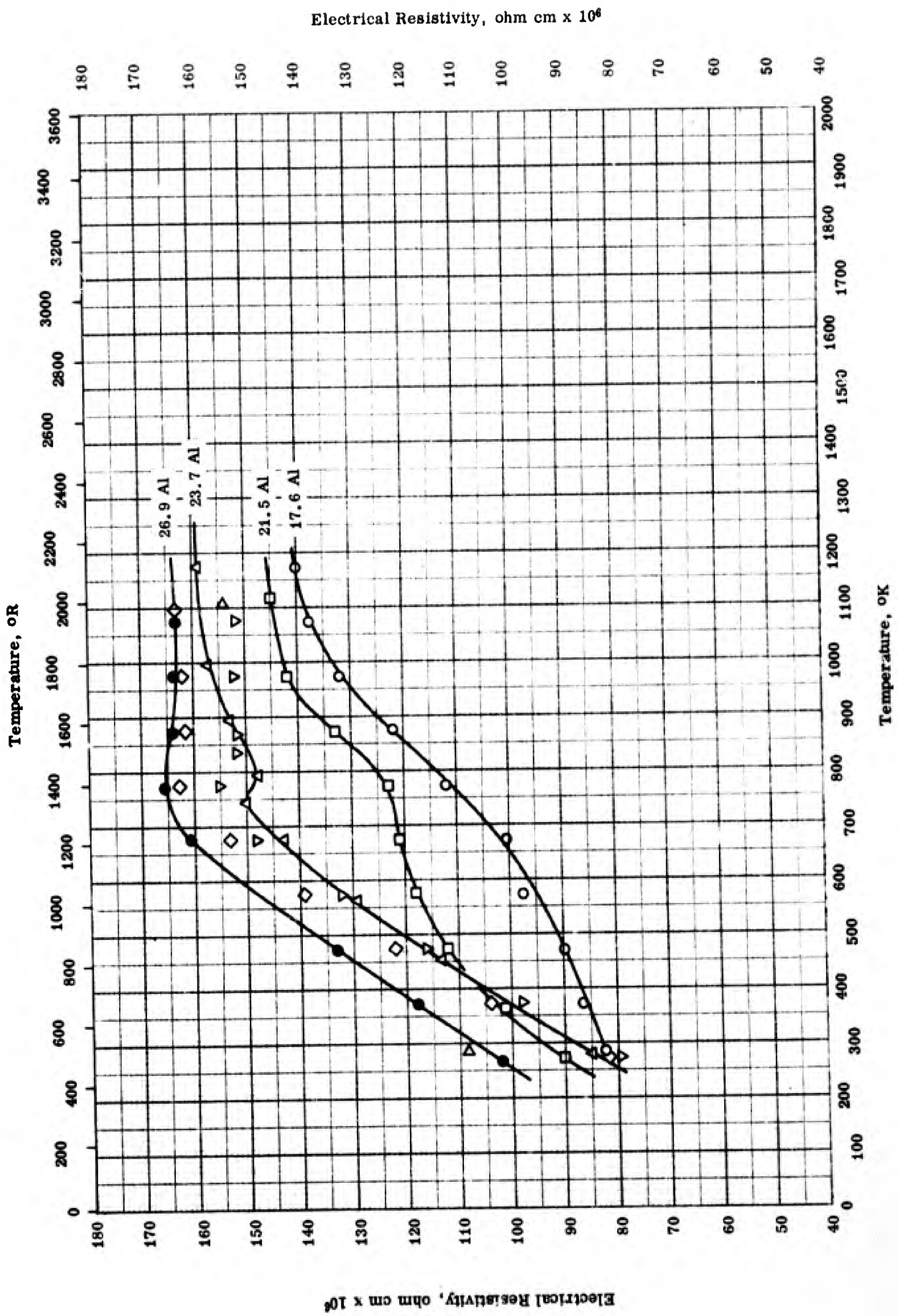


ELECTRICAL RESISTIVITY -- IRON + ALUMINUM + ΣX_i GROUP I.
($1 \le Al < 10$)

ELECTRICAL RESISTIVITY — IRON + ALUMINUM + ΣX_i GROUP I.
($1 \le Al < 10$)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	50-1	293-1073		1.0 Al.	Annealed; results may not be equilibrium data.
□	50-1	293-1073		2.0 Al.	Same as above.
∧	50-1	293-1073		3.0 Al.	Same as above.
◇	50-1	293-1073		4.0 Al.	Same as above.
▽	50-1	293-1073		5.1 Al.	Same as above.
▷	50-1	293-1073		6.2 Al.	Same as above.
●	50-1	293-1073		7.3 Al.	Same as above.
◁	50-1	293-1073		8.4 Al.	Same as above.
◒	50-1	293-1073		9.6 Al.	Same as above.
△	50-1	293-1073		9.4 Al.	Same as above.

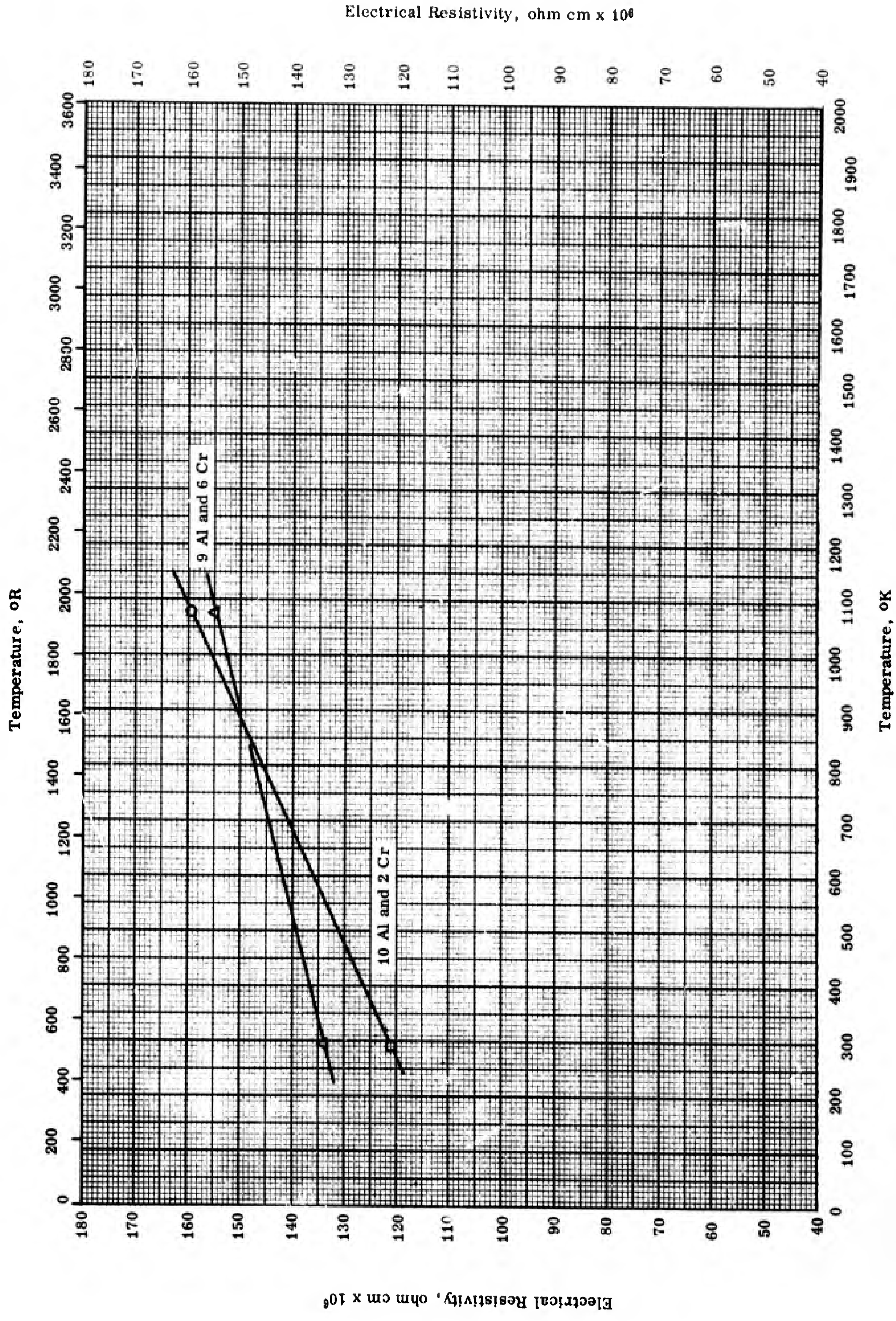


ELECTRICAL RESISTIVITY -- IRON + ALUMINUM + ΣX_i GROUP I
($10 < Al < 27$)

ELECTRICAL RESISTIVITY -- IRON + ALUMINUM + ΣX_i GROUP I
(10< Al < 27)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	52-4	273-1173		82.4 Fe and 17.6 Al; prepared from 99.998 pure Al and spectrographically pure Fe.	Results typical of samples both rapidly heated from quenched state and in equilibrium, slowly cooled.
□	52-4	273-1123		78.5 Fe and 21.5 Al; raw materials same as above.	Sample in equilibrium, slowly cooled.
△	52-4	273-1173		76.3 Fe and 23.7 Al; raw materials same as above.	Same as above.
◇	52-4	273-1073		75.5 Fe and 24.5 Al; raw materials same as above.	Same as above.
▽	52-4	273-1073		74.2 Fe and 25.8 Al; raw materials same as above.	Same as above.
●	52-4	273-973		73.1 Fe and 26.9 Al; raw materials same as above.	Same as above.
▷	50-1	293-1073		10.8 Al.	Annealed.



ELECTRICAL RESISTIVITY -- IRON + ALUMINUM + ΣX_i GROUP II

ELECTRICAL RESISTIVITY -- IRON + ALUMINUM + ΣX_i GROUP II

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	50-1	293-1073		87.7 Fe, 10.2 Al, and 2.1 Cr.	Annealed.
△	50-1	293-1073		84.8 Fe, 9.1 Al, B and 6.1 Cr.	Annealed.

PROPERTIES OF IRON + CHROMIUM + ΣX_i

REPORTED VALUES

Density See figure

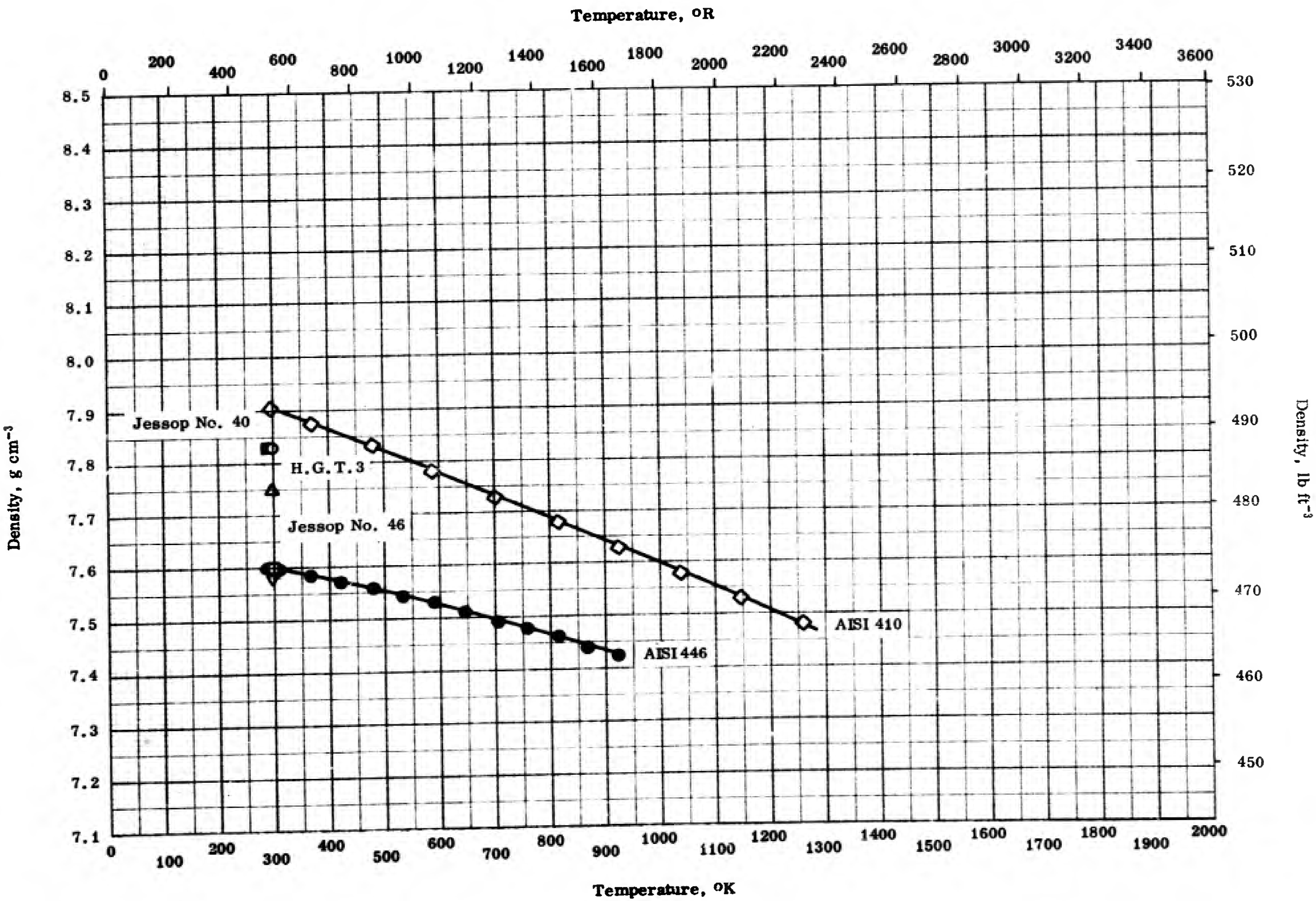
Melting Point	K	R
O AISI 430	1727	3109
AISI 403*	1780 ± 25	3204 ± 45
AISI 405*	1780 ± 25	3204 ± 45
AISI 410*	1780 ± 25	3204 ± 45
AISI 416*	1780 ± 25	3204 ± 45
AISI 430F*	1742 ± 42	3135 ± 75
AISI 440A*	1713 ± 70	3083 ± 126
AISI 440B*	1713 ± 70	3083 ± 126
AISI 440C*	1700 ± 55	3060 ± 99
AISI 446*	1769 ± 14	3184 ± 25

*Annealed samples; Metals Handbook. (Ref. 61-13)

PROPERTIES OF IRON + CHROMIUM + ΣX_i

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	63-5	1727		AISI 430; 14 - 18 Cr, 1.0 Mn, 1.0 Si, 0.1 C, 0.04 P, and 0.03 S.	

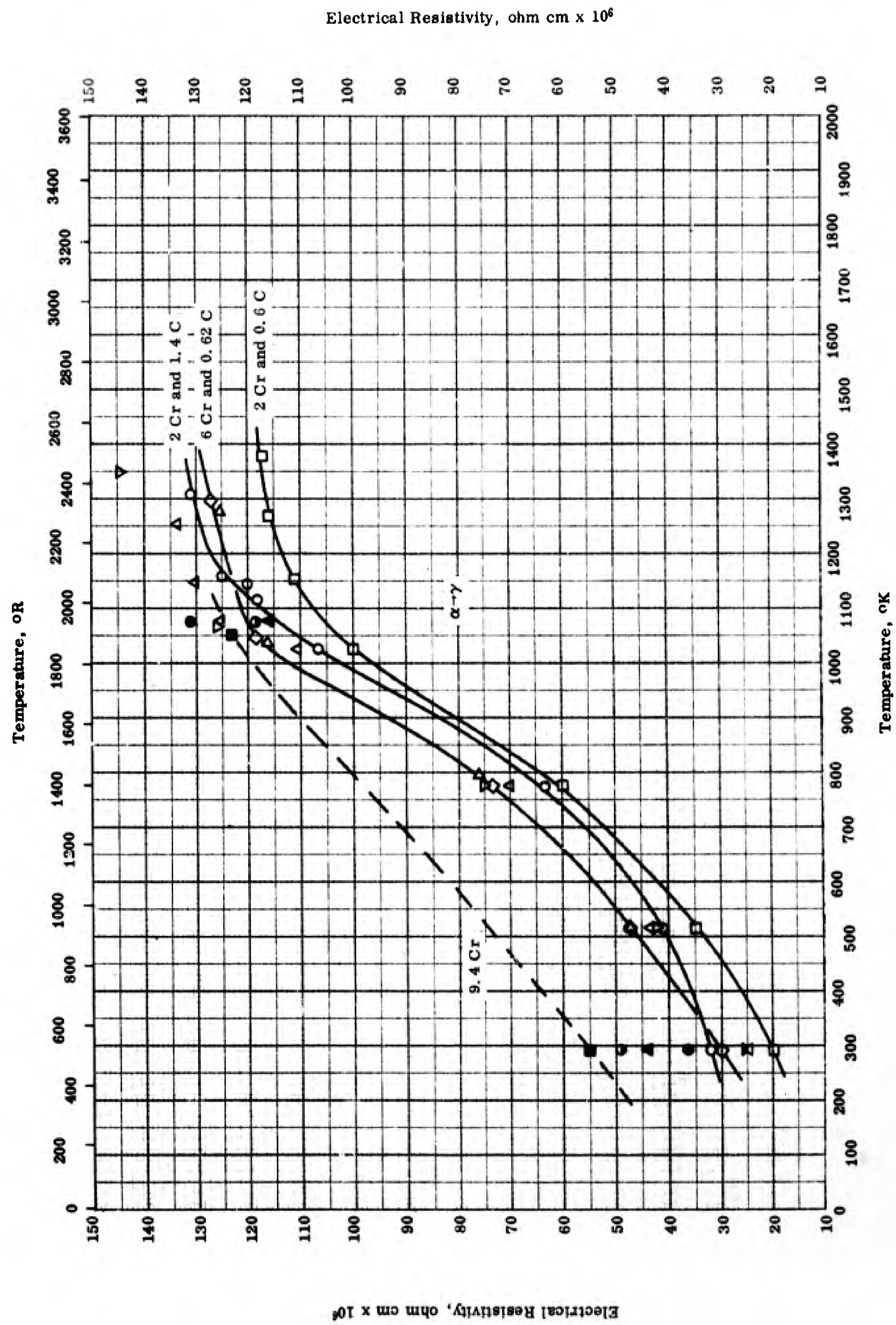


DENSITY -- IRON + CHROMIUM + ΣX_i GROUP II

DENSITY -- IRON + CHROMIUM + ΣX_i GROUP II

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-13	298		H.G.T. 3 steel (British design.); 2.87 Cr, 0.77 V, 0.59 W, 0.51 Mo, 0.45 Si, 0.35 Ni. 0.33 Mn, and 0.23 C.	
■	52-1	298		Jessop No. 40 steel (British design); 2.7 Cr, 0.75 V, 0.5 Mo, 0.5 W, 0.45 Si, 0.30 Ni, 0.30 Mn, 0.23 C.	
△	52-1	298		Jessop No. 46 steel (British design.); 11.0 Cr, 0.7 V, 0.5 Mo, 0.4 Mn, 0.3 Si, 0.2 C, and 0.15 Nb.	
□	60-5	298		81 Fe, 17 Cr, 1.0 ≥ Mn, and 1.0 ≥Si.	
●	61-10	294-922		AISI 446; 23.00 - 27.00 Cr, 1.5 >Mn, 1.0 >Si, 0.2 >C, and 0.25 >N.	
◇	61-10	294-1255		AISI 410; 11.50-13.50 Cr, 1.00 >Mn, 1.00 >Si, and 0.15 >C.	
▽	58-9	298		AISI 446 Stainless Steel; 70.55 Fe, 27.61 Cr, 0.086 C, and 0.01 Mo.	

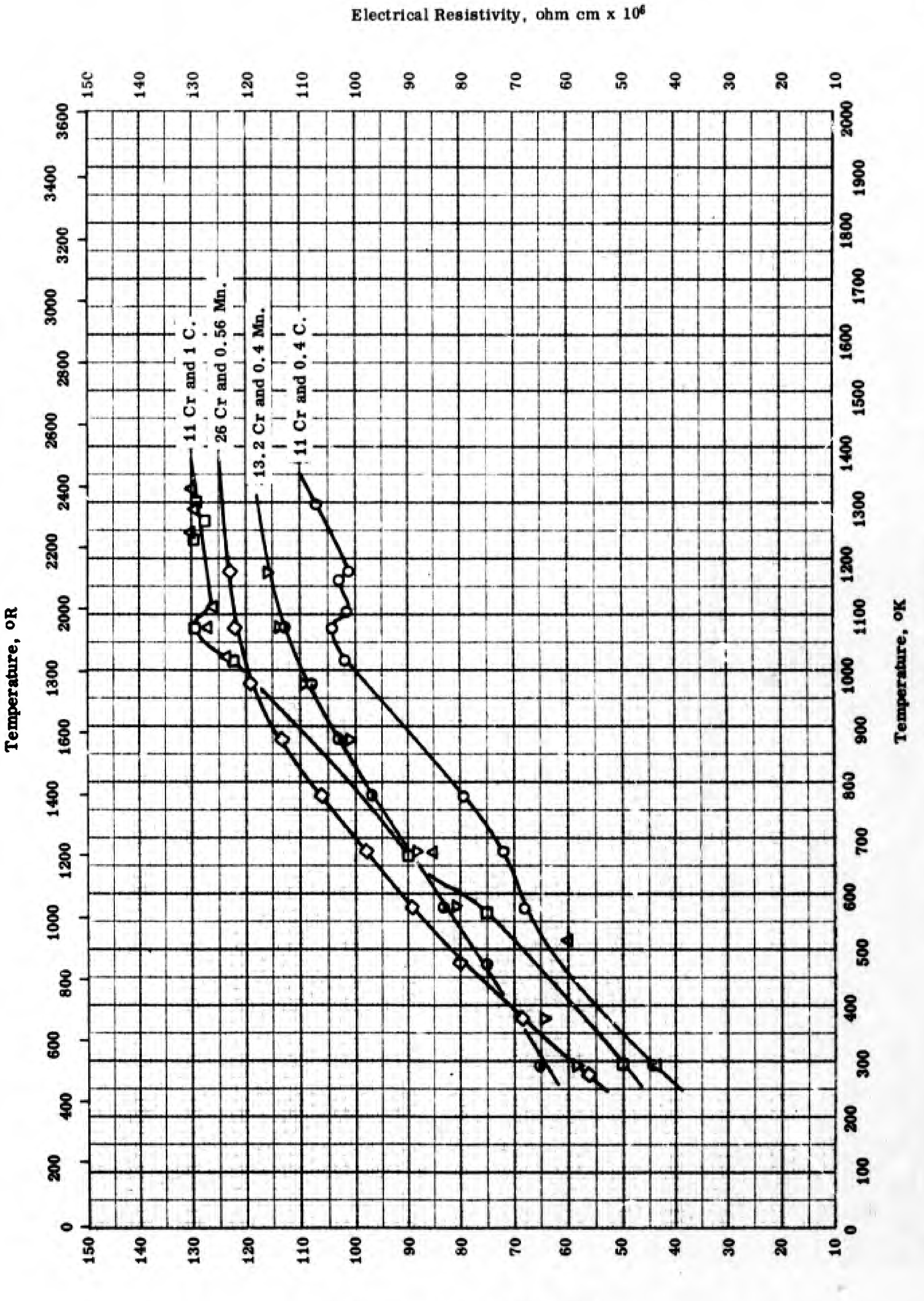


ELECTRICAL RESISTIVITY -- IRON + CHROMIUM + ΣX_i GROUP I
($1 < Cr < 10$)

ELECTRICAL RESISTIVITY -- IRON + CHROMIUM + ΣX_i GROUP I
(1< Cr <10)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
□	47-2	293-1348	± 2	2.09 Cr and 0.58 C; in form of $(Fe, Cr)_3C$.	Annealed to granular pearlite structure before test; tested at 20 C/min. above 500 C.
△	47-2	293-1248	± 2	2.21 Cr and 1.05 C; in form of $(Fe, Cr)_3C$.	Same as above.
○	47-2	233-1323	± 2	2.02 Cr and 1.41 C; in form of $(Fe, Cr)_3C$.	Same as above.
◇	47-2	293-1298	± 2	5.85 Cr and 0.62 C; in form of $(Cr, Fe)_7C_3$.	Same as above.
▽	47-2	293-1348	± 2	5.89 Cr and 0.96 C; in form of $(Cr, Fe)_7C_3$.	Same as above.
▷	47-2	293-1273	± 2	5.82 Cr and 1.25 C.	Same as above.
●	50-1	293-1073		3.7 Cr.	Values from author's smoothed curve.
▲	50-1	293-1073		5.6 Cr.	Same as above.
◒	50-1	293-1073		7.5 Cr.	Same as above.
■	50-1	293-1073		9.4 Cr.	Same as above.

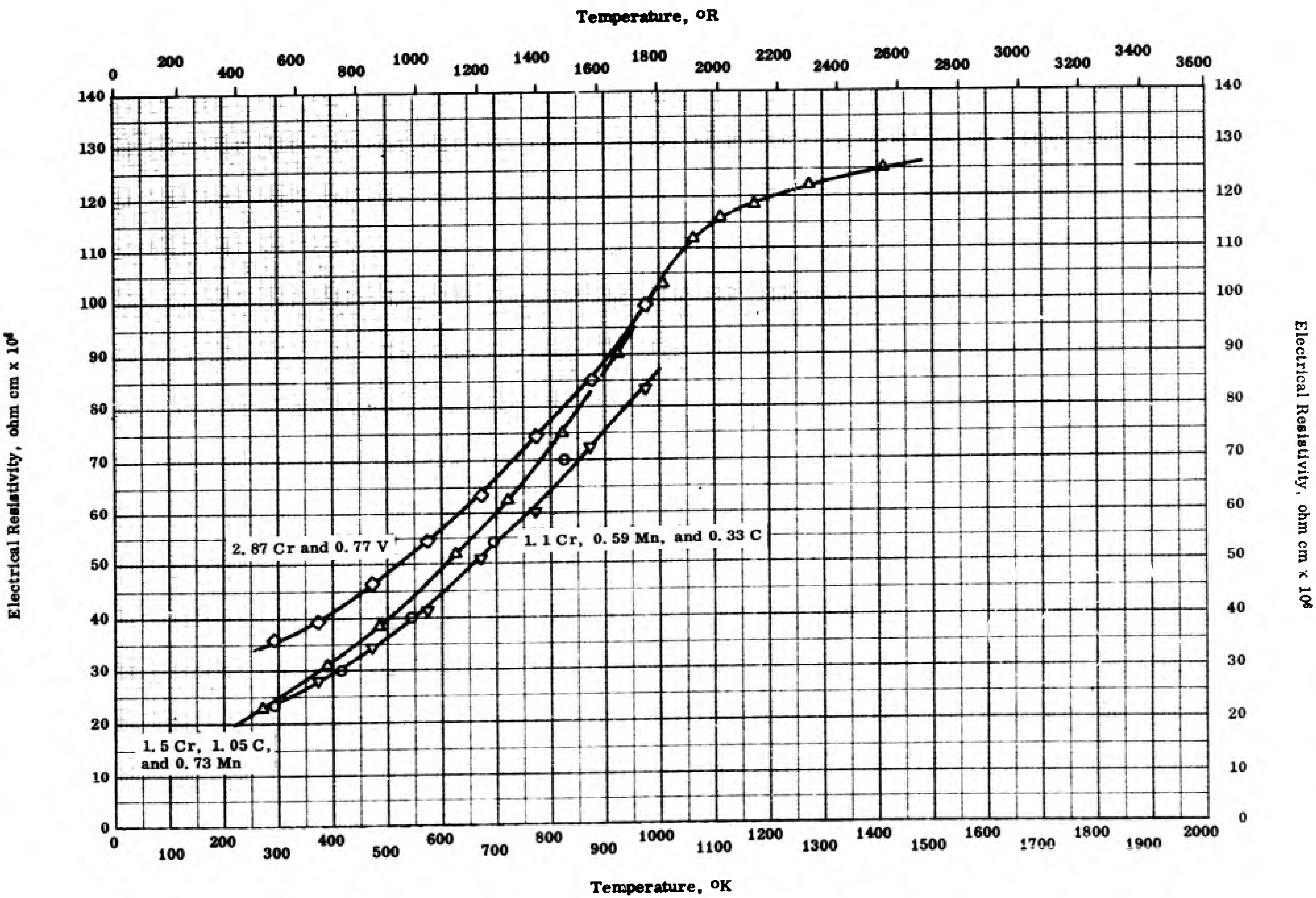


ELECTRIC RESISTIVITY -- IRON + CHROMIUM + ΣX_i GROUP I
($1 < Cr < 26$)

ELECTRICAL RESISTIVITY -- IRON + CHROMIUM + ΣX_i GROUP I
($10 < Cr < 26$)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	47-2	293-1298	± 2	11.05 Cr and 0.43 C; in form of $(Cr, Fe)_{23} C_6$.	Annealed to granulated pearlite structure before test; tested at 20 C min^{-1} above 500 C.
△	47-2	298-1323	± 2	10.86 Cr and 0.71 C; in form of $(Cr, Fe)_{23} C_6$.	Same as above.
□	47-2	293-1303	± 2	11.08 Cr and 1.01 C; in form of $(Cr, Fe)_7 C_3$.	Same as above.
◇	52-3	273-1173		Stainless Steel 446; 26.0 Cr, 0.56 Mn, 0.50 Si, 0.14 N, 0.13 C, 0.10 Ni, and 0.007 S.	
▽	55-1	293-1173		13.2 Cr, 0.40 Mn, 0.35 Si, and 0.17 C.	Quenched.
◒	55-1	293-1173		Same as above.	Tempered.

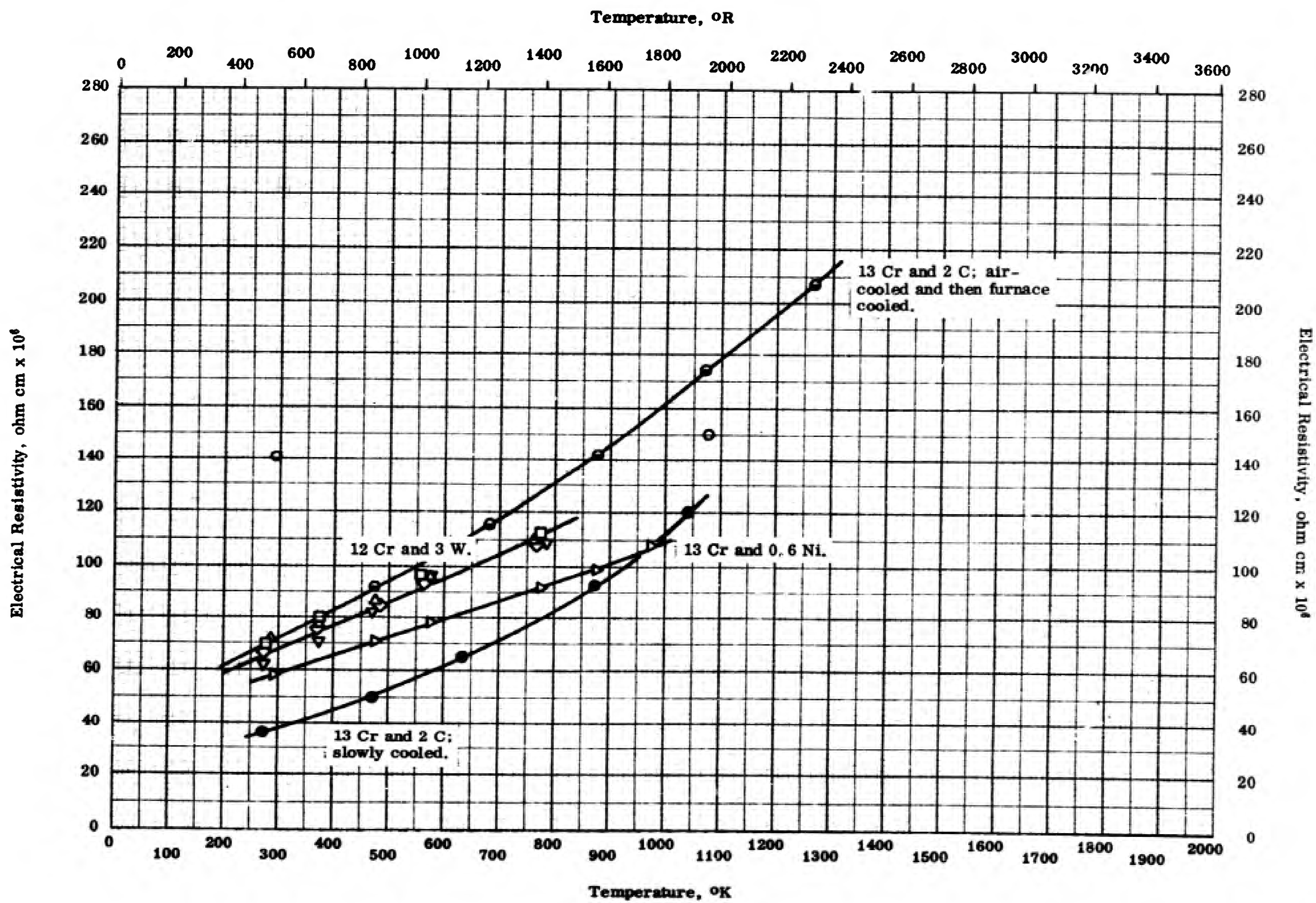


ELECTRICAL RESISTIVITY -- IRON + CHROMIUM + ΣX_i GROUP II
($Cr < 3.0$)

ELECTRICAL RESISTIVITY -- IRON + CHROMIUM + ΣX_i (Cr < 3.0) GROUP II

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-9 also 56-11	293-822		Type En19 steel (British design.); 1.15 Cr, 0.59 Mn, 0.42 C, 0.33 Ni, 0.23 Si, 0.22 Mo, 0.046 P, and 0.019 S.	Oil-quenched, annealed 1 hr at 850 C, cooled slowly, reheated to 650 C for 120 hrs and again cooled slowly.
△	56-9 also 56-11	272-1172		Type En31 steel (British design.); 1.5 Cr, 1.05 C, 0.73 Mn, 0.23 ea. of Ni and Si, 0.21 Mo, 0.030 P, and 0.028 S.	Oil-quenched from 830 C and tempered 2 hrs at 750 C.
◇	52-2	293-973		H. G. T. 3 steel (British design.); 2.87 Cr, 0.77 V, 0.59 W, 0.51 Mo, 0.45 Si, 0.35 Ni, 0.33 Mn, and 0.23 C.	
▽	55-1	373-973		1.08 Cr, 0.57 Mn, 0.30 V, 0.26 Si, and 0.15 C.	Average of two samples: one after working and the other heat-treated; max. deviation 1.3%.

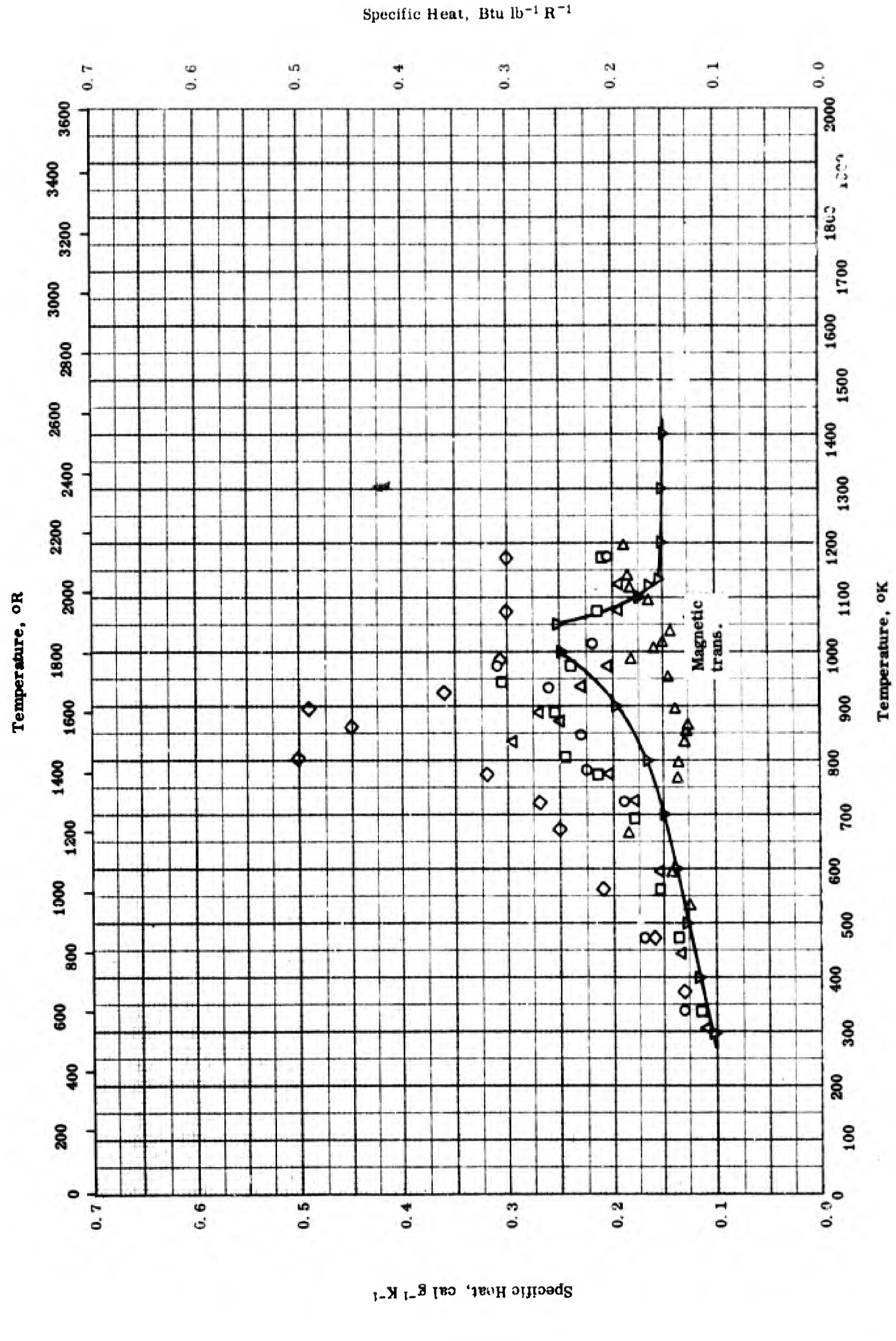


ELECTRICAL RESISTIVITY -- IRON + CHROMIUM + ΣX_i GROUP II.
(Cr > 10)

ELECTRICAL RESISTIVITY -- IRON + CHROMIUM + ΣX_i GROUP II.
($Cr > 10$)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	50-1	293-1073		10.2 Cr and 7.9 Al.	Low accuracy.
□	52-6	273-773		12.06 Cr, 3.10 W, 2.04 C, 0.46 Mn, 0.17 Ni, 0.13 Si, 0.018 P, and 0.008 S.	20 min. at 1130 C, air cooled to 500 C, placed in furnace at 500 C and furnace cooled at natural cooling rate of furnace.
△	52-6	273-773		Same as above.	Air cooled from 1050 C to 500 C, and then furnace cooled.
◇	52-6	273-773		Same as above.	Air cooled from 1000 C to 500 C, and then furnace cooled.
▽	52-6	273-773		Same as above.	Air cooled from 950 C to 500 C, and then furnace cooled.
▷	55-1	293-973		13.29 Cr, 0.6 > Ni, 0.59 Si, 0.52 Mn, and 0.36 C.	Tempere l.
●	52-6	273-973		13.23 Cr, 2.11 C, 0.64 Mn, 0.55 P, 0.34 Si, and 0.013 S.	Slowly heated and cooled at 100 C hr^{-1}.
◒	52-6	273-973		Same as above.	Heated 20 min at 1130 C, air-cooled to 500 C, and furnace-cooled to room temperature.

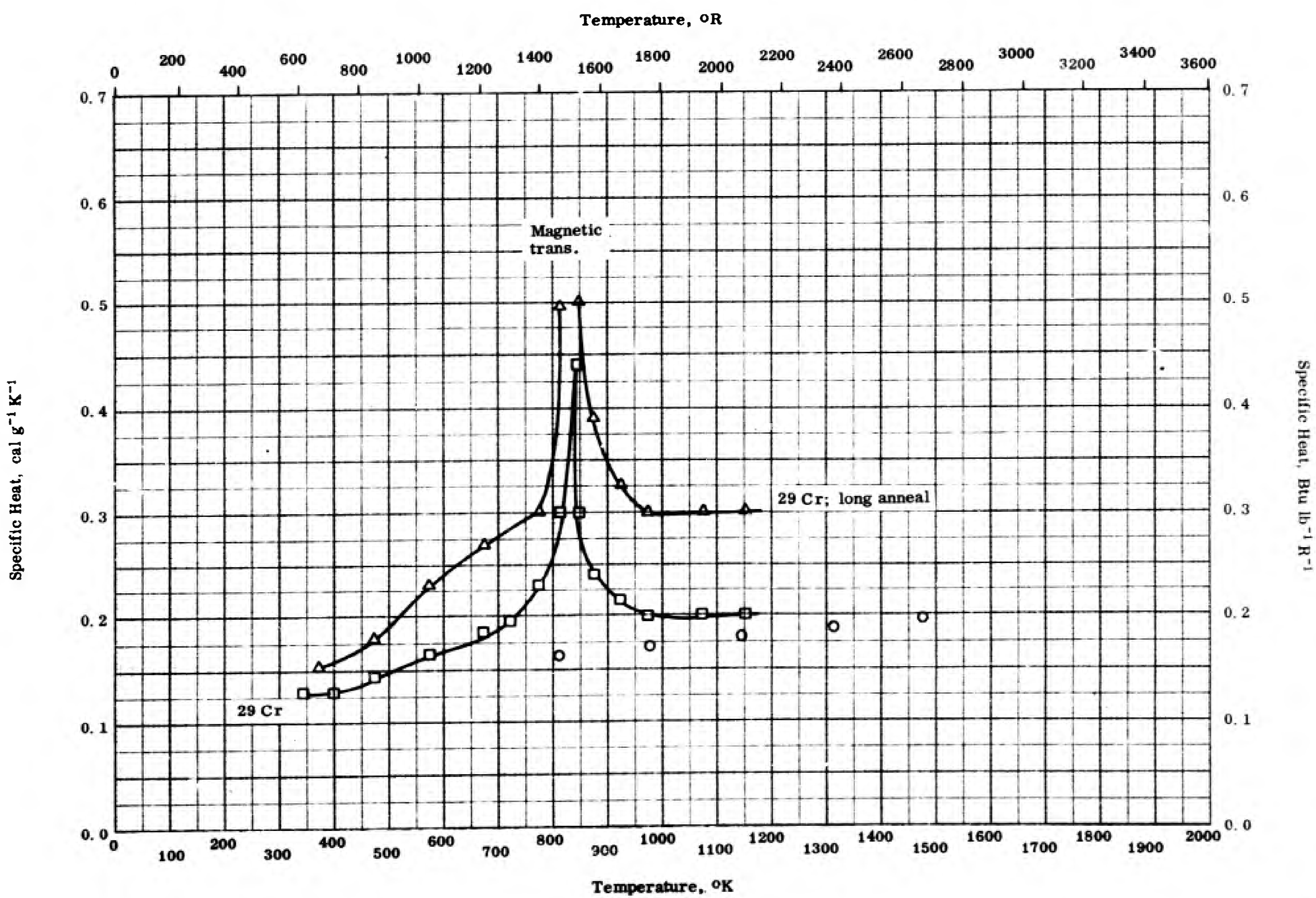


SPECIFIC HEAT -- IRON + CHROMIUM + ΣX_i GROUP I
($8 < Cr < 25$)

SPECIFIC HEAT -- IRON + CHROMIUM + ΣX_i GROUP I
($8 < Cr < 25$)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	53-6	339-1173		15.02 Cr, 0.31 Si, 0.045 N_2, and 0.041 C.	Heated 3 hrs at 1000 C in vacuum and cooled to room temperature at a rate of 30 C hr^{-1}.
□	53-6	339-1173		19.21 Cr, 0.34 Si, 0.010 N_2, and 0.049 C.	Same as above.
△	53-6	339-1173		24.31 Cr, 0.38 Si, 0.358 C, and 0.040 N_2.	Same as above.
◇	53-6	339-1173		Same as above.	Same as above; again heated 200 hrs at 475 C.
▽	59-2	294-1400	± 0.5	91.2 Fe and 8.8 Cr. [Author's design.: 9 Cr]	Homogenized at 1350 C for 4 days under helium atm. and then air cooled to room temperature.
▷	55-2	533-1195	≤5	8.05 Cr.	

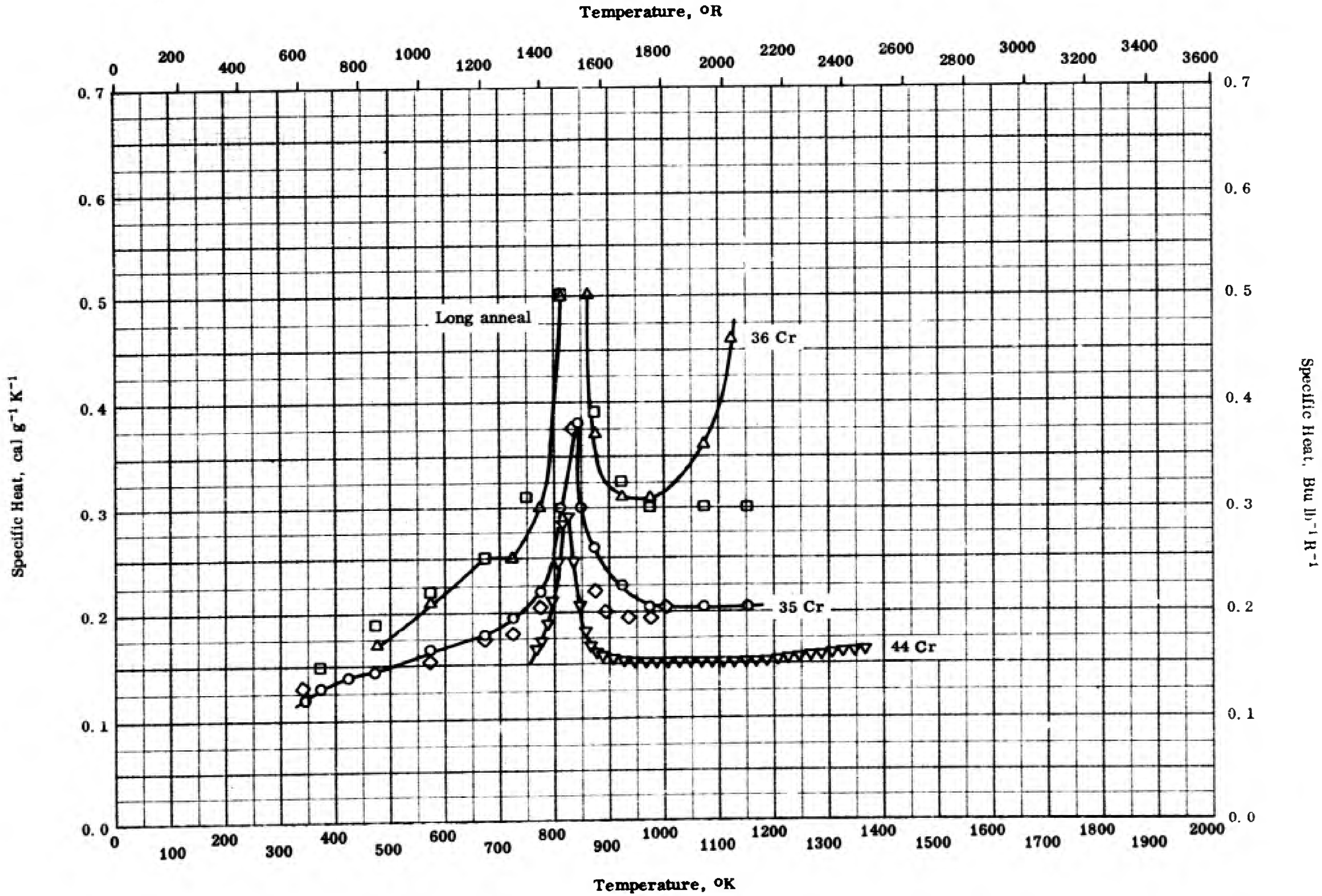


SPECIFIC HEAT -- IRON + CHROMIUM + ΣX_j GROUP I
$(25 < Cr < 30)$

SPECIFIC HEAT -- IRON + CHROMIUM + ΣX_i GROUP I
(25 < Cr < 30)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	58-9	847-1455	3	Stainless Steel 446; composition before test: 70.55 Fe, 27.61 Cr, 0.086 C, and 0.01 Mo, and after test: 70.59 Fe, 27.64 Cr, 0.066 C, and 0.01 Mo; density 473.5 lb ft^{-3}.	Under helium atm.
□	53-6	343-1153		28.58 Cr, 0.45 Si, and 0.068 C, and 0.035 N_2.	Heated 3 hrs at 2292 R, furnace cooled to 1932 R, and cooled to room temperature.
△	53-6	373-1153		Same as above.	Same as above; heated 200 hrs at 1347 R.

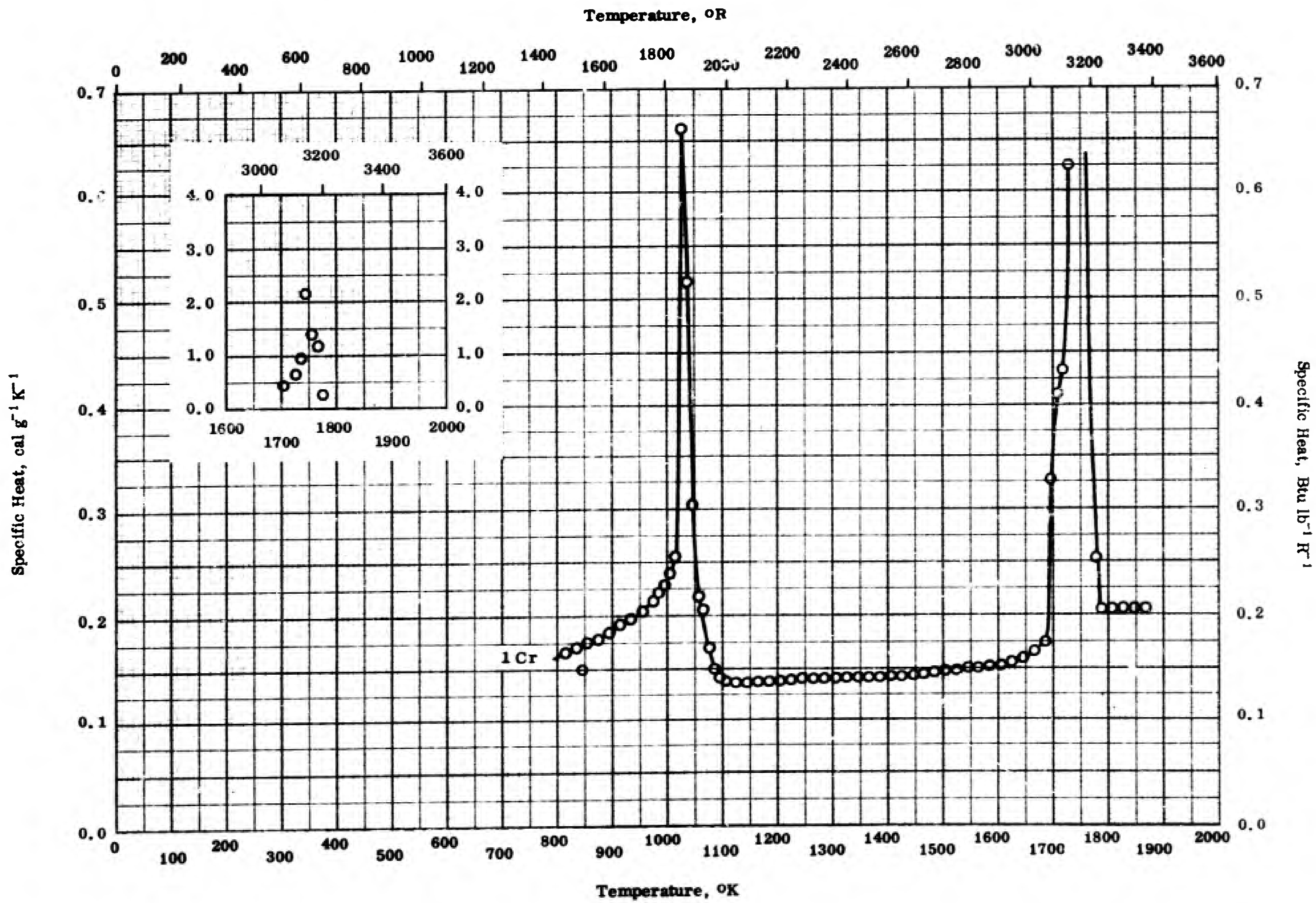


SPECIFIC HEAT -- IRON + CHROMIUM + ΣX_i GROUP I
(30 < Cr < 50)

SPECIFIC HEAT -- IRON + CHROMIUM + ΣX_i GROUP I
($30 < Cr < 50$)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	53-6	343-1163		35.54 Cr, 0.43 Si, 0.058 C, and 0.040 N_2.	Heated 3 hrs at 2292 R; furnace cooled to 1932 R, and cooled to room temperature at 54 R hr^{-1}.
□	53-6	373-1163		Same as above.	Same as above; heated 200 hrs at 1347 R.
△	53-6	373-1123		36.45 Cr, 0.58 Si, 0.41 Mn, 0.13 Al, 0.10 C, and 0.020 N_2.	Heated 3 hrs at 1000 C, furnace cooled to 800 C, cooled to room temperature at 30 C hr^{-1}, and heated 200 hrs at 475 C.
◇	53-6	343-1003		Same as above.	Heated 3 hrs at 1000 C, furnace cooled to 800 C, and cooled to room temperature at 30 C hr^{-1}.
▽	58-11	773-1373	±3	44 Cr.	Under vacuum.

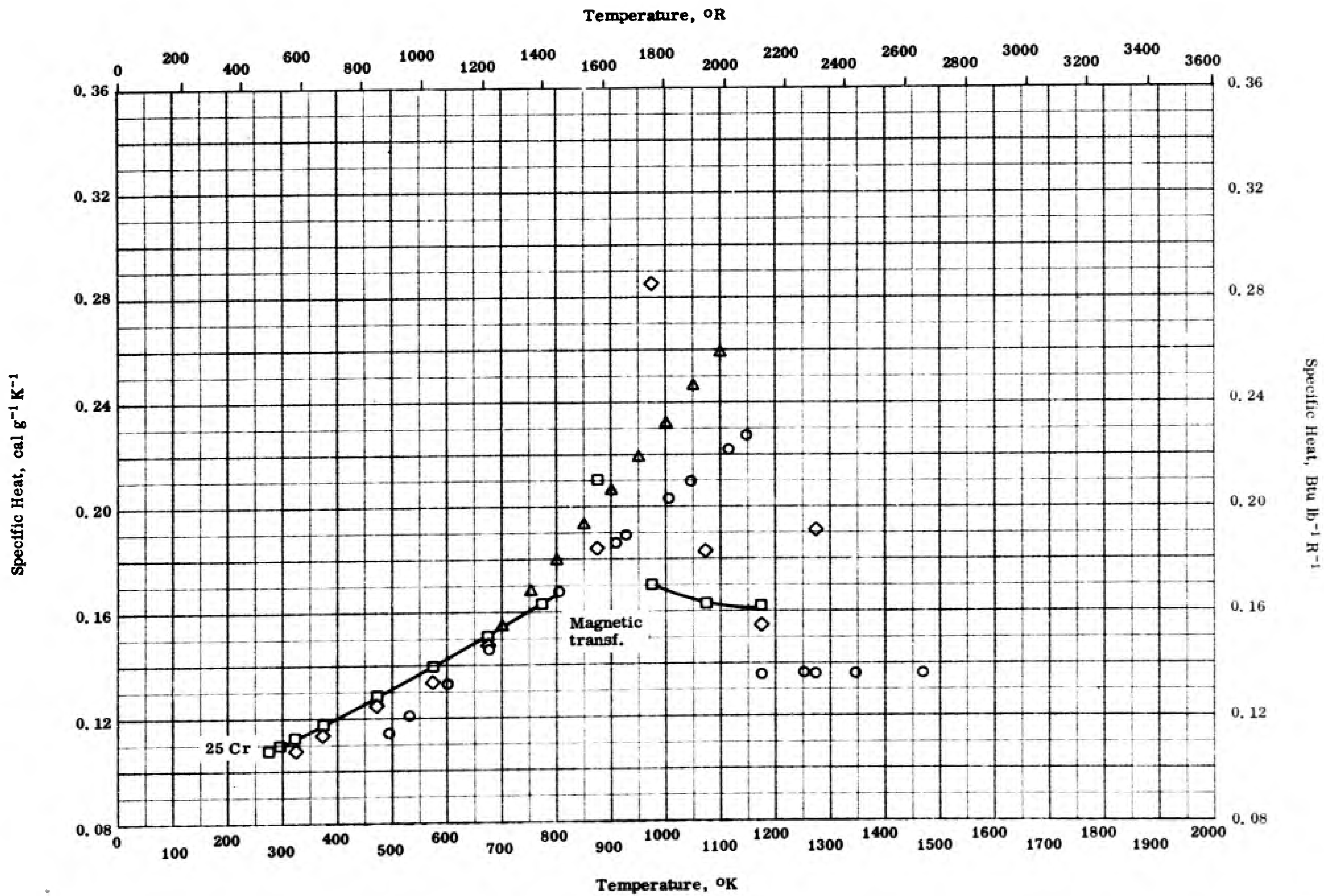


SPECIFIC HEAT -- IRON + CHROMIUM + ΣX_i GROUP II
(Cr < 5.0)

SPECIFIC HEAT -- IRON + CHROMIUM + ΣX_i GROUP II
(Cr < 5.0)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	58-11	818-1868		Alloy steel No. 19; 1.09 Cr, 0.69 Mn, 0.315 C, 0.20 Si, 0.073 Ni, 0.066 Cu, 0.039 P, 0.036 S, 0.028 As, 0.012 Mo, 0.005 Al, and trace W.	Heated at constant rate of 40 watts up to 1210 C during one day and left at 1000 C overnight.

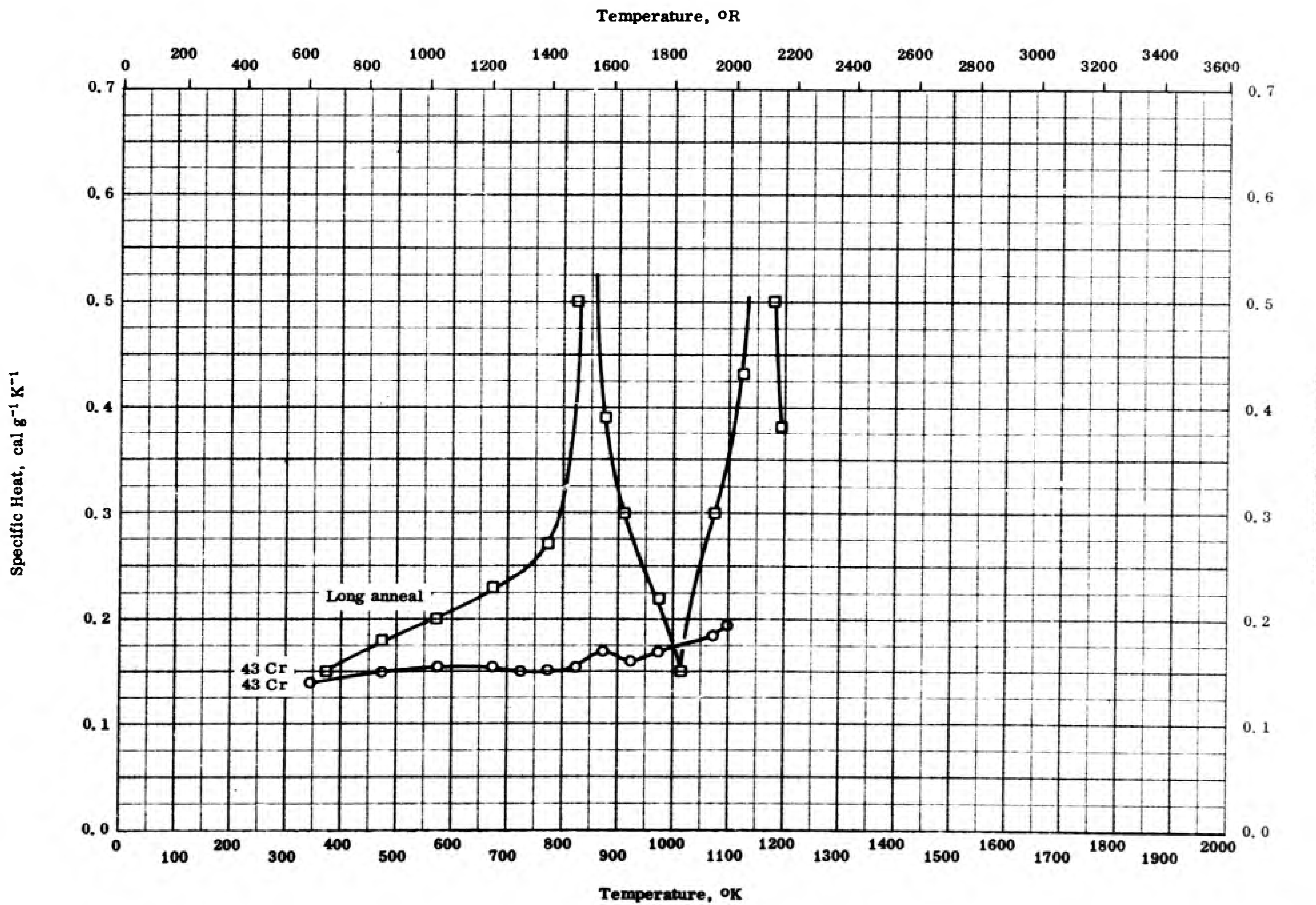


SPECIFIC HEAT -- IRON + CHROMIUM + ΣX_i GROUP II
($14 \le Cr < 27$)

SPECIFIC HEAT -- IRON + CHROMIUM + ΣX_i GROUP II
($14 \leq Cr < 27$)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	61-4	493-1471	3.0	AISI 420; 84.999 Fe, 13.10 Cr, 0.5 Ni, 0.48 Mn, 0.41 Si, 0.30 C, 0.12 Cu, 0.06 Mo, 0.02 P, and 0.011 S; density 481 lb ft^{-3}.	
□	61-6, 53-7 also 55-4	273-1173	±0.30	AISI 446; 72.744 Fe, 25.58 Cr, 0.68 Si, 0.42 Mn, 0.32 Ni, 0.23 C, 0.019 P, and 0.016 S.	
△	55-3	700-1100		AISI 430; nominal composition: 14-18 Cr, 1.00 ≥ Si, and 0.12 ≥ C.	
◇	59-3	323-1273		Steel 4 Kh 13; nominal composition: 12.0-14.0 Cr, 0.60 Mn, 0.60 Ni, 0.60 Si, 0.35-0.45 C, 0.035 P, and 0.030 S.	

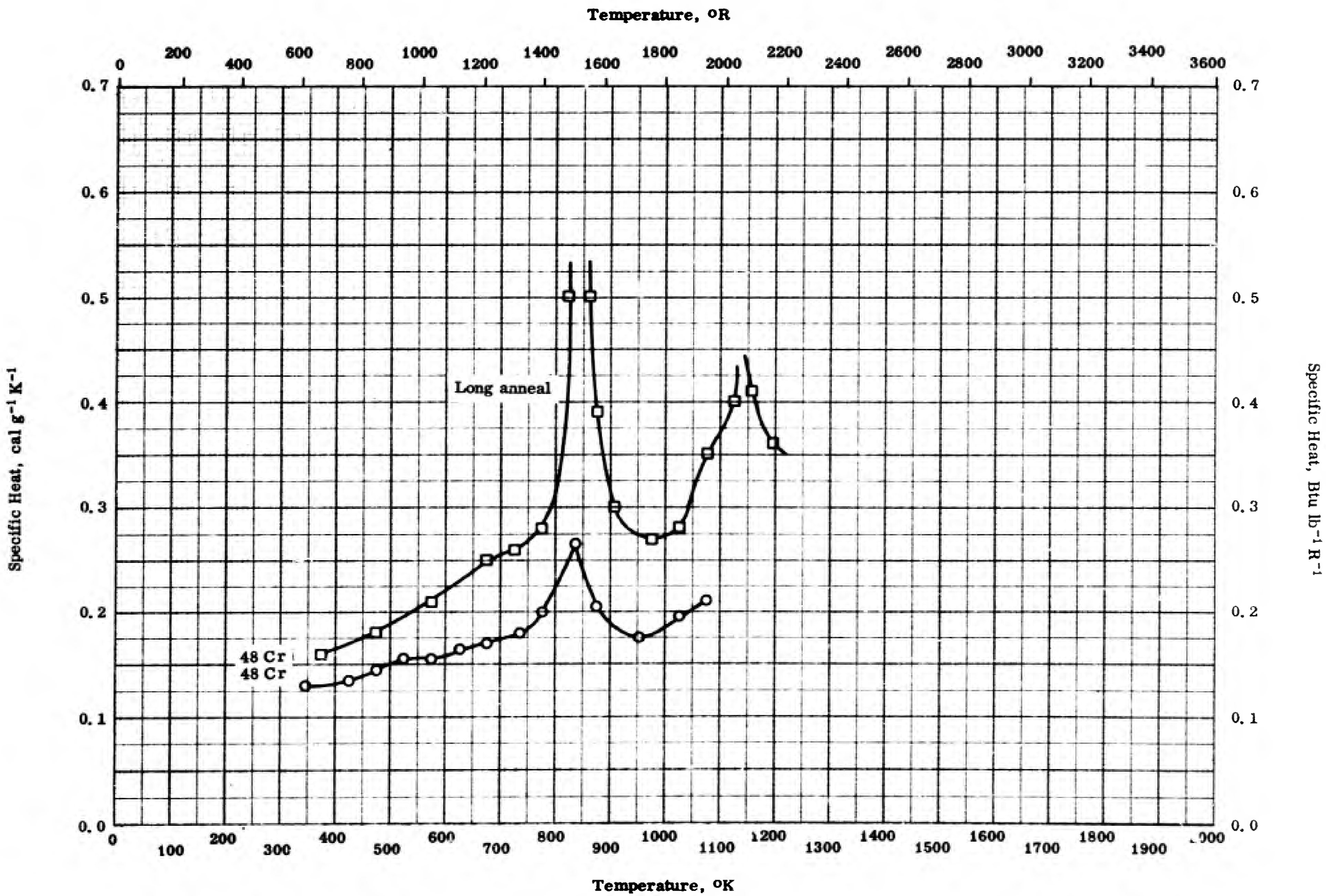


SPECIFIC HEAT -- IRON + CHROMIUM + ΣX_i GROUP II
(40 < Cr < 45)

SPECIFIC HEAT -- IRON + CHROMIUM + ΣX_i GROUP II
(40 < Cr < 45)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	53-6	343-1103		43.16 Cr, 0.72 Si, 0.32 Mn, 0.14 Al, 0.11 C, and 0.025 N_2.	Heated 3 hrs at 1000 C, furnace cooled to 800 C, and then cooled to room temperature at 30 C hr^{-1}.
□	53-6	373-1193		Same as above.	Same as above; heated 200 hrs at 475 C.

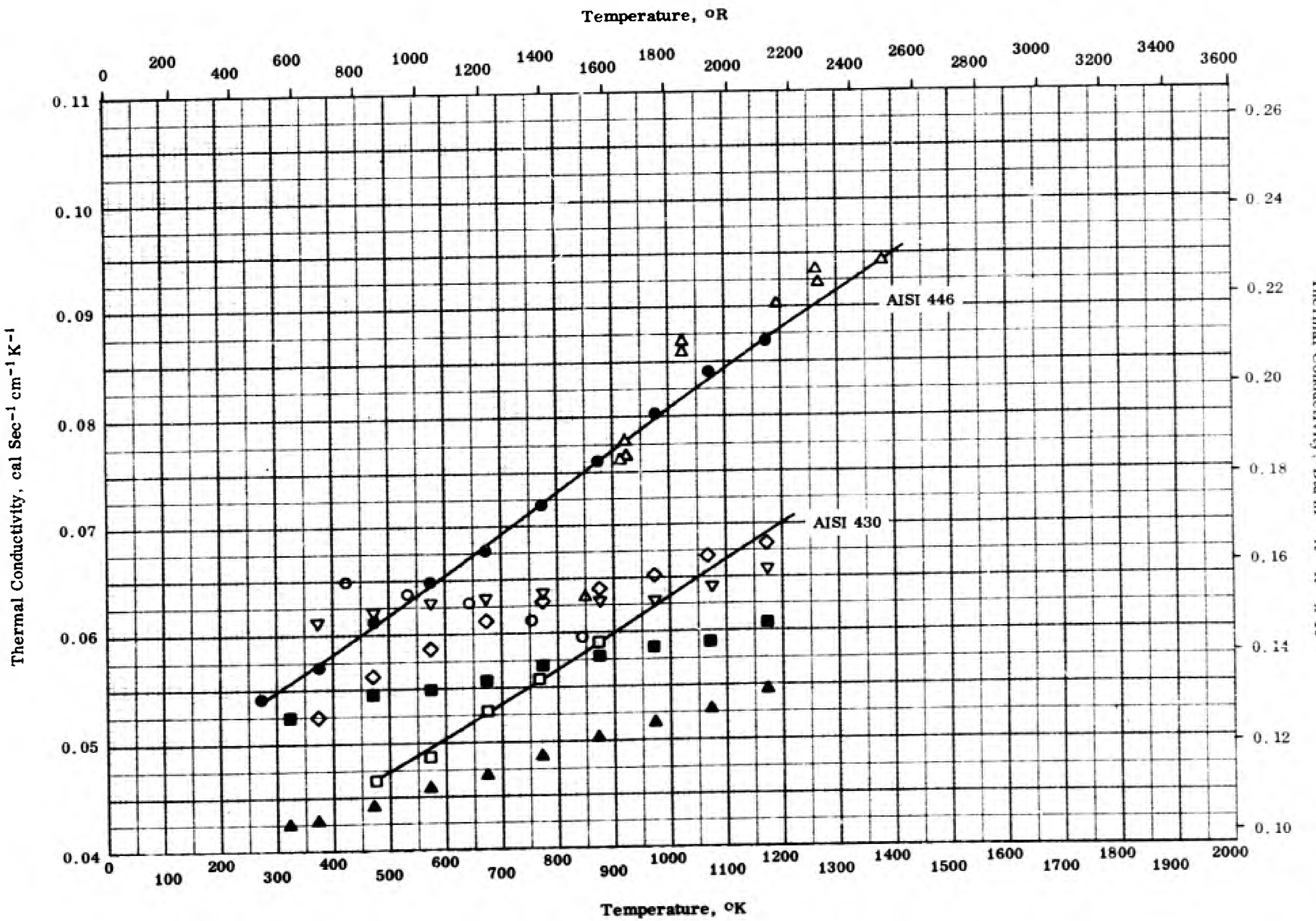


SPECIFIC HEAT -- IRON + CHROMIUM + ΣX_i GROUP II
$(45 < Cr < 50)$

SPECIFIC HEAT -- IRON + CHROMIUM + ΣX_i GROUP II
$(45 < Cr < 50)$

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	53-6	343-1073		48.35 Cr, 0.76 Si, 0.44 Mn, 0.12 Al, 0.11 C; and 0.022 N_2.	Heated 3 hrs at 1000 C furnace cooled to 800 C, and then cooled to room temperature at 30 C hr^{-1}.
□	53-6	373-1193		Same as above.	Same as above; heated 200 hrs at 475 C.

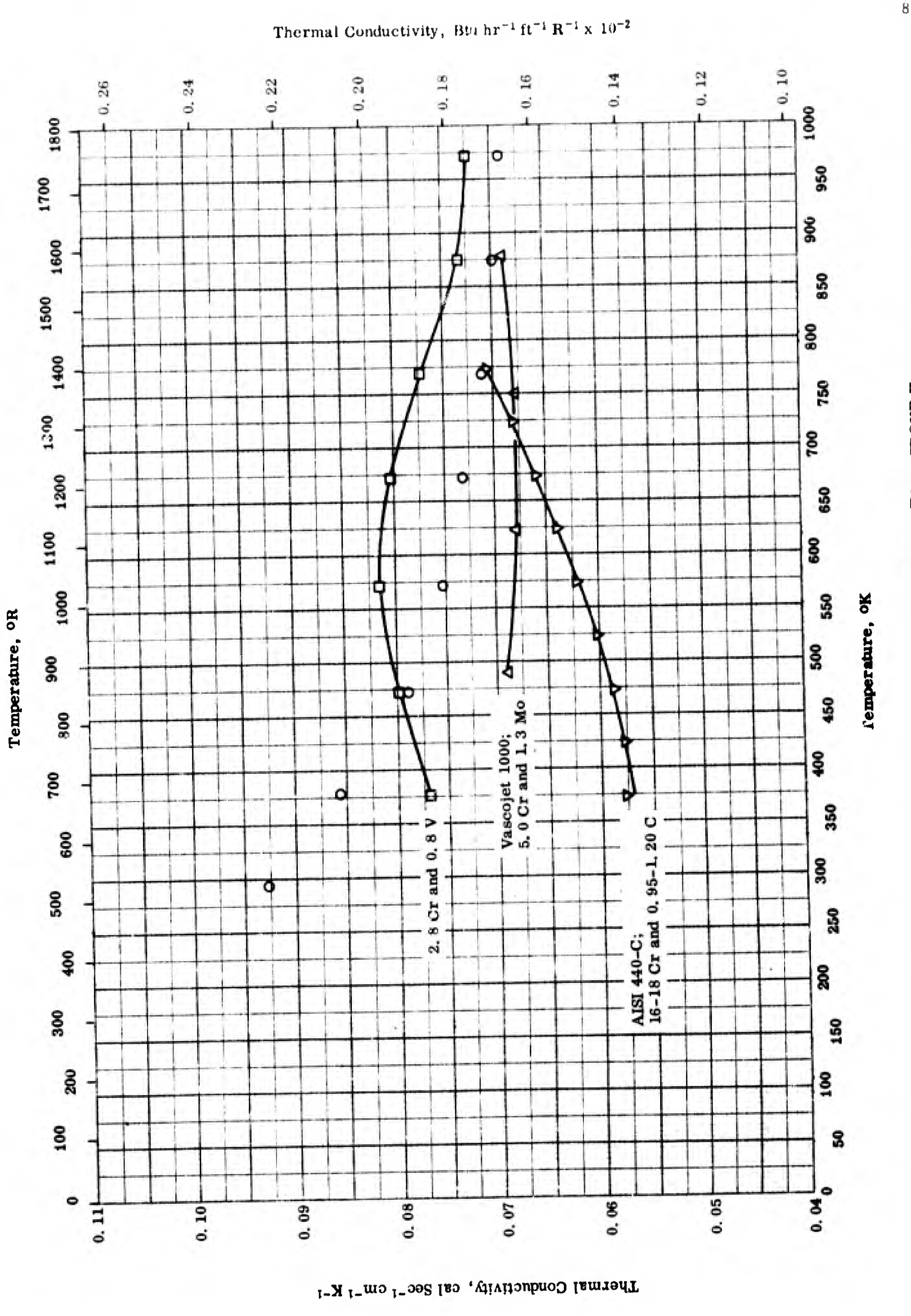


THERMAL CONDUCTIVITY -- IRON + CHROMIUM + ΣX_i GROUP I

THERMAL CONDUCTIVITY -- IRON + CHROMIUM + ΣX_i GROUP I

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	51-1	203-845	± 4	AISI 403; 12.0 Cr and 0.15 C.	
□	58-10	473-873		AISI 430; 14-18 Cr; nominal composition.	Test in He atm.
△	58-9	853-1381		AISI 446; composition before test: 70.55 Fe, 21.61 Cr, 0.086 C, 0.01 Mo, and after test: 70.59 Fe, 27.64 Cr, 0.066 C, and 0.01 Mo; density 473.5 lb ft^{-3}.	
◇	55-1	373-1173		13.2 Cr, 0.40 Mn, 0.35 Si, and 0.17 C.	Quenched.
▽	55-1	373-1173		Same as above.	Tempered.
●	52-3	273-1173		AISI 446; 26.0 Cr, 0.56 Mn, 0.50 Si, 0.14 N, 0.13 C, 0.10 Ni, and 0.007 S.	
■	53-2	323-1173		AISI 430; 82.4 Fe, 17.2 Cr, 0.254 Mn, 0.102 C, and 0.035 S.	
▲	53-2	323-1173		AISI 446; 76.44 Fe, 23.58 Cr, 0.152 C, 0.043 Mn, and 0.021 S.	

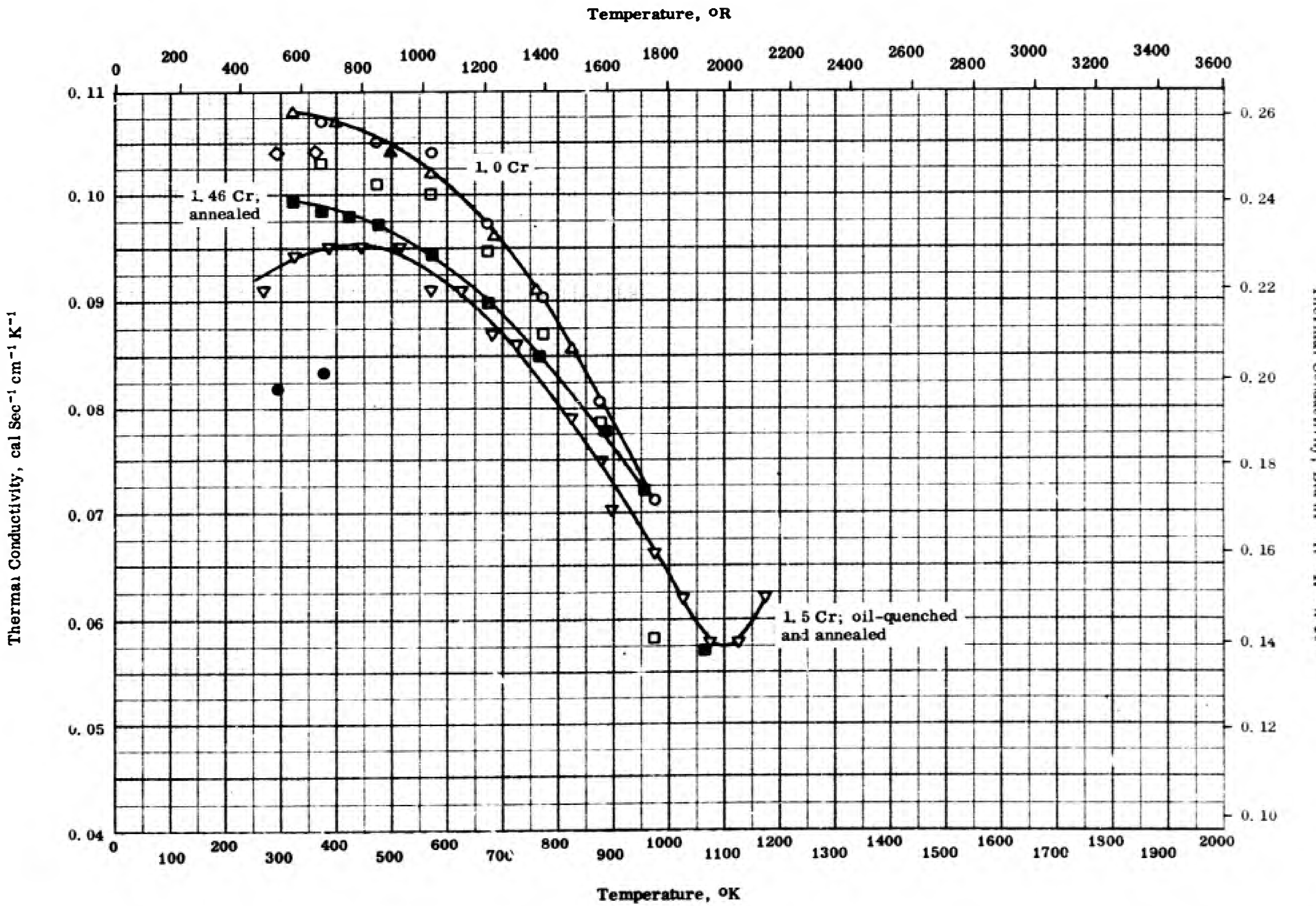


THERMAL CONDUCTIVITY -- IRON + CHROMIUM + ΣX_i GROUP II
(Cr > 2. 0)

THERMAL CONDUCTIVITY -- IRON + CHROMIUM + ΣX_i GROUP II
($Cr > 2.0$)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	52-2	293-973		H. G. T. 3 Steel (Brit. Design.); 2.87 Cr, 0.77 V, 0.59 W, 0.51 Mo, 0.45 Si, 0.35 Ni, 0.33 Mn, and 0.23 C; density 489 lb ft^{-3}.	
□	52-1	373-973		Jessop H 40 Steel (Brit. Design.); 2.7 Cr, 0.75 V, 0.5 each Mo and W, 0.45 Si, 0.3 each Ni and Mn, and 0.23 C; density 489 lb ft^{-3}.	
△	57-2	489-878		Vascojet 1000; 92 Fe, 5.0 Cr, 1.3 Mo, 0.5 V, and 0.4 C; density 0.280 lb in^{-3}.	
▽	58-4	373-773	5	AISI 440-C; 16 - 18 Cr, 0.95 - 1.20 C, and 0.75 max Mo.	

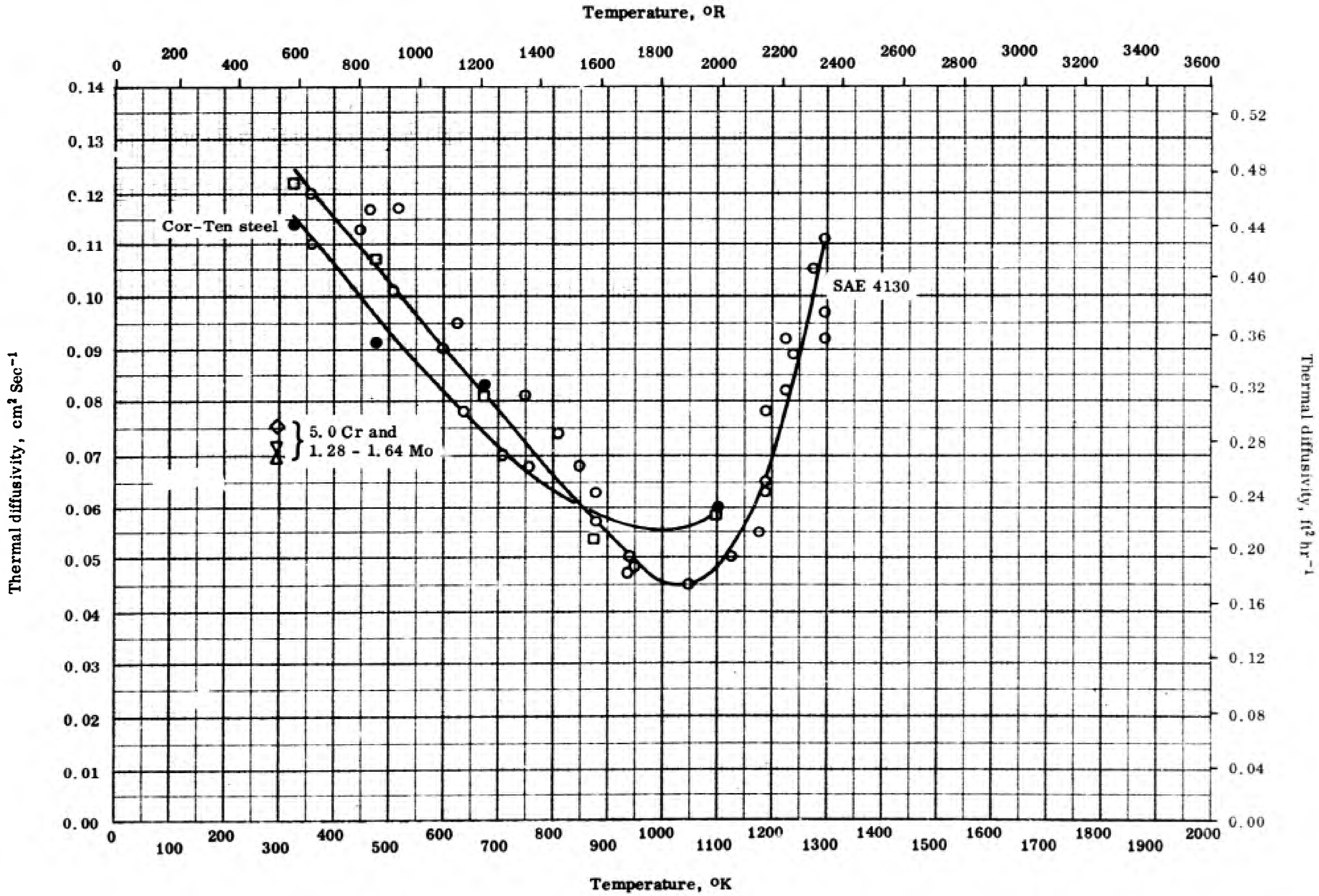


THERMAL CONDUCTIVITY -- IRON + CHROMIUM + ΣX_i GROUP II
($Cr < 2.0$)

THERMAL CONDUCTIVITY -- IRON + CHROMIUM + ΣX_i GROUP II
(Cr < 2.0)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	55-1	373-973		1.08 Cr, 0.57 Mn, 0.30 V, 0.26 Si, and 0.15 C.	After working.
□	55-1	373-973		Same as above.	Heat-treated.
△	56-9	323-823		En 19 Steel (Brit. Design.); 1.15 Cr, 0.59 Mn, 0.42 C, 0.33 Ni, 0.23 Si, 0.22 Mo, 0.046 P, and 0.019 S.	Oil-quenched, annealed 1 hr at 850 C and cooled slowly, and then reheated to 650 C for 120 hrs and cooled slowly.
▽	56-9	273-1172		En 31 Steel (Brit. Design.); 1.5 Cr, 1.05 C, 0.73 Mn, 0.23 each Ni and Si, 0.21 Mo, 0.030 P, and 0.028 S.	Oil-quenched from 830 C and then tempered 2 hrs at 750 C; measured in vacuum and radiation loss counted.
◇	56-7	293-363		0.88 Cr, 0.59 Mn, 0.35 C, and 0.26 Ni.	Annealed.
●	56-7	293-373		Same as above.	Same as above except oil-quenched and then tempered at 100 C.
■	56-7	323-1073		1.46 Cr, 1.06 C, 0.31 Ni, 0.24 Si, 0.045 Mn, 0.017 P, and 0.013 S.	Annealed

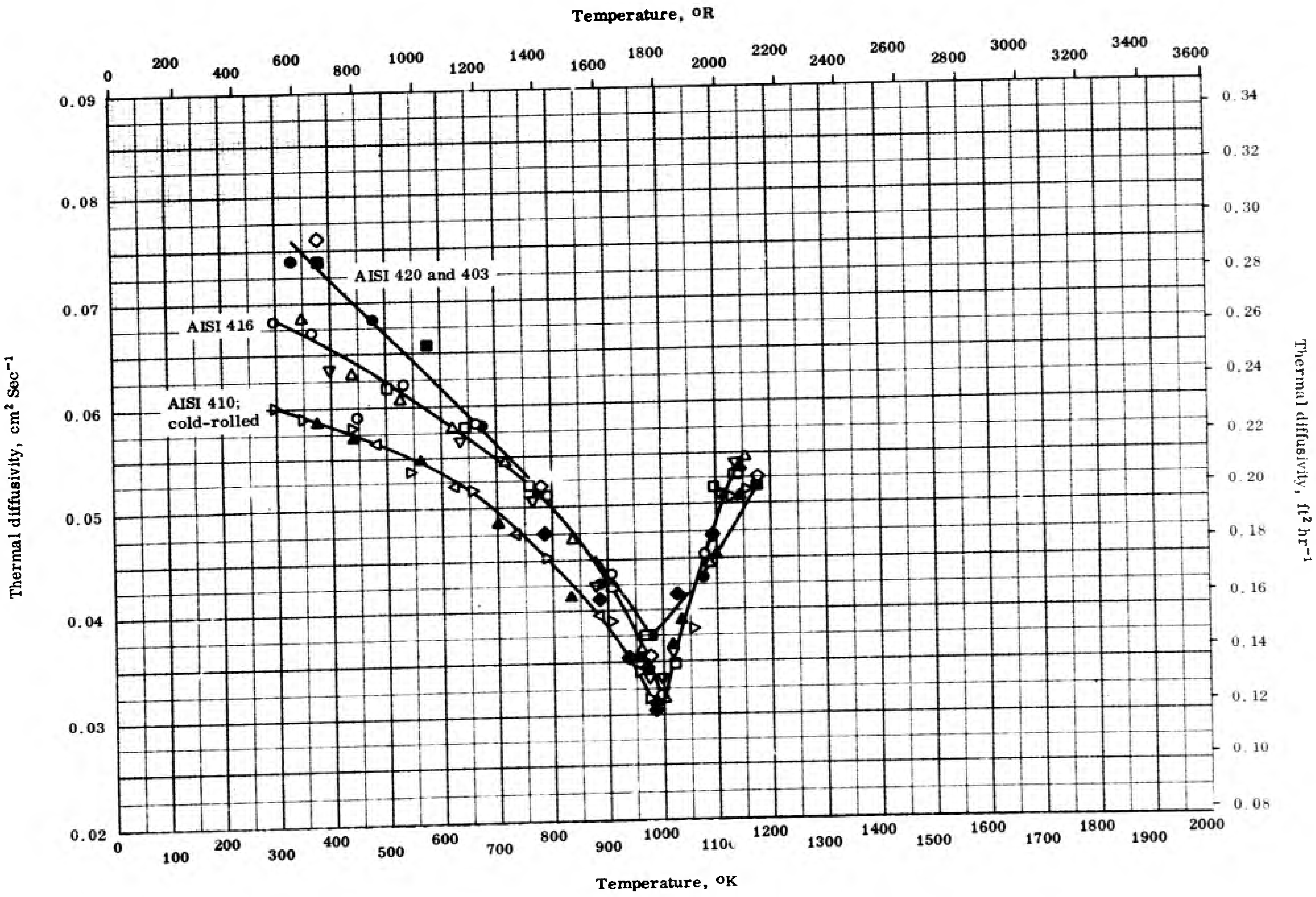


THERMAL DIFFUSIVITY -- IRON + CHROMIUM + ΣX_i GROUP II
(0.8 - 5.3 Cr)

THERMAL DIFFUSIVITY -- IRON + CHROMIUM + ΣX_i GROUP II
(0.8 - 5.3 Cr)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
●	56-3	323-1098		Cor-Ten steel; 1.3 Cr, 1.0 Si, 0.5 Cu, 0.3 Mn, 0.2 P, and 0.10 C.	
△	61-1	298	±4	G X 4881; 5.06 Cr, 1.64 Mo, 1.59 W, 1.13 Si, and 0.36 C; composition given by Bethlehem Steel Co.; sample 3/16 in. dia and 25 cm long.	
▽	61-1	298	±4	23 D 245; 5.22 Cr, 1.28 Mo, 1.11 Si, 1.02 V, 0 39 C, 0.39 Mn, 0.17 Cu, 0.11 Ni, 0.04 W, 0.01 P, and 0.001 S; composition given by Bethlehem Steel Co.; sample 3/16 in. dia and 25 cm long.	
◇	61-1	298	±4	HX 4249; 5.04 Cr, 1.33 Si, 1.28 Mo. 0.44 V, 0.39 C, and 0.39 Mn; composition given by Bethlehem Steel Co.; sample 3/16 in. dia and 25 cm long.	
○	57-1	358-1293		SAE 4130; 0.8 - 1.10 Cr. 0.4 - 0.6 Mn, 0.28 - 0.33 C, 0.20 - 0.35 Si, 0.15 - 0.25 Mo, 0.04 max P, and 0.04 max S; composition from Metal's Handbook.	
□	56-3	323-1098		Same as above.	



THERMAL DIFFUSIVITY -- IRON + CHROMIUM + ΣX_i GROUP II
(11 - 14 Cr)

THERMAL DIFFUSIVITY -- IRON + CHROMIUM + ΣX_i GROUP II
(11 - 14 Cr)

REFERENCE INFORMATION

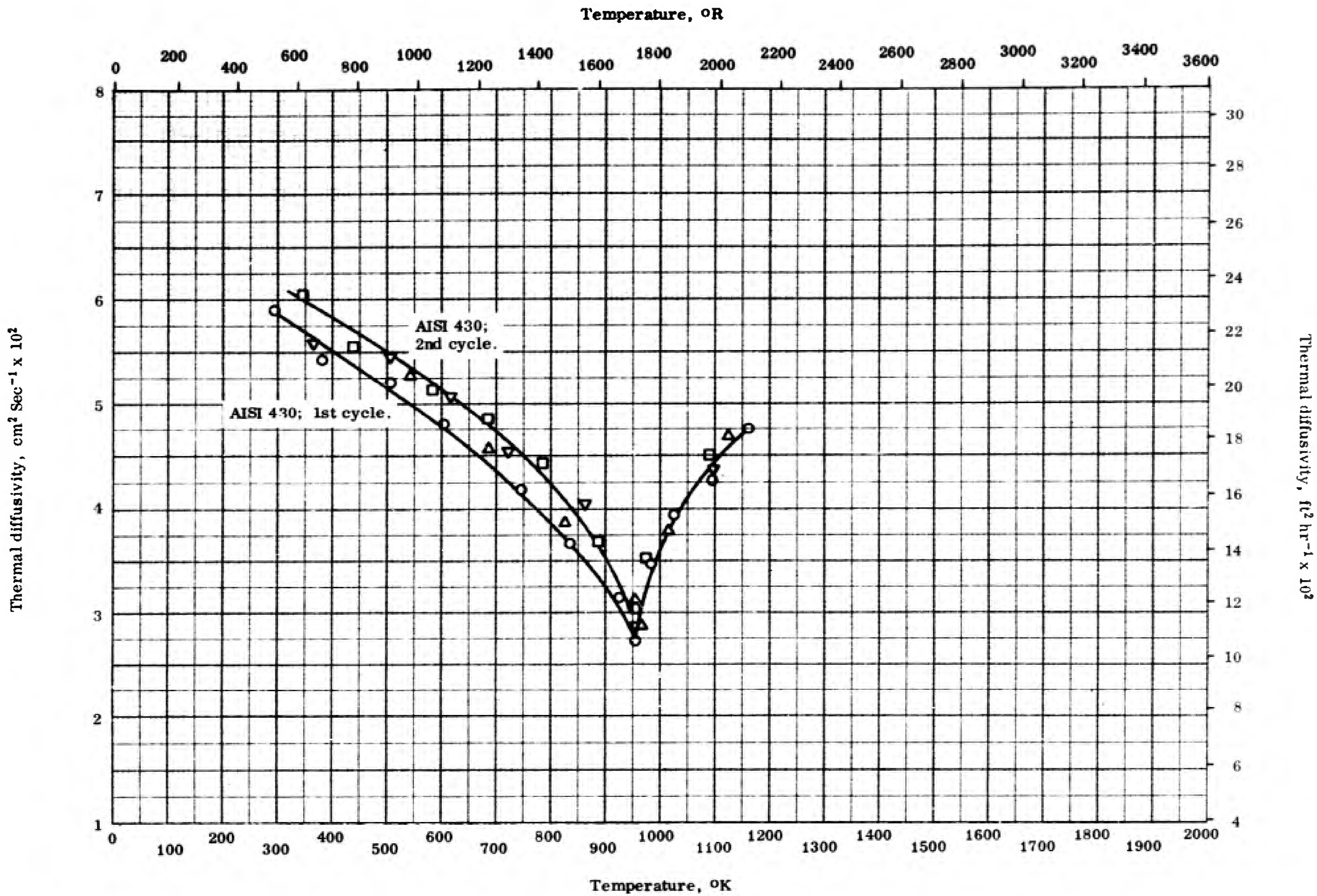
Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
●	56-3	323-1073		AISI 403, 11.50 - 13.00 Cr, 1.0 max Mn, 0.5 max Si, and 0.15 max C; composition from Metal's Handbook.	
■	56-2	373-1173		Same as above.	
▷	60-2	293-1155	±5	AISI 410; 11.5 - 13.5 Cr, 1.0 max Mn, 1.0 max Si, 0.15 max C, 0.04 max P, and 0.03 max S; martensitic structure; sample 0.065 cm thick.	Cut from No. 2 finish cold-rolled sheet steel of 0.065 cm thick.
◆	60-2	784-1143	± 5	Same as above.	The above sample measured as temperature decreases from 1155 to 784 K.
▲	60-2	373-1143	± 5	Same as above.	The above sample measured as temperature increases after the above measurement.
◁	60-2	483-1083	± 5	Same as above.	The above sample measured as temperature decreases from 1143 to 483 K.
○	60-2	293-1140	± 5	AISI 416; 12 - 14 Cr, 1.25 max Mn, 1.0 max Si, 0.6 Mo, 0.6 Zr, 0.15 S, 0.15 max C, and 0.06 max P; martensitic structure; sample 1.27 cm dia and 0.177 cm thick.	Cut from 1.27 cm dia rod.
□	60-2	500-1133	± 5	Same as above.	The above sample measured as temperature decreases from 1140 to 500 K.
△	60-2	343-1153	± 5	Same as above.	The above sample measured as temperature increases after the above measurement.
▽	60-2	396-1136	± 5	Same as above.	The above sample measured as temperature decreases from 1153 to 396 k.

(Continued onto next page)

THERMAL DIFFUSIVITY -- IRON + CHROMIUM + ΣX_i GROUP II (Continued)
(11 - 14 Cr)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
◇	56-2	373-1173		AISI 420; 12 - 14 Cr, 1.0 max Mn, 1.0 max Si, and 0.15 min. C.	

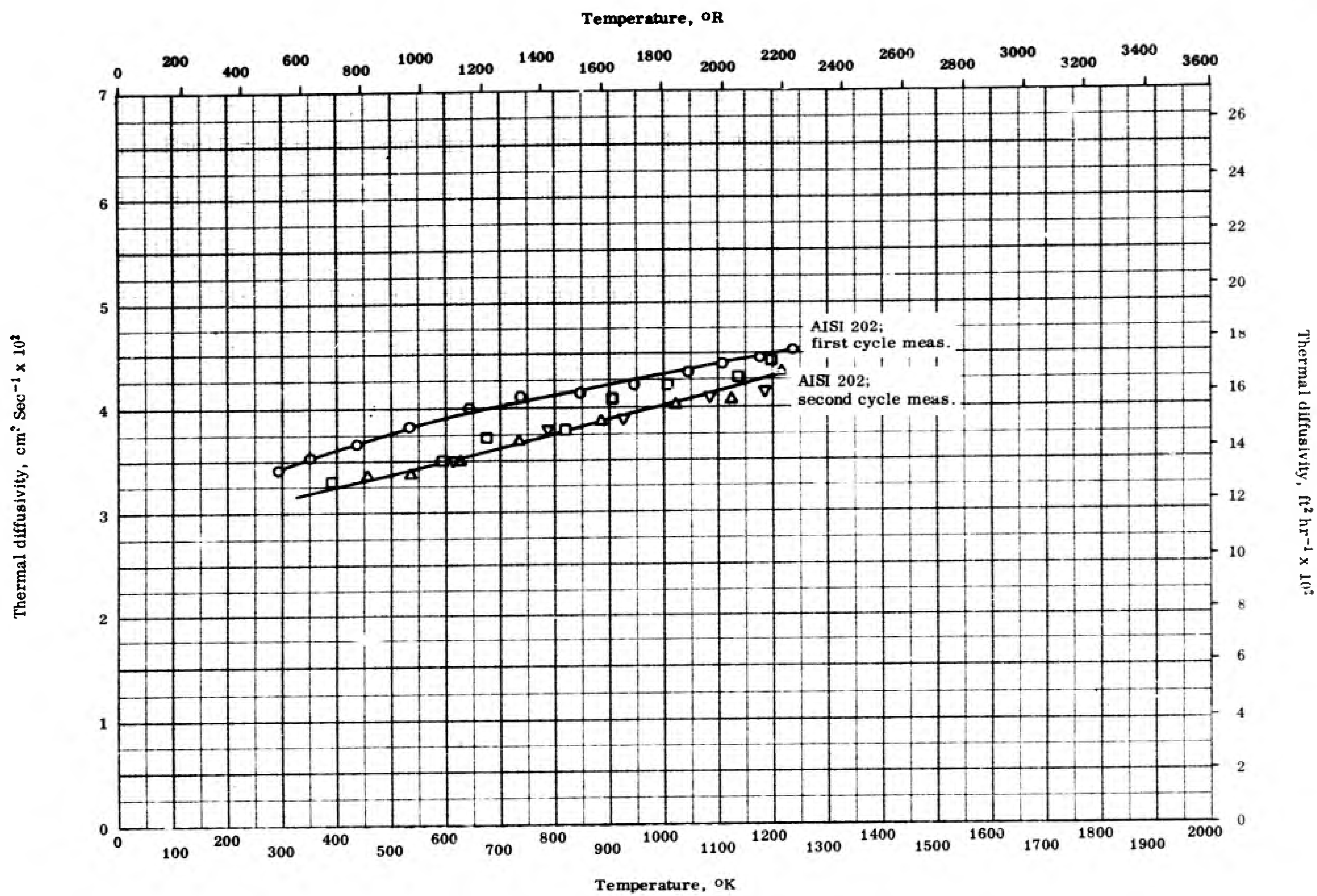


THERMAL DIFFUSIVITY -- IRON + CHROMIUM + $\Sigma X i$ GROUP II
(14-18 Cr)

THERMAL DIFFUSIVITY -- IRON + CHROMIUM + ΣX_i GROUP II
(14-18 Cr)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-2	291-1160	± 5	AISI 430; 14-18 Cr, 1.0 max Mn, 1.0 max Si, 0.12 C, 0.04 max P, and 0.03 S; martensitic structure; sample 0.089 cm thick.	Cut from No. 2 finish cold-rolled sheet steel of 0.089 cm thick.
□	60-2	343-1090	± 5	Same as above.	The above sample measured as temperature decreases from 1160 to 343 K.
△	60-2	438-1123	± 5	Same as above.	The above sample measured as temperature increases after the above measurement.
▽	60-2	363-1098	± 5	Same as above.	The above sample measured as temperature decreases from 1123 to 363 K.

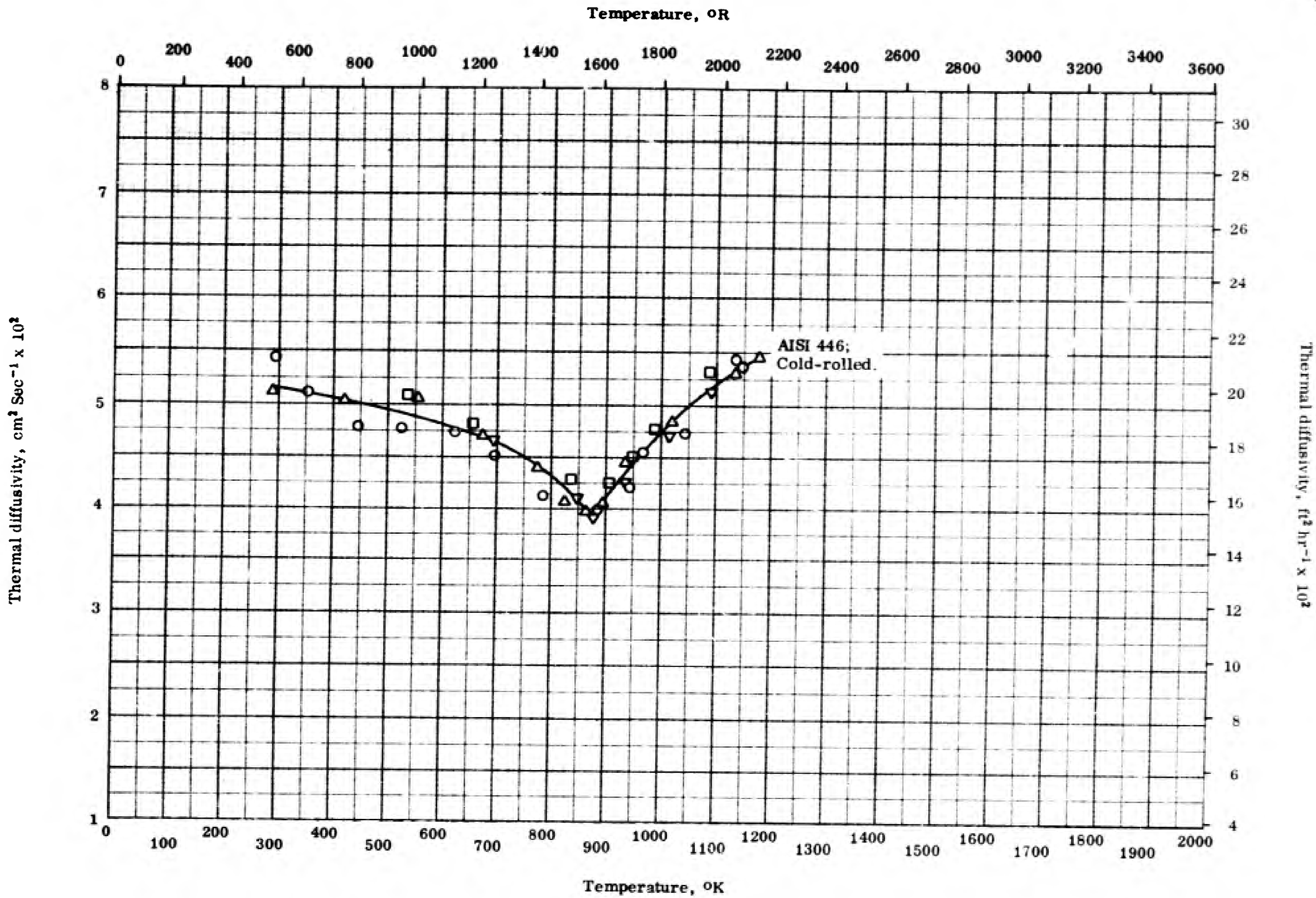


THERMAL DIFFUSIVITY -- IRON + CHROMIUM + ΣX_i GROUP II
(18 Cr, 7.5-10 Mn, and 4-6 Nb)

THERMAL DIFFUSIVITY -- IRON + CHROMIUM + ΣX_i GROUP II
(18 Cr, 7.5–10 Mn, and 4–6 Nb)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-2	292-1236	± 5	AISI 202; 17.9 Cr, 7.5-10 Mn, 4-6 Nb, 1.0 max Si, 0.25 max N, 0.15 max C, 0.06 max P, and 0.04 max S; austenitic structure; sample 0.065 cm thick.	Cut from No. 2 finish cold-rolled sheet steel of 0.065 cm thickness.
□	60-2	389-1195	± 5	Same as above.	The above sample measured as temperature decreases from 1236 to 389 K.
△	60-2	455-1216	± 5	Same as above.	The above sample measured as temperature increases from 389 to 1216 K.
▽	60-2	613-1183	± 5	Same as above.	The above sample measured as temperature decreases from 1216 to 613 K.

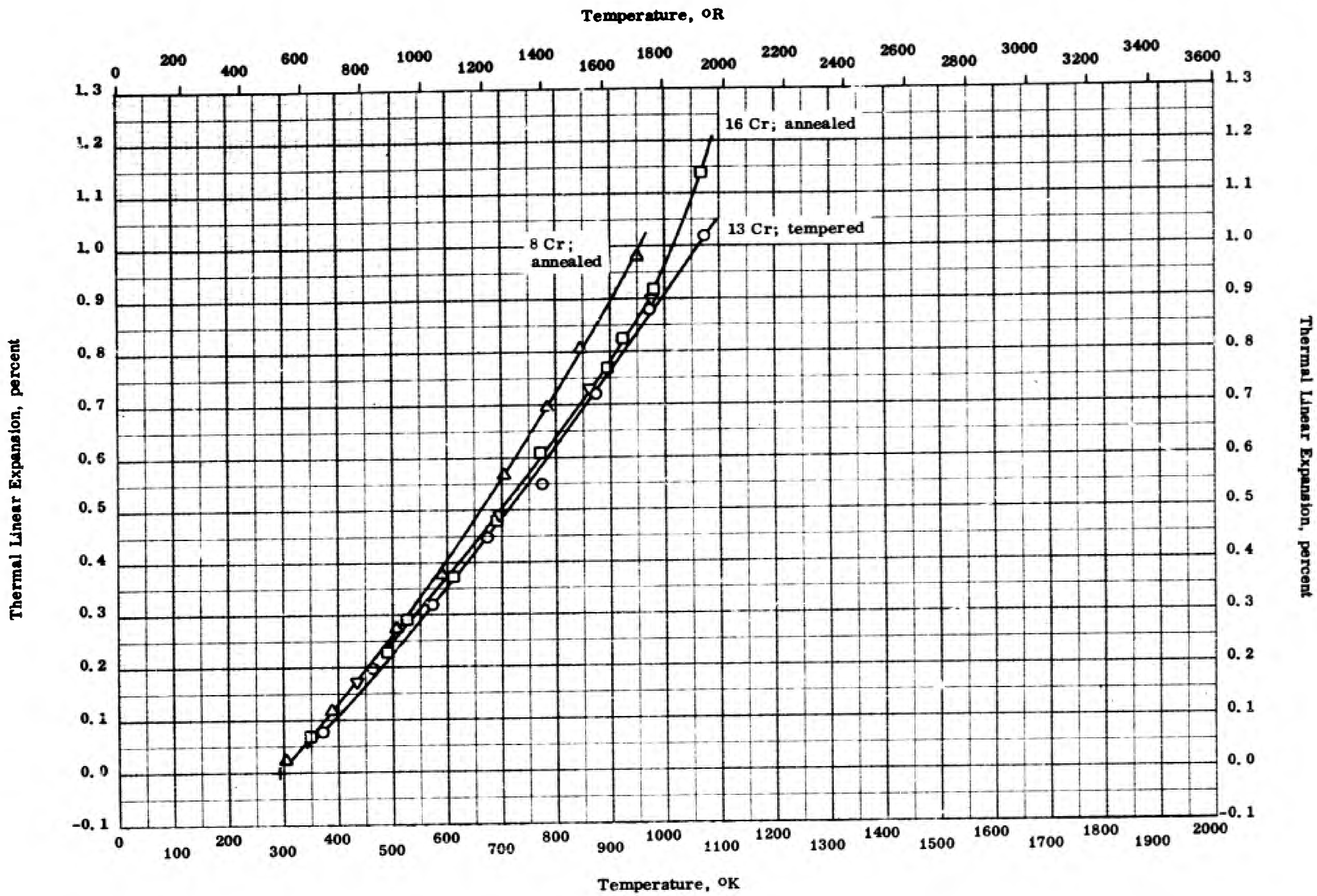


THERMAL DIFFUSIVITY -- IRON + CHROMIUM + ΣX_i GROUP II
(23-27 Cr)

THERMAL DIFFUSIVITY -- IRON + CHROMIUM + ΣX_i GROUP II
(23-27 Cr)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-2	291-1148	± 5	AISI 446; 23-27 Cr, 1.5 max Mn, 1.0 max Si, 0.25 Ni, 0.2 C, 0.04 max P, and 0.03 max S; martensitic structure; sample 0.178 cm thick.	Cut from No. 2 finish cold-rolled sheet steel of 0.178 cm thick.
□	60-2	530-1088	± 5	Same as above.	The above sample measured as the temperature decreases from 1148 to 530 K.
△	60-2	289-1146	+ 5	Same as above.	The above sample measured as the temperature increases after the above measurement.
▽	60-2	693-1090	± 5	Same as above.	The above sample measured as the temperature decreases from 1146 to 693 K.

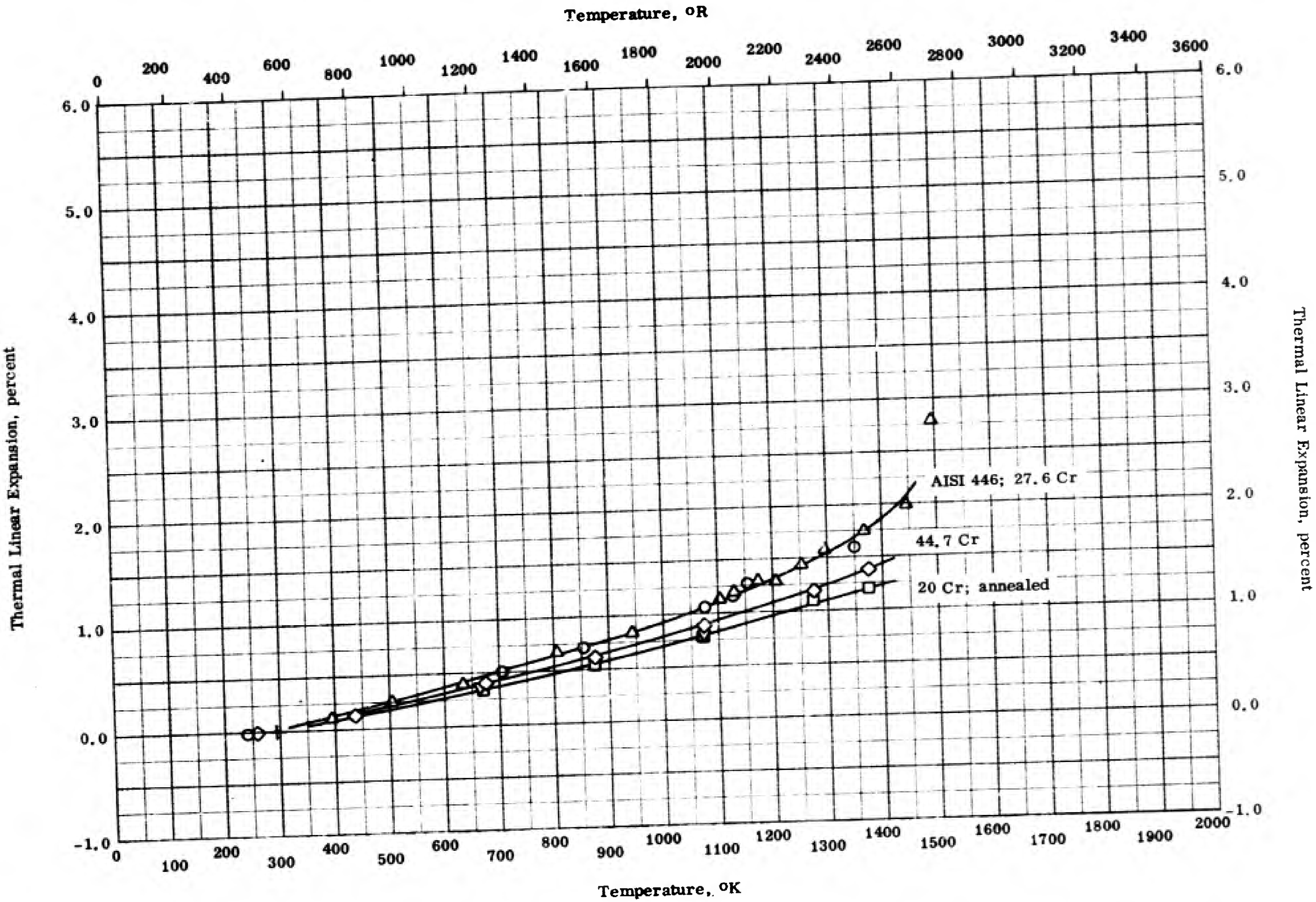


THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + ΣX_i GROUP I
(Cr < 20)

THERMAL LINEAR EXPANSION — IRON + CHROMIUM + ΣX_i GROUP I
(Cr < 20)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	55-1	293-1073		Two samples: (a) 13.2 Cr, 0.40 Mn, 0.35 Si, and 0.17 C. (b) 13.6 Cr, 0.36 Mn, 0.33 Si, and 0.11 C.	Heated at 120 C hr^{-1}; all samples high-temperature tempered and sample (a) also tested and quenched.
□	55-11	293-1073		82.9 Fe, 16.8 Cr, 0.07 Mn, and 0.05 C.	Annealed at 1200 C for 70 hrs; x-ray diffraction method.
△	55-11	293-1077		8.25 Cr, 0.09 Si, 0.07 Mn, and 0.05 C.	Annealed 73 hrs at 1200 C.
▽	43-1	293-973		5.01 Cr, 0.60 Mn, 0.30 Si, 0.05 C, 0.016 S, and 0.015 P.	Tested in vacuum at 1.5 C min^{-1} rise.

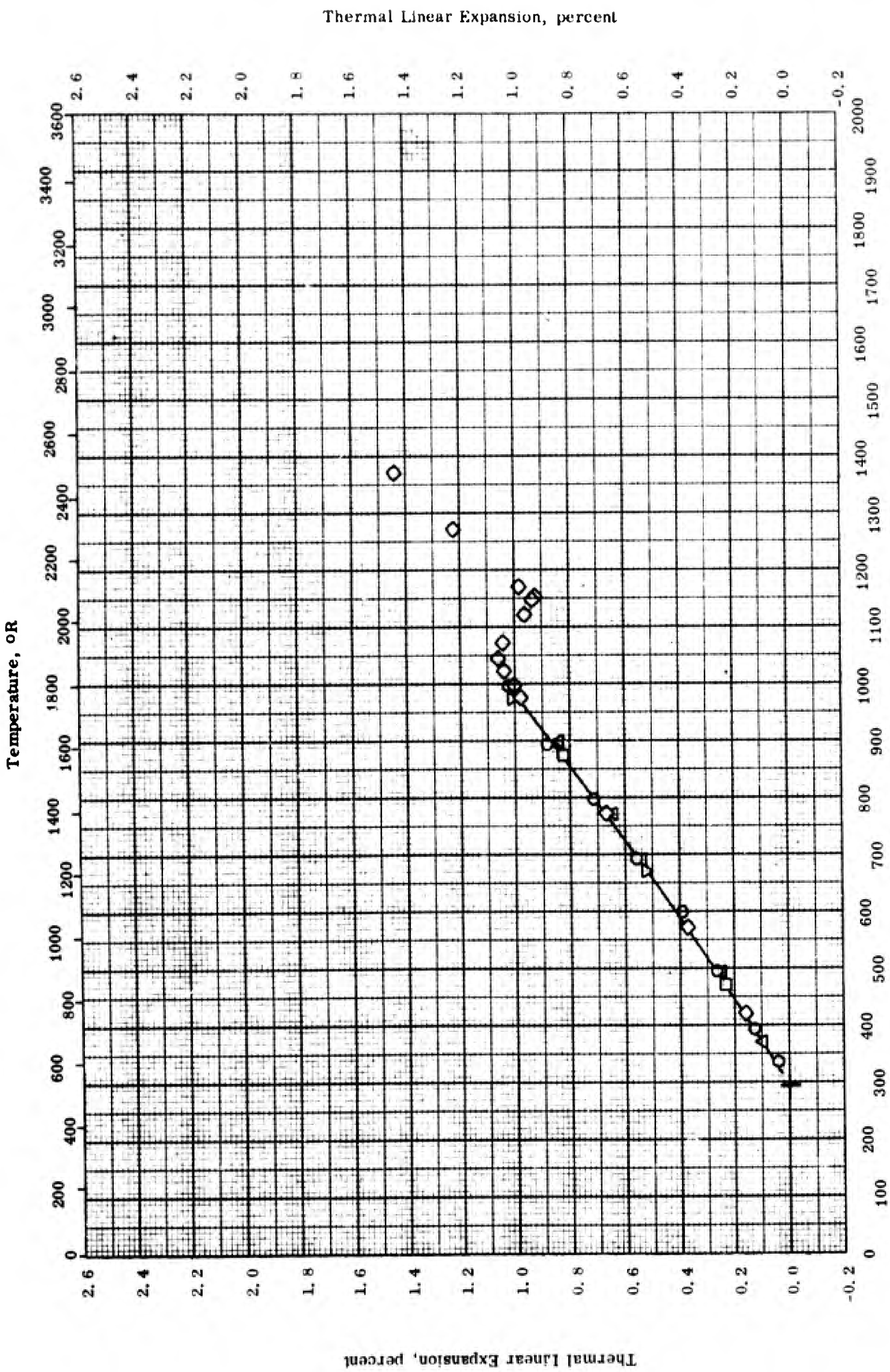


THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + ΣX_i GROUP I
(Cr ≥ 20)

THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + ΣX_i GROUP I
($Cr \geq 20$)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
▽	46-1	293-1373		20 Cr, 0.02 - 0.04 C, 0.008 S, and 0.08 - 0.15 Si.	Annealed.
□	46-1	293-1373		20 Cr, 0.08 - 0.15 Si, 0.02 - 0.04 C, and 0.008 S.	Annealed.
△	58-9	300-1493		AISI 446 Stainless Steel; 70.55 Fe, 27.61 Cr, 0.86 C, and 0.01 Mo.	
◇	56-18	293-1373		55.3 Fe and 44.7 Cr.	100% solid solution at start of test.
○	56-18	293-1373		Same as above.	100% solid solution at start of test due to previous heat-treatment.

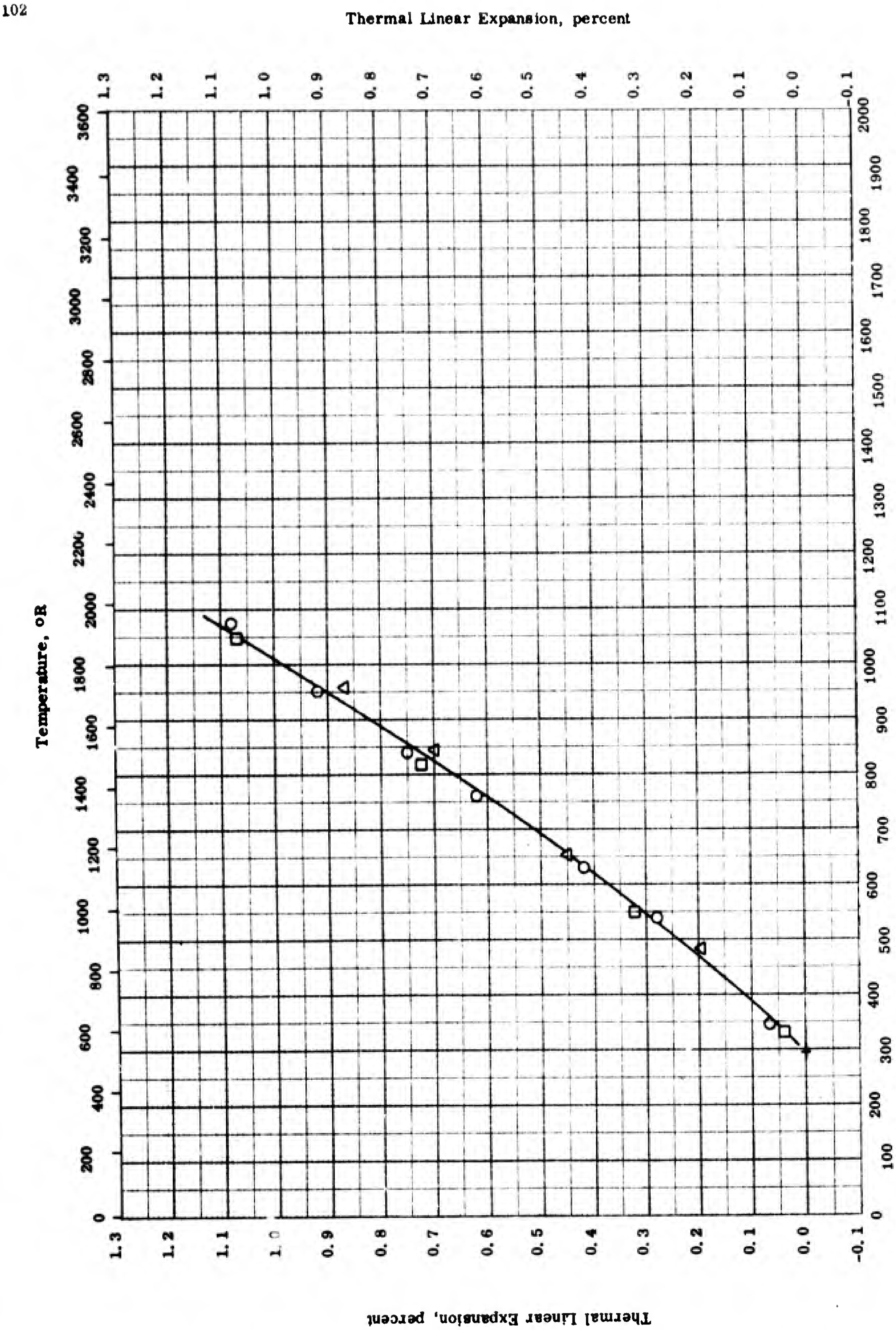


THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + ΣX_i GROUP II
($0.5 < Cr < 2.5$)

THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + ΣX_i GROUP II
(0.5 < Cr < 2.5)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	55-1	293-973	±1 - 1.5	0.55 Cr, 0.35 V, 0.32 Mn, 0.22 Si, 0.18 Mo, and 0.08 C.	Tested at 2 C min^{-1} rise.
△	55-1	293-973		Four samples: (a) 1.08 Cr, 0.57 Mn, 0.30 V, 0.26 Si, and 0.15 C. (b) 1.53 Cr, 0.72 W, 0.42 Si, 0.4 V, 0.27 Mn, and 0.09 C. (c) 1.55 Cr, 0.31 V, 0.27 Mn, 0.21 Si, and 0.08 C. (d) 1.62 Cr, 0.44 Si, 0.35 V, 0.25 Mn, 0.1 Ti, and 0.09 C.	Mean values with max 3% deviation; sample (a) tested after working and heat treating; tested at 120 C hr^{-1} heating rate.
□	43-1	293-1176		Three samples: (a) 2.38 Cr, 0.74 Mn, 0.30 C, 0.27 V, 0.25 Si, 0.018 P, and 0.010 S. (b) 2.43 Cr, 0.70 Mn, 0.29 Si, 0.28 Mo, 0.25 V, and 0.24 C. (c) 2.48 Cr, 0.68 Mn, 0.27 C, 0.25 Si, 0.21 Mo, 0.19 V, 0.018 P, and 0.010 S.	Mean value with max 5% deviation.
▽	43-1	293-1176		Three samples: (a) 1.05 Cr, 0.64 Mn, 0.48 C, 0.28 Si, 0.18 V, 0.020 P, and 0.14 S. (b) 1.07 Cr, 0.70 Mn, 0.30 Si, 0.26 C, 0.22 Mo, 0.013 Si, and 0.011 P. (c) 1.26 Cr, 1.22 Al, 0.77 Mn, 0.31 C, 0.30 Si, and 0.27 Mo.	Mean values with max 5% deviation.
◇	64-3	273-1373		15 KhM; 0.8 - 1.10 Cr, 0.40 - 0.70 Mn, 0.40 - 0.60 Mo, 0.30 Ni, 0.17 - 0.37 Si, 0.25 Cu, 0.12 - 0.20 C, 0.04 P, and 0.04 S.	

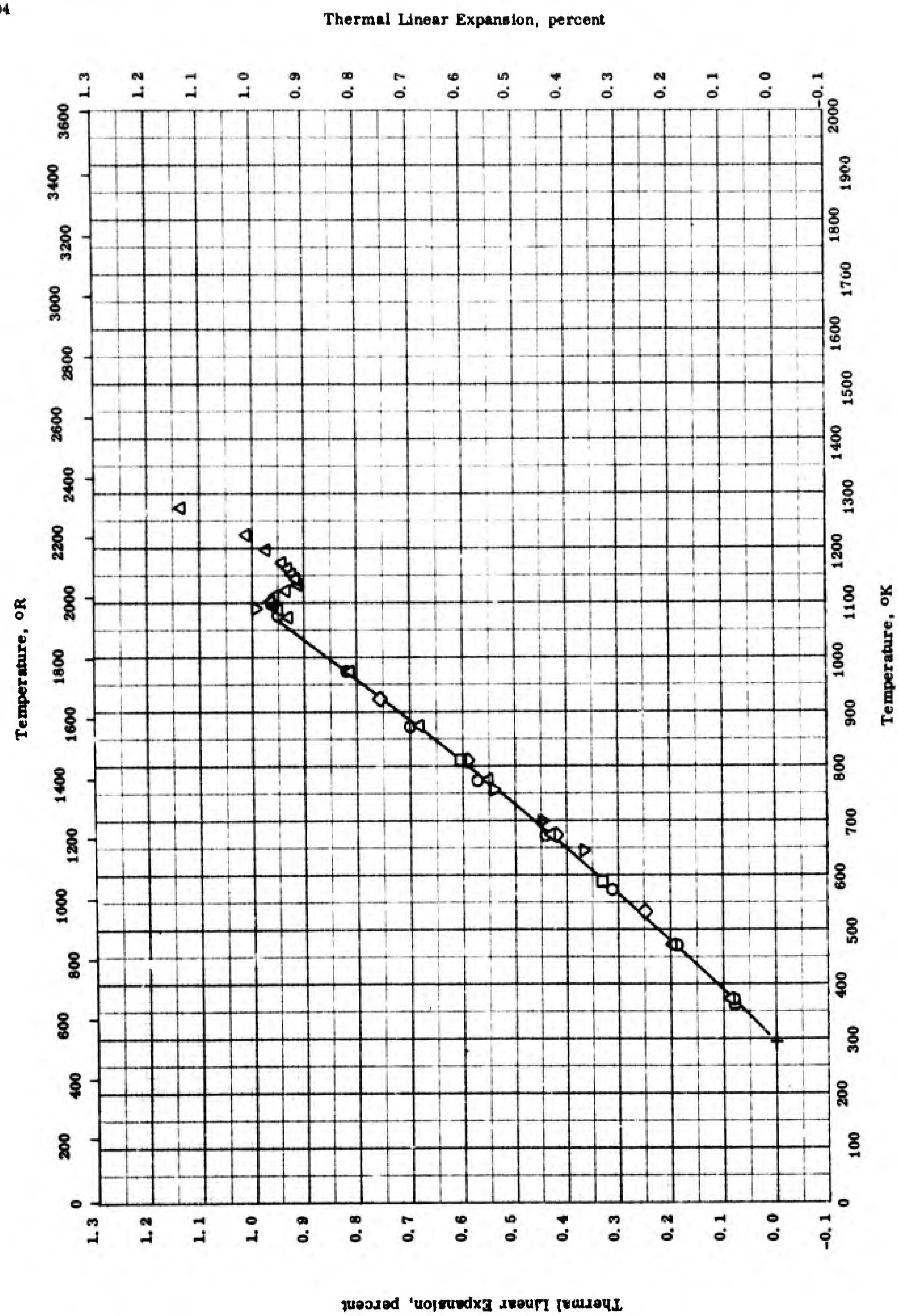


THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + ΣX_i GROUP II
($2.5 < Cr < 3.0$)

THERMAL LINEAR EXPANION — IRON + CHROMIUM + ΣX_i GROUP II
($2.5 < Cr < 3.0$)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	52-1	373-1073		Jessop No. 40 Steel (Brit. design.); 2.7 Cr, 0.75 V, 0.5 Mo, 0.5 W, 0.45 Si, 0.30 Mn, 0.30 Ni, and 0.23 C.	
□	52-1	373-1073		H.G.T. 3 steel (Brit. design.); 2.87 Cr, 0.77 V, 0.59 W, 0.51 Mo, 0.45 Si, 0.35 Ni, 0.33 Mn, and 0.23 C.	
△	43-1	293-973		2.58 Cr, 2.54 Ni, 0.77 Mn, 0.34 Si, 0.09 C, 0.014 P, and 0.011 S.	Tested in vacuum at 1.5 C min^{-1} rise.

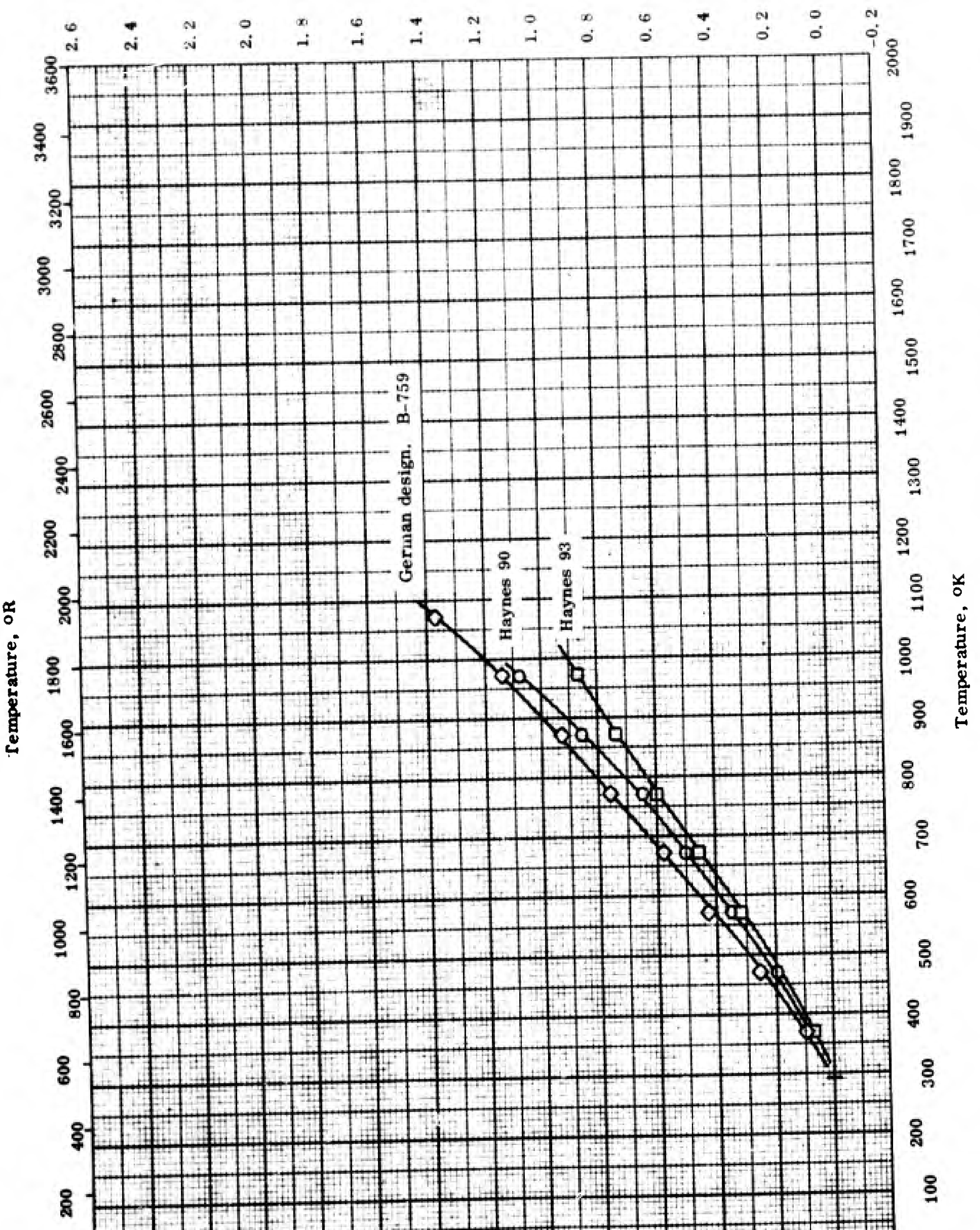


THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + ΣX_i GROUP II
($10<Cr<15$)

THERMAL LINEAR EXPANSION — IRON + CHROMIUM + ΣX_i GROUP II
(10<Cr<15)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	52-1	293-1073		Jessop No. 46 Steel (Brit. design.);11 Cr, 0.7 V, 0.5 Mo, 0.4 Mn, 0.3 Si, 0.2 C, and 0.15 Nb; density 484 lb ft^{-3}.	
△	64-3	273-1273		EI-802 Steel; 11-13 Cr, 0.7-1.0W, 0.6-1.0 Mn, 0.17-1.37 Si, 0.5-1.0 Ni, 0.4-0.6 Mo, 0.15-0.30 V, and 0.11-0.18 C.	
□	60-11	294-922		AISI 422 Stainless Steel; 12.0 Cr, 1.0 Mo, 1.0 W, 0.80 Ni, 0.75 Mn, 0.35 Si, 0.25 V, and 0.23 C.	
▽	59-8	293-1089		USS 12 MoV Stainless Steel; 12.0 Cr, 1.0 Mo, 0.7 Ni, 0.5 Mn, 0.5 Si, 0.30 V, and 0.25 C.	
◇	59-8	294-922		AISI 422 Stainless Steel; 12 Cr, 1 Mo, 1 W, 0.75 Ni, 0.65 Mn, 0.50 Si, and 0.20 C.	

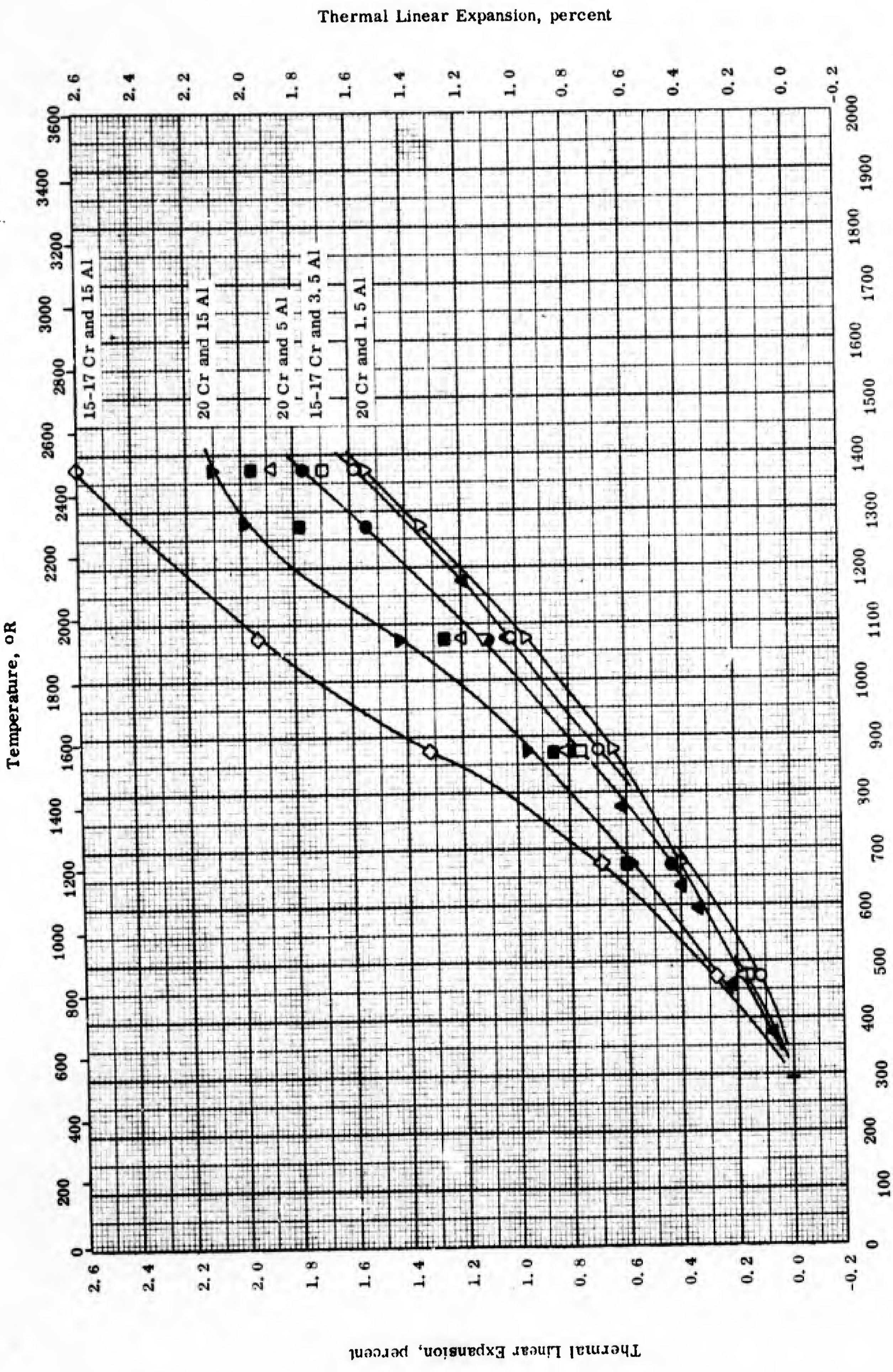


THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + ΣX_i GROUP II
($15 < Cr < 30$)

THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + ΣX_i GROUP II
($15 < Cr < 30$)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
◇	47-3	473-1073		B-759 (German design.); 17.9 Cr, 10.9 Mo, 10.3 Ni, 1.2 Si, 1.0 Mn, and 0.34 C.	Forged.
○	62-11	296-973		Haynes Alloy No. 90; 62.25 Fe, 27 Cr, 2.75 C, 1.0 Mn, 1.0 Si, and 3.0 others; density 7.35 g cm^{-3} at 22 C and melting point 1310 C.	Sand-cast and hardened prior to testing; nominal composition.
□	62-11	296-973		Haynes Alloy No. 93; 50.6 Fe, 17 Cr, 16 Mo, 6 Co, 3.0 C, 1.9V, 1.5 Si, 1.0 Mn, and 3 others; density 7.77 g cm^{-3} at 22 C and melting range 1138-1218 C.	Same as above.

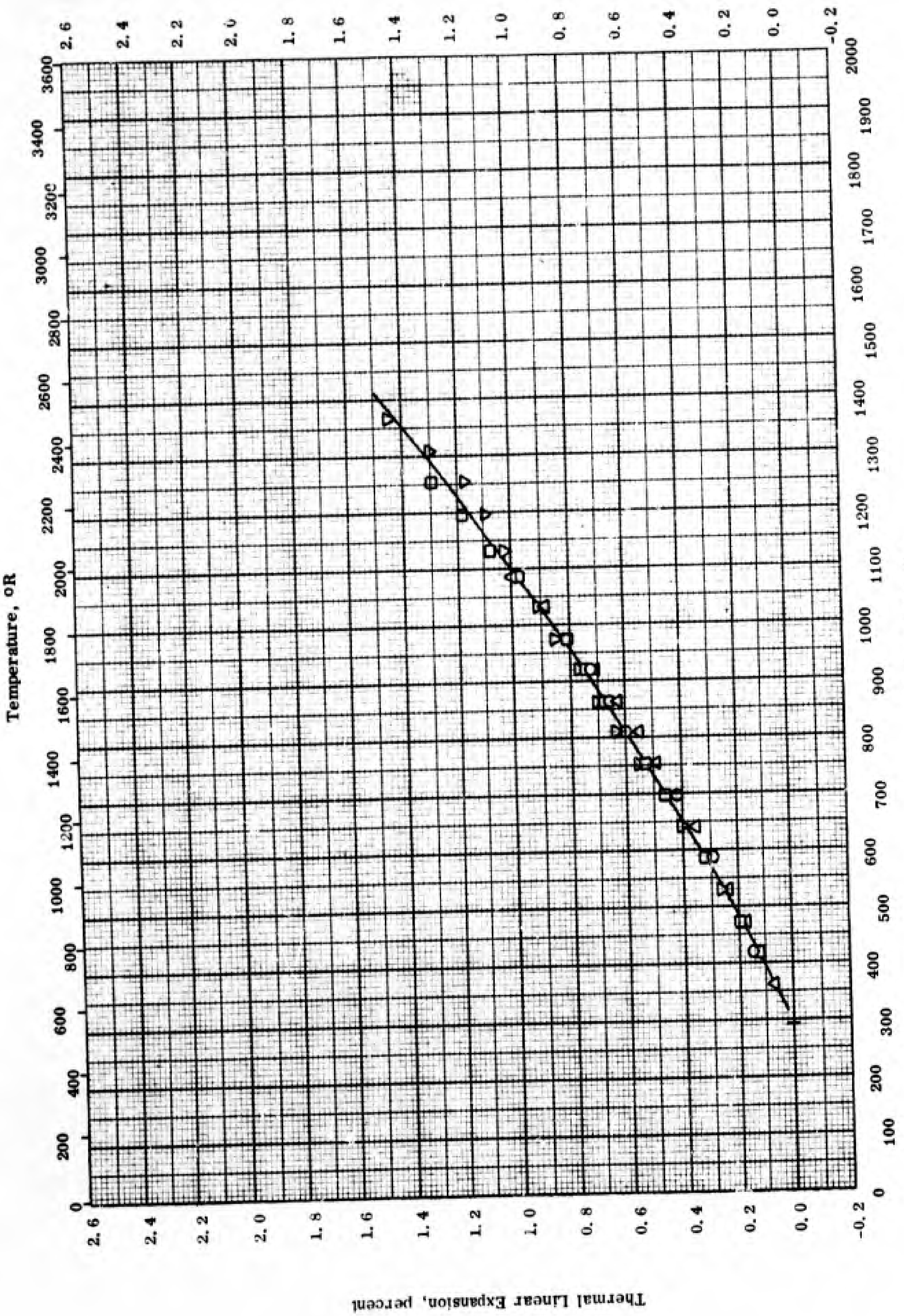


THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + ΣX_i GROUP II
(15-20 Cr and 3-15 Al)

THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + ΣX_i GROUP II
(15-20 Cr and 3-15 Al)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	46-1	293-1373		15-17 Cr, 3.5 Al, 0.08-0.15 Si, 0.02-0.04 C and 0.008 S.	Annealed.
□	46-1	293-1373		15-17 Cr and 5.5 Al; impurities same as above.	Same as above.
△	46-1	293-1373		15-17 Cr and 9 Al; impurities same as above.	Same as above.
◇	46-1	293-1373		15-17 Cr and 15 Al; impurities same as above.	Same as above.
▽	46-1	293-1373		20 Cr, and 1.5 Al; impurities same as above.	Same as above.
●	46-1	293-1373		20 Cr and 5 Al; impurities same as above.	Same as above.
■	46-1	293-1373		20 Cr and 10 Al; impurities same as above.	Same as above.
▼	46-1	293-1373		20 Cr and 15 Al; impurities same as above.	Same as above.
▲	55-11	293-1173		18.53 Cr, 5.8 Al, 0.29 Si, 0.04 C, and 0.018 Mn.	Annealed 100 hrs at 1200 C.
◁	55-11	293-1173		Same as above.	Annealed 5 hrs at 1200 C.

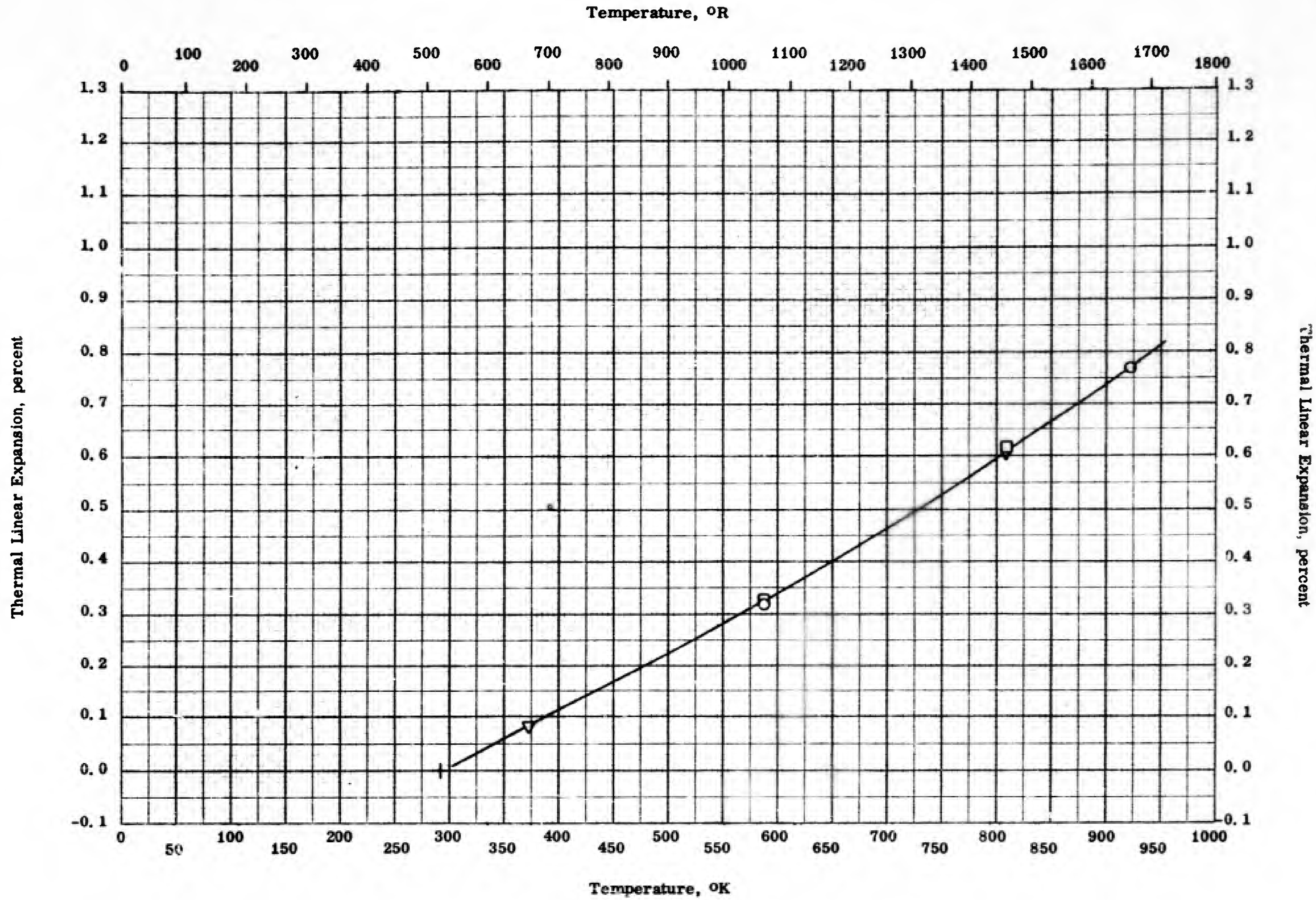


THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + ΣX_i GROUP II
(11-14 Cr and 1.25 max Mn)

THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + ΣX_i GROUP II
(11-14 Cr and 1.25 max Mn)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-11	294-922		AISI 403 Stainless Steel; 11.5-13 Cr, 1.0 max Mn, 0.5 max Si, 0.15 max C, 0.045 max P, and 0.030 S.	
□	60-11	293-1256		AISI 410 Stainless Steel; 11.5-13.5 Cr, 1.00 max Mn, 1.00 max Si, 0.15 max C, 0.045 max P, and 0.030 max S.	
△	60-11	293-1089		AISI 416 Stainless Steel; 12-14 Cr, 1.25 max Mn, 1.00 max Si, 0.15 max C, 0.06 max P, and 0.015 min S.	
▽	60-11	293-1366		AISI 420 Stainless Steel; 12-14.0 Cr, 1.00 max Mn, 1.00 max Si, 0.15 min C, 0.045 max P, and 0.030 max S.	

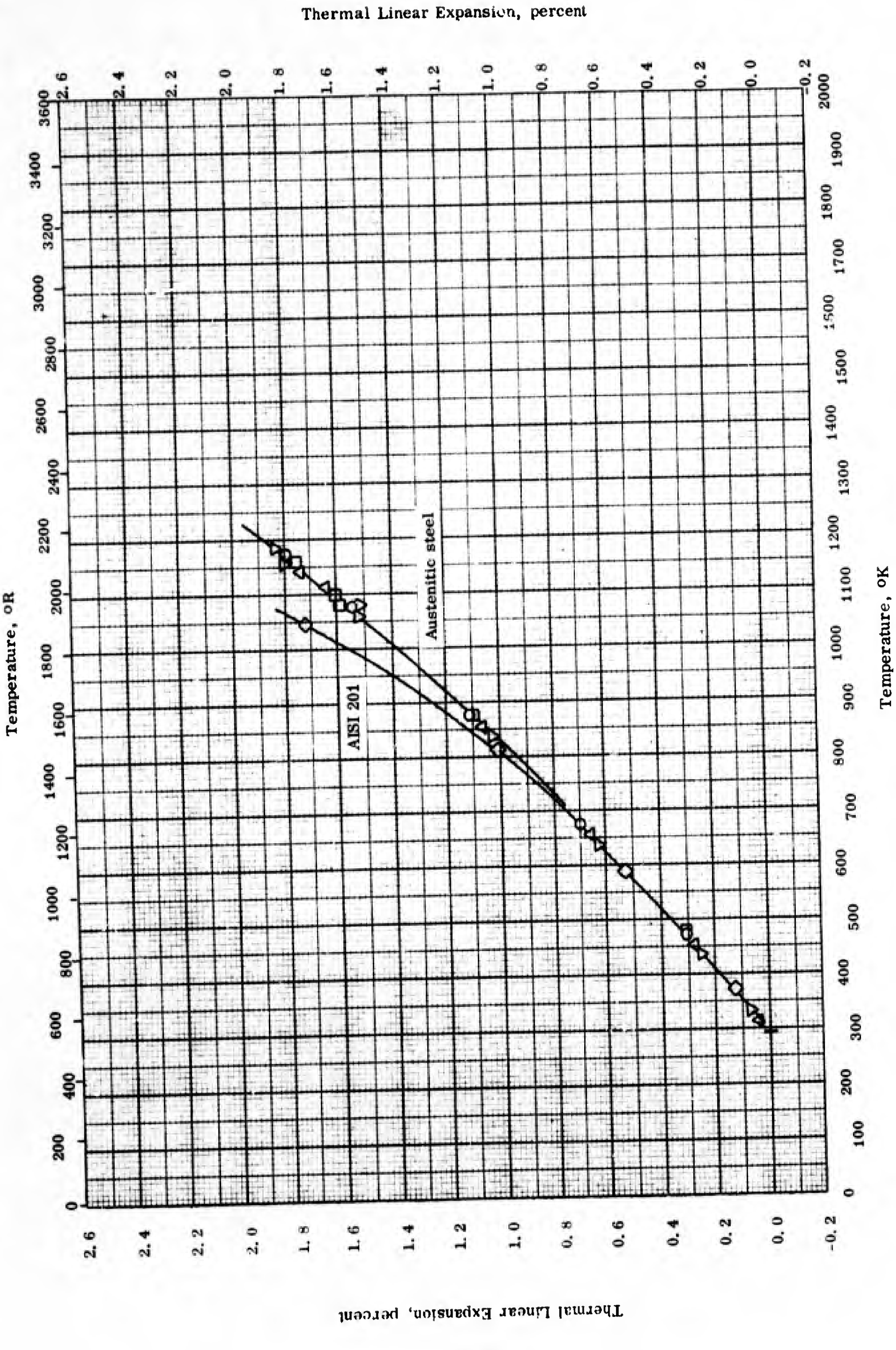


THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + ΣX_i GROUP II
(16-18 Cr and 1.00 max Mn)

THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + ΣX_i GROUP II (16–18 Cr and 1.00 max Mn)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-11	273-922		AISI 440 A Stainless Steel; 16-18 Cr, 1.00 max Mn, 1.00 max Si, 0.75 max Mo, 0.60 - 0.75 C, 0.045 max P, and 0.030 max S.	
□	60-11	273-922		AISI 440 B; same composition as above except 0.75 -0.95 C.	
▽	60-11	273-922		AISI 440C; same composition as above except 0.95-1.20 C.	

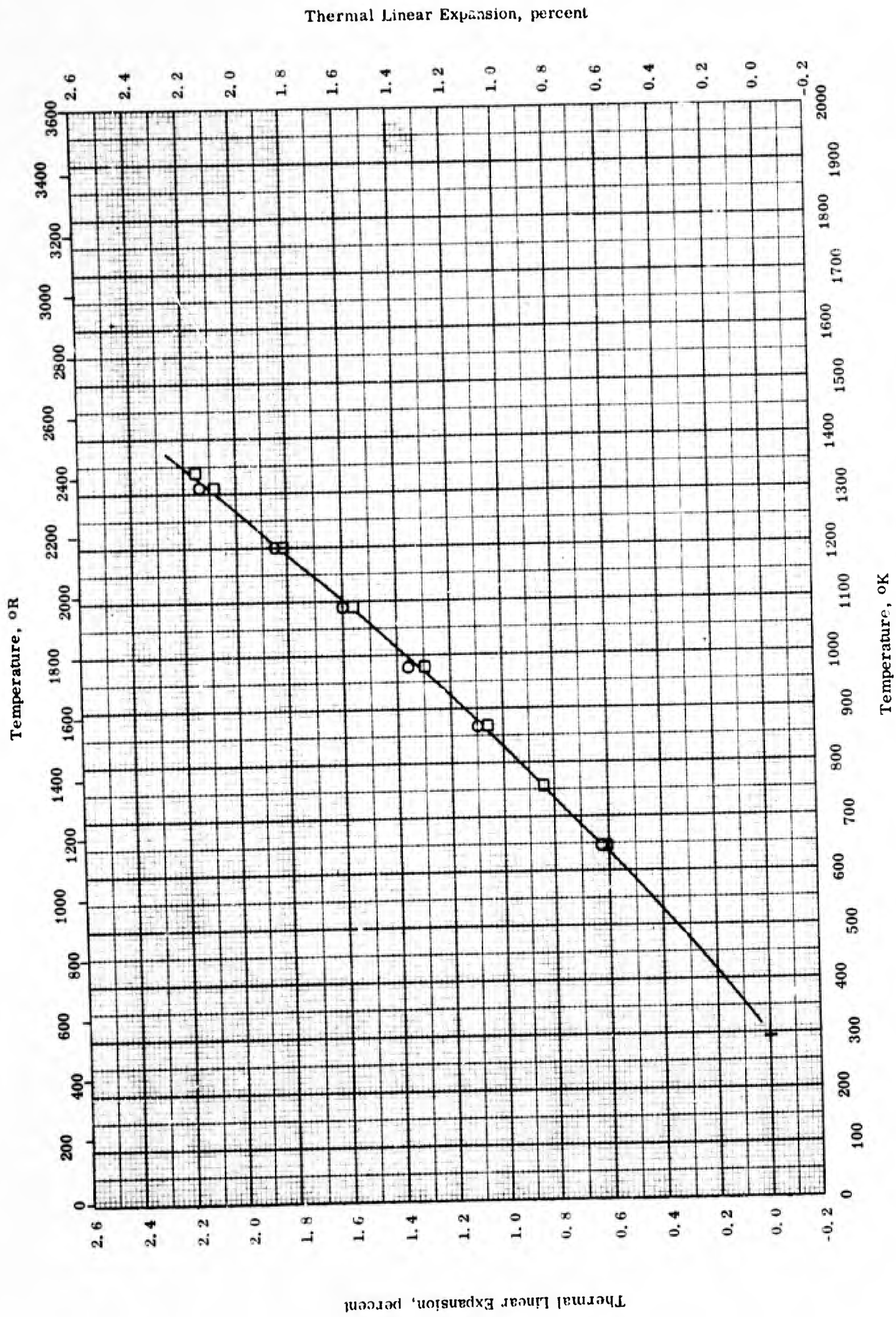


THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + ΣX_i GROUP II
(10–18 Cr and 5–8 Mn)

THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + ΣX_i GROUP II
(10-18 Cr and 5-8 Mn)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	43-1	293-1176		Austenitic steel; 11.8 Cr, 6.0 Mn, 6.0 Ni, 3.4 Si, 1.2 W, 0.43 C, and 0.03 N.	Heating rate 1.5 C min^{-1}.
□	43-1	293-1173		Austenitic steel; 14.8 Cr, 6.5 Mn, 3.2 Ni, 2.3 Si, 0.50 C, 0.4 W, and 0.065 N.	Data including both for heating and cooling.
△	43-1	293-1173		Austenitic steel; 14.8 Cr, 6.3 Mn, 4.8 Ni, 1.1 W, 0.46 C, and 0.18 N.	Same as above.
▽	43-1	293-1173		Austenitic steel; 12.8 Cr, 6.7 Mn, 5.1 Ni, 3.2 Si, 1.2 W, 0.45 C, and 0.16 N.	Same as above.
◇	59-9	293-1044		AISI 201; 16-18 Cr, 5.5-7.5 Mn, 3.5-5.5 Ni, 1.0 max Si, 0.25 max N, 0.15 max C, 0.06 max P, and 0.03 max S.	Annealed.

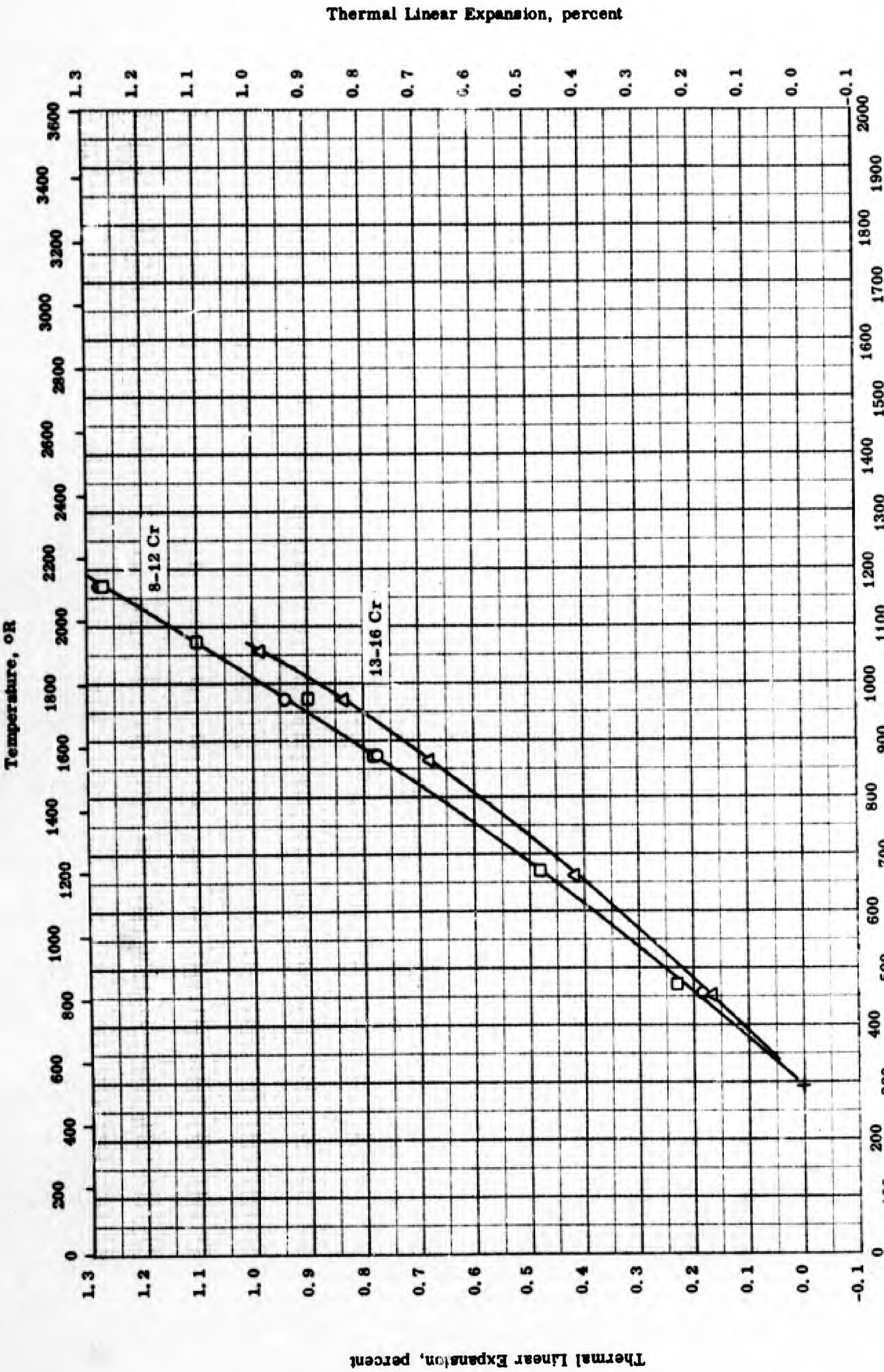


THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + ΣX_i GROUP II
(17 Cr and 14-15 Mn)

THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + ΣX_i GROUP II
(17 Cr and 14-15 Mn)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	59-9	273-1311		USS Tenelon; 17 Cr, 14.5 Mn, 0.40 N, and 0.10 C.	
□	59-9	273-1339		USS 17-5 Mn V; 17.0 Cr, 15.0 Mn, 5.0 Ni, 2.0 Mo, 0.75 V, 0.5 Si, 0.35 N, and 0.10 C.	

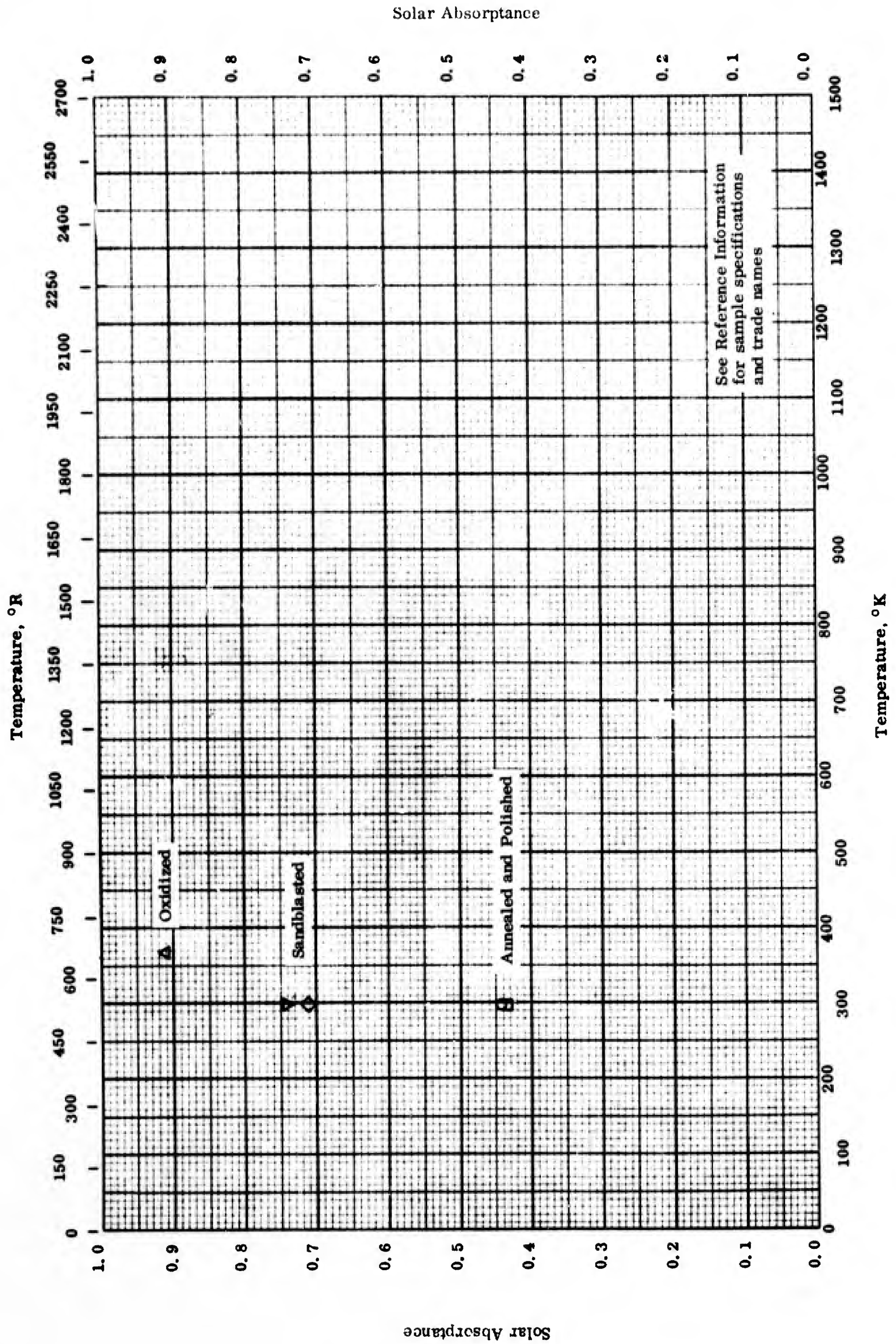


THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + ΣX_i GROUP II
(8-16 Cr and 0.3-3.0 Si)

THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + ΣX_i GROUP II
(8-16 Cr and 0.3-3.0 Si)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	43-1	293-1173		8-12 Cr, 3.0 Si, 0.4-0.6 C, and 0.5 Mn.	
□	43-1	293-1173		8-13 Cr, 0.35-3.0 Si, 0.4-2.2 C, and 0.5 approx Mn.	Tested in vacuum at 1.5 C min^{-1} rise.
△	43-1	293-1073		Two samples: (a) 13-16 Cr, 0.8 >Si, 0.3-0.5 Mn, and 0.15-0.25 C. (b) 13-16 Cr, 0.5-0.7 Si, 0.35-0.50 C, and 0.3-0.5 Mn.	Mean values with max 2 % deviation.

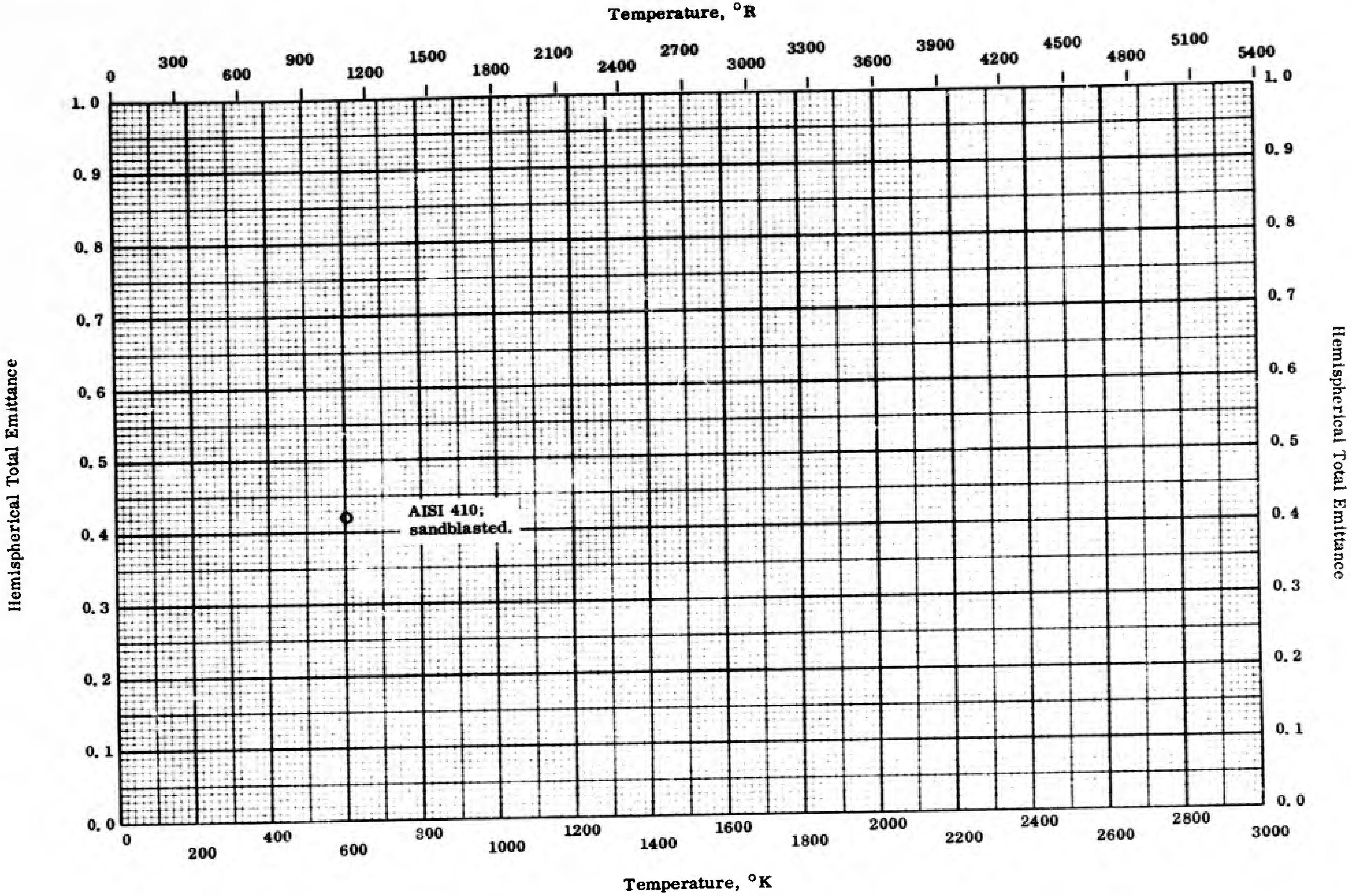


SOLAR ABSORPTANCE -- IRON + CHROMIUM + ΣX_i GROUP II

SOLAR ABSORPTANCE -- IRON + CHROMIUM + ΣX_i GROUP II

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	57-13	298		Stainless steel 446; nominal: 23 - 27 Cr, 1.50 > Mn, 1.00 > Si, 0.040 > P, 0.2 > C 0.030 > S, and 0.25 > N; grade QQ-5-763A; surface roughness 2 μ in. RMS.	Annealed, polished, above atmosphere.
□	57-13	298		Stainless steel 446; grade QQ-5-763A; surface roughness 15 μ in. RMS.	Annealed, polished, above atmosphere.
△	62-10	366	1.1	Cobalt alloy (surface N-1) N-155; nominal: 30 Fe, 21 Cr, 20 Co, 20 Ni, 3 Mo, 2.5 W, 1.5 Mn, 1.0 Nb, 0.5 Si, and 0.15 each C, N.	Highly polished, mirror finish oxide formation at 873 K for 3 hrs; measured in air.
▽	62-5	298		Stainless steel 410; nominal: 11.5 - 13.5 Cr, 0.15 > C, 1.00 > Mn, 1.00 > Si, 0.15 > C, 0.040 > P, and 0.030 > S.	Sandblasted with 100 mesh grit, heated in air at 600 F for 5 min.; values obtained by Langley IRD for the range 0.26 - 2.6 μ.
◇	62-5	298		Same as above.	Same as the above specimen; values obtained by Lockheed-Aircraft Corp. for the range 0.3 - 22 μ.

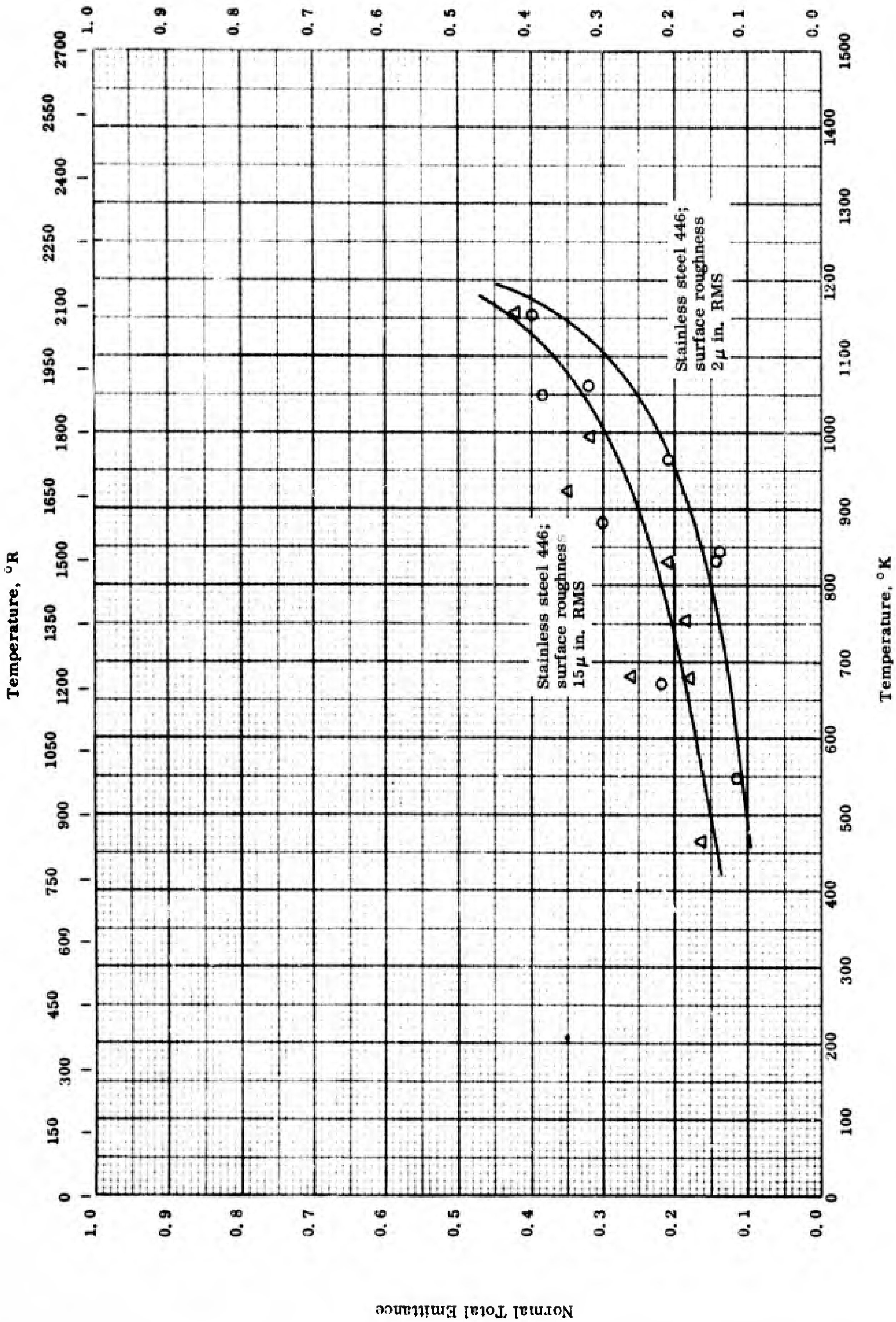


HEMISPHERICAL TOTAL EMITTANCE -- IRON + CHROMIUM + ΣX_i GROUP II

HEMISPHERICAL TOTAL EMITTANCE -- IRON + CHROMIUM + ΣX_i GROUP II

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	62-5	300		Stainless steel 410; nominal: 11.5 - 13.5 Cr, 1.00 > Mn, 1.00 > Si; 0.040 > P, 0.030 > S, and 0.15 > C.	Sandblasted with 100 mesh grit; heated in air at 600 F for 5 min.

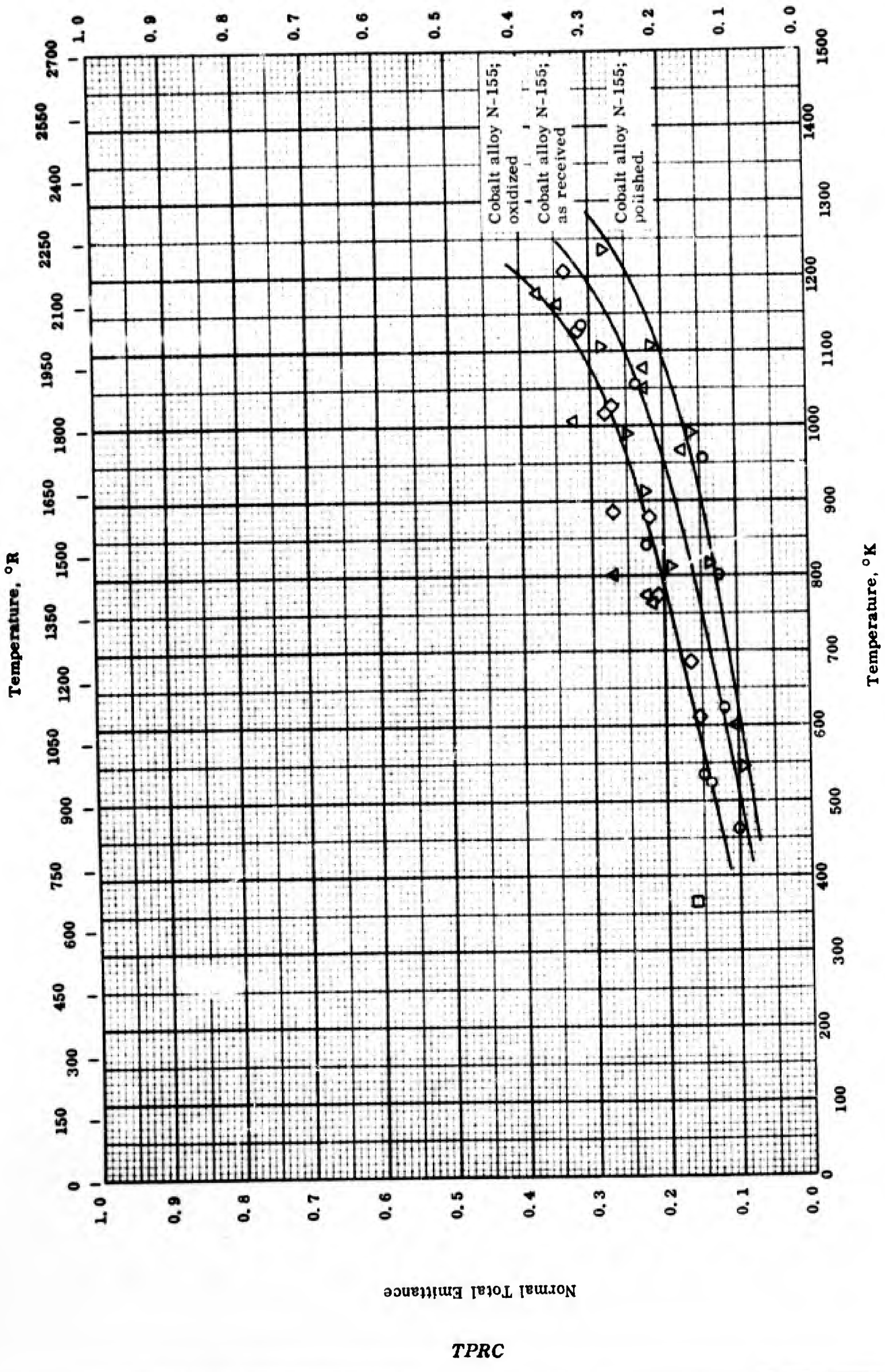


NORMAL TOTAL EMITTANCE -- IRON + CHROMIUM + ΣX_i GROUP II
(AISI 446)

NORMAL TOTAL EMITTANCE -- IRON + CHROMIUM + ΣX_i GROUP II
(AISI 446)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	57-13	549-1155	± 10	Stainless steel 446, nominal: 23 - 27 Cr, 1.50 > Mn, 1.00 > Si, 0.20 > C, 0.040 > P, 0.030 > S, and 0.25 > N; grade QQ-5-763A; surface roughness 2 μ in. RMS.	Measured in vacuum 5 x 10^{-4} mm Hg.
△	57-13	466-1155	± 10	Stainless steel 446; grade QQ-5-763A; surface roughness 15 μ in. RMS.	Measured in vacuum 5 x 10^{-4} mm Hg.

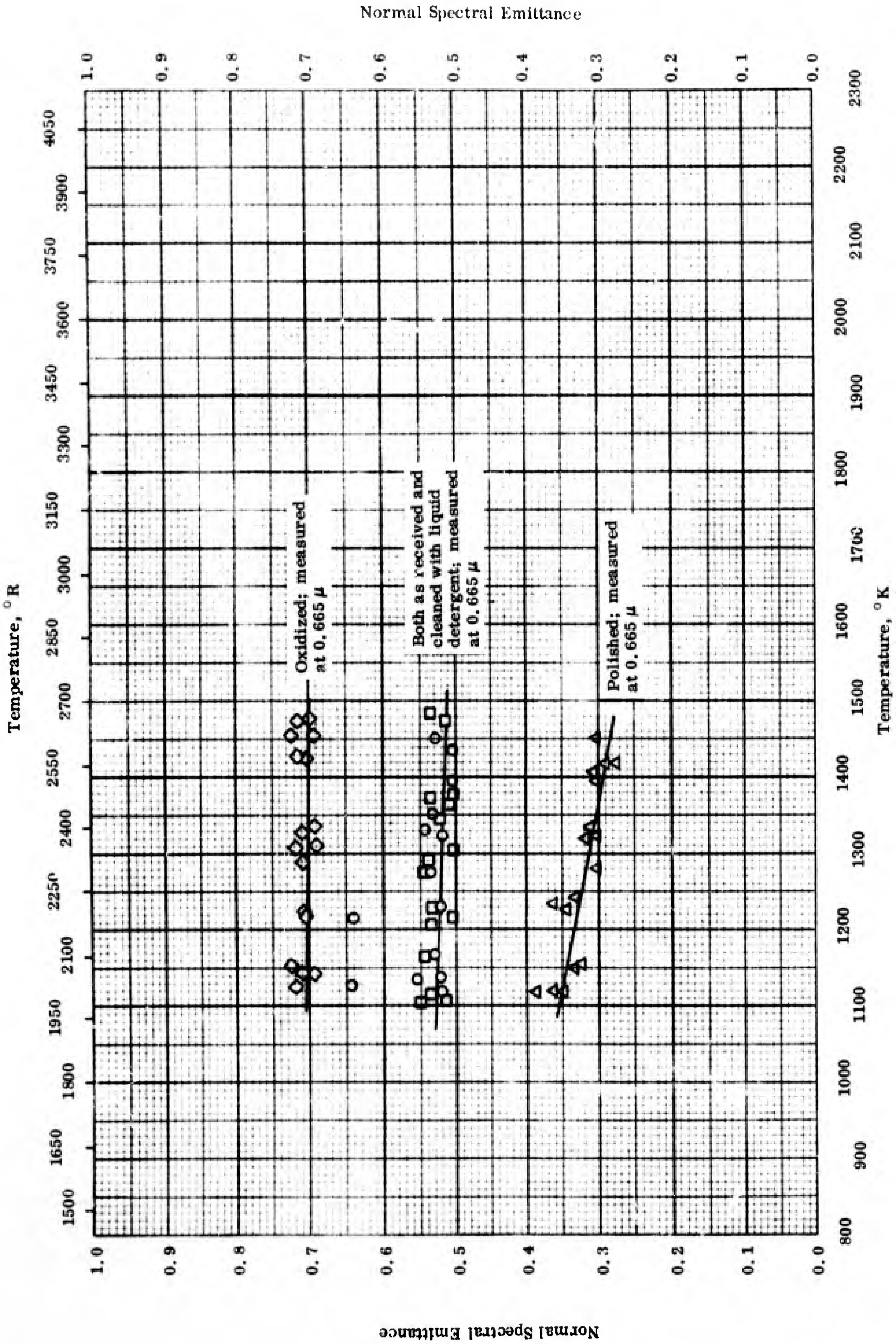


NORMAL TOTAL EMITTANCE -- IRON + CHROMIUM + ΣX_i GROUP II
(Cobalt alloy N-155)

NORMAL TOTAL EMITTANCE -- IRON + CHROMIUM + ΣX_i GROUP II
(Cobalt alloy N-155)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
□	62-10	366		Cobalt alloy (Surface N-1) N-155; nominal: 30 Fe, 21 Cr, 20 Co, 20 Ni, 3 Mo, 2.5 W, 1.5 Mn, 1.0 Nb, 0.5 Si, 0.15 each C, N.	Highly polished, mirror finish oxide formation at 873 K for 3 hrs; measured in air.
○	57-13	461-1133	±10	Cobalt alloy N-155.	As received; measured in vacuum (5×10^{-4} mm Hg).
△	57-13	600-1178	±10	Cobalt alloy N-155.	Cleaned with a liquid detergent; measured in vacuum (5×10^{-4} mm Hg).
▽	57-13	544-1233	±10	Cobalt alloy N-155.	Polished with fine polishing compounds on a buffing wheel; measured in vacuum (5×10^{-4} mm Hg).
◇	57-13	611-1205	±10	Cobalt alloy N-155.	Oxidized in air at red heat for 30 min.; measured in vacuum (5×10^{-4} mm Hg).

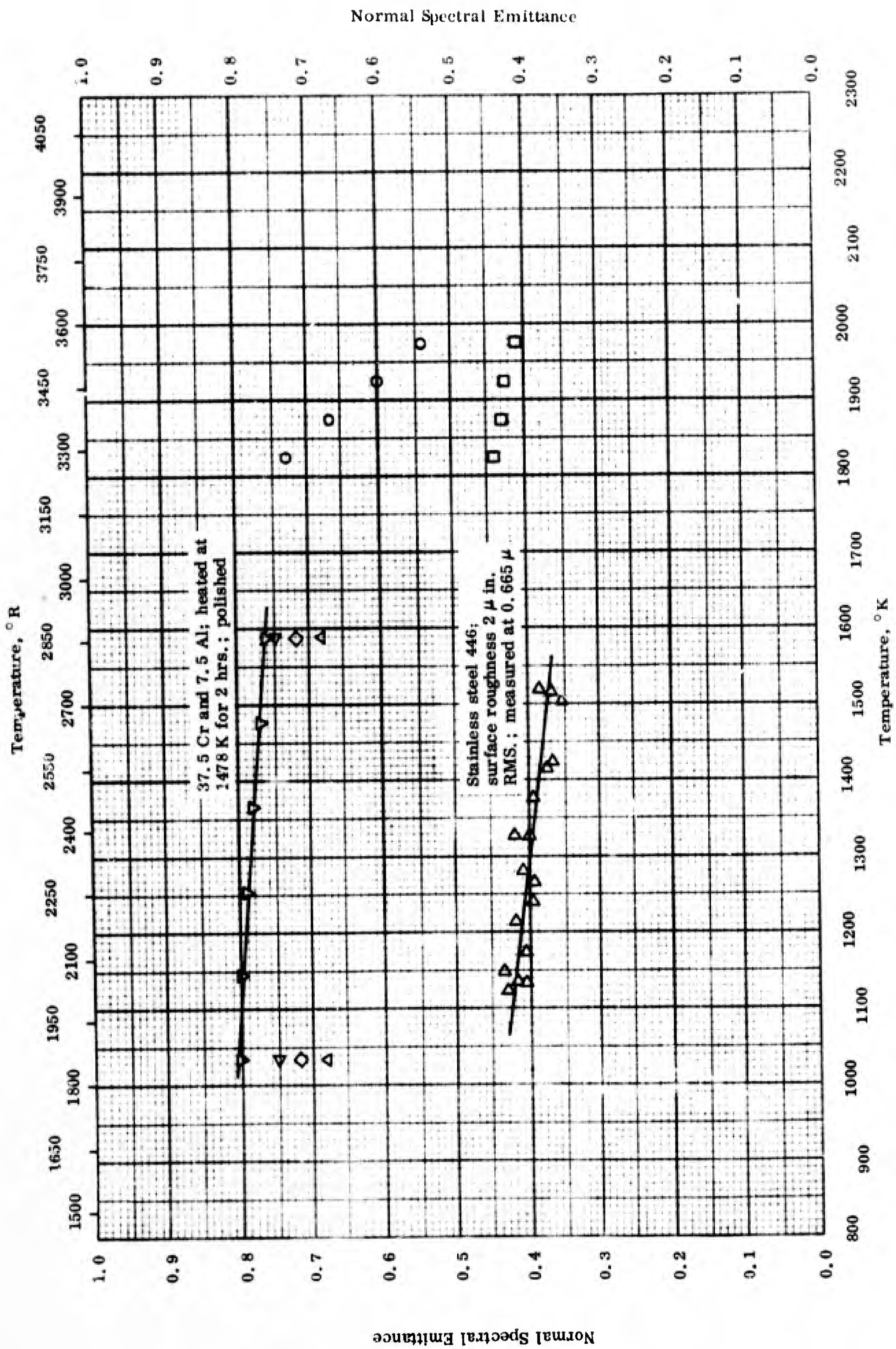


NORMAL SPECTRAL EMITTANCE -- IRON + CHROMIUM + ΣX_i GROUP II
(Multimet N-155)

NORMAL SPECTRAL EMITTANCE -- IRON + CHROMIUM + ΣX_i GROUP II
(Multimet N-155)

REFERENCE INFORMATION

Symbol	Ref.	Wavelength μ	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	57-13	0.665	1119-1450		Cobalt alloy N-155; nominal: 30 Fe, 21 Cr, 20 Co, 20 Ni, 3 Mo, 2.5 W, 1.5 Mn, 1.0 Nb, 0.5 Si, 0.15 each C, N.	As received; measured in vacuum.
□	57-13	0.665	1103-1483		Cobalt alloy N-155.	Cleaned with a liquid detergent; measured in vacuum.
△	57-13	0.665	1119-1450		Cobalt alloy N-155.	Polished with fine polishing compounds on a buffing wheel; measured in vacuum.
◇	57-13	0.665	1125-1478		Cobalt alloy N-155.	Oxidized in air at red heat for 30 min.; measured in vacuum.

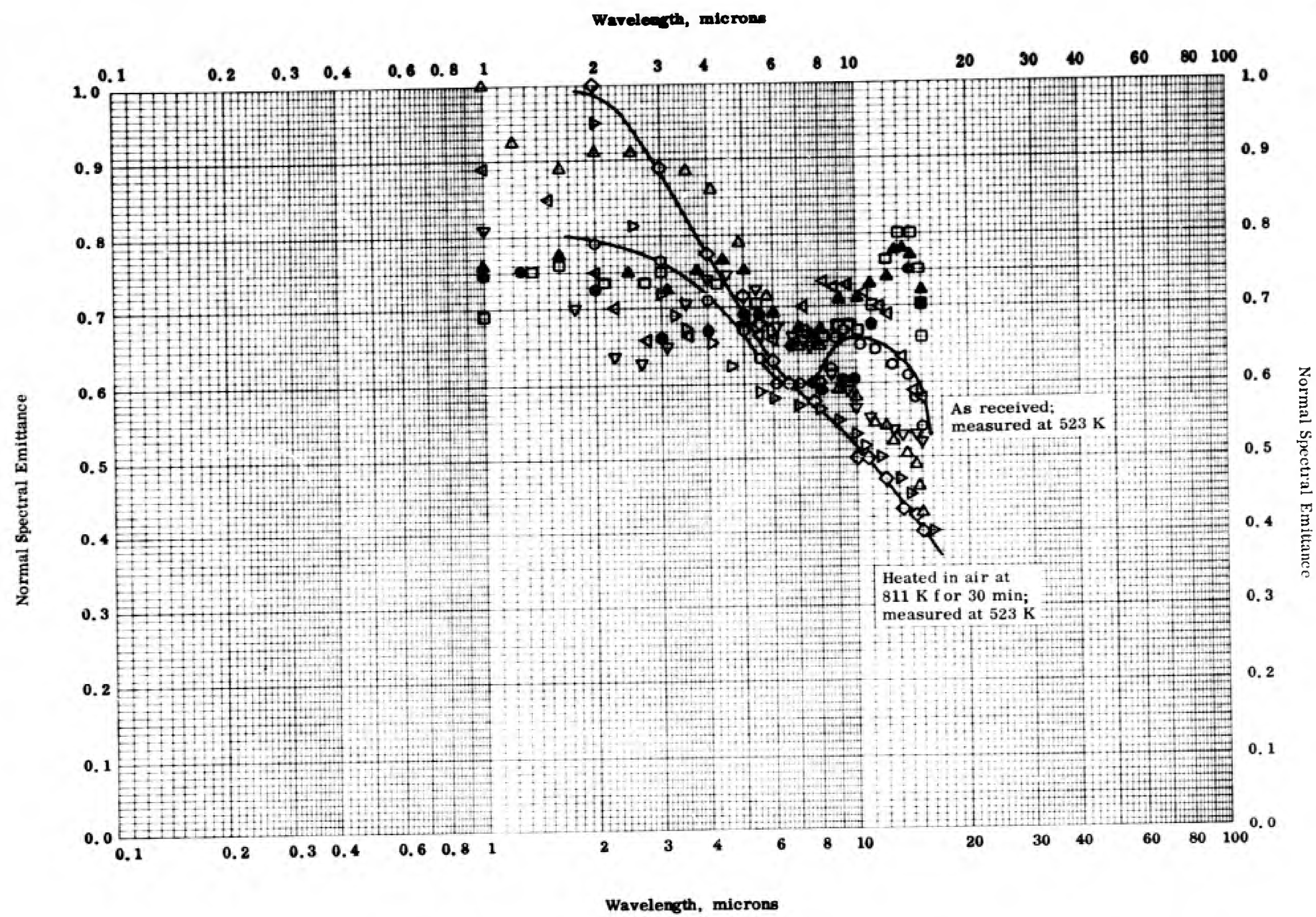


NORMAL SPECTRAL EMITTANCE -- IRON + CHROMIUM + ΣX_i GROUP II
(Miscellaneous)

NORMAL SPECTRAL EMITTANCE -- IRON + CHROMIUM + ΣX_i GROUP II
(Miscellaneous)

REFERENCE INFORMATION

Symbol	Ref.	Wavelength μ	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	47-4	0.655	1823-1973		18 Cr and 9 Cu; liquid state; oxidized film.	Lab. high frequency furnace (sillimanite lining); data taken from smooth curve; same data for 0.648 μ; scum on molten metal.
□	47-4	0.655	1823-1973		18 Cr and 9 Cu; liquid state.	Lab. high frequency furnace (sillimanite lining); data taken from smooth curve; same data for 0.648 μ.
△	39-1	0.65	1033-1589		37.5 Cr and 7.5 Al.	Polished with rouge paper; measured in purified hydrogen; emittance is constant within the temperature range.
◇	39-1	0.65	1033-1589		23 Cr, 5 Al, and 2 Co.	Polished with rouge paper; measured in purified hydrogen; emittance is constant within the temperature range.
▽	39-1	0.65	1033-1589		37.5 Cr and 7.5 Al.	Polished with rouge paper; heated 2 hrs. at 1478 K; measured in air.
◁	39-1	0.65	1033-1589		23 Cr, 5 Al, and 2 Co.	Polished with rouge paper; heated 2 hrs. at 1478 K; measured in air; emittance is constant within the temperature range.
▷	57-13	0.665	1122-1519		Stainless steel 446; nominal: 23 - 27 Cr, 1.50 > Mn, 1.00 > Si, 0.25 > N, 0.20 > C, 0.040 > P, and 0.030 > S; surface roughness 15 μ in. RMS.	Annealed; measured in vacuum; same data for a finish of 2 μ in. RMS.

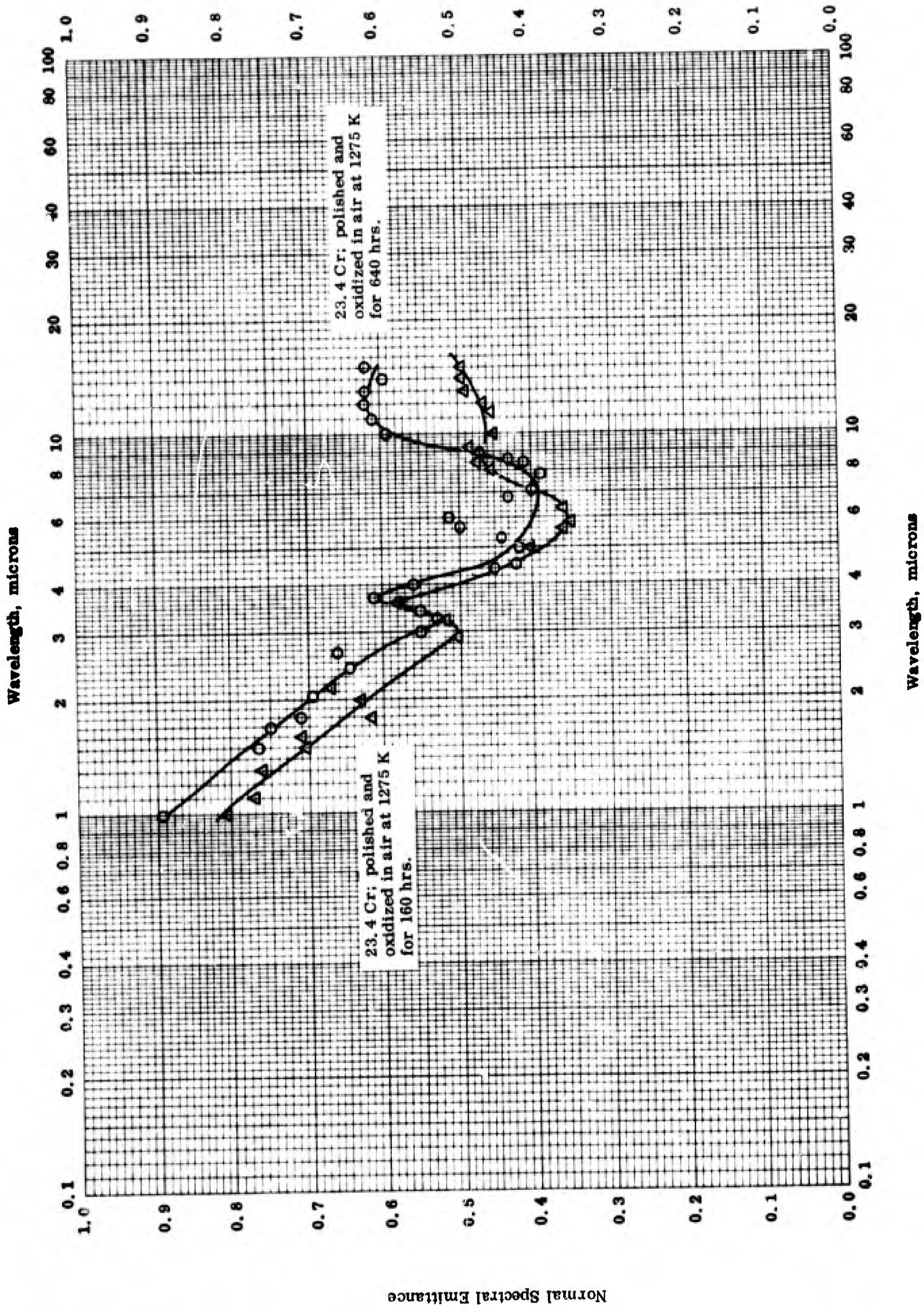


NORMAL SPECTRAL EMITTANCE -- IRON + CHROMIUM + ΣX_i GROUP II
(Vascojet 1000)

NORMAL SPECTRAL EMITTANCE — IRON + CHROMIUM + ΣX_i GROUP II •
(Vascojet 1000)

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
○	62-8	523	2.00-15.00		Vascojet 1000; 92.1 Fe, 5 Cr, 1.3 Mo, 0.9 Si, 0.3 Mn, 0.4 C, 0.5 V.	As received.
△	62-8	773	1.00-15.00		Same as above.	As received.
□	62-8	1023	1.00-15.00		Same as above.	As received.
◇	62-8	523	2.00-15.00		Same as above.	Heated in air at 811 K for 30 min.
▽	62-8	773	1.00-15.00		Same as above.	Same as above.
●	62-8	1023	1.00-15.00		Same as above.	Same as above.
▷	62-8	523	2.00-15.00		Same as above.	Heated in a 3.6×10^{-5} mm Hg of vacuum at at 811 K for 30 min.
◁	62-8	773	1.00-15.00		Same as above.	Same as above.
▲	62-8	1023	1.00-15.00		Same as above.	Same as above.

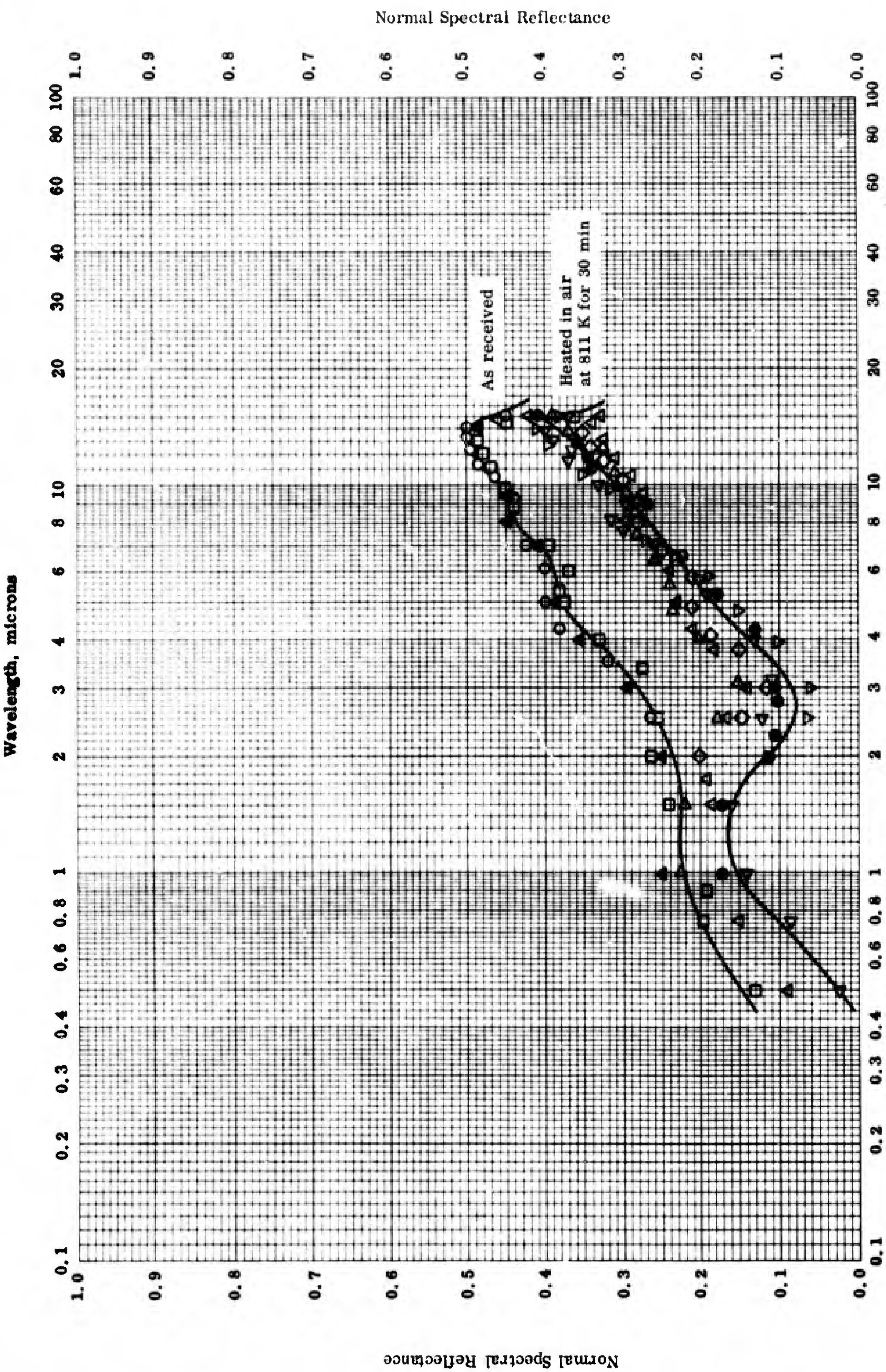


NORMAL SPECTRAL EMITTANCE -- IRON + CHROMIUM + ΣX_i GROUP II
(Miscellaneous)

NORMAL SPECTRAL EMITTANCE -- IRON + CHROMIUM + ΣX_i GROUP II
(Miscellaneous)

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error%	Sample Specifications	Remarks
○	61-12	1400	1-15		68.44 Fe, 23.4 Cr, 6.2 Al, 1.9 Co and 0.06 C.	Polished and oxidized in air at 1275 K for 640 hrs; data taken from smooth curve.
△	61-12	1400	1-15		Same as above.	Polished and oxidized in air at 1275 K for 160 hrs.

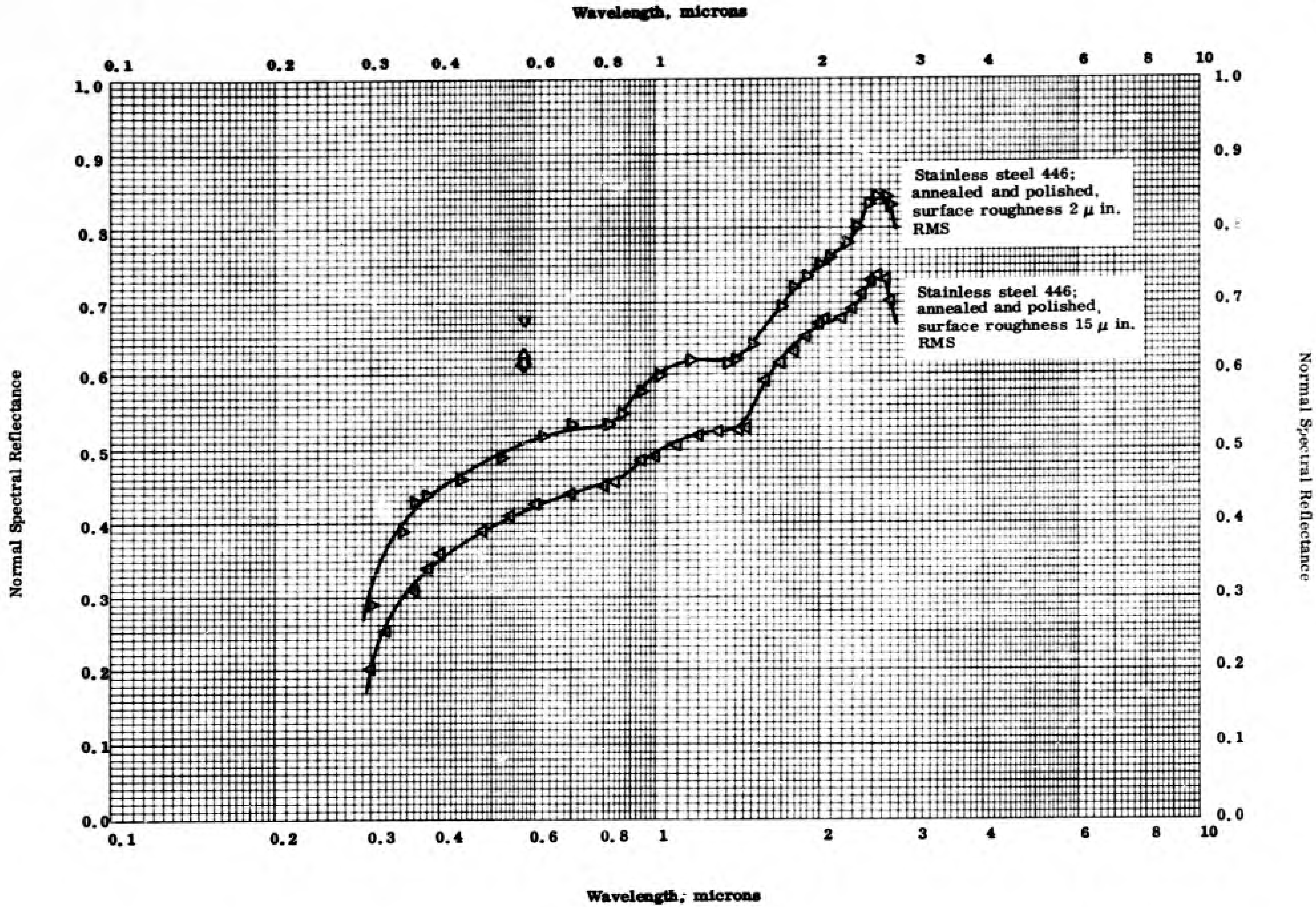


NORMAL SPECTRAL REFLECTANCE -- IRON + CHROMIUM + ΣX_i GROUP II
(Vascojet 1000)

NORMAL SPECTRAL REFLECTANCE -- IRON + CHROMIUM + ΣX_i (GROUP II)
(Vascojet 1000)

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
○	62-8	<322	2.00-15.00		Vascojet 1000; 92.1 Fe, 5 Cr, 1.3 Mo, 0.9 Si, 0.5 V, 0.4 C, and 0.3 Mn.	As received; 523.2 K source.
▲	62-8	<322	1.00-15.00		Same as above.	The above specimen with 773.2 K source.
□	62-8	<322	0.50-15.00		Same as above.	The above specimen with 1273 K source.
▽	62-8	<322	2.00-15.00		Same as above.	Heated in air at 811 K for 30 min; 523.2 K source.
●	62-8	<322	1.00-15.00		Same as above.	The above specimen with 773.2 K source.
◁	62-8	<322	0.50-15.00		Same as above.	The above specimen with 1273 K source.
◇	62-8	<322	2.00-15.00		Same as above.	Heated in a 3.6 x 10^{-5} mm Hg of vacuum at 811 K for 30 min; 523.2 K source.
▷	62-8	<322	1.00-15.00		Same as above.	The above specimen with 773.2 K source.
△	62-8	<322	0.50-15.00		Same as above.	The above specimen with 1273 K source.



NORMAL SPECTRAL REFLECTANCE -- IRON + CHROMIUM + ΣX_i GROUP II
(Miscellaneous)

NORMAL SPECTRAL REFLECTANCE -- IRON + CHROMIUM + ΣX_i GROUP II
(Miscellaneous)

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
○	53-11	298	0.575		Stainless steel 410; 12.4 Cr and 0.11 C.	Metallographically polished.
■	53-11	298	0.575		Stainless steel 420; 13.1 Cr and 0.40 C.	Metallographically polished.
△	53-11	298	0.575		Stainless steel 430; 16.9 Cr and 0.10 C.	Metallographically polished.
▽	53-11	298	0.575		Stainless steel 446; 25.9 Cr and 0.12 C.	Metallographically polished.
◇	53-11	298	0.575		Stainless 18-8 Cr-Cu; 17.8 Cr and 8.0 Cu.	Metallographically polished.
▷	57-13	298	0.3-2.7	±4	Stainless steel 446; nominal: 23-27 Cr, <0.20 C, 1.50> Mn, 1.00>Si, 0.040>P, 0.20>C, 0.25>N, and 0.030>S; grade QQ-5-763A; surface roughness 2 μ in. RMS.	Annealed and polished.
◁	57-13	298	0.3-2.7	±4	Stainless steel 446; grade QQ-5-763A; surface roughness 15 μ in. RMS.	Annealed and polished.

PROPERTIES OF IRON + CHROMIUM + NICKEL + ΣX_i

REPORTED VALUES

Density*		g cm^{-3}	lb ft^{-3}
○	Stainless steel 310	7.90	493
●	Multimet alloy	8.20	512
□	DVL 46	8.055	502
△	DVL 50	7.825	488.5
◇	DVL 47	8.027	501.1
▽	DVL 49	8.082	504.5
◁	DVL 48	7.959	496.9
▷	AISI 316	7.952	496.5
■	AISI 347	7.905	493.5
▲	AISI 302B	7.15	446
◀	15.3 Cr and 12.3 Ni	8.036	501.7
▶	Same as above	8.009	500.0
◆	17-7 PH	7.43	464
◑	AISI 321	7.89	493
◨	17-7 PH	7.74	483
▲	SAS-8	7.884	492
▼	ATS	7.982	498.1
◀	17.84 Cr and 9.5 Ni	7.9	493
▶	Jessop R-20	7.92	494
◆	Jessop G-21	8.03	501
◐	WF 100D	7.938	495.3
◧	DVL 51	7.770	484.8
▲	DVL 30	7.875	491.6
▼	DVL 52	7.908	493.7

Melting Point**	K	R
AISI 301	1683 ± 11	3029 ± 20
AISI 302	1683 ± 11	3029 ± 20
AISI 302B	1658 ± 14	2984 ± 25
AISI 303	1683 ± 11	3029 ± 20
AISI 304	1700 ± 28	3060 ± 50
AISI 305	1700 ± 28	3060 ± 50
AISI 308	1683 ± 11	3029 ± 20
AISI 309	1700 ± 28	3060 ± 50

* See the following figure for additonal information on densities as a function of temperature.

** Annealed samples; Metals Handbook. (Ref. 61-13)

PROPERTIES OF IRON + CHROMIUM + NICKEL + ΣX_i (continued)

Melting Point** (continued)	K	R
AISI 310	1700 ± 28	3060 ± 50
AISI 316	1658 ± 14	2984 ± 25
AISI 317	1658 ± 14	2984 ± 25
AISI 321	1686 ± 14	3035 ± 25
AISI 347	1686 ± 14	3035 ± 25
◆ HF grade steel	1700	3060

**Annealed samples; Metals Handbook, (Ref. 61-13)

PROPERTIES OF IRON + CHROMIUM + NICKEL + ΣX_i

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	57-4	298		Stainless steel type 310; 46. 58 Fe, 24. 94 Cr, 12. 60 Ni, 1. 57 Mn, 0. 37 Si, 0. 062 C, 0. 018 P, and 0. 018 S.	
●	47-1 also 50-2	298		Multimet alloy (NR-21, AMS-55326); nominal: 33 Fe, 20 - 22. 5 Cr, 19 - 21 Ni, 18. 5 - 21 Co, 2. 5 - 3. 5 Mo, 2 - 3 W, 0. 75 - 1. 25 Nb + Ta, 0. 1 - 0. 2 N_2, and 0. 08 - 0. 16 C.	
□	47-3	298		DVL 46 (German design.): 54. 3 Fe, 19. 2 Cr, 14. 2 Ni, 5. 2 Co, 4. 5 W, 1. 5 Si, 0. 6 Mn, and 0. 41 C.	
△	47-3	298		DVL 50 (German design.): 54. 2 Fe, 20. 0 Cr, 14. 4 Ni, 6. 45 Co, 2. 7 V, 1. 33 Si, 0. 86 Mn, and 0. 44 C.	
◇	47-3	298		DVL 47 (German design.): 51. 2 Fe, 27. 7 Cr, 13. 7 Ni, 4. 7 Co, 1. 5 Si, 0. 75 Mn, and 0. 46 C.	
▽	47-3	298		DVL 49 (German design.): 50 Fe, 19. 7 Cr, 14. 5 Ni, 11. 1 Co, 2. 98 W, 0. 68 Si, 0. 56 Mn, and 0. 44 C.	
◁	47-3	298		DVL 48 (German design.): 48. 2 Fe, 25. 8 Cr, 12. 7 Ni, 4. 95 Co, 3. 6 W, 3. 3 Si, 0. 72 Mn, 0. 42 C, and 0. 28 Ti.	
▷	51-2 also 58-1	293		AISI 316; 16 - 18 Cr, 10 - 14 Ni, and 2 - 3 Mo.	Hot-rolled, annealed 1 hr at 2460 R, and water quenched; density by weight and volume by water displacement.
■	51-2 also 58-1	293		AISI 347; 17 - 19 Cr, 9 - 12 Ni, and 10 x C = Nb.	Same as above.
				(Continued onto next page)	

PROPERTIES OF IRON + CHROMIUM + NICKEL + ΣX_i (Continued)

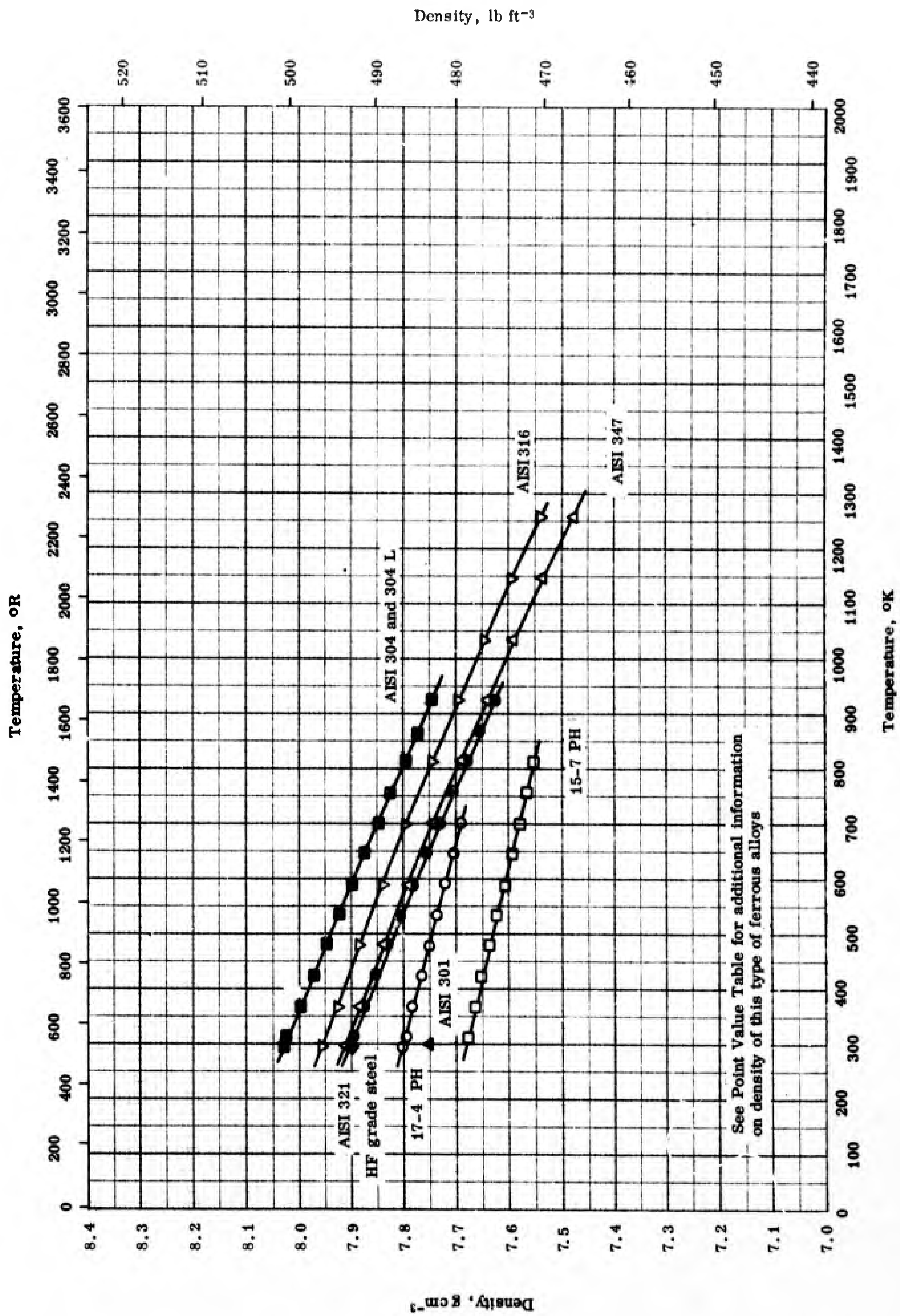
REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
▲	55-9	298		AISI 302B; 17 - 19 Cr, 8 - 10 Ni, 2 - 3 Si, and 0.08 - 0.20 C.	Powder hot-pressed at 2110 psi and 2460 R; density from weight in air and in water after 2 hrs boiling.
◀	55-1	298	±0.2	15.3 Cr, 12.3 Ni, 2.76 W, 0.72 Mo, 0.59 Si, 0.43 Mn, and 0.10 C.	Density by hydrostatic weighing.
▶	55-1	298	±0.2	Same as above.	Same as above.
◆	57-4	298		Stainless steel type 17-7 PH; 17.08 Cr, 7.21 Ni, 1.19 Al, 0.71 Mn, 0.70 C, 0.45 Si, 0.024 P, and 0.017 S.	
◐	57-4	298		AISI 321; 17.59 Cr, 9.85 Ni, 1.53 Mn, 1.17 Ti, 0.71 Si, 0.091 C, 0.009 S, and trace of P.	
◧	58-9	298		Stainless steel 17-7 PH; 72.21 Fe, 17.3 Cr, 7.06 Ni, 1.11 Al, 0.60 Mn, 0.49 Si, and 0.074 C.	
▲	47-3	298		SAS 8 (German design.); 62.0 Fe, 17.6 Cr, 15.2 Ni, 2.2 Mo, 1.8 Cu, 1.06 Ta and Nb total, and 0.1 C.	
▼	47-3	298		Alloy ATS (German design.); 67.3 - 68.6 Fe, 18.0 - 19.3 Cr, 9.2 - 10.3 Ni, 1.35 - 1.75 Ta and Nb total, 0.70 - 0.72 Mn, 0.30 - 0.84 Si, 0.58 - 0.70 W, and 0.13 - 0.14 C.	
◐	47-3	298		WF 100 (German design.); 14.8 Cr, 12.9 Ni, 2.5 W, 1.84 Si, 0.52 Mn, 0.38 C, and 0.23 Mo.	
				(Continued onto next page)	

PROPERTIES OF IRON + CHROMIUM + NICKEL + ΣX_i (Continued)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
◧	47-3	298		DVL 51 (German design.); 16.8 Cr, 12.3 Ni, 1.03 B, 0.88 Si, 0.70 Mn, and 0.16 C.	
▲	47-3	298		DVL 30 (German design.); 21.0 Cr, 14.3 Ni, 3.2 W, 1.61 Mn, 1.60 Si, 1.24 Ti, and 0.25 C.	
▼	47-3	298		DVL 52 (German design.); 21.1 Cr, 15.3 Ni, 3.3 W, 1.84 Mn, 1.57 Si, 0.88 Ti, and 0.22 C.	
◀	52-7	298		70.4 Fe, 17.84 Cr, 9.5 Ni, 1.22 Nb, 0.50 Si, 0.41 Mn, 0.11 C, 0.014 W, and 0.011 S.	
▶	52-1	298		Jessop R20 Steel (British design.); 64.05 Fe, 19.0 Cr, 14.0 Ni, 1.7 Nb, 0.80 Mn, 0.30 Si, and 0.15 C.	
⬗	52-1	298		Jessop G-21 Steel (British design.); 13.0 Cr, 13.0 Ni, 1.7 Nb, 0.80 Mn, 0.30 Si, and 0.15 C.	
◆	53-9	1700		HF grade alloy; nominal 21 Cr and 9 Ni.	

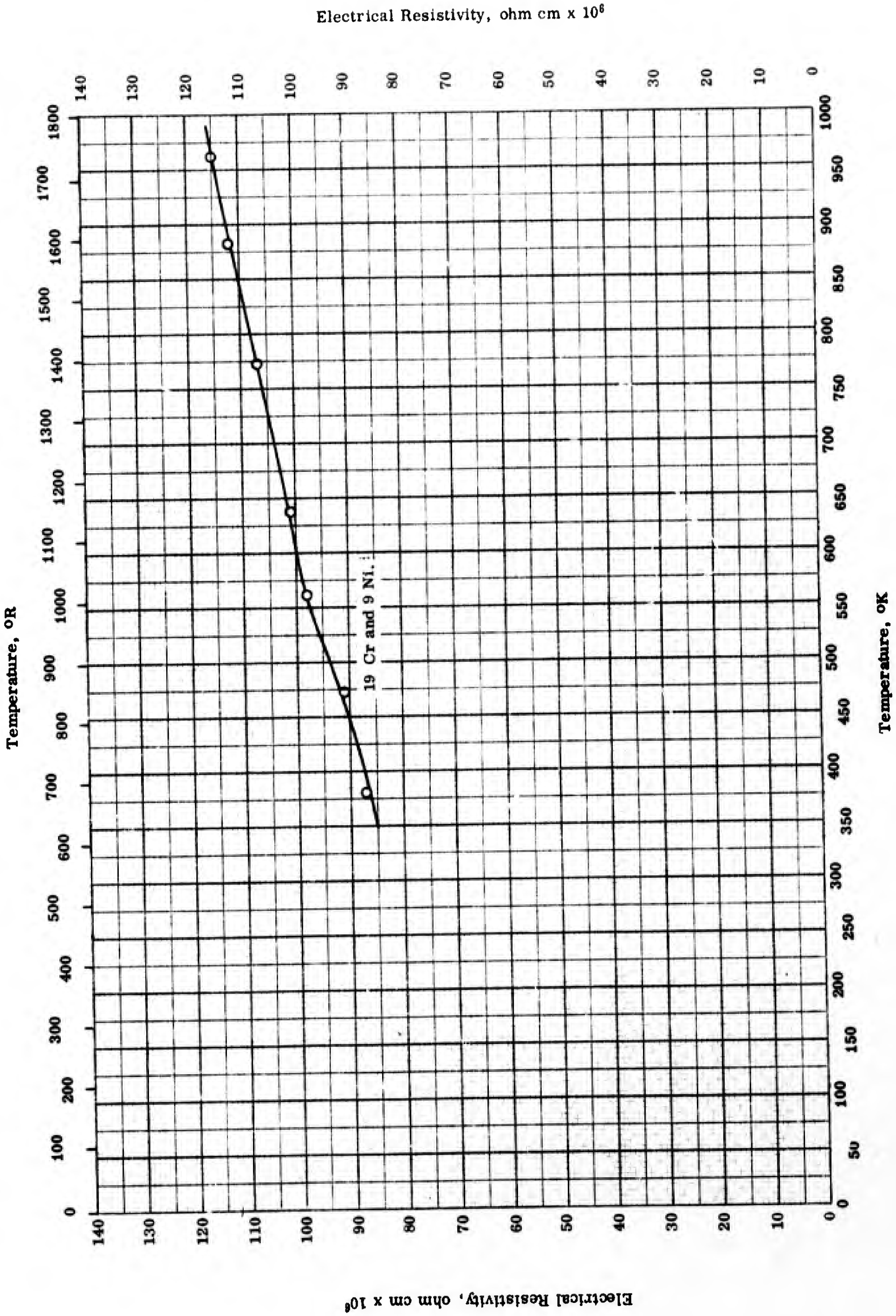


DENSITY -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II

DENSITY -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	63-7	294-700		Stainless steel 17-4 PH; 16.5 Cr, 4.25 Ni, 3.6 Cu, 0.5 Si, 0.4 Mn, 0.25 Nb, and 0.04 C.	
□	63-7	311-811		Stainless steel 15-7 PH; 15.0 Cr, 7.00 Ni, 2.25 Mo, 1.15 Al, 0.7 Mn, 0.4 Si, and 0.07 C.	
△	63-6	294-1255		17-19 Cr, 9-13 Ni, 2.0 >Mn, 1.0 > Si, 0.08 >C, and 10 x C> Nb and Ta.	
▽	63-6	294-1255		AISI 316; 16-18 Cr, 10-14 Ni, 2-3 Mo, 2.0 >Mn, 1.0 >Si, and 0.08 >C.	
●	61-10	294-922		AISI 321; 17-19 Cr, 9-12 Ni, 2.0 > Mn, 1.0 >Si, 0.08 >C, and 5 x C of Ti.	
■	61-10	297-922		AISI 304 and 304 L; 18-20 Cr, 8-12 Ni, 2.0 >Mn, 1.0 >Si, and 0.08 >C.	
◆	51-2 also 58-1	293		Stainless steel 301; nominal 16 - 18 Cr and 6 - 8 Ni.	Density by weight and volume of water displacement.
▲	53-9	298		HF grade alloy; nominal 21 Cr and 9 Ni.	

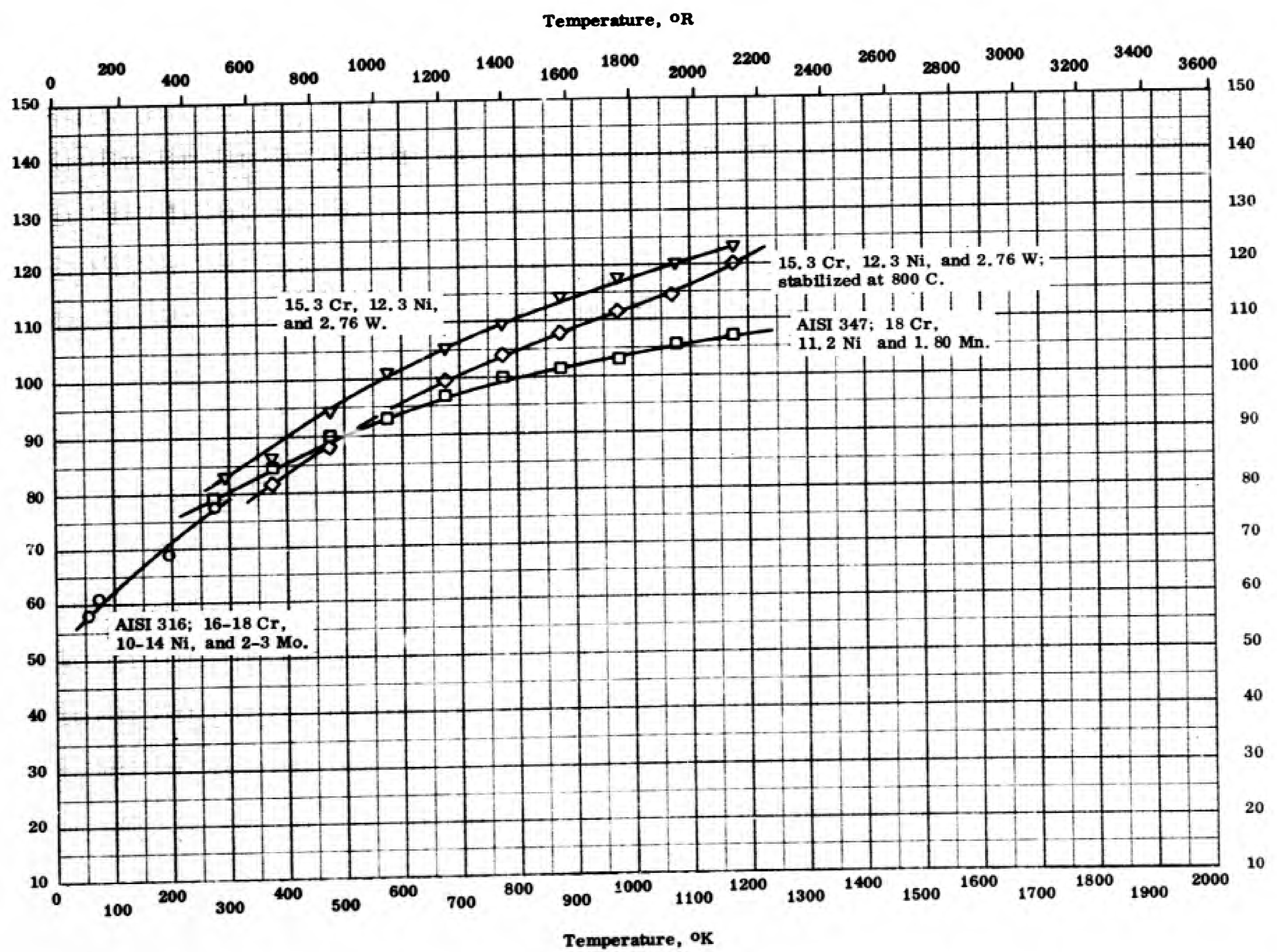


ELECTRICAL RESISTIVITY -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP I.

ELECTRICAL RESISTIVITY -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP I.

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	57-3	380-961	± 1	19 Cr and 9 Ni.	Forged, quenched in water from 1150 C, and then aged 50 hrs at 100 C.

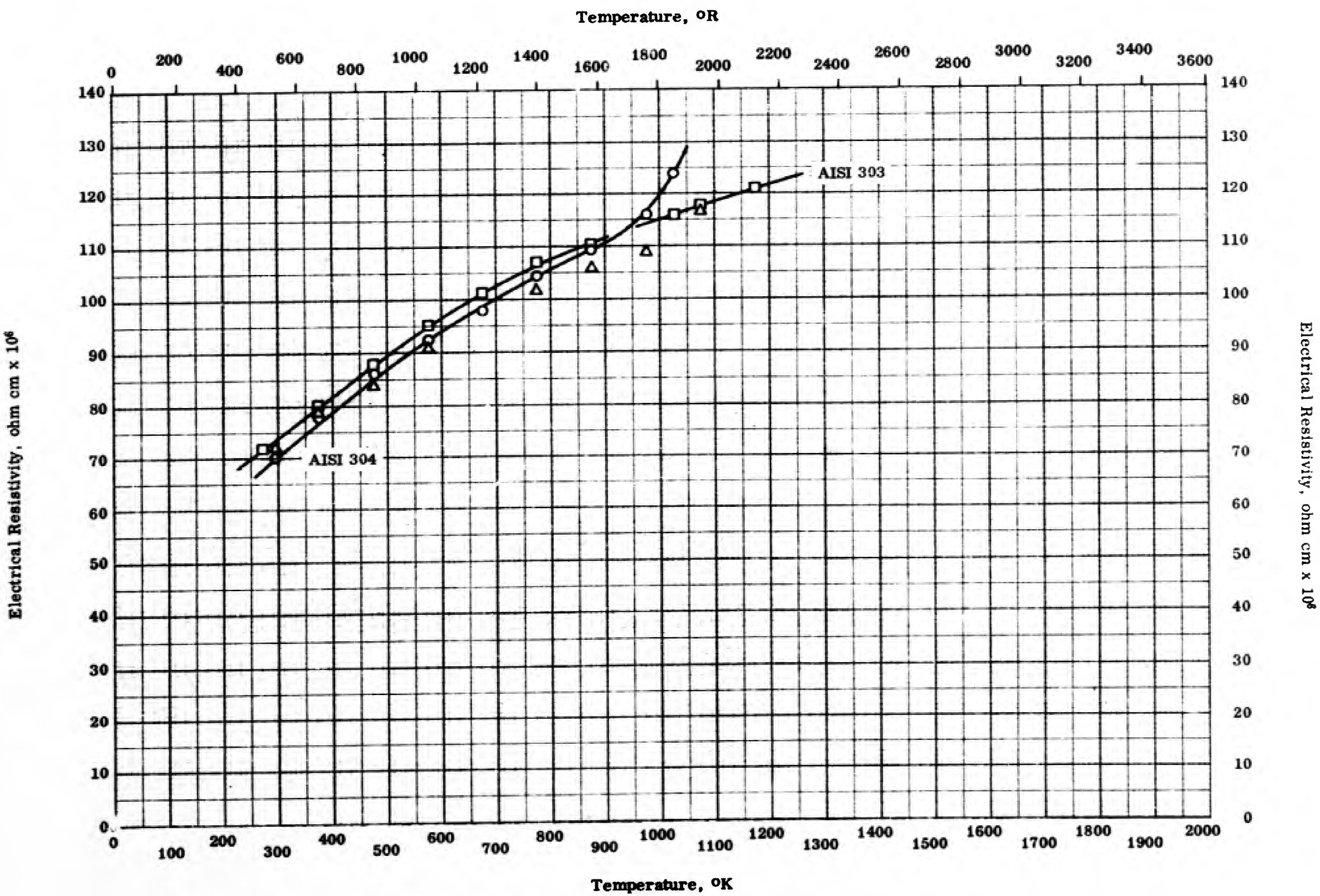


ELECTRICAL RESISTIVITY -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II.
$(15 < Cr \le 18)$

ELECTRICAL RESISTIVITY -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II.
($15 < Cr \leq 18$)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	52-5 also 53-8	64-273	± 2	AISI 316 (Allegheny Metal 18-8 M); nominal: 16-18 Cr, 10-14 Ni, 2-3 Mo, and 0.1 C max.	25% minimum final cold reduction before test.
□	52-3	273-1173		AISI 347, nominal: 18.0 Cr, 11.2 Ni, 1.80 Mn, 0.77 Nb, 0.70 Si, 0.069 C, 0.021 P, and 0.007 S.	
▽	55-1	293-1173		15.3 Cr, 12.3 Ni, 2.76 W, 0.72 Mo, 0.59 Si, 0.43 Mn, and 0.10 C; austenitic condition.	
◇	55-1	373-1173		Same as above.	Stabilized 10 hrs at 800 C.

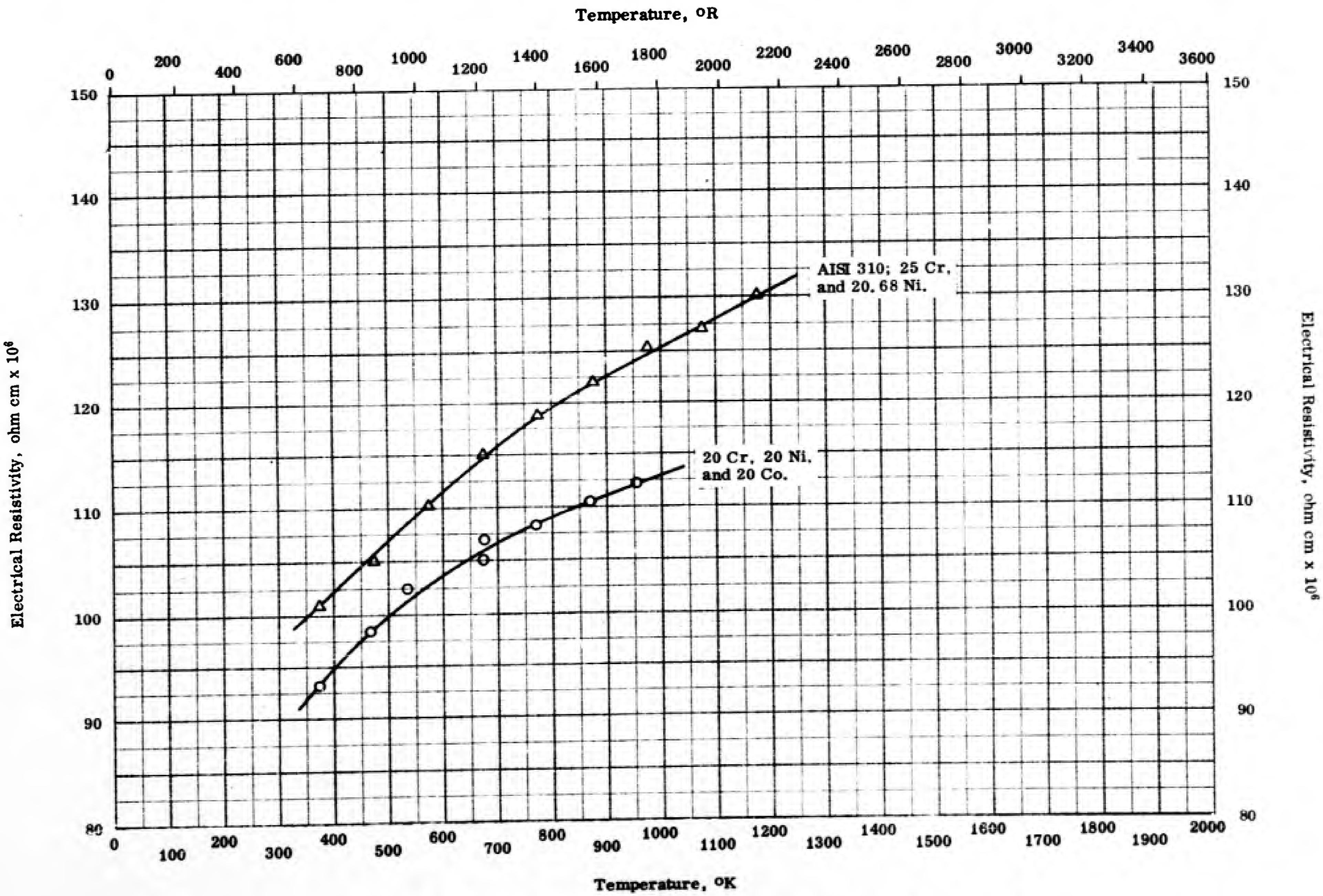


ELECTRICAL RESISTIVITY -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(18< Cr < 20)

ELECTRICAL RESISTIVITY -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
($18 < Cr < 20$)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
□	52-3	273-1173		Stainless Steel 303; nominal: 18.42 Cr, 8.97 Ni, 0.61 Mn, 0.51 Si, and 0.17 C.	
○	61-9	293-1023		Stainless Steel 304; 18-20 Cr, 8-12 Ni, 2.0 max Mn, 1.0 max S, and 0.08 max C.	
△	55-1	293-1173		18.1 Cr, 9.82 Ni, 0.88 Mn, 0.74 Si, 0.09 C, and 0.45 Ti.	Initial condition.

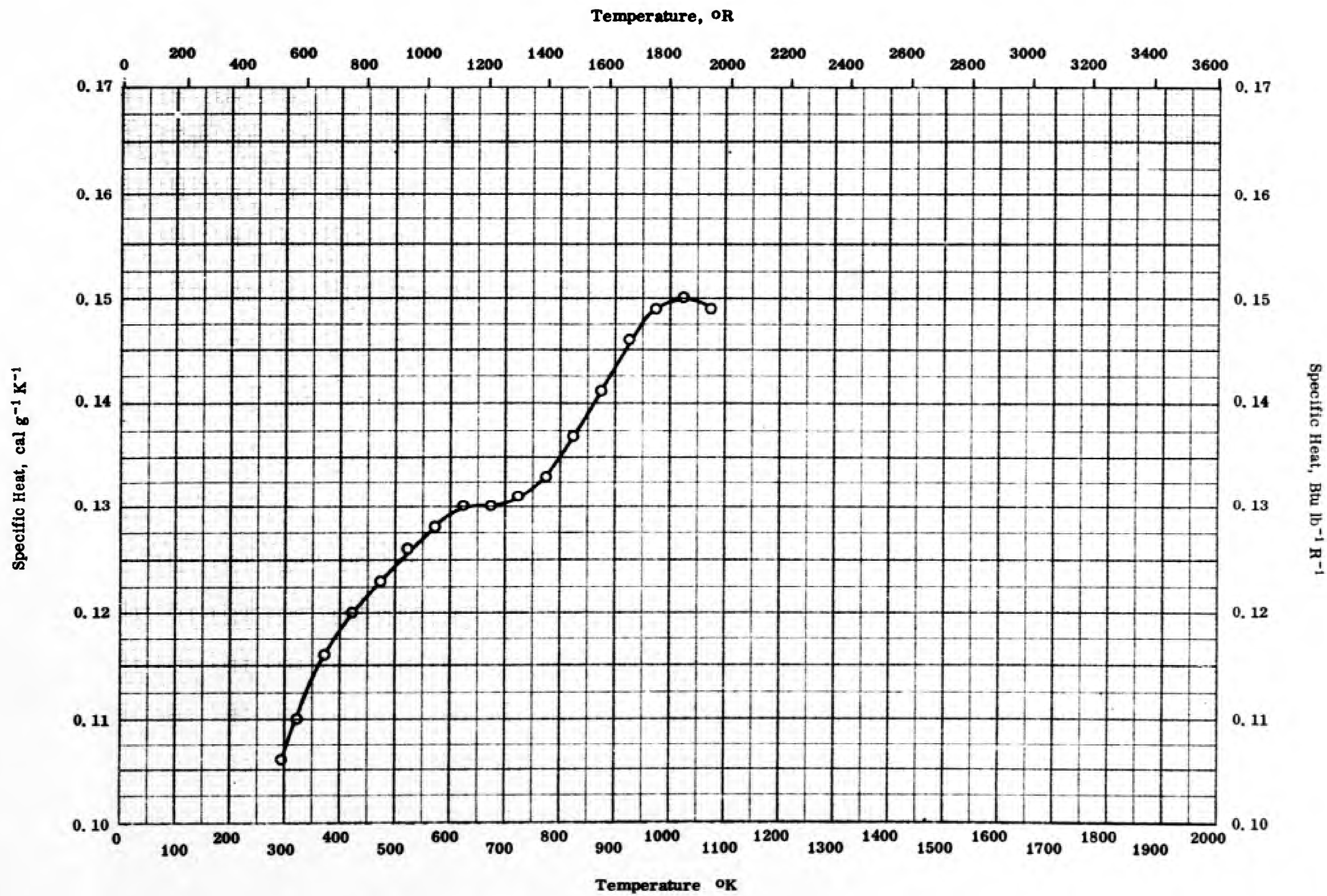


ELECTRICAL RESISTIVITY -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II.
($20 \le Cr < 26$)

ELECTRICAL RESISTIVITY -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II.
$(20 \leq Cr < 26)$

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	57-3	372-956	± 1	20 Cr, 20 Ni, and 20 Co.	Forged, quenched in oil from 1200 C, and aged 70 hrs at 760 C.
△	52-3	273-1173		Stainless steel 310; 50.98 Fe, 25.54 Cr, 20.68 Ni, 1.83 Mn, 0.84 Si, 0.10 C, 0.025 P, and 0.005 S.	

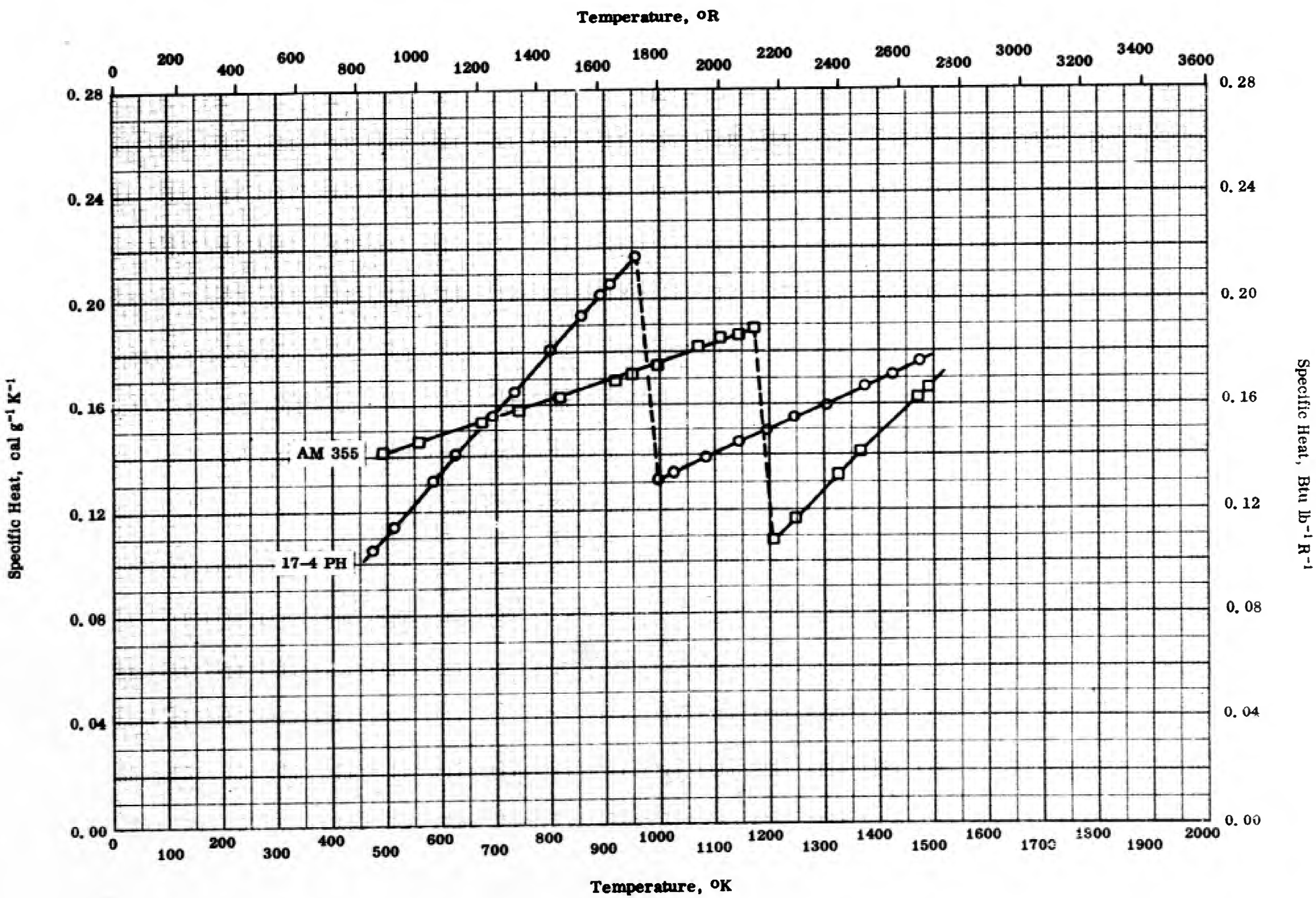


SPECIFIC HEAT -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(13 - 15 Cr and 13 - 15 Ni)

SPECIFIC HEAT -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(13 - 15 Cr and 13 - 15 Ni)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	59-4	298-1073	1.0	EI-257; Nominal composition: 13.0-15.0 Cr, 13.0-15.0 Ni, 2.0-2.75 W, 0.8 Si, 0.70 Mn, 0.40-0.60 Mo, 0.15 C, 0.035P, and 0.030 S.	

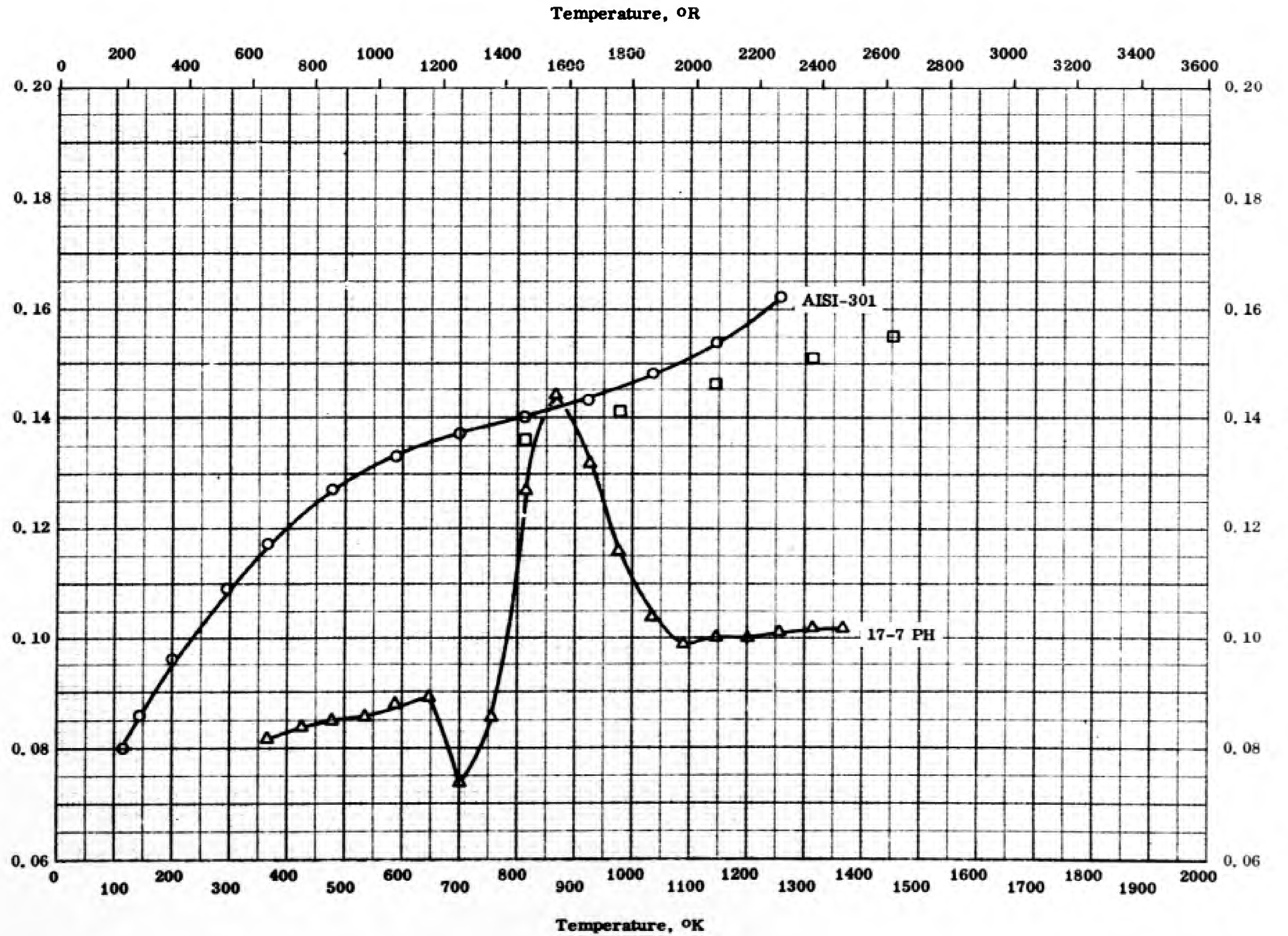


SPECIFIC HEAT -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(15-16 Cr and 4-5 Ni)

SPECIFIC HEAT -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(15-16 Cr and 4-5 Ni)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	61-4	472-1474	3.0	Stainless steel type 17-4PH; 72.9 Fe, 16.4 Cr, 4.2 Ni, 4.1 Cu, 1.0 Mn, 1.0 Si, 0.30 Cb + Ta, 0.07 C, and 0.04 P; density 482 lb ft^{-3}.	Under helium atmosphere.
□	61-4	489-1489	3.0	Stainless steel type Am 355; 75.5 Fe, 15.66 Cr, 4.27 Ni, 2.82 Mo, 0.94 Mn, 0.12 C, 0.05 Si, and 0.02 P; density 485 lb ft^{-3}.	Same as above.

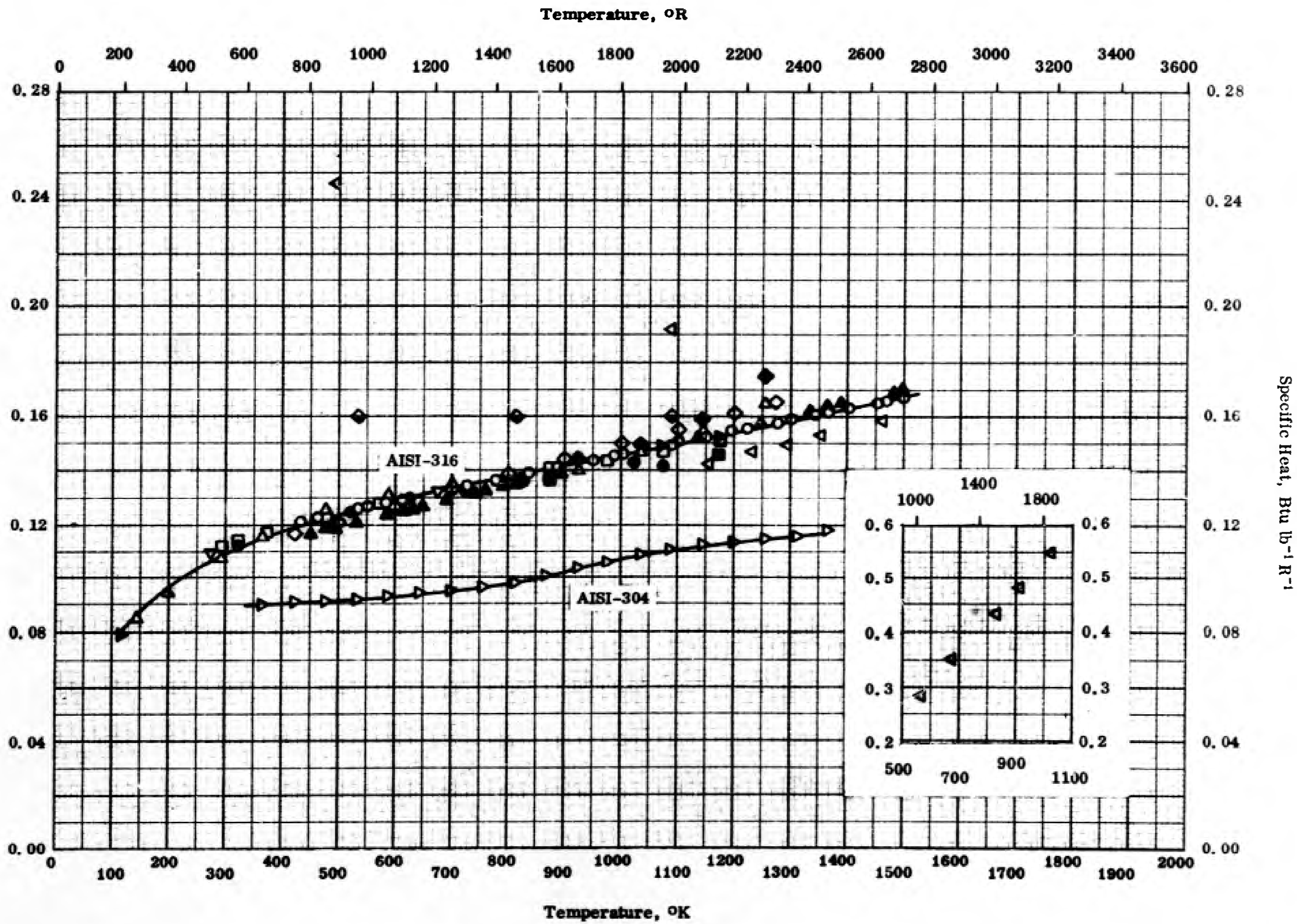


SPECIFIC HEAT -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(16-18 Cr and 6-8 Ni)

SPECIFIC HEAT -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(16-18 Cr and 6-8 Ni)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	58-1	116-1255		AISI 301; nominal composition: 71-74 Fe, 16-18 Cr, 6-8 Ni, ≤2 Mn, ≤1 Si, ≤0.15 C, ≤0.045 P and ≤0.030 S; density (32 F) 495 lb ft^{-3}.	Annealed 1 hr at 1900 F and water quenched; Sealed under helium atmosphere.
□	58-9	756-1450		Stainless steel type 17-7 PH; before test: 72.21 Fe, 17.30 Cr, 7.06 Ni, 1.11 Al, 0.60 Mn, 0.49 Si, 0.074 C; after test: 72.71 Fe, 17.35 Cr, 7.13 Ni, 1.09 Al, 0.55 Mn, 0.52 Si and 0.074 C; density 483 lb ft^{-3}.	Under helium atmosphere.
△	59-1	366-1366	5-10	Stainless steel type 17-7 PH; 73.053 Fe, 16.99 Cu, 7.26 Ni, 1.25 Al, 0.85 Mn, 0.49 Si, 0.069 C, 0.026 P, and 0.012 S.	Heated 1.5 hrs at 1400 F and air cooled; heated 1.5 hrs at 1050 F and air cooled.



SPECIFIC HEAT -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(17-20 Cr and 8-14 Ni)

SPECIFIC HEAT -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(17–20 Cr and 8–14 Ni)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	58-2 also 59-5	432-1500	0.66-2.9	AISI 316; nominal composition: 61-63 Fe, 16-18 Cr, 10-14 Ni, 2-3 Mo, ≤2 Mn, ≤1 Si, ≤0.08 C, ≤0.045 P, and ≤0.03 S.	Under helium atmosphere.
□	61-6, 53-7, also 55-4	273-1173	± 0.3	AISI 316; 66.6 Fe, 17.0 Cr, 12.6 Ni, 2.0 Mo, 1.4 Mn, and 0.4 Si.	Under helium atmosphere.
△	58-1 also 54-6	116-1255		AISI 316; nominal composition: 61-68 Fe, 16-18 Cr, 10-14 Ni, 2-3 Mo, ≤2 Mn, ≤1 Si, ≤0.08 C, ≤0.045 P, and ≤0.03 S; density (32 F) 496 lb ft^{-3}.	Annealed 1 hr at 2000 F and water quenched; sealed under helium atmosphere.
◇	42-1	423-1273	±5	AISI 316; 17.0 Cr, 12.2 Ni, 2.3 Mo, 1.49 Mn, 0.55 Si, 0.12 C, 0.026 P and 0.004 S.	
▽	57-7	273-1173		AISI 316; nominal composition: 61-68 Fe, 16-18 Cr, 10-14 Ni, 2-3 Mo, ≤2 Mn, ≤1 Si, ≤0.08 C, ≤0.045 P, and ≤0.03 S.	
◆	62-3	533-1367	≤ 5.0	AISI 304; nominal composition: 65-71 Fe, 18-20 Cr, 8-12 Ni, ≤2 Mn, ≤1.0 Si, ≤0.08 C, ≤0.045 P, and ≤ 0.030 S.	
▷	59-1	366-1366	5-10	AISI steel 304; 70.157 Fe, 18.67 Cr, 9.50 Ni, 1.11 Mn, 0.46 Si, 0.063 C, 0.023 P, and 0.017 S.	Mill-annealed condition.
◁	61-4	492-1461	3.0	Stainless steel type crucible HNM; 68.0 Fe, 18.5 Cr, 9.5 Ni, 3.5 Mn, 0.3 C, 0.23 P, 0.05 Si, and trace Mo; density 479 lb ft^{-3}.	Under helium atmosphere.

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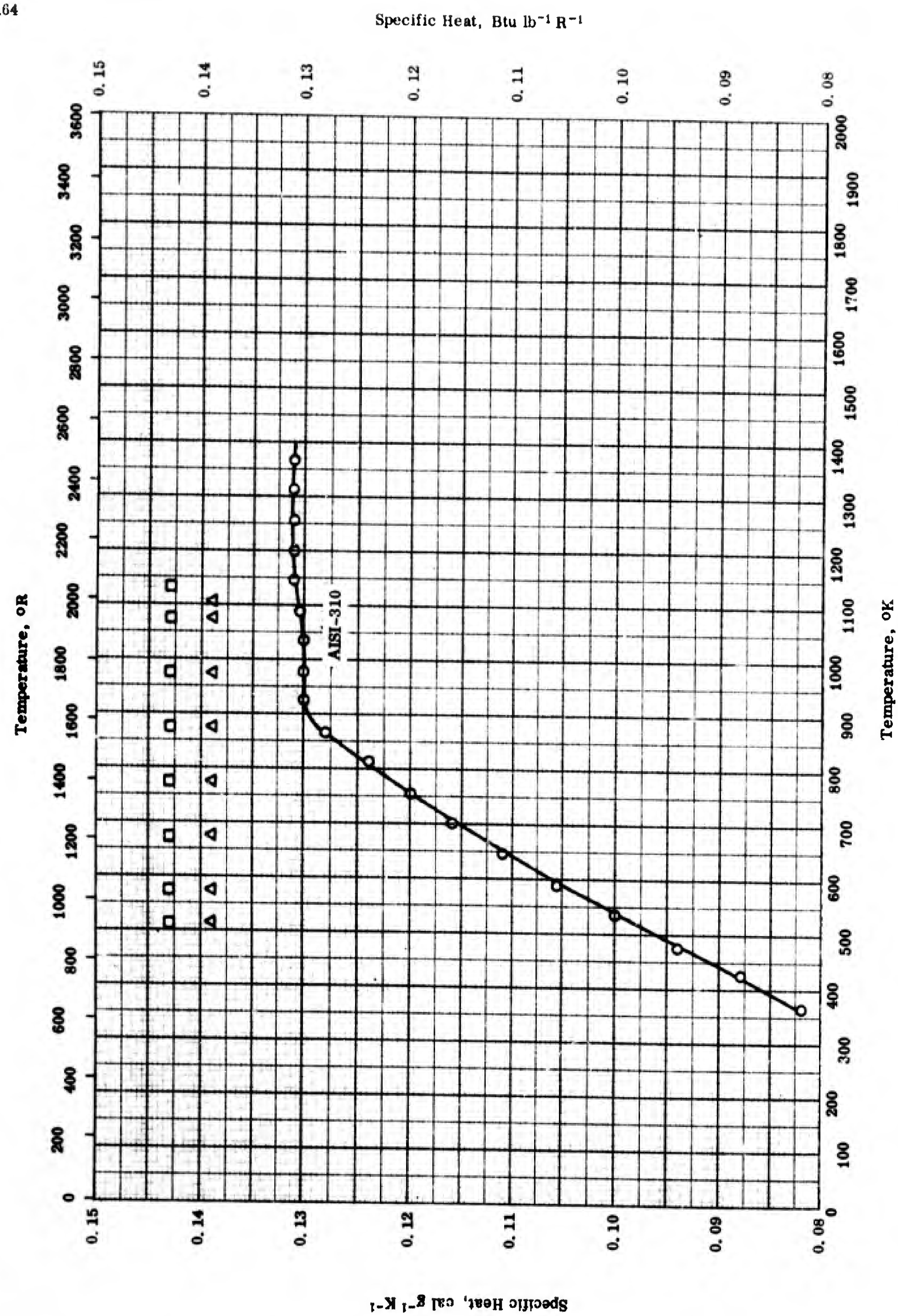
SPECIFIC HEAT -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II (continued)
(17-20 Cr and 8-14 Ni)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
●	59-4	298-1073	1.0	Steel mark 1 x 18 N9T; nominal composition: 17.0-20.0 Cr, 8.0-11.0 Ni, 2.0 Mn, 0.8 Si, ≤0.8 Ti, 0.12 C, 0.035 P, and 0.030 S.	
■	59-3	323-1273	1.0	Same as above.	
▲	58-2 also 59-5	450-1494	0.66-2.9	AISI 347; nominal composition: 64-70 Fe, 17-19 Cr, 9-13 Ni, ≤2 Mn, ≤1.0 Si, ≤0.08 C, ≤0.047 P, ≤0.030 S, and 10 x C minimum Cb-Ta; density (32 F) 494 lb ft^{-3}.	Under helium atmosphere.
◆	58-1 also 54-6	116-1255		AISI 347; nominal composition same as above.	Annealed 1 hr at 2000 F and water quenched; sealed under helium atmosphere.
▶	61-6, 53-7, also 55-4	273-1173		AISI 347; 67.84 Fe, 18.3 Cr, 11.1 Ni, 1.30 Mn, 0.86 Nb, 0.52 Si, and 0.08 C.	

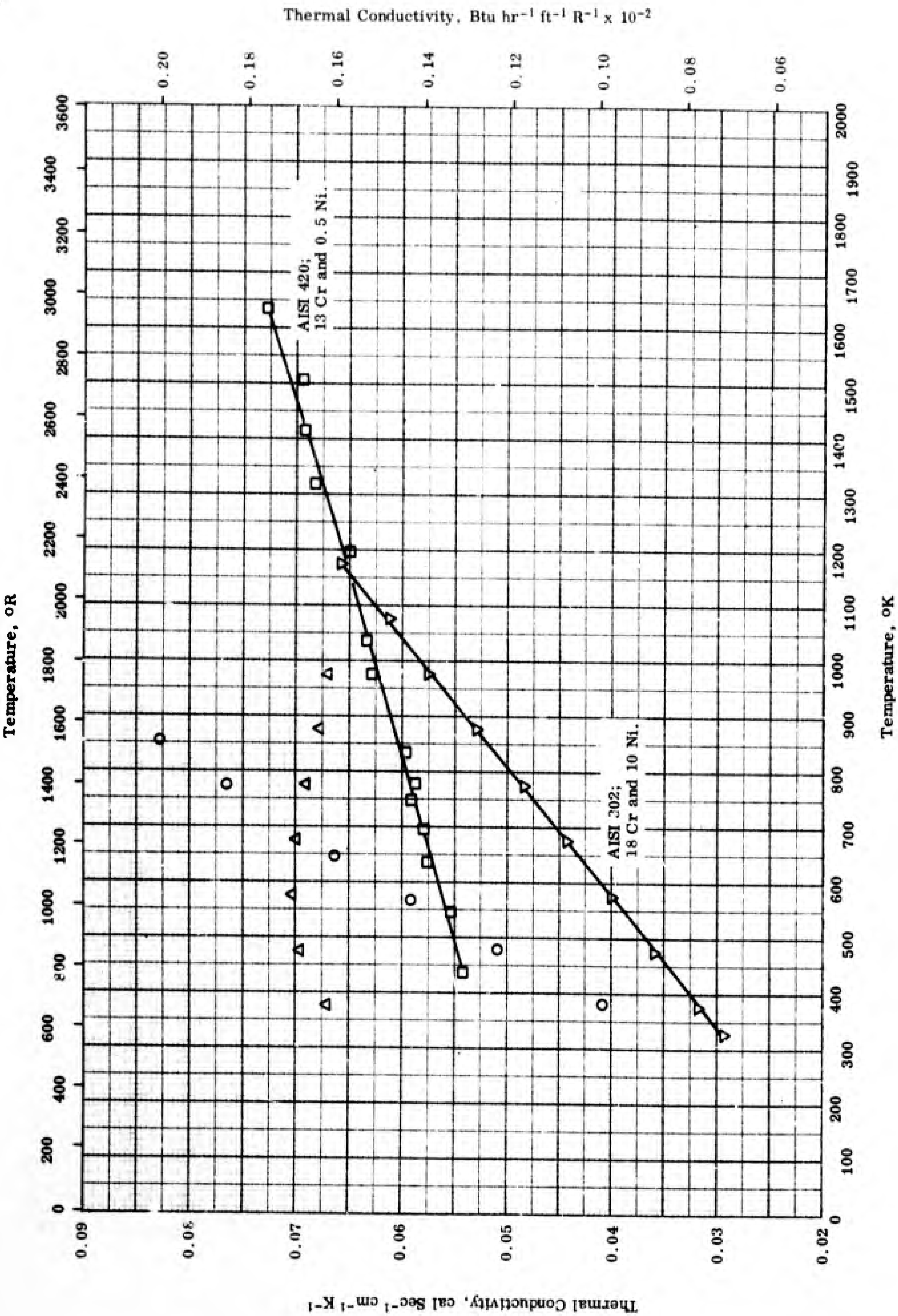


SPECIFIC HEAT -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(22-25 Cr and 17-20 Ni)

SPECIFIC HEAT -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(22-25 Cr and 17-20 Ni)

REFERENCE INFORMATION

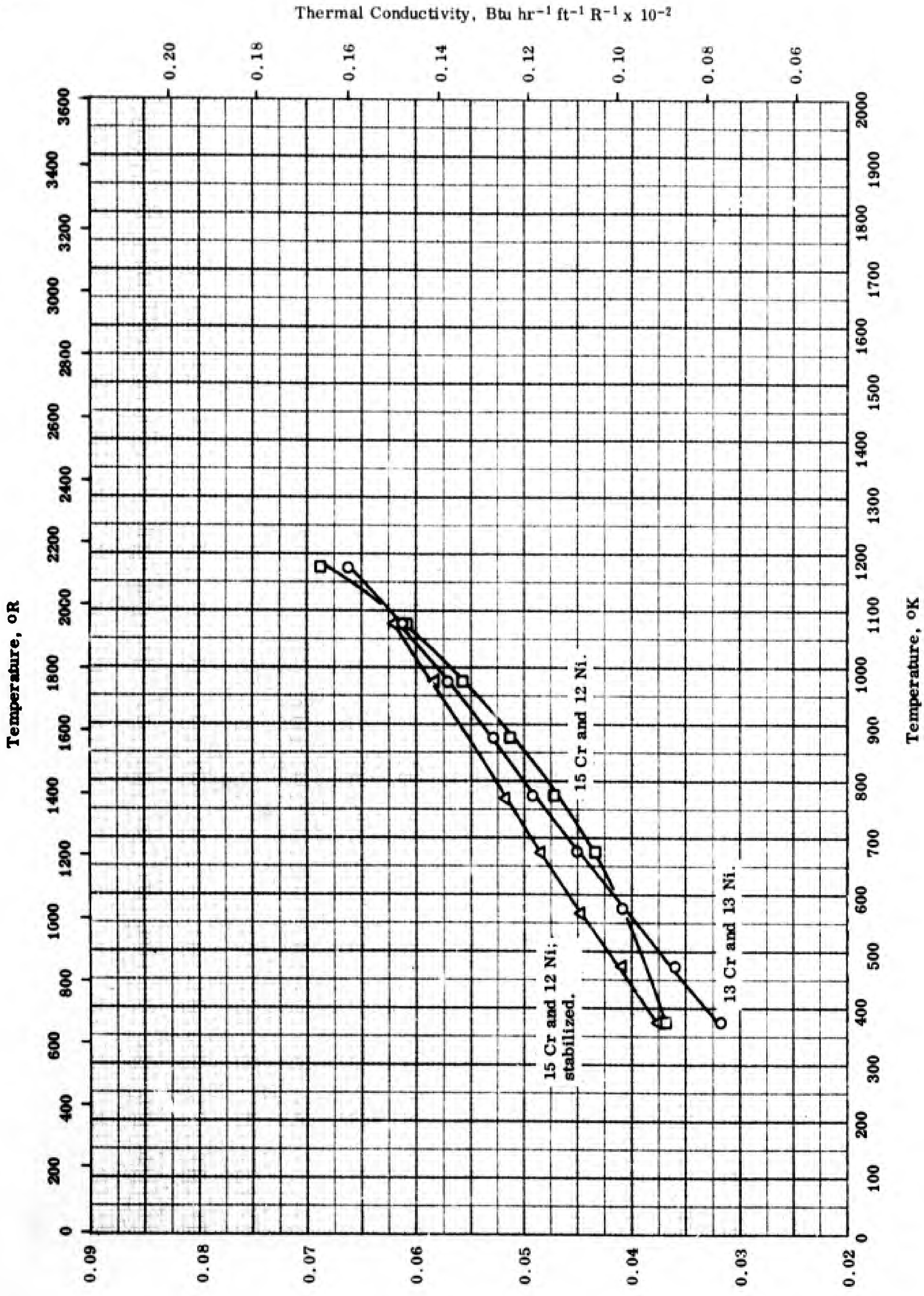
Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	59-1	366-1366	5-10	AISI 310; 53.169 Fe, 24.90 Cr, 19.63 Ni, 1.60 Mn, 0.42 Si, 0.22 P, 0.036 C and 0.025 S.	Mill-annealed condition.
□	53-5	511-1131	±5	AISI 310; Heat 64177; 24.03 Cr, 16.96 Ni, 0.55 Si, 0.42 Mn, 0.13 C, 0.13 Cu, 0.033 Mo, 0.018 P, 0.01 Co, 0.01 Ta, <0.01 Hf, <0.01 Li, <0.01 W, 0.008 S, <0.002 Cd, and <0.001 B.	
△	53-5	513-1107	±5	AISI 310; Heat 64270; 22.30 Cr, 19.14 Ni, 0.50 Mn, 0.43 Si, 0.12 C, 0.10 Cu, 0.042 Mo, 0.025 P, 0.01 Co, <0.01 W, and 0.008 S.	



THERMAL CONDUCTIVITY -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP I

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	57-3	380-961	± 4	10 Cr and 9 Ni.	Forged beginning at 1150 C and ending 950 C; quenched in water from 1150 C, then aged 50 hrs at 100 C.
□	61-4	435-1632	< 5	AISI 420; 13.0 Cr, 0.5 Ni, 0.48 Mn, 0.41 Si, 0.3 C, 0.12 Cu, 0.06 Mo, 0.02 P, and 0.011 S.	Five one-inch disks.
△	55-1	373-973		13.29 Cr, 0.6 > Ni, 0.59 Si, 0.52 Mn, and 0.36 C.	Tempered.
▽	53-2	323-1173		AISI 302; 71.6 Fe, 18.4 Cr, 9.6 Ni, 0.13 Si, 0.13 S, 0.116 C, and 0.021 P.	

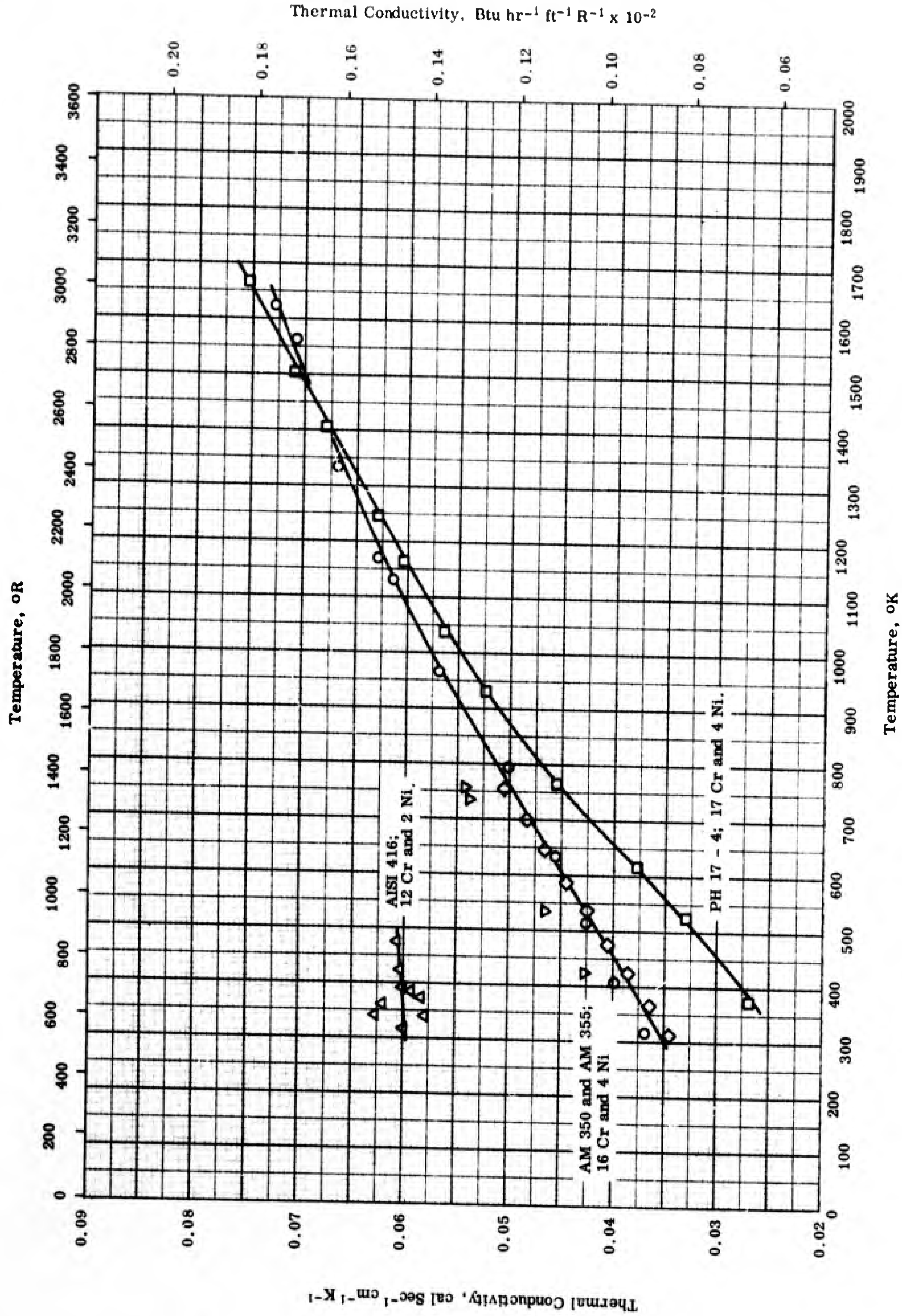


THERMAL CONDUCTIVITY -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(13 - 15.5 Cr and 12 - 13 Ni)

THERMAL CONDUCTIVITY -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(13 - 15.5 Cr and 12 - 13 Ni)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	52-1	373-1173		Jessop G 18 B Steel (Brit. Design.); 13.0 Cr, 13.0 Ni, 10.0 Co, 3.0 Nb, 2.5 W, 2.0 Mo, 1.0 Si, 0.8 Mn, and 0.4 C.	
□	55-1	373-1173		15.3 Cr, 12.3 Ni, 2.76 W, 0.72 Mo, 0.59 Si, 0.43 Mn, and 0.01 C.	Austenitized.
△	55-1	373-1173		Same as above.	Stabilized 10 hrs at 800 C.

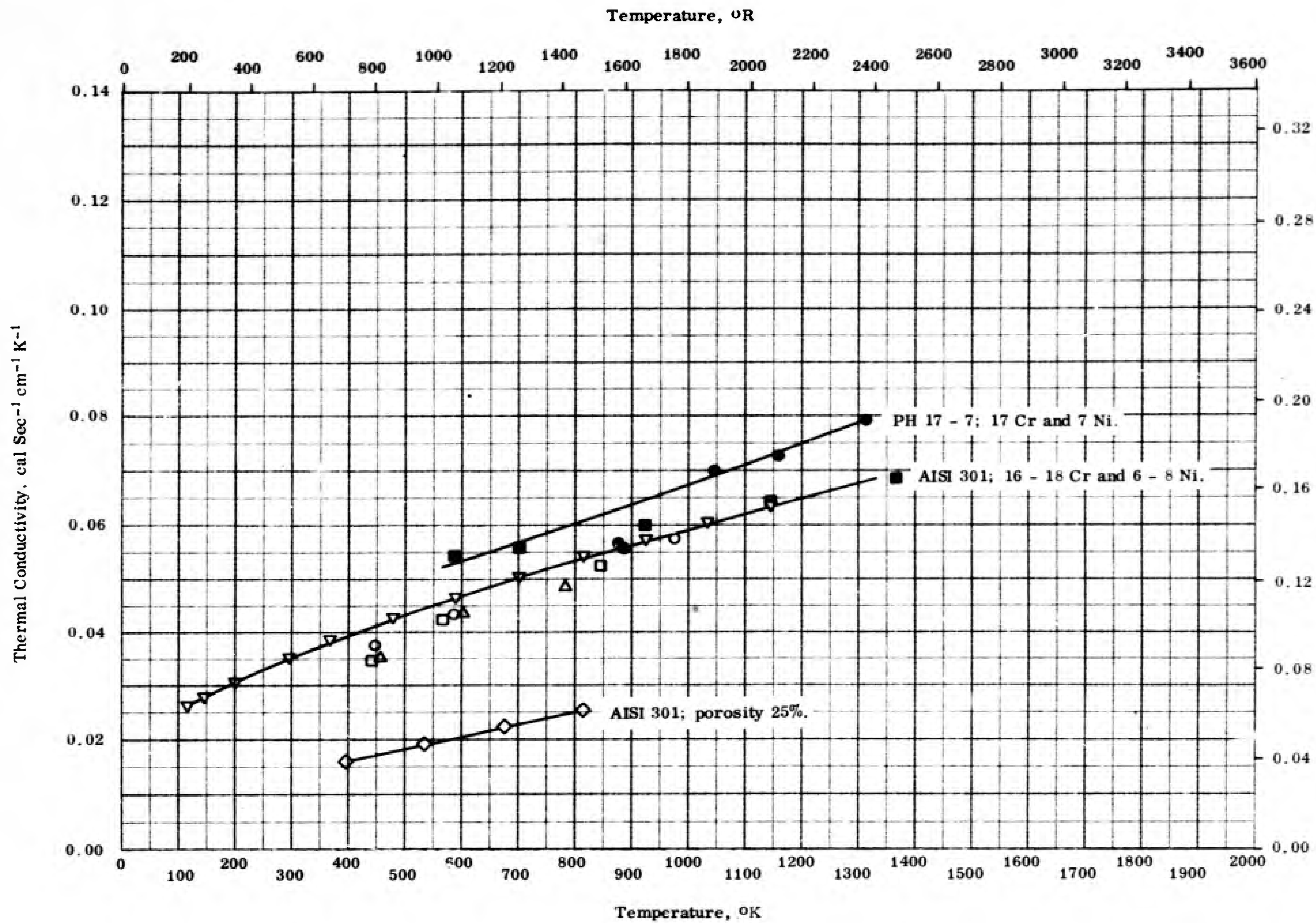


THERMAL CONDUCTIVITY -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(12 - 18 Cr and 1 - 5 Ni)

THERMAL CONDUCTIVITY -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(12 - 18 Cr and 1 - 5 Ni)

REFERENCE INFORMATION

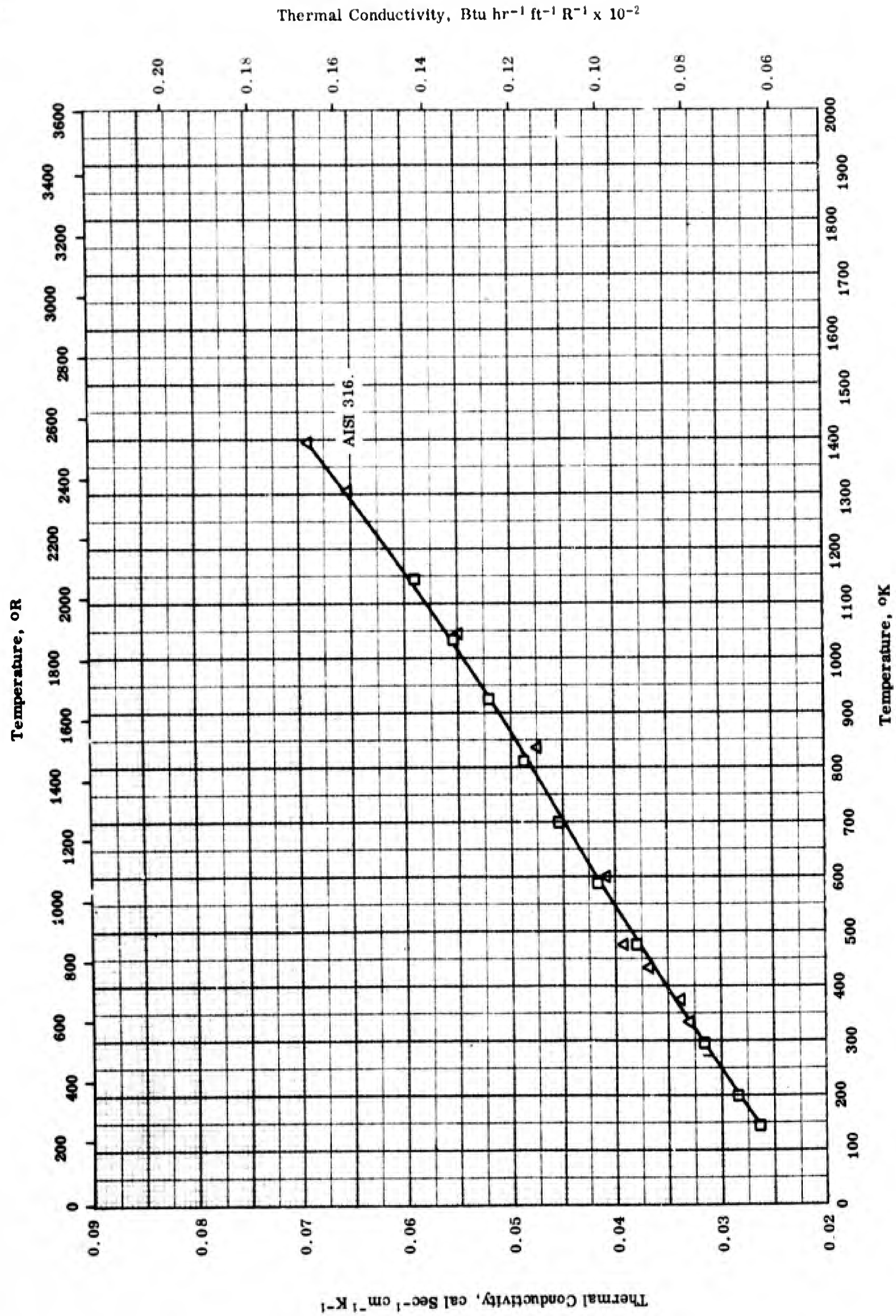
Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	61-4	317-1623		AM 355; 75.5 Fe, 15.66 Cr, 4.27 Ni, 2.82 Mo, 0.94 Mn, 0.12 C, 0.05 Si, and 0.02 P.	
□	61-4	375-1668		PH 17 - 4 (H 900); 72.9 Fe, 16.4 Cr, 4.2 Ni, 4.1 Cu, 1.0 Mn, 1.0 Si, 0.3 Nb + Ta, 0.07 C, and 0.04 P.	
△	62-2	317-473		Stainless 416; 12 - 14 Cr, 1.25 - 2.50 Ni, 1.25 max Mn, 1.00 max Si, 0.15 max C, and 0.15 max S.	
▽	58-7	422-755		PH 17 - 4 (H 900); 74 Fe, 16.5 Cr, 4.0 Ni, 4.0 Cu, 1.0 Mn, 1.0 Si, 0.35 Nb, 0.07 C, 0.04 P, and 0.03 S; density 0.282 lb in^{-3}.	
◇	63-2	311-755		AM 350; 16.5 Cr, 4.25 Ni, 2.75 Mo, 0.75 Mn, 0.35 Si, 0.1 C, and 0.1 N.	



THERMAL CONDUCTIVITY -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(16 - 18 Cr and 6 - 8 Ni)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	58-5	447-973		EI 606 (USSR Design.); 18 Cr, 8 Ni, 2.0 U, 1.5 Si, 1.0 Mn, and 0.09 C.	
□	58-5	440-843		Same as above.	Another sample.
△	58-5	457-780		Same as above.	Aged at 340 C for 1000 hrs.
▽	51-2	117-1144		AISI 301; 16 - 18 Cr, 6 - 8 Ni, 2.0 max Mn, 1.0 max Si, and 0.15 max C; nominal composition.	Hot-rolled; annealed for 1 hr at 1900 F and water-quenched.
◇	51-1	395-814	±4	AISI 301; 17 Cr, 7 Ni, and 0.11 C; porosity 25%.	
●	58-9	877-1310		PH 17-7; composition before test: 72.21 Fe, 17.30 Cr, 7.06 Ni, 1.11 Al, 0.6 Mn, 0.49 Si, 0.074 C, and after test: 72.71 Fe, 17.35 Cr, 7.13 Ni, 1.09 Al, 0.55 Mn, 0.52 Si, and 0.074 C; density 483 lb ft^{-3}.	Test in He atm.
■	47-4	590-1367	±20	PH 17 - 7; 72.62 Fe, 17.0 Cr, 7.21 Ni, 1.19 Al, 0.71 Mn, 0.70 C, 0.45 Si, 0.024 P, and 0.017 S; density 464 lb ft^{-3}.	Measured in vacuum.

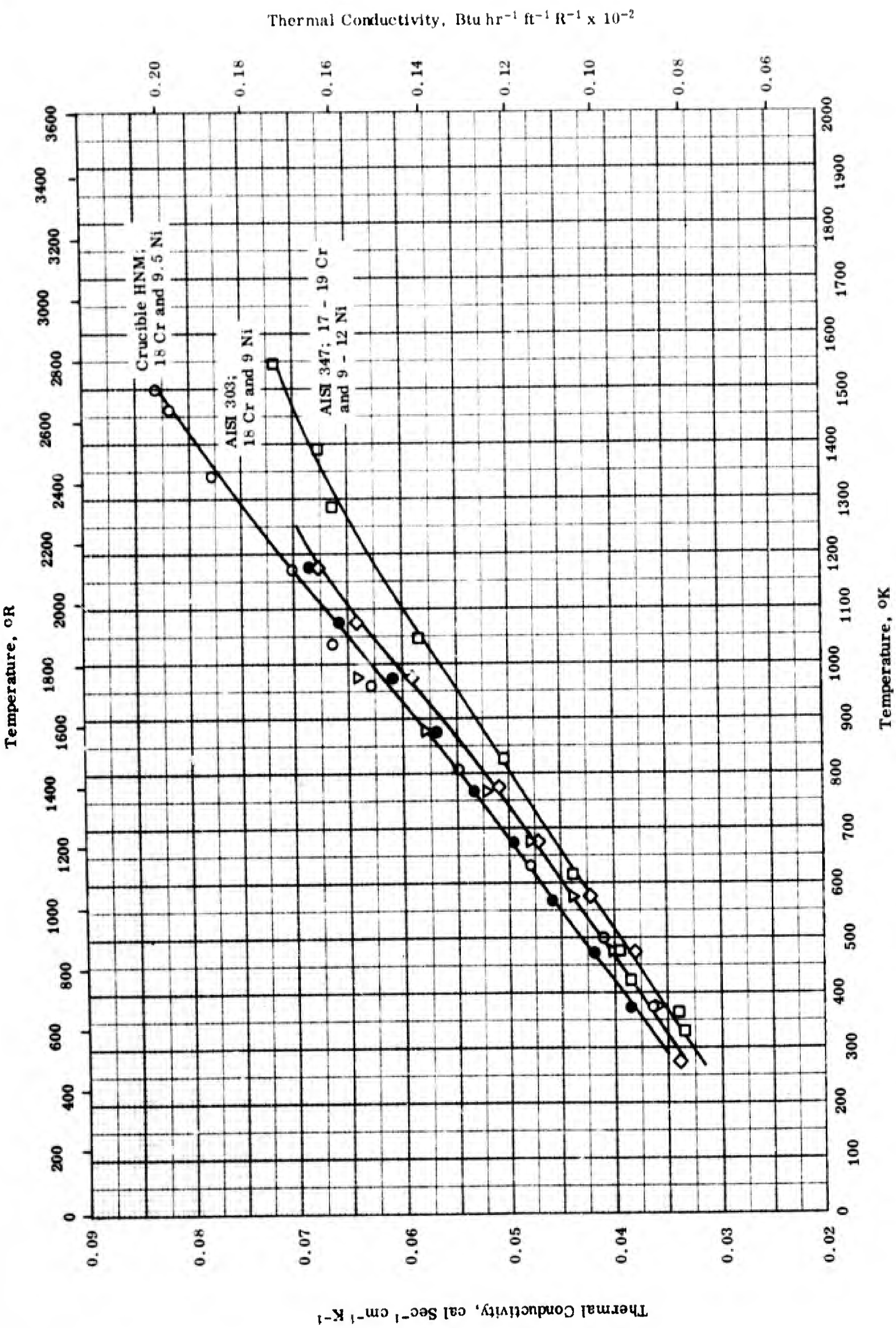


THERMAL CONDUCTIVITY -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(16 - 18 Cr and 10 - 14 Ni)

THERMAL CONDUCTIVITY -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(16 - 18 Cr and 10 - 14 Ni)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
□	51-2	117-1256		AISI 316; 16 - 18 Cr, 10 - 14 Ni, and 2 - 3 Mo; nominal composition.	Hot rolled; annealed 1 hr at 2000 F and then water-quenched.
△	58-2	333-1397		AISI 316; 16 - 18 Cr, 10 - 14 Ni, and 2 - 3 Mo; nominal composition.	

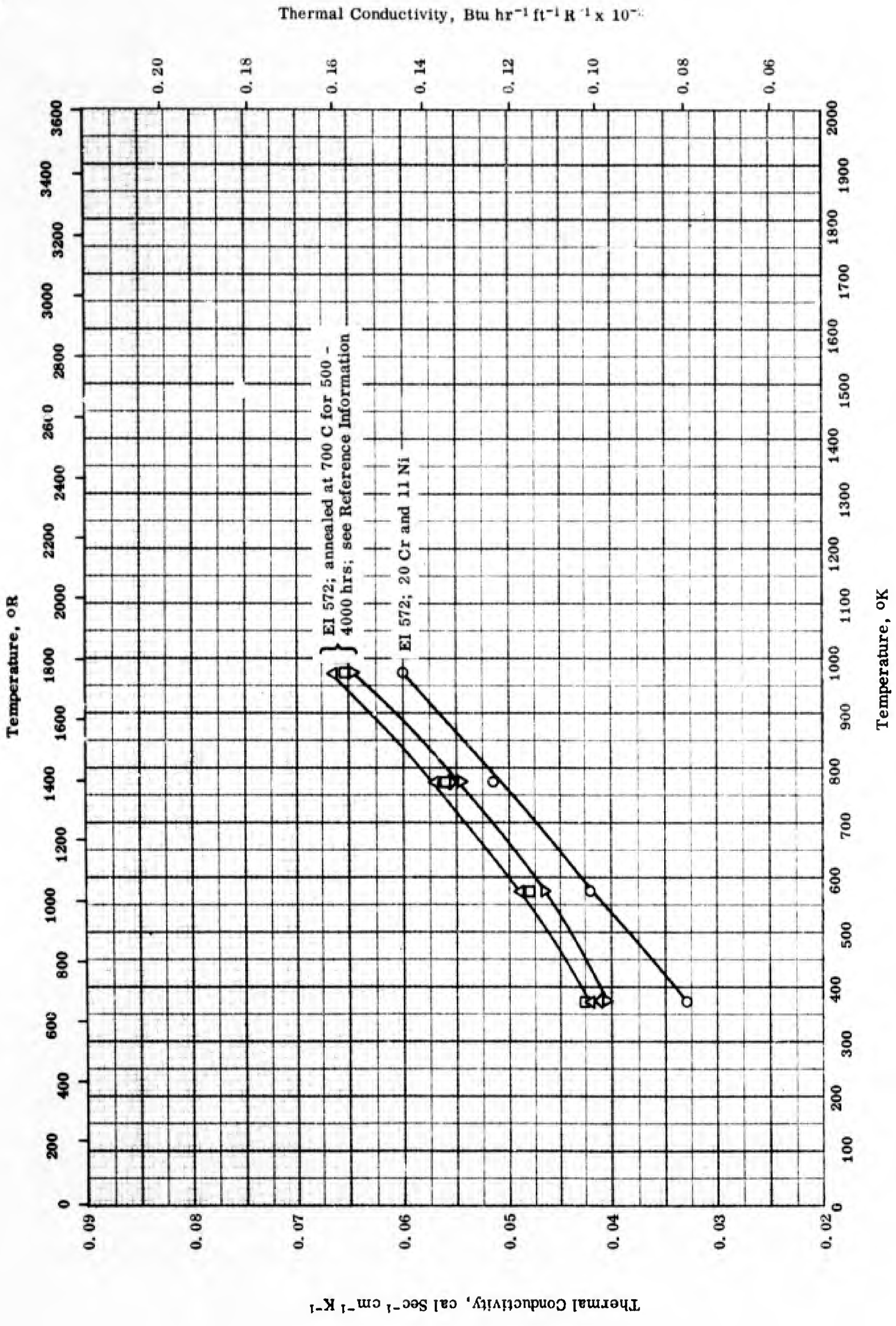


THERMAL CONDUCTIVITY -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(18 - 19 Cr and 8 - 14 Ni)

THERMAL CONDUCTIVITY -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(18 - 19 Cr and 8 - 14 Ni)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	61-4	373-1500		Crusible HNM; 68 Fe, 18.5 Cr, 9.50 Ni, 3.50 Mn, 0.30 C, 0.23 P, 0.05 Si, and traces of Mo, Al, and W.	
□	58-2	330-1543	2	AISI 347; 17 - 19 Cr, 9 - 12 Ni, 0.08 max C, and 10 x C Nb.	
▽	52-1	373-973		Jessop R20 Steel (Brit. Design.); 19.0 Cr, 14 Ni, 1.7 Nb, 0.80 Mn, 0.30 Si, and 0.15 C; density 494 lb ft^{-3}.	
◇	52-3	273-1173		AISI 303; 18.42 Cr, 8.97 Ni, 0.61 Mn, 0.51 Si, and 0.17 C.	
●	55-1	373-1173		18.1 Cr, 9.82 Ni, 0.88 Mn, 0.74 Si, 0.45 Ti, and 0.09 C.	

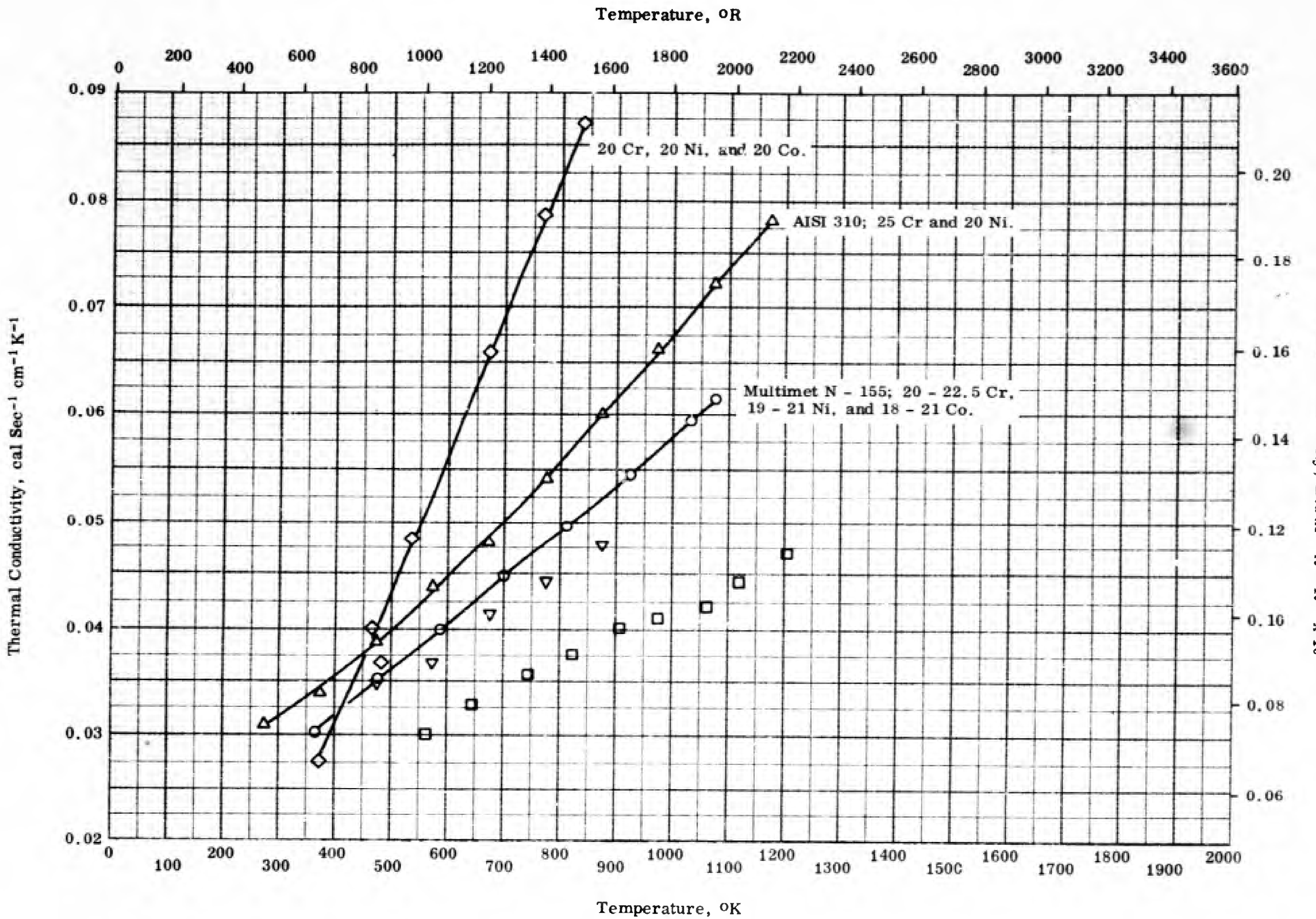


THERMAL CONDUCTIVITY -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(20 Cr and 11 Ni)

THERMAL CONDUCTIVITY -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(20 Cr and 11 Ni)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	58-5	373-973		EI - 572 (USSR Design.); 20 Cr, 11 Ni, 1.5 Mo, 1.2 Mn, 0.70 Si, 0.55 Ti, 0.36 C, and 0.3 Nb.	
□	58-5	373-973		Same as above.	Tempered at 700 C for 500 hrs.
△	58-5	373-973		Same as above.	Tempered at 700 C for 1000 hrs.
▽	58-5	373-973		Same as above.	Tempered at 700 C for 2000 hrs.
◇	58-5	373-973		Same as above.	Tempered at 700 C for 4000 hrs.

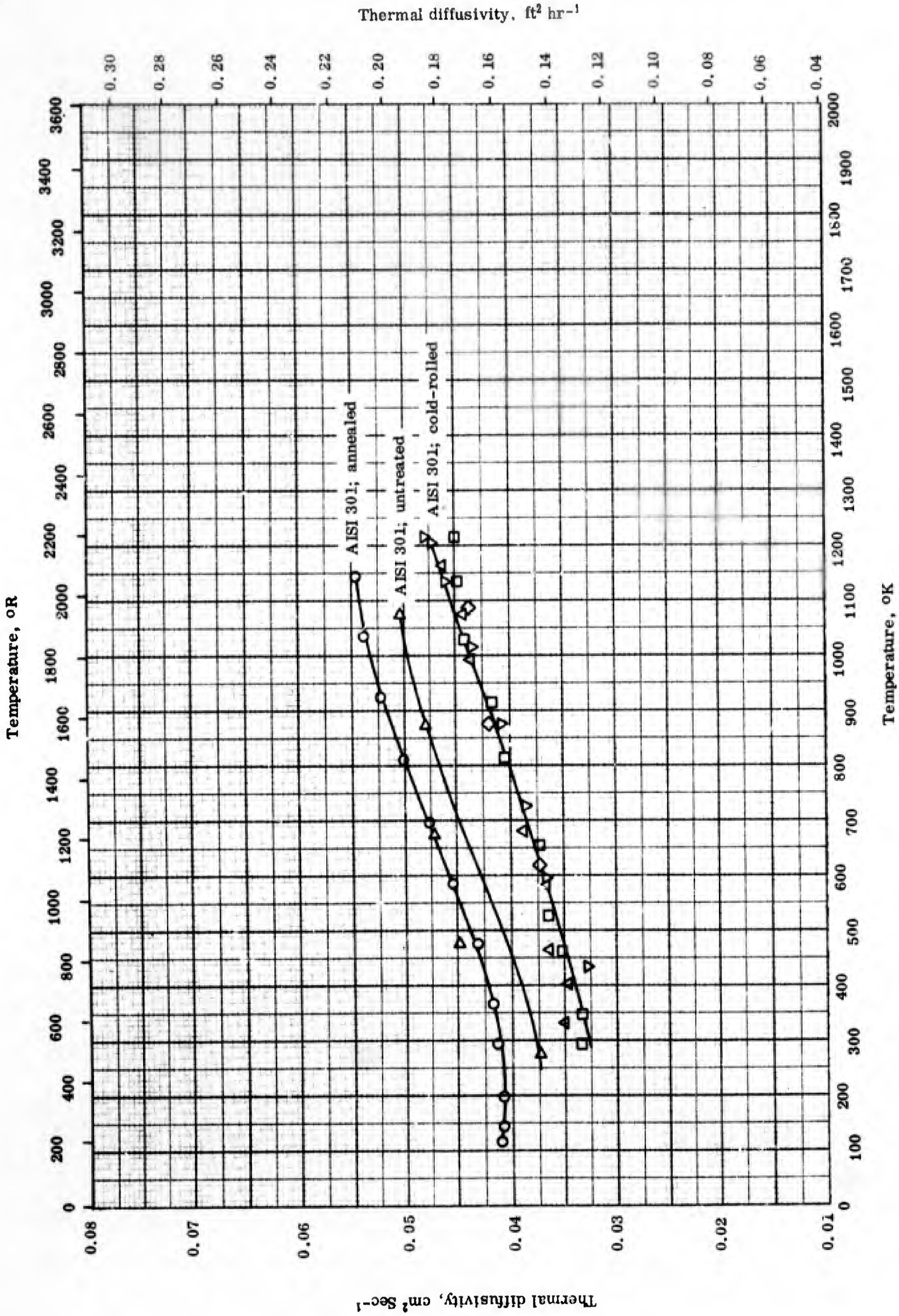


THERMAL CONDUCTIVITY -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(20 - 26 Cr and 19 - 22 Ni)

THERMAL CONDUCTIVITY -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(20 - 26 Cr and 19 - 22 Ni)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	58-6	366-1078		Haynes Multimet N-155; 21 Cr, 20 Ni, 20 Co, 3 Mo, 2.5 W, 1.0 Nb + Ta, and 0.12 C.	
□	60-4	561-1203		AISI 310 Stainless; 24 - 26 Cr, 19 - 22 Ni, 2.0 max Mn, 1.5 max Si, and 0.25 max C.	Author claimed that values are 10 - 15% lower than published values due to inadequate insulation from electricity.
△	52-3	273-1173		AISI 310 Stainless; 50.98 Fe, 25.54 Cr, 20.68 Ni, 1.83 Mn, 0.84 Si, 0.10 C, 0.025 P, and 0.005 S.	
▽	47-1	473-873		Multimet; 20 - 22.5 Cr, 19 - 21.0 Ni, 18.5 - 21.0 Co, 2.5 - 3.5 Mo, 2.0 - 3.0 W, 0.75 - 1.25 Nb + Ta, 0.10 - 0.20 N_2, and 0.08 - 0.16 C.	Wrought.
◇	57-3	373-955	±4	20 Cr, 20 Ni and 20 Co.	Forged beginning at 1180 C and ending at 950 C; oil-quenched from 1200 C and aged 70 hrs at 760 F; data probably high.

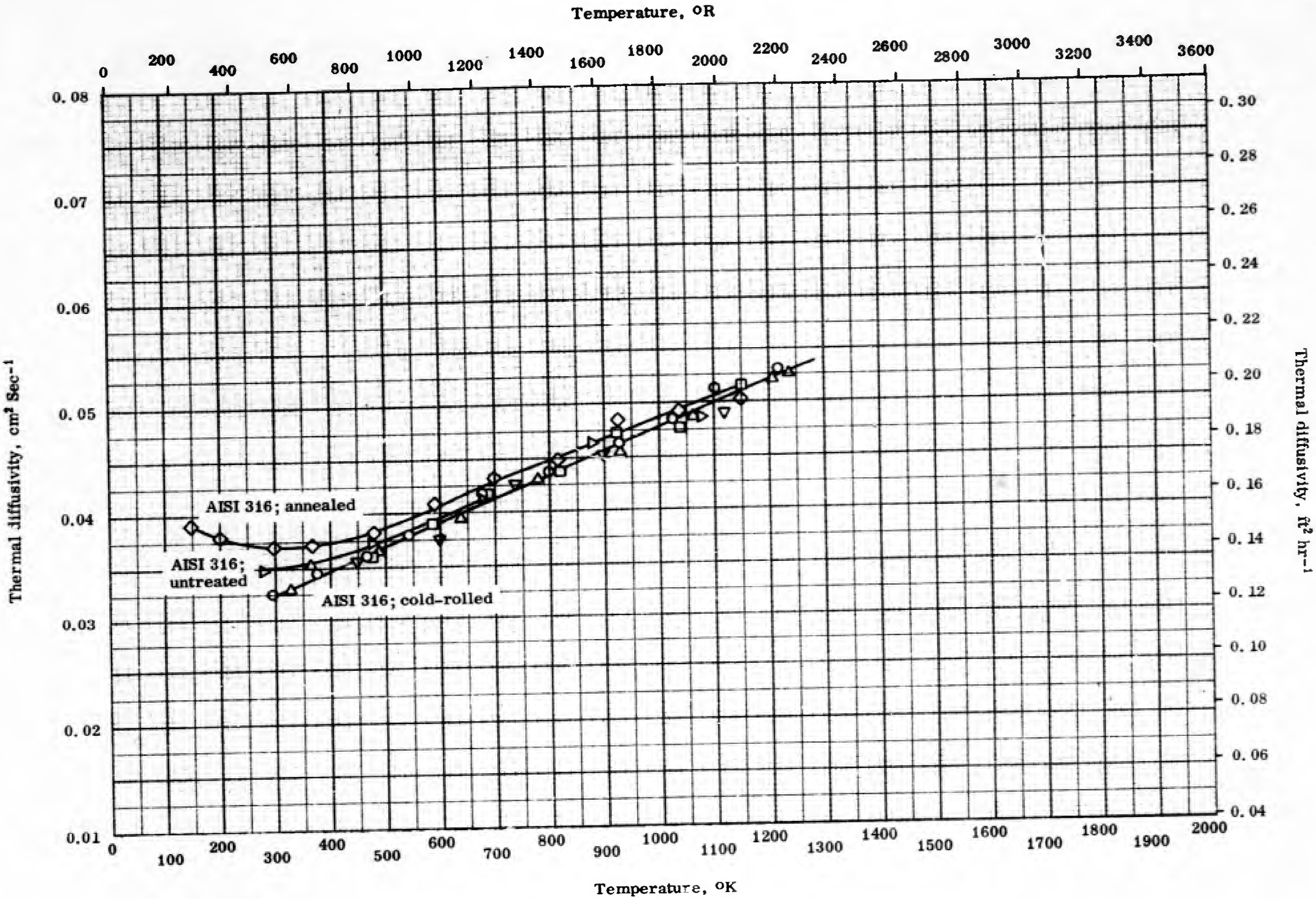


THERMAL DIFFUSIVITY -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(16 – 18 Cr and 6 – 8 Ni)

THERMAL DIFFUSIVITY -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(16 - 18 Cr and 6 - 8 Ni)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	58-1	116-1144		AISI 301; 16.0 - 18.0 Cr, 6.0 - 8.0 Ni, 2.0 max Mn, and 0.08 - 0.2 C.	Hot-rolled; annealed at 1900 F for 1 hr. and water quenched.
□	60-2	291-1215	±5	AISI 301; 16.0 - 18.0 Cr, 6.0 - 8.0 Ni, 2.0 max Mn, 1.0 max Si, 0.15 max C, 0.045 max P, and 0.03 S; austenitic structure; sample 0.097 cm thick.	Cut from No. 2 finish cold-rolled sheet steel of 0.097 cm thick.
△	60-2	331-1163	±5	Same as above.	The above sample measured as temperature decreases from 1215 to 331 K.
▽	60-2	431-1216	±5	Same as above	The above sample measured as temperature increases after the above measurement.
◇	60-2	619-1086	±5	Same as above	The above sample measured as temperature decreases from 1216 to 619K.
▷	56-3	273-1073		AISI 301; 16 - 18 Cr, 6 - 8 Ni, 2.0 max Mn, 1.0 max Si, and 0.15 max C.	

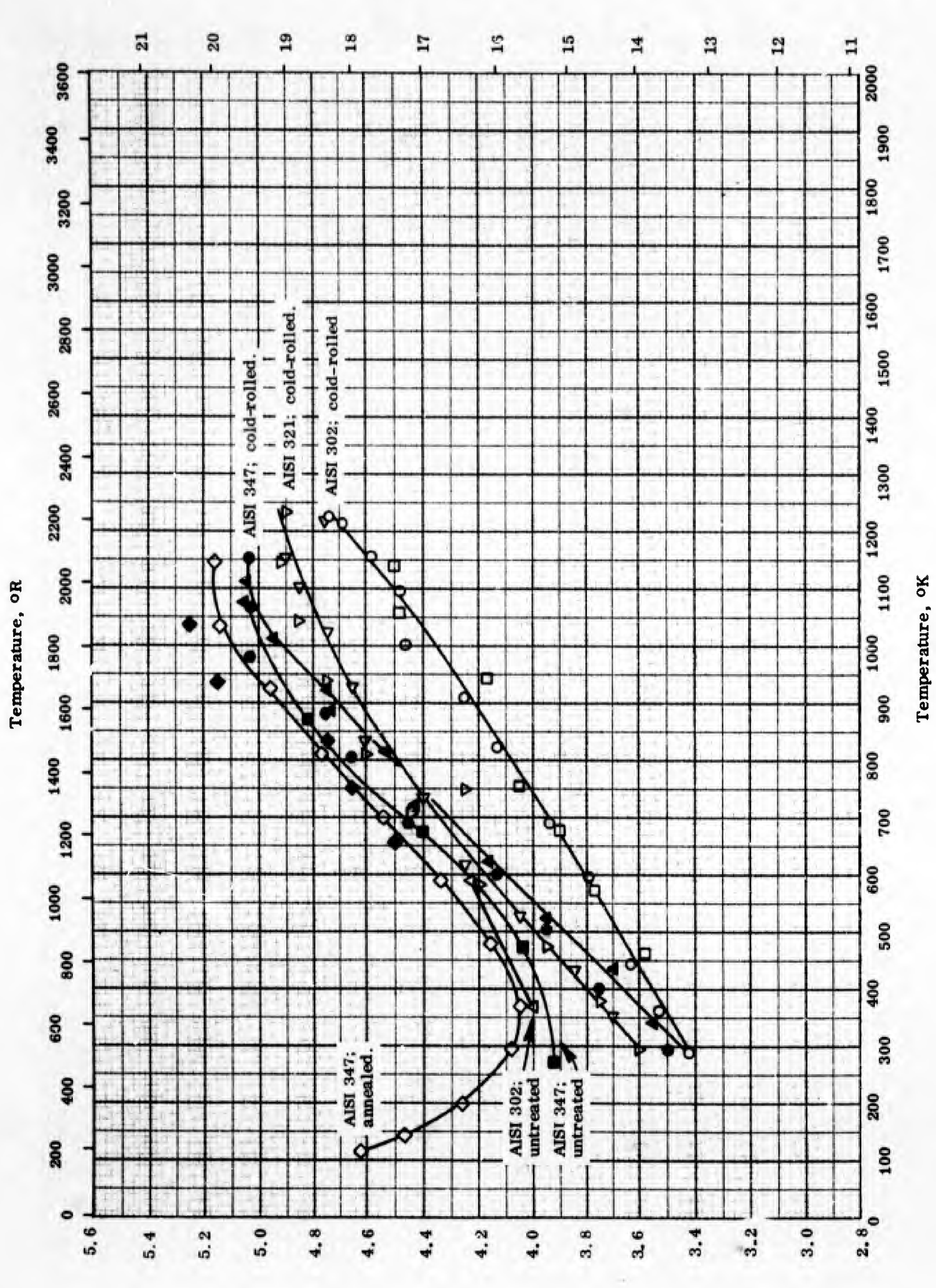


THERMAL DIFFUSIVITY -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(16-18 Cr and 10-14 Ni)

THERMAL DIFFUSIVITY -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(16-18 Cr and 10-14 Ni)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-2	293-1213	± 5	AISI 316; 16-18 Cr, 10-14 Ni, 2.0 max Mn, 1.0 max Si, 0.1 max C, 0.045 max P, and 0.03 S; austenitic structure; sample 0.136 cm thick.	Cut from No. 2 finish cold-rolled sheet steel of 0.136 cm thick.
□	60-2	473-1150	± 5	Same as above.	The above specimen measured as temperature decreases from 1213 to 473 K.
△	50-2	326-1233	± 5	Same as above.	The above specimen measured as temperature increases after the above measurement.
▽	60-2	448-1116	± 5	Same as above.	The above specimen measured as temperature decreases from 1233 to 448 K.
◇	58-1	144-1144		AISI 316; 16.82 Cr, 11.66 Ni, 2.18 Mo, 1.59 Mn, 0.26 Si, 0.108 C, 0.023 S, and 0.018 P.	Hot rolled; annealed at 2000 F for 1 hr and water quenched.
▷	56-3	273-1073		AISI 316; 16-18 Cr, 10-14 Ni, 2.0-3.0 Mo, 2.0 max Mn, 1.0 max Si, and 0.08 max C.	



THERMAL DIFFUSIVITY -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(17–19 Cr and 8–13 Ni)

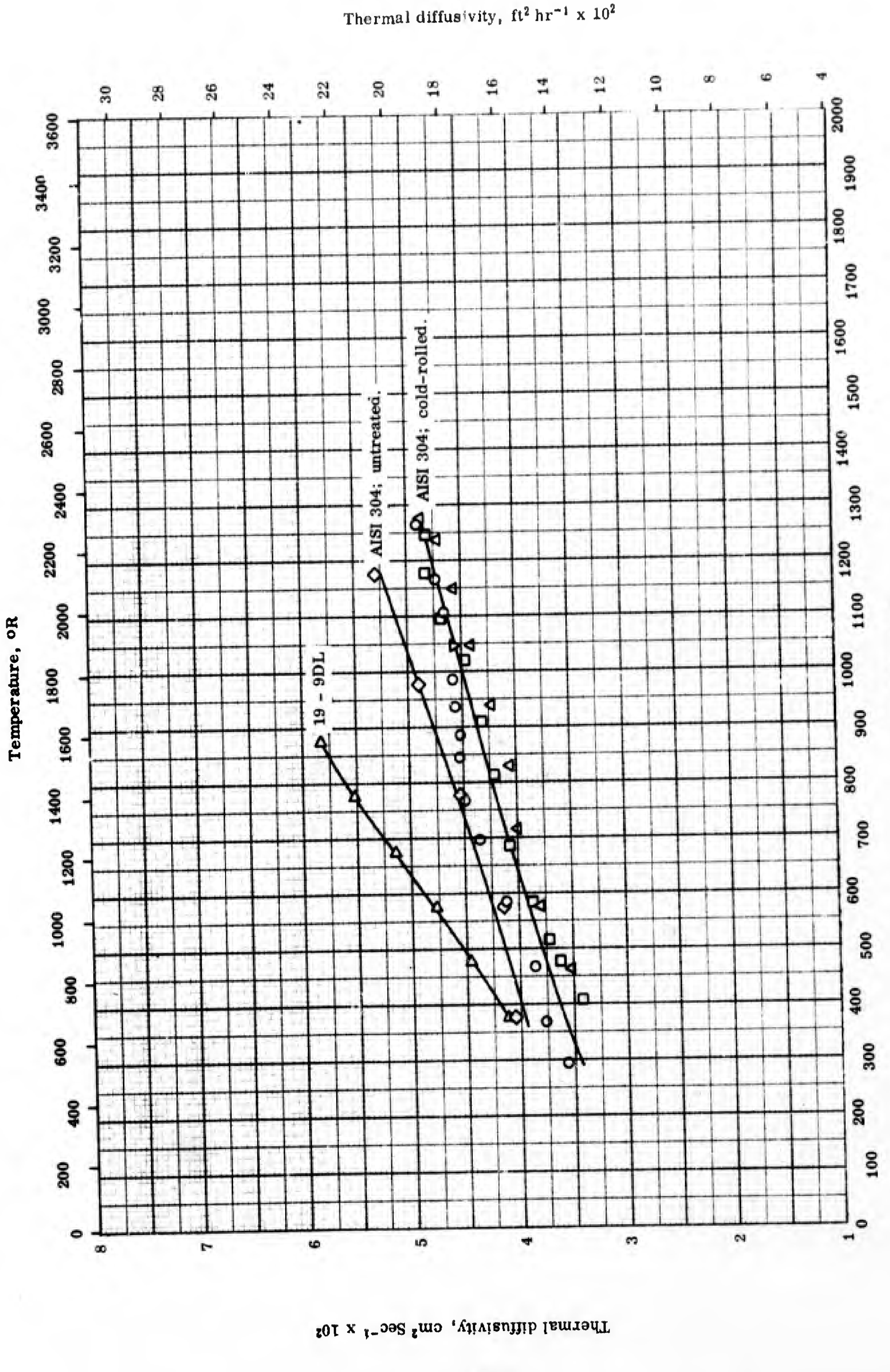
REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-2	290-1223	±5	AISI 302; 17-19 Cr, 8-10 Ni, 2.0 max Mn, 1.0 max Si, 0.15 max C, 0.045 max P, and 0.03 max S; austenitic structure; sample 0.096 cm thick.	Cut from No. 2 finish cold-rolled sheet steel of 0.096 cm thick.
□	60-2	461-1140	±5	Same as above.	The above sample measured as temperature decreases from 1223 to 461 K.
△	61-2	367-589	±5	AISI 302; 17-19 Cr, 8-10 Ni, 2.0 max Mn, 1.0 max Si, 0.15 max C, 0.045 max P, and 0.03 max S.	
▽	60-2	293-1233	±5	AISI 321; 17-19 Cr, 9-12 Ni, 2.0 max Mn, 1.0 max Si, 0.4 min Ti, 0.08 max C, 0.045 max P, and 0.03 max S; austenitic structure; sample 0.082 cm thick.	Cut from No. 2 finish cold-rolled sheet steel of 0.082 cm thick.
◁	60-2	353-1218	±5	Same as above.	The second run of the above specimen.
◇	58-1	116-1144	±5	AISI 347; 17.65 Cr, 10.94 Ni, 1.64 Mn, 0.73 Nb, 0.58 Si, 0.09 Cu, 0.06 C, 0.02 Mo, 0.017S, and 0.013 P.	Hot-rolled; annealed at 2000 F and water quenched.
◗	60-2	293-1151	±5	AISI 347; 17-19 Cr, 9-12 Ni, 2.0 max Mn, 1.0 max Si, 0.8 min Nb, 0.08 max C, 0.04 max P, and 0.03 max S; austenitic structure; sample 0.114 cm thick.	Cut from No. 2 finish cold-rolled sheet steel of 0.114 cm thick.
▲	60-2	343-1113	±5	Same as above.	The second measurement of the above sample as temperature decreases from 1113 to 343 K.
◆	62-1	615-1036		AISI 347; 17-19 Cr, 9-12 Ni, 2.0 max Mn, 1.0 max Si, 0.08 max C, 0.04 max P, and 0.03 max S; handbook compositions; sample 0.25 in. dia and 0.25 in. long. (Continued onto next page)	Measured by using a chromium-doped-ruby-rod generated laser beam.

THERMAL DIFFUSIVITY -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II (Continued)
(17-19 Cr and 8-13 Ni)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
■	56-3	273-1073		AISI 347; 17-19 Cr, 9-13 Ni, 2.0 max Mn, 1.0 max Si, 0.08 max C, and 10 x C min Nb-Ta.	

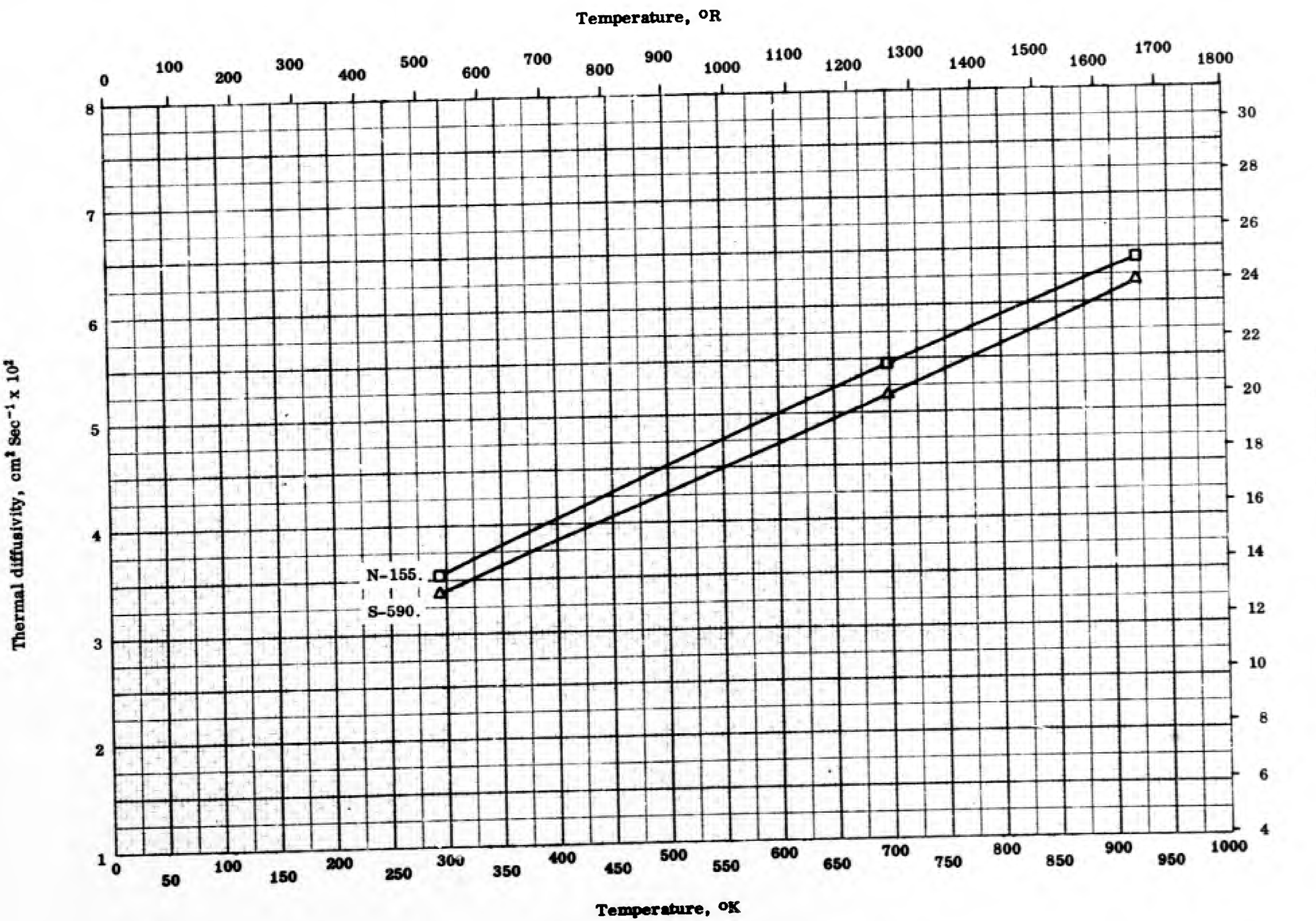


THERMAL DIFFUSIVITY -- IRON + CHROMIUM + NICKEL + ΣXi; GROUP II
(18 - 20 Cr and 8 - 12 Ni)

THERMAL DIFFUSIVITY -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(18 - 20 Cr and 8 - 12 Ni)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
▷	56-2	373-873		19 - 9 DL; 19 Cr, 9 Ni, 1.25 Mo, 1.25 W, 1.10 Mn, 0.60 Si, 0.40 Nb, 0.30 C, and 0.30 Ti.	
○	60-2	291-1261	± 5	AISI 304; 18 - 20 Cr, 8 - 12 Ni, 2.0 max Mn, 1.0 max Si, 0.08 max C, 0.045 max P, and 0.030 max S; austenitic structure; sample 0.080 cm thick.	Cut from No. 2 finish cold rolled sheet steel of 0.080 cm thick.
□	60-2	403-1243	± 5	Same as above.	The above sample measured as temperature decreases from 1261 to 403 K.
△	60-2	460-1273	± 5	Same as above.	The above sample measured as temperature increases after the above measurement.
▽	60-2	1043	± 5	Same as above.	The above sample measured when cooled from 1273 to 1043 K.
◇	56-2	373-1173		AISI 304; 16.68 Cr, 8.84 Ni, 1.12 Mn, 0.43 Si, 0.06 Cu, 0.05 C, 0.031 N, 0.023 S, and 0.017 P.	

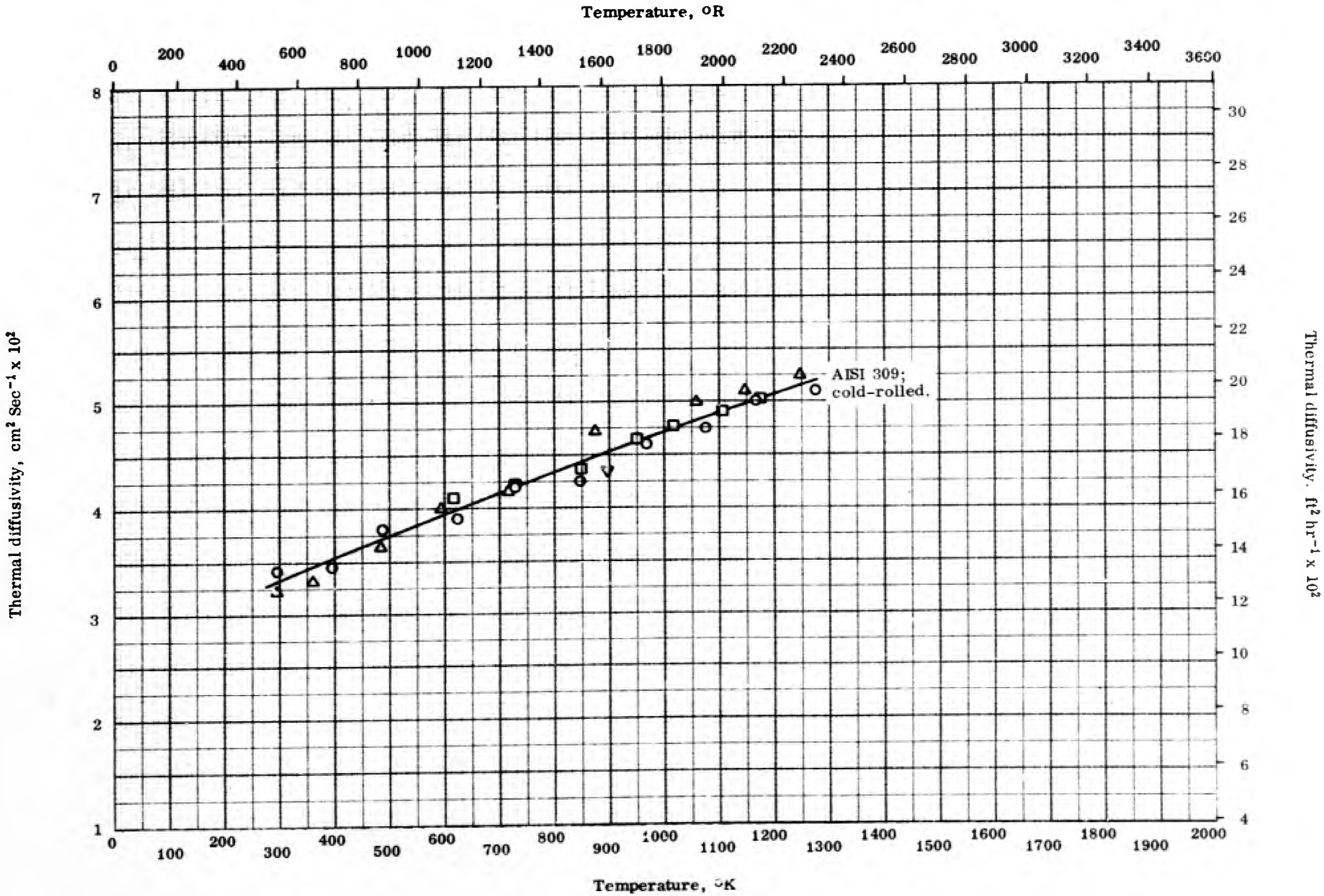


THERMAL DIFFUSIVITY -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(20-21 Cr and 20 Ni)

THERMAL DIFFUSIVITY -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(20-21 Cr and 20 Ni)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
□	56-2	294-922		N-155; 21.0 Cr, 20.0 Ni, 20.0 Co, 3.0 Mo, 3.0 W, 1.5 Mn, 1.0 Nb, 0.5 Si, 0.15 C, and 0.15 N.	
△	56-2	294-922		S-590; 20 Cr, 20 Ni, 20 Co, 4.0 Mo, 4.0 Nb, 4.0 W, 1.20 Mn, 0.40 C, and 0.40 Si.	

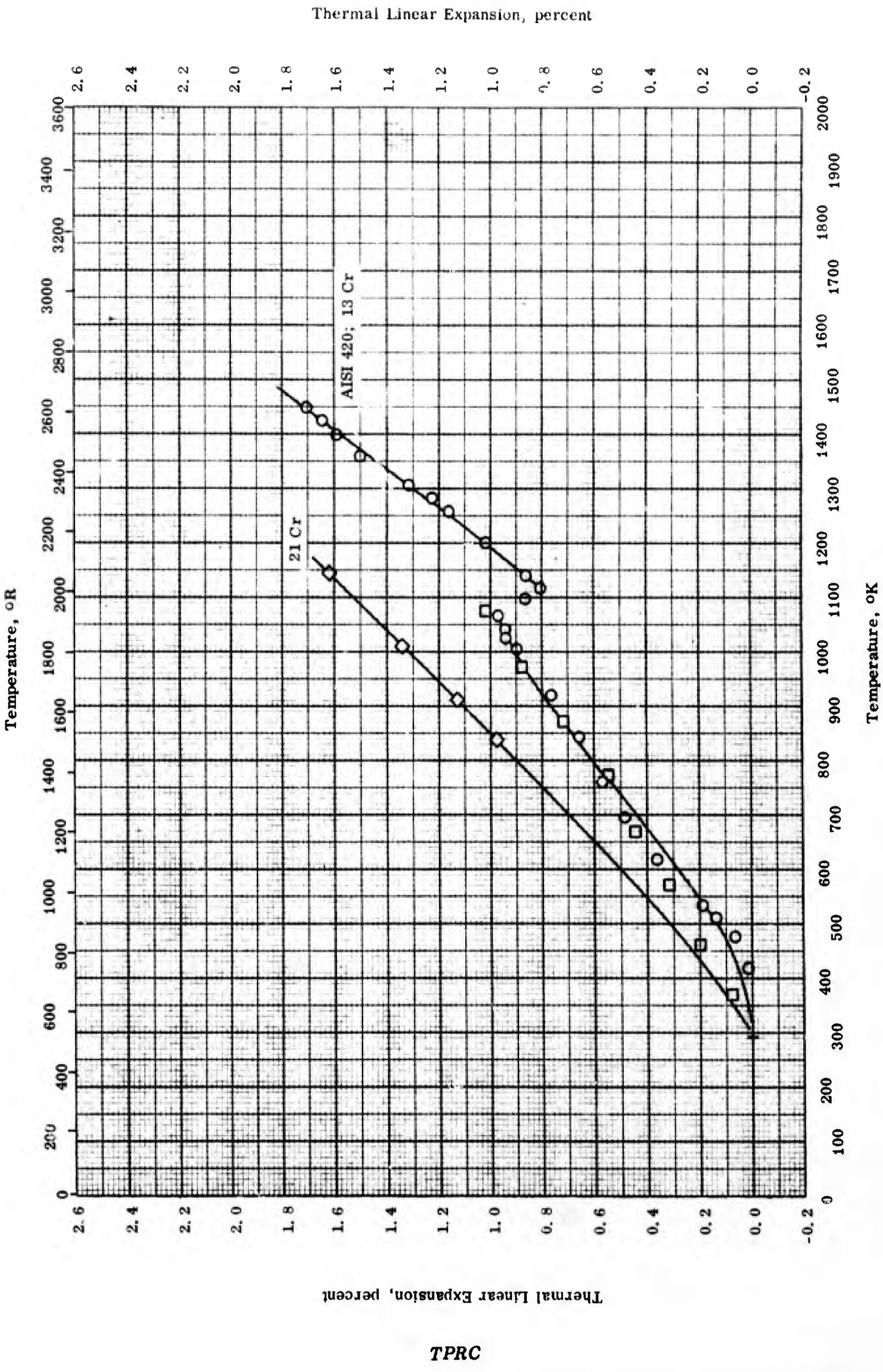


THERMAL DIFFUSIVITY -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(22-24 Cr and 12-15 Ni)

THERMAL DIFFUSIVITY -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(22-24 Cr and 12-15 Ni)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-2	203-1273	± 5	AISI 309; 22-24 Cr, 12-15 Ni, 2.0 max Mn, 1.0 max Si, 0.2 max C, 0.045 max P, and 0.03 max S; austinitic structure; sample 0.198 cm thick.	Cut from No. 2 finish cold-rolled sheet steel of 0.198 cm thick.
□	60-2	616-1173	± 5	Same as above.	The above sample measured as temperature decreases from 1273 to 616 K.
△	60-2	293-1223	± 5	Same as above.	The above sample measured as temperature increases after above measurement.
▽	60-2	893	± 5	Same as above	The above sample measured as temperature decreases from 1223 to 893 K.

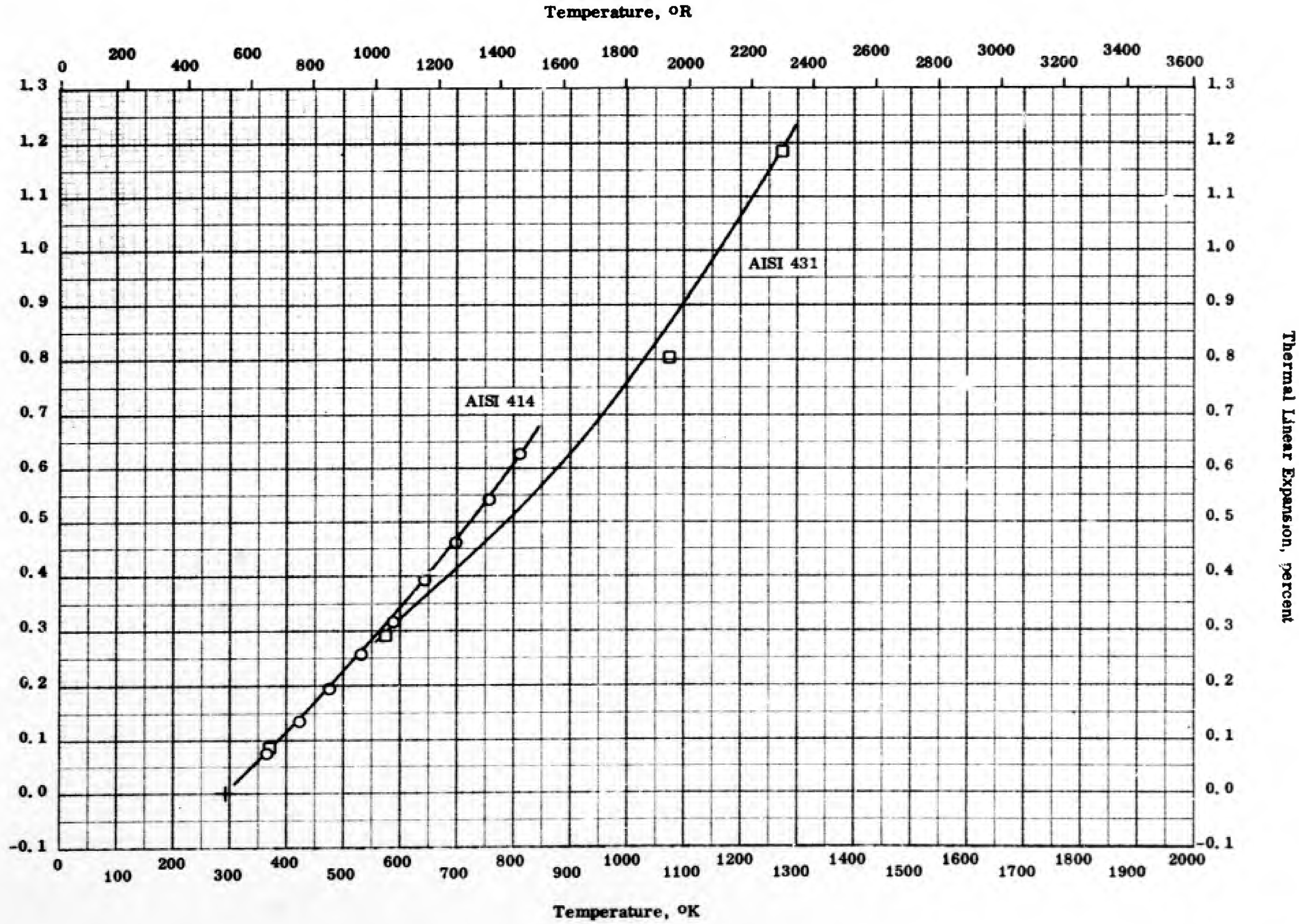


THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP I

THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP I

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	61-4	300-1449		AISI 420 Stainless Steel; 84.99 Fe, 13.10 C, 0.5 Ni, 0.48 Mn, 0.41 Si, 0.30 C, 0.12 Cu, 0.06 Mo, 0.02 P, and 0.011 S; density 7.71 g cm^{-3}.	
□	55-1	293-1073	± 1.5	Two samples: (a) 12.8 Cr, 0.6 Ni, 0.38 Mn, 0.28 Si, and 0.26 C. (b) 13.2 Cr, 0.6 Ni, 0.59 Si, 0.52 Mn, and 0.36 C.	Mean value within max deviation of 2%.
◇	53-9	295-1145		HF Grade Alloy; 21 Cr and 9 Ni.	

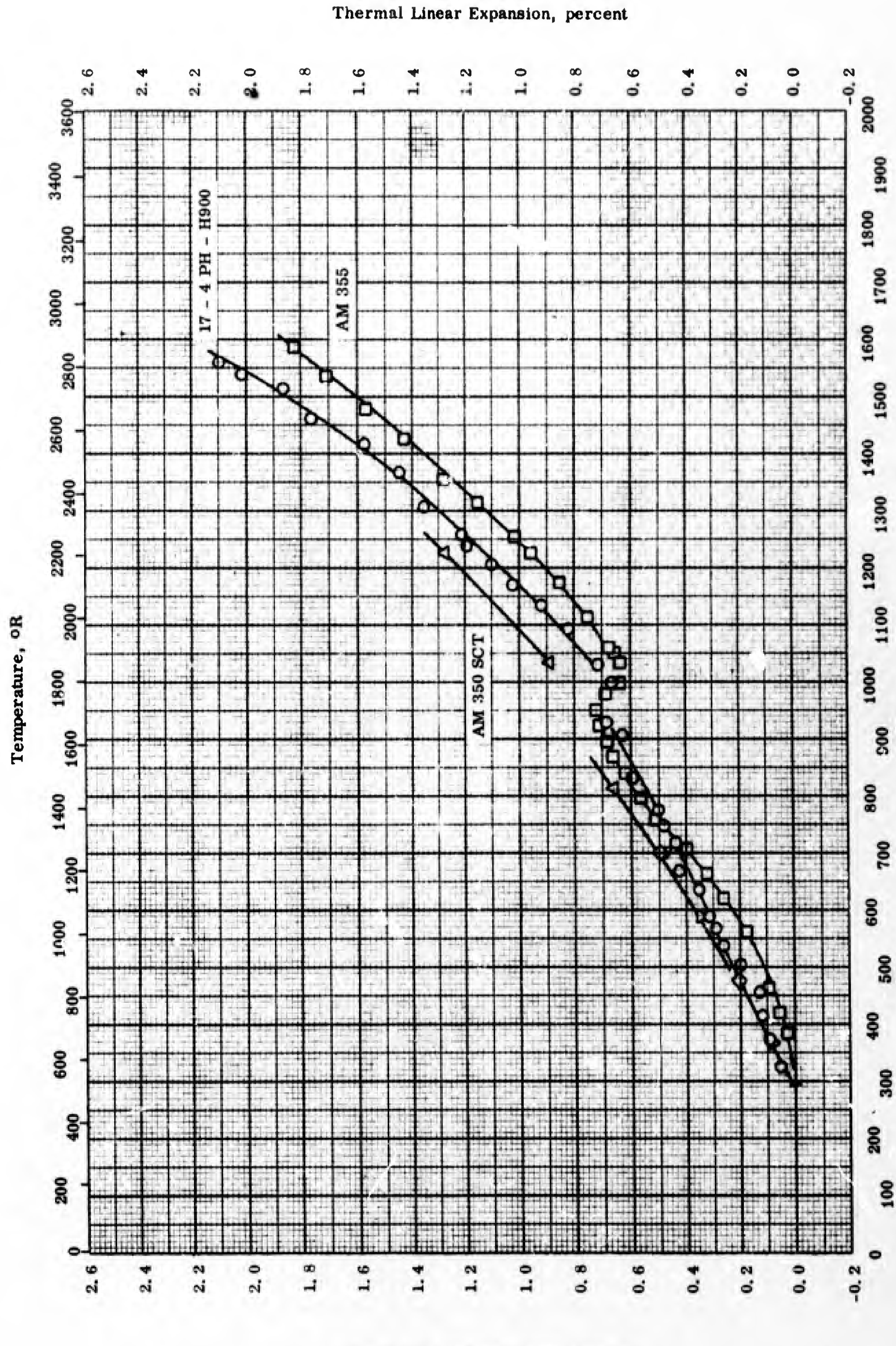


THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(11 - 17 Cr and 1.25 - 2.50 Ni)

THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(11 - 17 Cr and 1.25 - 2.50 Ni)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-11	293-811		AISI 414 Stainless Steel; 11.5 - 13.5 Cr, 1.25 - 2.50 Ni, 1.0 max Mn, 1.0 max Si, 0.15 C, 0.045 max P, and 0.030 max S; nominal composition.	
□	60-11	293-1273		AISI 431 Stainless Steel; 15 - 17 Cr, 1.25 - 2.50 Ni, 1.0 max Mn, 1.0 max Si, 0.20 max C, 0.045 max P, and 0.030 max S; nominal composition.	

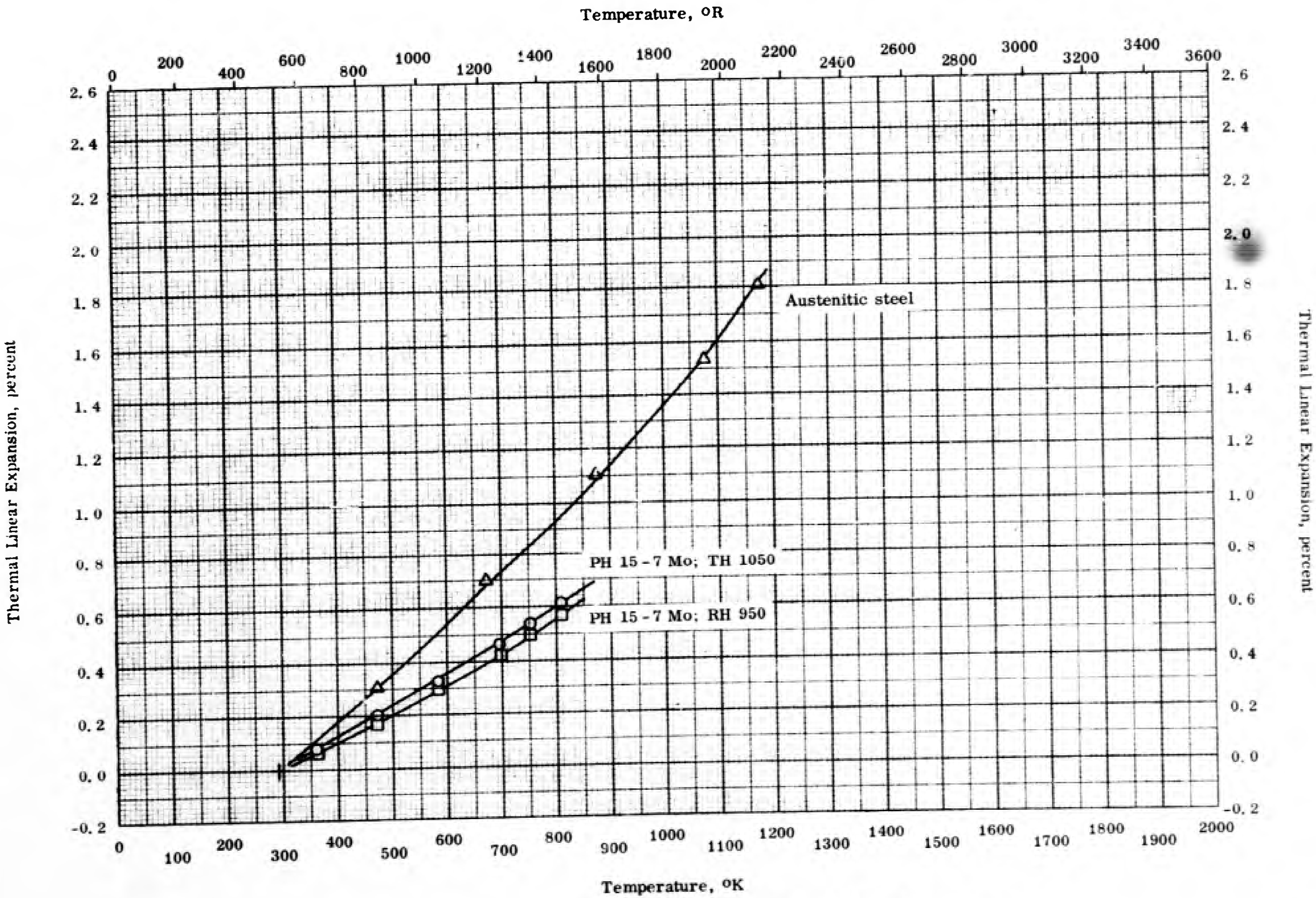


THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(14.5 - 17.5 Cr and 3 - 5 Ni)

THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(14.5 - 17.5 Cr and 3 - 5 Ni)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	61-4	294-1560		17 - 4 PH - H900; 72.9 Fe, 16.4 Cr, 4.2 Ni, 4.1 Cu, 1.0 Mn, 1.0 Si, 0.3 Ta + Nb, 0.07 C, and 0.04 P; density 7.74 g cm^{-3}.	
□	61-4	300-1583		AM 355; 75.5 Fe, 15.66 Cr, 4.27 Ni, 2.82 Mo, 0.94 Mn, 0.12 C, 0.05 Si, and 0.02 P; density 7.78 g cm^{-3}.	
△	59-10	294-1033		AM 350 SCT; 16.5 Cr, 4.25 Ni, 2.75 Mo, 0.75 Mn, 0.35 Si, 0.10 C, and 0.10 N; density 0.286 lb $in.^{-3}$	
▽	52-11	294-700		17 - 4 PH - H900; density 0.282 lb $in.^{-3}$	
◇	59-10	294-700		17 - 7 PH - TH1050; 17 Cr, 7 Ni, 1.15 Al, 0.70 Mn, 0.40 Si, and 0.07 C; nominal composition; density 0.276 lb $in.^{-3}$	
◁	59-10	294-700		17 - 4 PH; 15.5 - 17.5 Cr, 3.0 - 5.0 Ni, 3.0 - 5.0 Cu, 1.0 max Mn, 1.0 max Si, 0.15 - 0.45 Nb + Ta, and 0.07 max C; nominal composition.	Aged at 900 F for 1 hr.

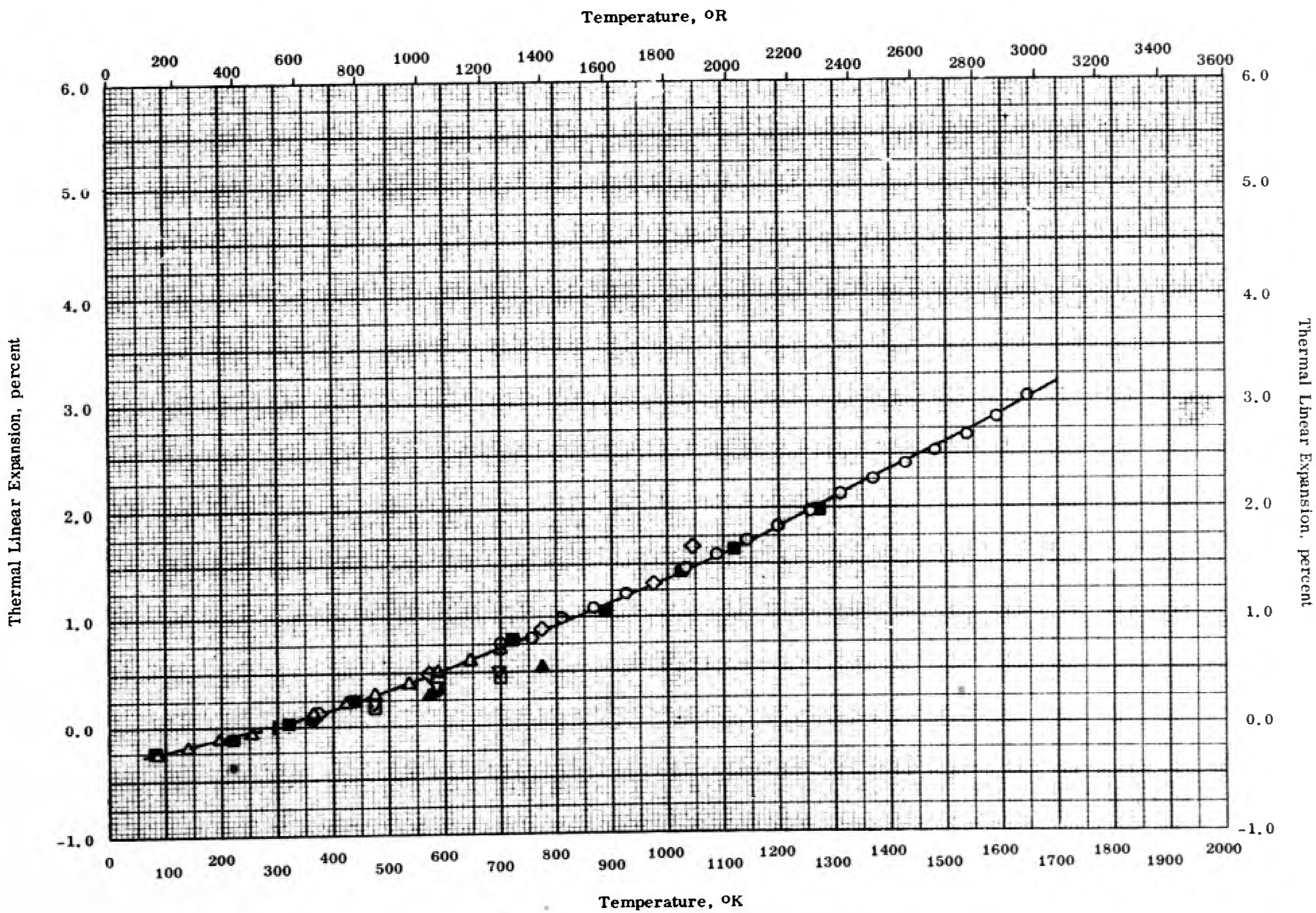


THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(11 - 16 Cr and 6 - 8 Ni)

THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(11 - 16 Cr and 6 - 8 Ni)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	61-14	294-811		PH 15 - 7 Mo TH 1050; 14 - 16.0 Cr, 6.5 - 7.75 Ni, 2.0 - 3.0 Mo, 0.75 - 1.50 Al, 1.0 max Mn, 1.0 max Si, 0.09 max C, 0.04 max P, and 0.04 max S; nominal composition.	
□	61-14	294-811		PH 15 - 7 Mo RH - 950.	
△	43-1	293-1176		Austenitic Steel; 11.8 Cr, 6 Ni, 6 Mn, 3.4 Si, 1.2 W, 0.43 C, and 0.03 N.	Heating rate 1.5 C min^{-1}.

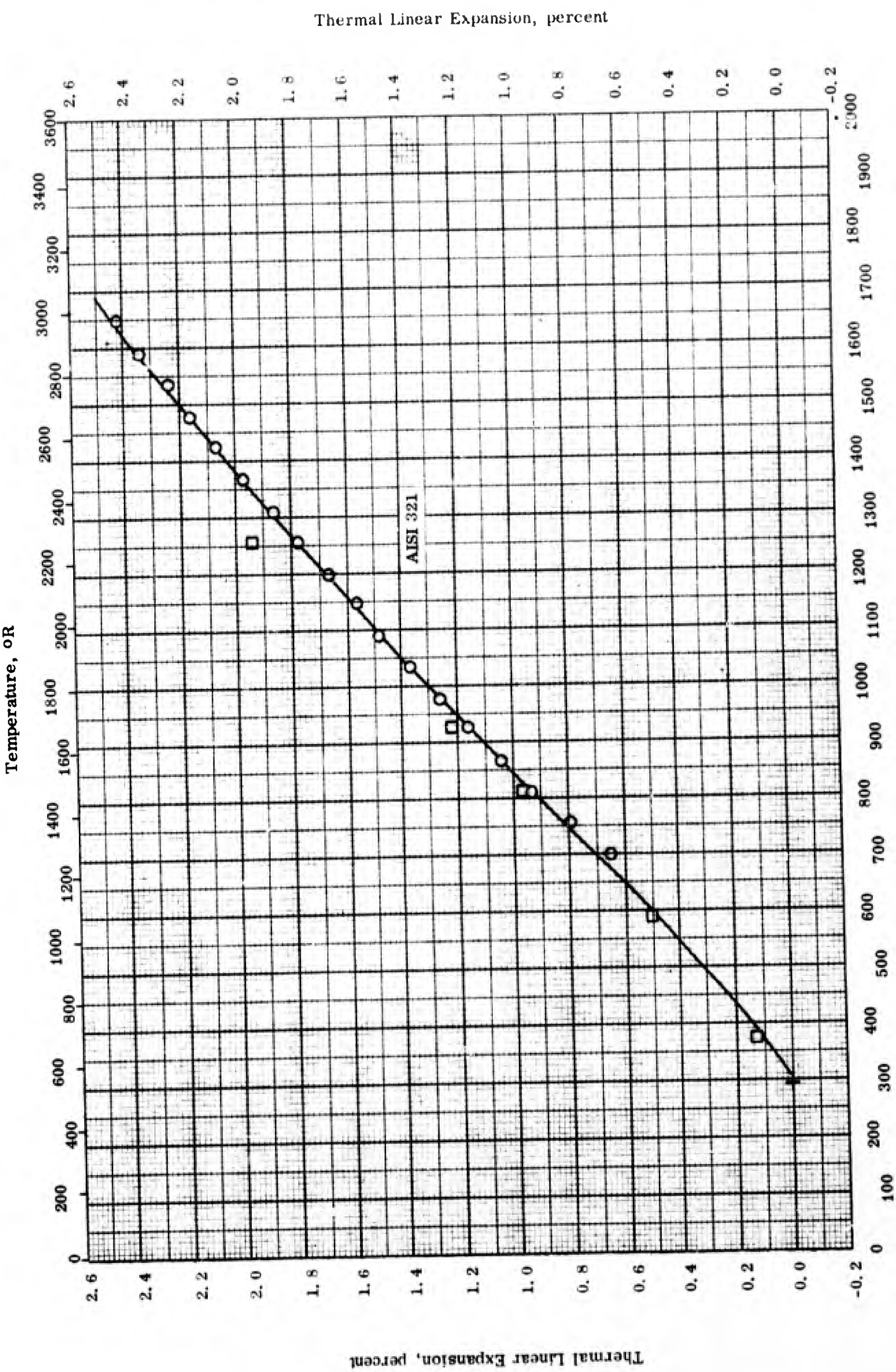


THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(16 - 18 Cr and 6 - 8 Ni)

THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + NICKEL + ΣX_1 GROUP II
(16 - 18 Cr and 6 - 8 Ni)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	57-4	700-1644		17 - 7 PH; 72.62 Fe, 17.08 Cr, 7.21 Ni, 1.19 Al, 0.71 Mn, 0.70 C, 0.45 Si, 0.024 P, and 0.017 S; density 7.43 g cm^{-3}.	Heating rate at above 3 - 5 F min^{-1} in vacuum of the order 10^{-6} to 10^{-5} mm Hg.
□	52-11	294-700		17 - 7 PH - TH 1050; density 0.276 lb in^{-3}.	
△	50-6	88-811		AISI 301; 16.91 Cr, 7.25 Ni, 0.80 Mn, 0.54 Si, and 0.13 C; sample 0.25 in. in dia and 4 in. in length.	Annealed at 1950 F for 30 min and water-quenched; heating rate at 450 F hr^{-1}.
▽	59-10	294-700		17 - 7 Ph RH-950.	
◇	59-9	293-1044		AISI 301; 16 - 18.0 Cr, 6 - 8.0 Ni, 2.0 max Mn, 1.0 max Si, 0.08 - 0.20 C, 0.03 P, and 0.03 S; nominal composition.	Annealed.
●	61-14	294-700		17 - 7 Ph CH-900.	
■	51-2	83-1273		AISI 301.	Hot-rolled, annealed 1 hr at 1900 F, and then water-quenched.
▲	59-10	273-773		Stainless Steel W; 16 - 18 Cr, 6 - 8 Ni, 1.0 max Al, Mn, Si, Ti each, 0.2 max N, and 0.12 max C.	Aged at 950 F for 1 hr.

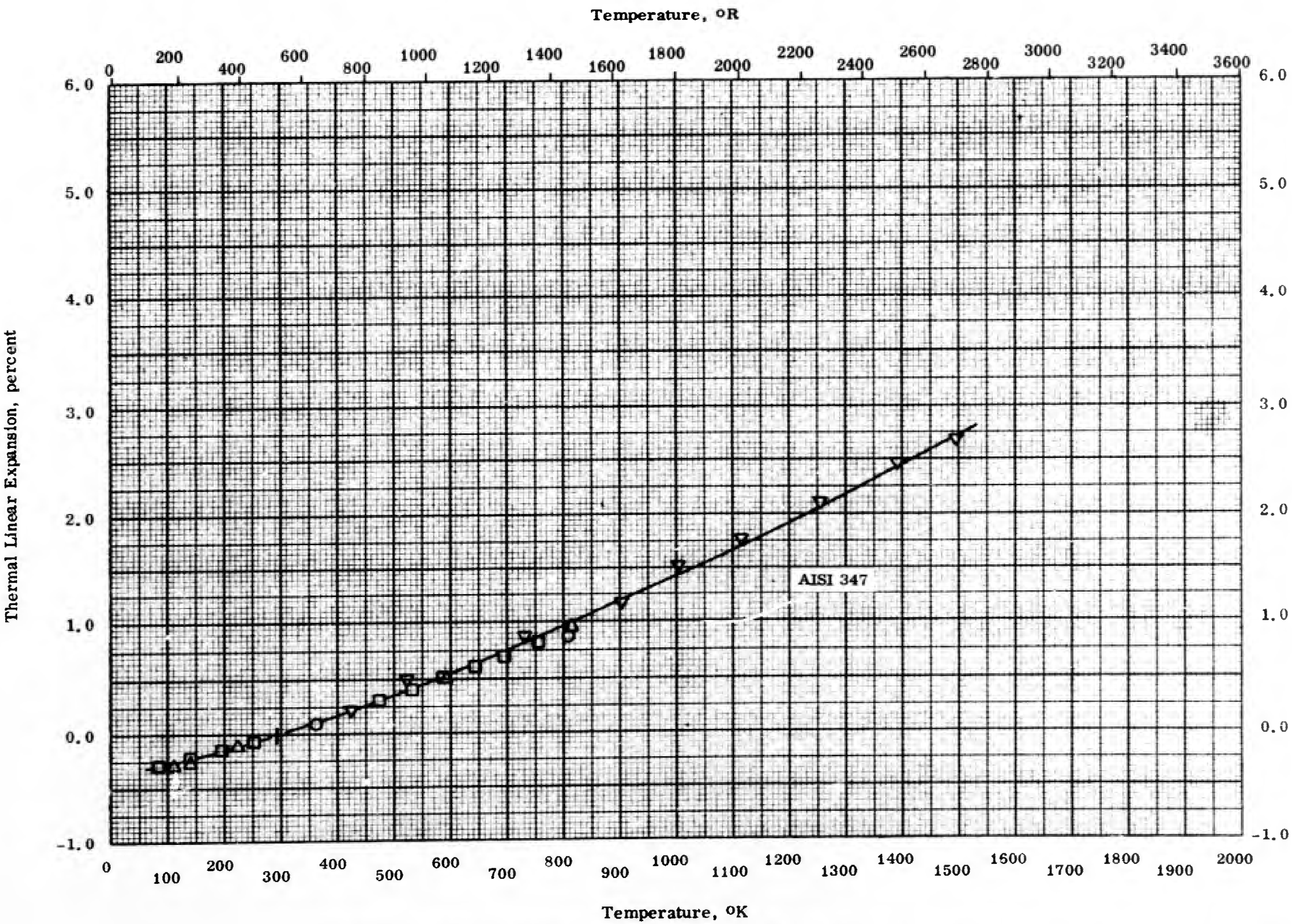


THERMAL LINEAR EXPANSION --- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(17 - 18 Cr and 9 - 10 Ni)

THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(17 - 18 Cr and 9 - 10 Ni)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	57-4	700-1644	≤5	AISI 321; 69.05 Fe, 17.59 Cr, 9.85 Ni, 1.53 Mn, 1.17 Ti, 0.71 Si, 0.091 C, 0.069 S, and trace P; density 7.89 g cm^{-3}.	Heating rate at about 3 - 5 F min^{-1} in vacuum of the order 10^{-6} to 10^{-5} mm Hg.
□	52-11	273-1255		AISI 321.	

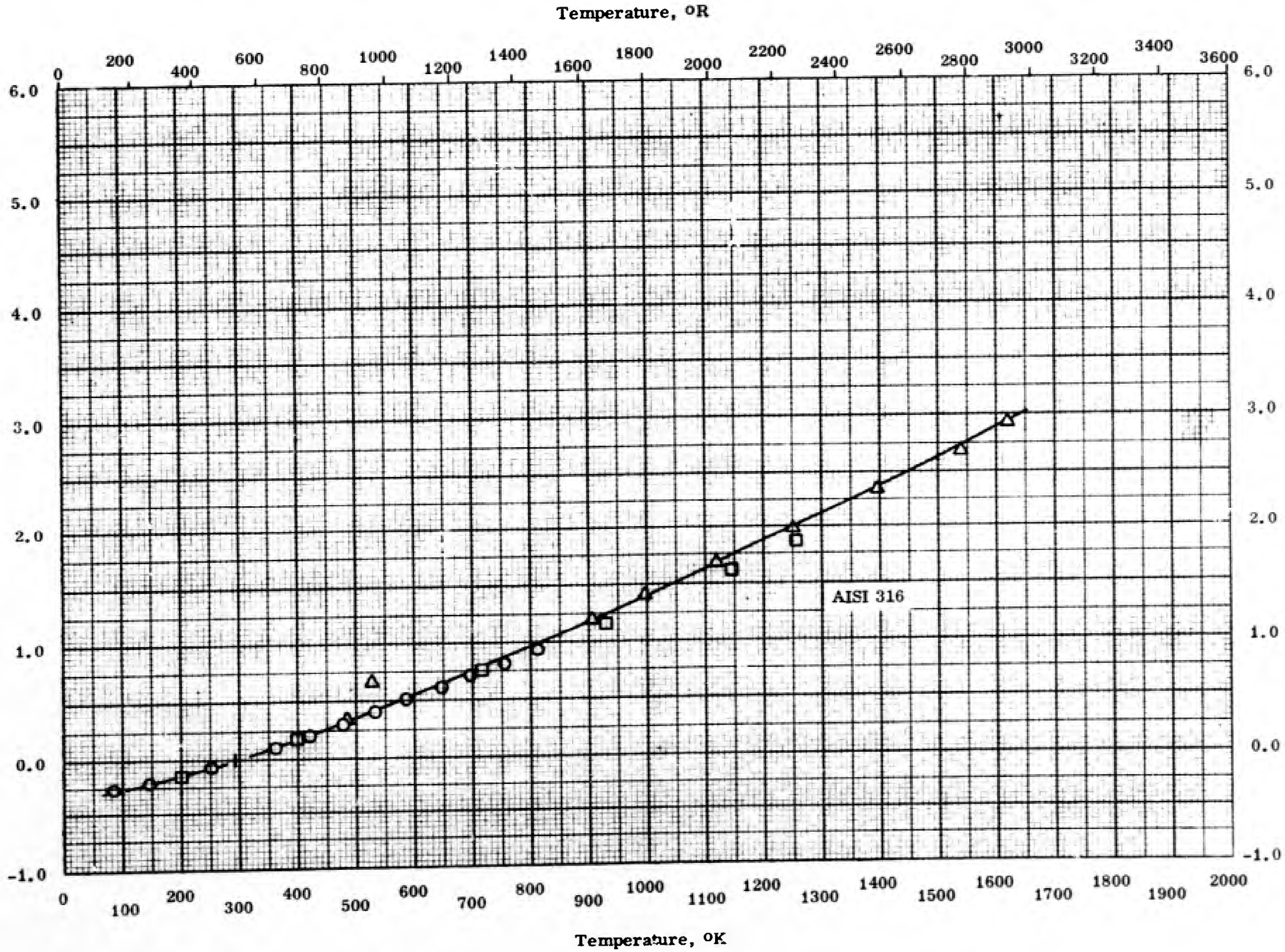


THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(17 - 19 Cr and 10 - 12 Ni)

THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(17 - 19 Cr and 10 - 12 Ni)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	52-11	294-811		AISI 347.	
□	50-6	88-811		AISI 347; 18.65 Cr, 11.30 Ni, 1.74 Mn, 0.77 Nb, 0.56 Si, 0.068 C, 0.019 P, and 0.006 S; sample 4 in. in length.	Annealed at 1950 F for 30 min and water-quenched; heating rate 450 F hr^{-1}.
△	51-2 also 58-1	111-1145		AISI 347.	Hot-rolled, annealed 1 hr at 2000 F, and water-quenched; tested in vacuum.
▽	58-2	300-1495		AISI 347; 17.82 Cr, 10.32 Ni, 1.62 Mn, 0.6 Si, 0.14 Mo, 0.13 Cu, 0.06 C, 0.018 P, and 0.018 S; manufacturer's analysis.	Tested in He.

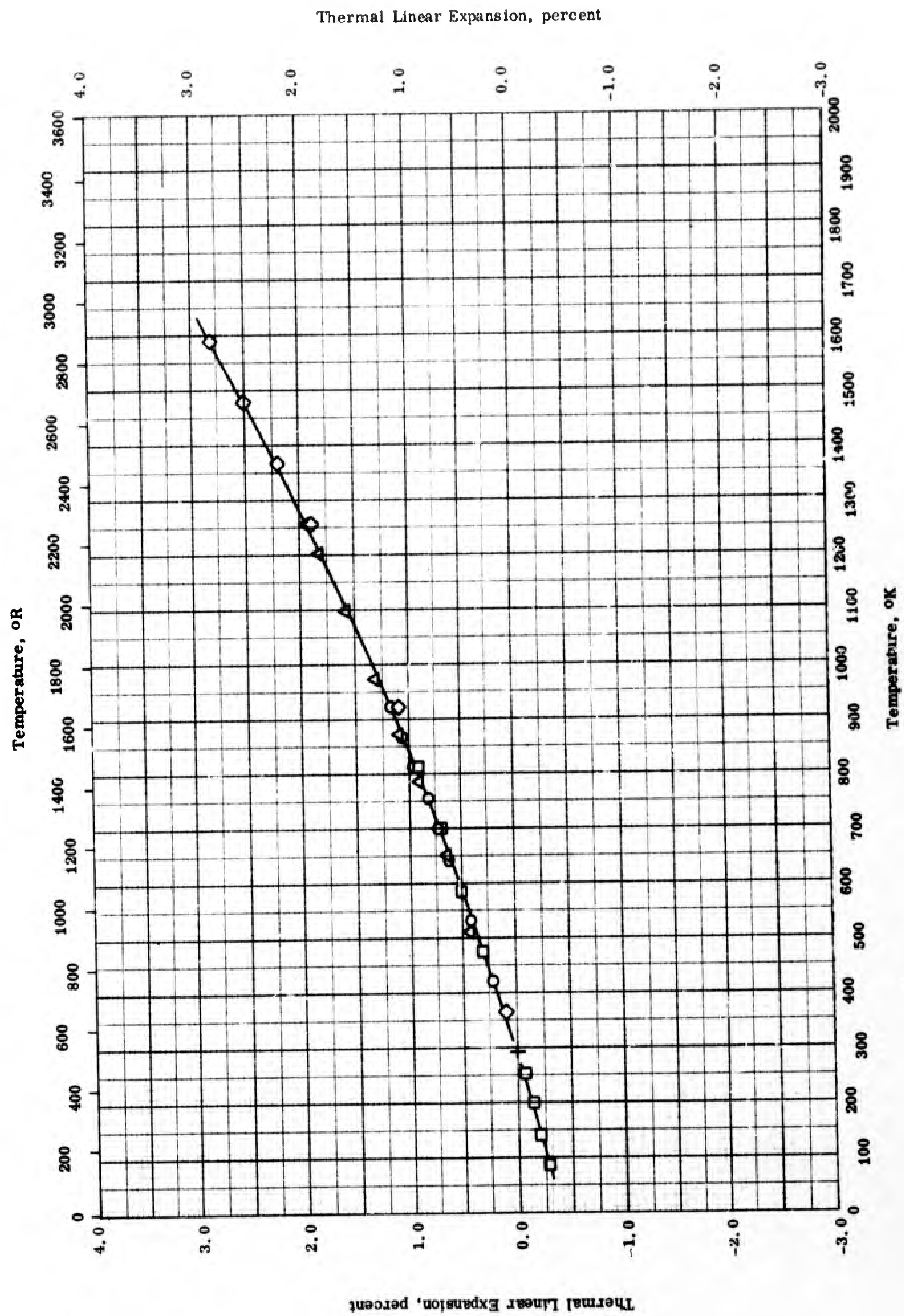


THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(17-18 Cr and 12-13 Ni)

THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(17-18 Cr and 12-13 Ni)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	50-6	89-811		AISI 316; 17.78 Cr, 12.70 Ni, 2.38 Mo, 1.77 Mn, 0.58 Si, 0.057 C, 0.026 P, and 0.012 S; sample 4 in. long.	Annealed at 1950 F for 30 min and water-quenched; heating rate 450 F hr^{-1}.
□	51-2 also 58-1	111-1256		AISI 316.	Hot-rolled, annealed at 2000 F for 1 hr, and water-quenched; measured in vacuum.
△	58-2	300-1616		AISI 316.	Measured in He.

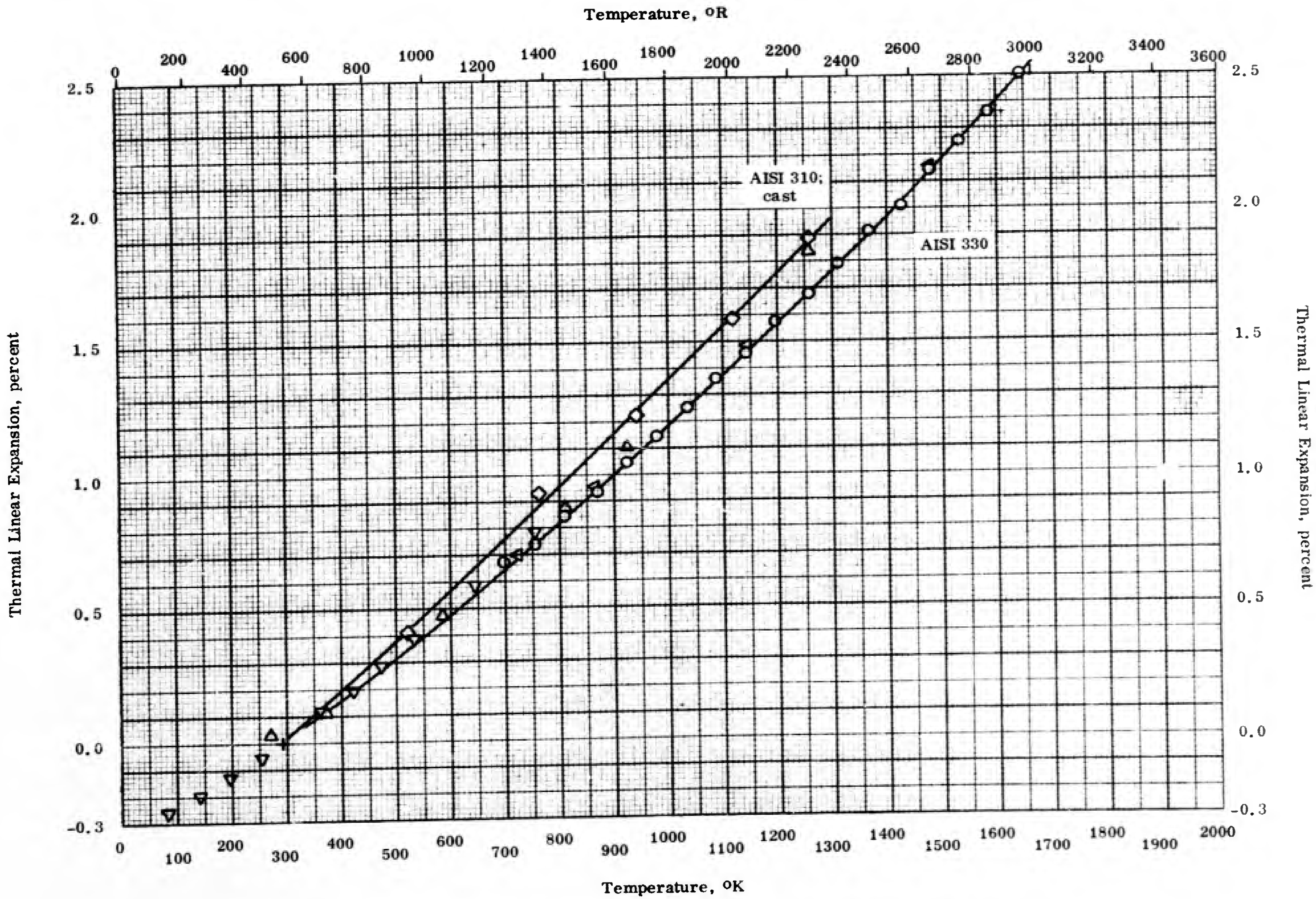


THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(18-20 Cr and 8-10 Ni)

THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(18 - 20 Cr and 8 - 10 Ni)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	63-11	294-922		AISI 304.	
□	50-6	88-811		AISI 304; 19.19 Cr, 8.49 Ni, 0.65 Mn, 0.53 Si, 0.068 C, 0.024 P, and 0.007 S; 4 in. long sample.	Annealed at 1950 F for 30 min and water-quenched; heating rate 450 hr^{-1}.
△	48-4	293-1256		AISI 304; 18.43 Cr, 9.67 Ni, 1.11 Mn, 0.53 Si, 0.16 Cu, 0.069 C, 0.023 P, and 0.016 S.	Solution heat-treated 314 hrs at 1990 - 2020 F, water-quenched, and aged 48 - 50 hrs at 1400 F.
◇	51-4	295-1589		19 - 9 DL; 19.2 Cr, 9.0 Ni, 1.34 Mo, 1.0 Mn, 0.82 Si, and 0.014 N.	

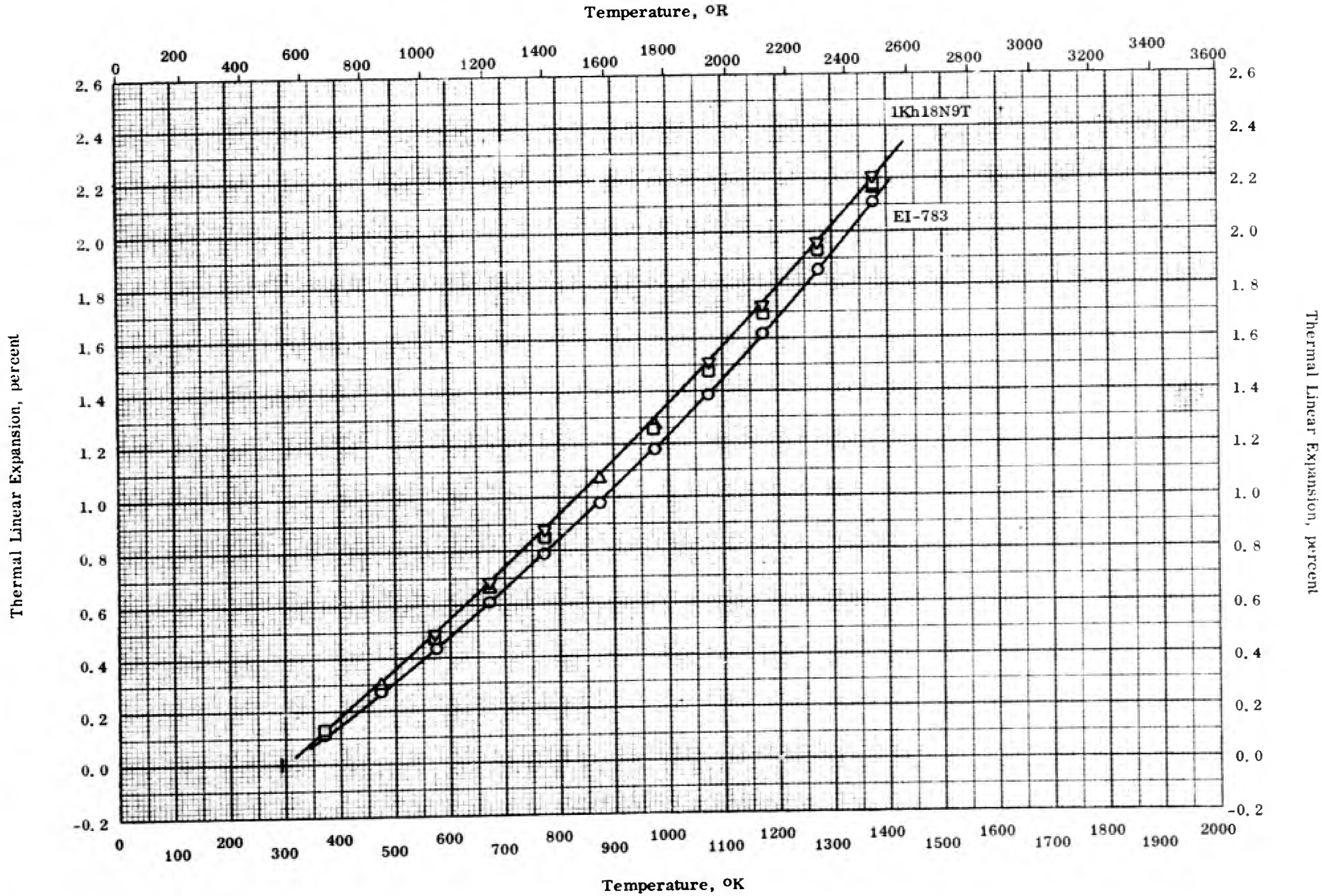


THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(23 - 28 Cr and 19 - 22 Ni)

THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(23-28 Cr and 19-22 Ni)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	57-4	700-1644	≤ 5	AISI 330; 46.58 Fe, 24.94 Cr, 19.60 Ni, 1.57 Mn, 0.37 Si, 0.062 C, 0.018 P, and 0.018 S; density 7.90 g cm^{-3}.	Heating rate at 3-5 F min^{-1} in vacuum of 10^{-6}-10^{-5} mm Hg.
△	57-4	273-1255		AISI 310; 25 Cr, 20 Ni, 2 max Mn, 1.5 max Si, and 0.25 max C.	
▽	50-6	88-811		AISI 310; 27.22 Cr, 21.64 Ni, 1.51 Mn, 0.42 Si, 0.111C, 0.022 P, and 0.010 S; sample 0.25 in. in dia and 4 in. in length.	
◇	53-12	533-1256		AISI 310; 51.2 Fe, 25.0 Cr, 20.5 Ni, 2.00> Mn, 1.5 >Si, and 0.25 >C	Arc-melted, cast, heated for 24 hrs at 1800 F in vacuum; data average of two heating and cooling cycles.
◁	57-4	700-1645		AISI 310; 46.58 Fe, 24.94 Cr, 19.60 Ni, 1.57 Mn, 0.37 Si, 0.062 C, 0.018 P, and 0.018 S.	Calibrated using Cu and Mo; measured at a heating rate of 350 F min^{-1} in vacuum.

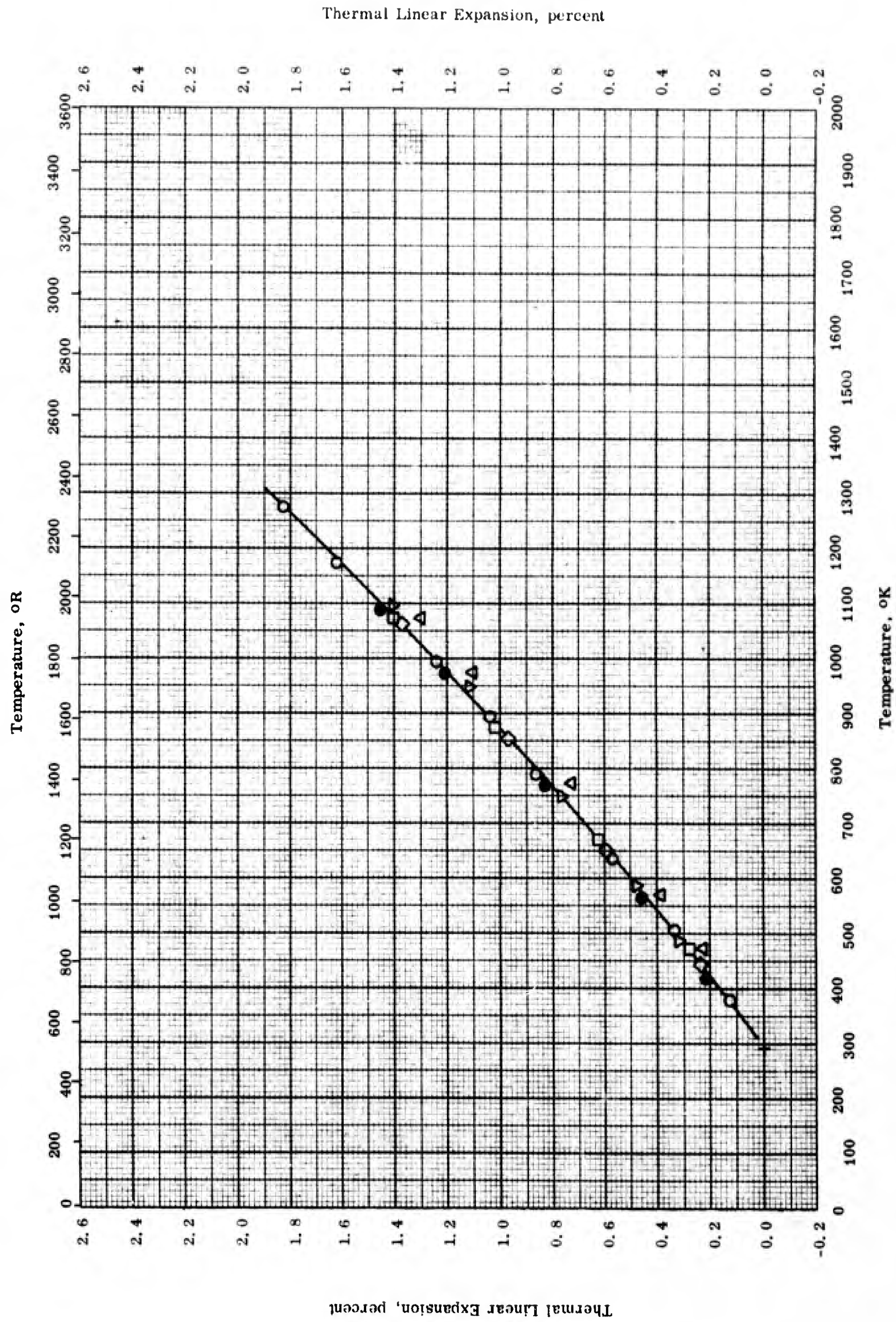


THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(Some Russian steels; 17 - 20 Cr and 8 - 11 Ni)

THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(Some Russian steels; 17-20 Cr and 8 - 11 Ni)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	64-3	273-1373		EI-783; 18.4 Cr, 8.95 Ni, 2.34 Mo, 1.65 W, 0.77 Mn, 0.59 V, 0.37 Ti, 0.24 Si, and 0.005 C.	
□	64-3	273-1373		EI-572; 18-20 Cr, 8 - 11 Ni, 1 - 1.5 Mo, 0.7 - 1.2 Mn, 0.3 - 0.6Nb, 0.25 - 0.55 Ti, 0.4 - 0.7 Si, and 0.27 - 0.36 C.	
△	64-3	273-1373		EI-606; 18-20 Cr, 8 - 10 Ni, 2.2 - 2.7 V, 1.3 - 1.8 Si, 0.7 Mn, 0.07 C, 0.030 P and 0.030 S.	
▽	64-3	273-1373		1 Kh 18N9T ; 17-20 Cr, 8-11 Ni, 2.0 Mn, 5 Ti (0.03 C), 0.8 Si, 0.8 max. Ti, 0.12 C, 0.035 P, and 0.030 S.	

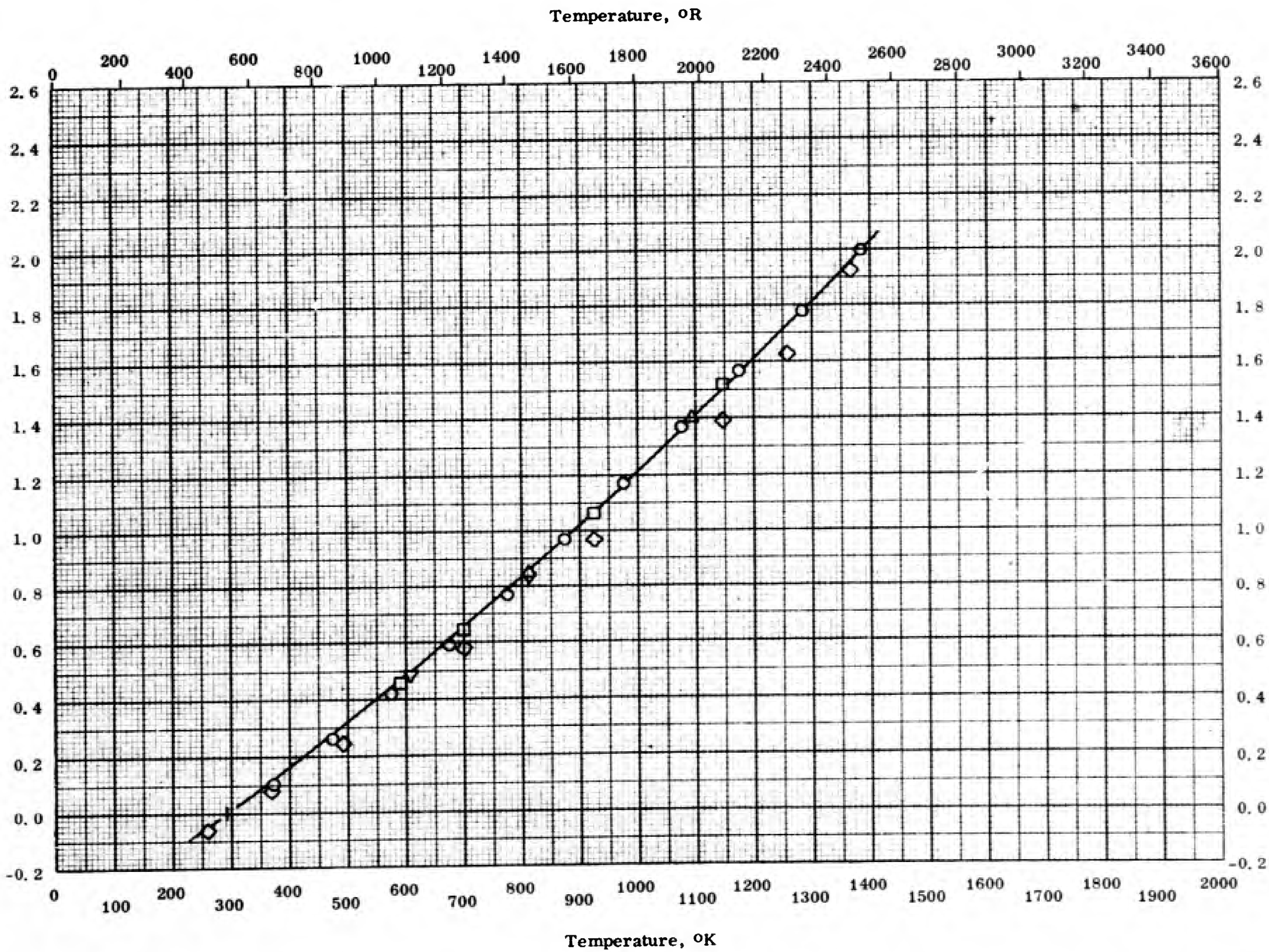


THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(13 - 28 Cr, 12 - 15 Ni, and 4 - 12 Co)

THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(13 - 28 Cr, 12 - 15 Ni, and 4 - 12 Co)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	52-1	373-1273		Jessop G-18B Steel (Brit. design.); 13.0 Cr, 13 Ni, 10 Co, 3 Nb, 2.5 W, 2.0 Mo, 1.0 Si, 0.8 Mn, and 0.4 C; density 508 lb ft^{-3}.	
□	47-3	473-1073		DVL 46 (German design.); 19.2 Cr, 14.2 Ni, 5.2 Co, 4.5 W, 1.5 Si, 0.67 Mn, and 0.41 C; density 503 lb ft^{-3}.	Forged.
△	47-3	473-1073		DVL 47 (German design.); 27.7 Cr, 13.7 Ni, 4.7 Co, 1.5 Si, 0.75 Mn, and 0.46 C; density 501 lb ft^{-3}.	Forged.
▽	47-3	473-1073		DVL 48 (German design.); 25.8 Cr, 12.7 Ni, 4.95 Co, 3.6 W, 3.3 Si, 0.72 Mn, 0.42 C, and 0.28 Ti; density 497 lb ft^{-3}.	Forged.
◇	47-3	473-1073		DVL 49 (German design.); 19.7 Cr, 14.5 Ni, 11.1 Co, 2.98 W, 0.68 Si, 0.56 Mn, and 0.44 C; density 504 lb ft^{-3}.	Forged.
●	47-3	473-1073		DVL 50 (German design.); 20 Cr, 14.4 Ni, 6.35 Co, 2.7 V, 1.03 Si, 0.86 Mn, and 0.44 C; density 488 lb ft^{-3}.	Forged.

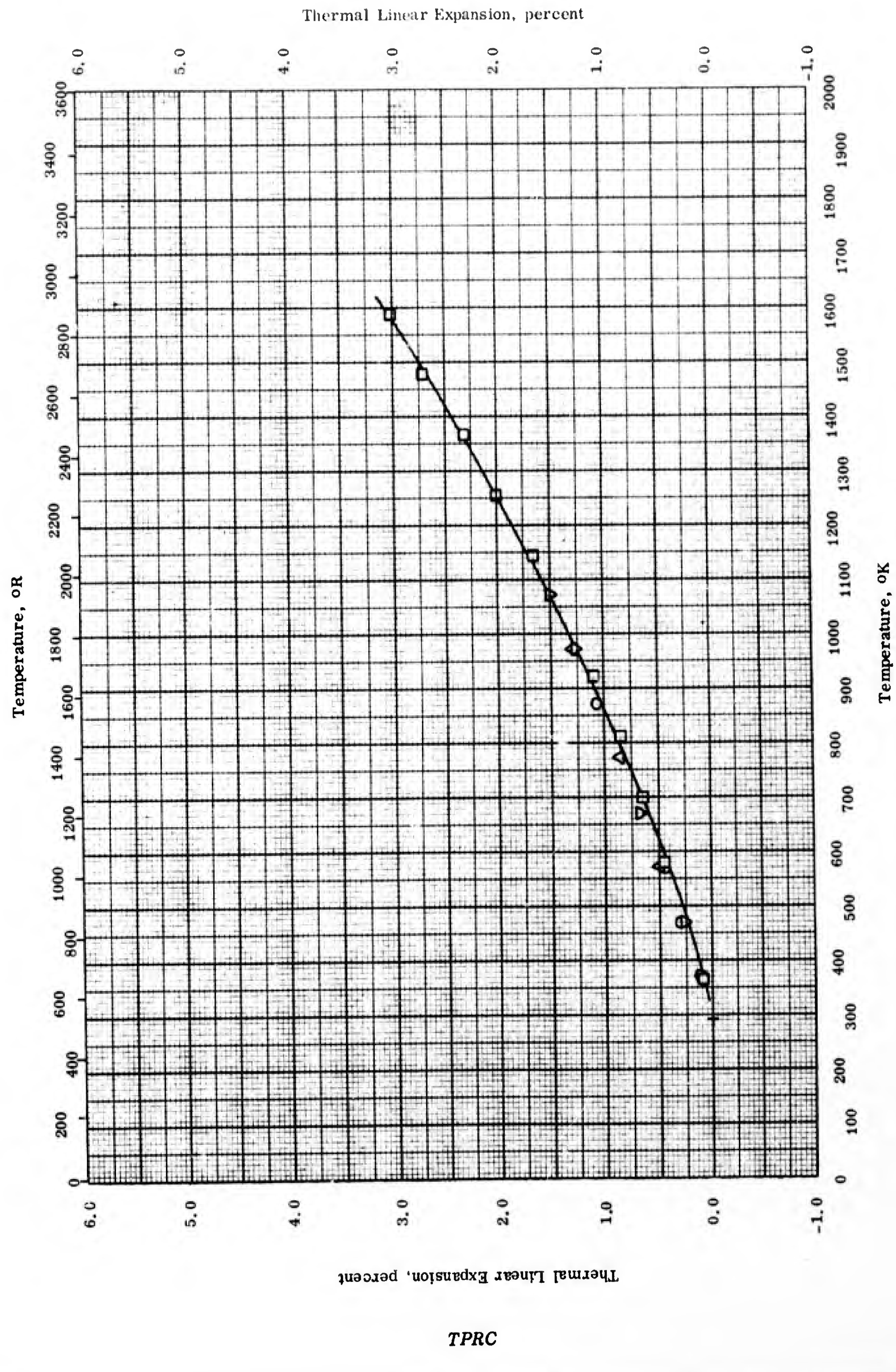


THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(20 - 22.5 Cr, 19 - 21 Ni, and 18 - 21 Co)

THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(20 - 22.5 Cr, 19 - 21 Ni, and 18 - 21 Co)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	63-14	296-1373		Union Carbide Multimet Alloy; nominal composition: 20.0 - 22.50 Cr, 19 - 21 Ni, 18.5 - 21.00 Co, 2.50 - 3.50 Mo, 2.0 - 3.0 W, 1.0 - 2.0 Mn, 1.0 Si, 0.75 - 1.25 Nb + Ta, 0.10 - 0.20 N, and 0.08 - 0.16 C; density 8.20 g cm^{-3} at 22 C and melting range 1288 - 1354 C.	
□	52-11	294-1144		N-155; 21 Cr, 20 Ni, 20 Co, 3.0 Mo, 3.0 W, 1.5 Mn, 1.0 Nb, 0.5 Si, 0.15 C, and 0.15 N; nominal composition; density 0.300 lb in^{-3} and melting point 2500 F.	
△	63-12	294-1089		AISI 661; 20.75 Cr, 19.85 Ni, 19.50 Co, 2.90 Mo, 2.35 W, 1.5 Mn, 1.15 Nb + Ta, 0.7 Si, 0.13 N, and 0.12 C; density 8.2 g cm^{-3} and melting range 2325 - 2475 F.	
▽	50-2	589-1145		Multimet Alloy NR-21 (AMS - 55326); 20.0 - 22.5 Cr, 19.0 - 21.0 Ni, 18.5 - 21.0 Co, 2.5 - 3.5 Mo, 2.0 - 3.0 W, 0.75 - 1.25 Nb + Ta, 0.10 - 0.20 N, and 0.08 - 0.16 C.	Wrought.
◇	50-2	256-1367		Multimet Alloy Low Carbon NR-21 (AMS - 53762); 20.0 - 22.5 Cr, 19 - 21.0 Ni, 18.5 - 21.0 Co, 2.5 - 3.5 Mo, 2.0 - 3.0 W, 0.75 - 1.25 (Nb + Ta), 0.10 - 0.20 N, and 0.20 max C.	

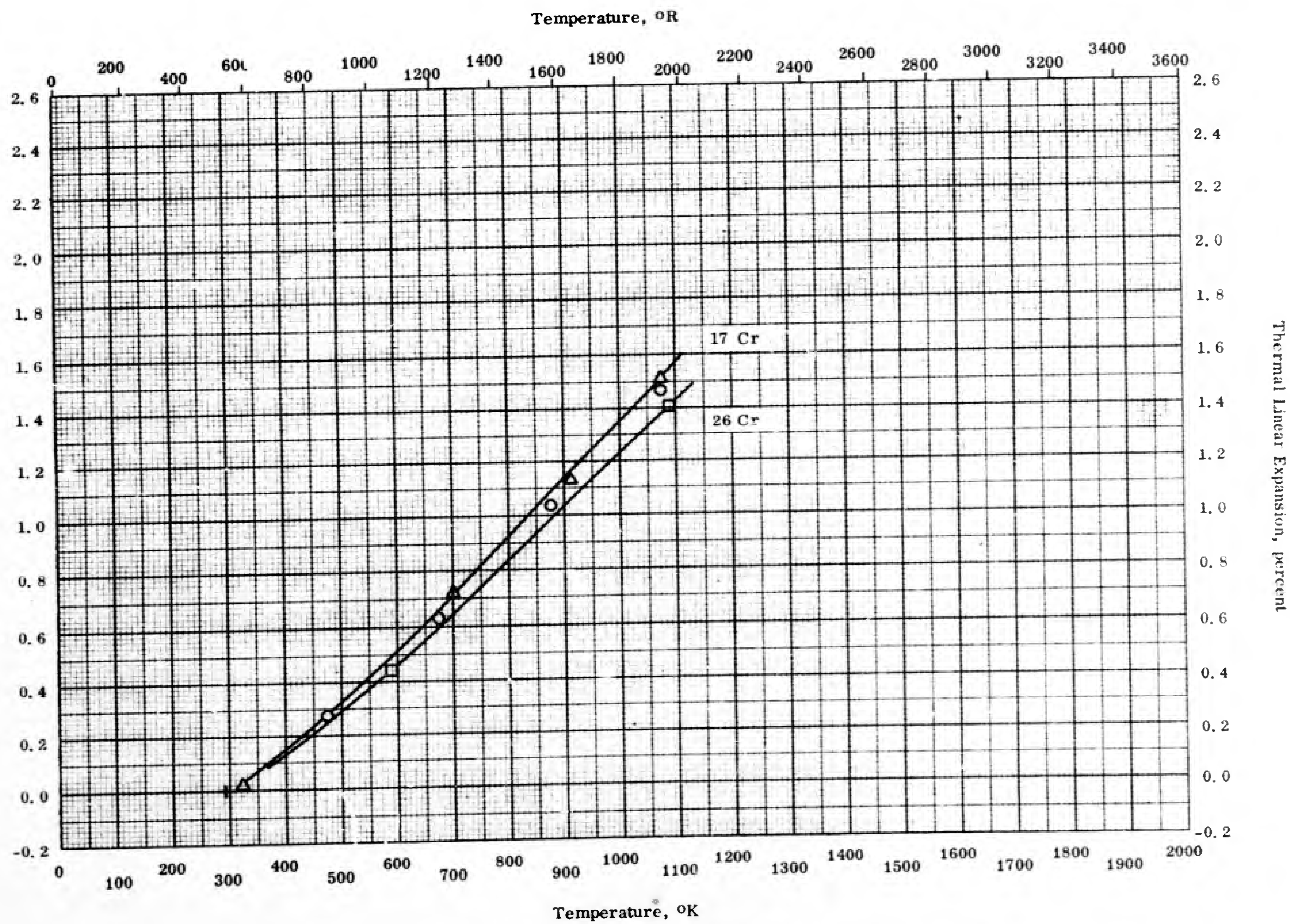


THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(17 - 20 Cr, 9 - 19 Ni, and 1 - 8 Nb)

THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(17 - 20 Cr, 9 - 19 Ni, and 1 - 8 Nb)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	52-1	373-973		Jessop R 20 (Brit. design.); 19 Cr, 14 Ni, 1 7 Nb, 0.8 Mn, 0.30 Si, and 0.15 C; density 494 lb ft^{-3}.	
□	51-4	295-1589		S-590; 20.0 Cr, 18.7 Ni, 7.34 Nb, 4.87 Co, 2.20 W, 1.22 Mo, 1.20 Mn, 0.46 C, and 0.40 Si.	Heating rate at 200 F sec^{-1}.
△	52-7	373-973		17.84 Cr, 9.5 Ni, 1.22 Nb, 0.50 Si, 0.41 Mn, 0.11 C, 0.014 P, and 0.011 S.	Hot-rolled, heated 30 min at 1050 C, and air-cooled.
▽	47-3	373-1073		A.T.S. (German design.); 18.0 - 19.3 Cr, 9.2 - 10.3 Ni, 1.35 - 1.75 Nb, 1.35 - 1.75 Ta, 0.70 - 0.72 Mn, 0.30 - 0.84 Si, 0.58 - 0.7 W, and 0.13 - 0.14 C; density 498.1 lb ft^{-3}.	Forged, heated to 1050 C, and air-cooled.

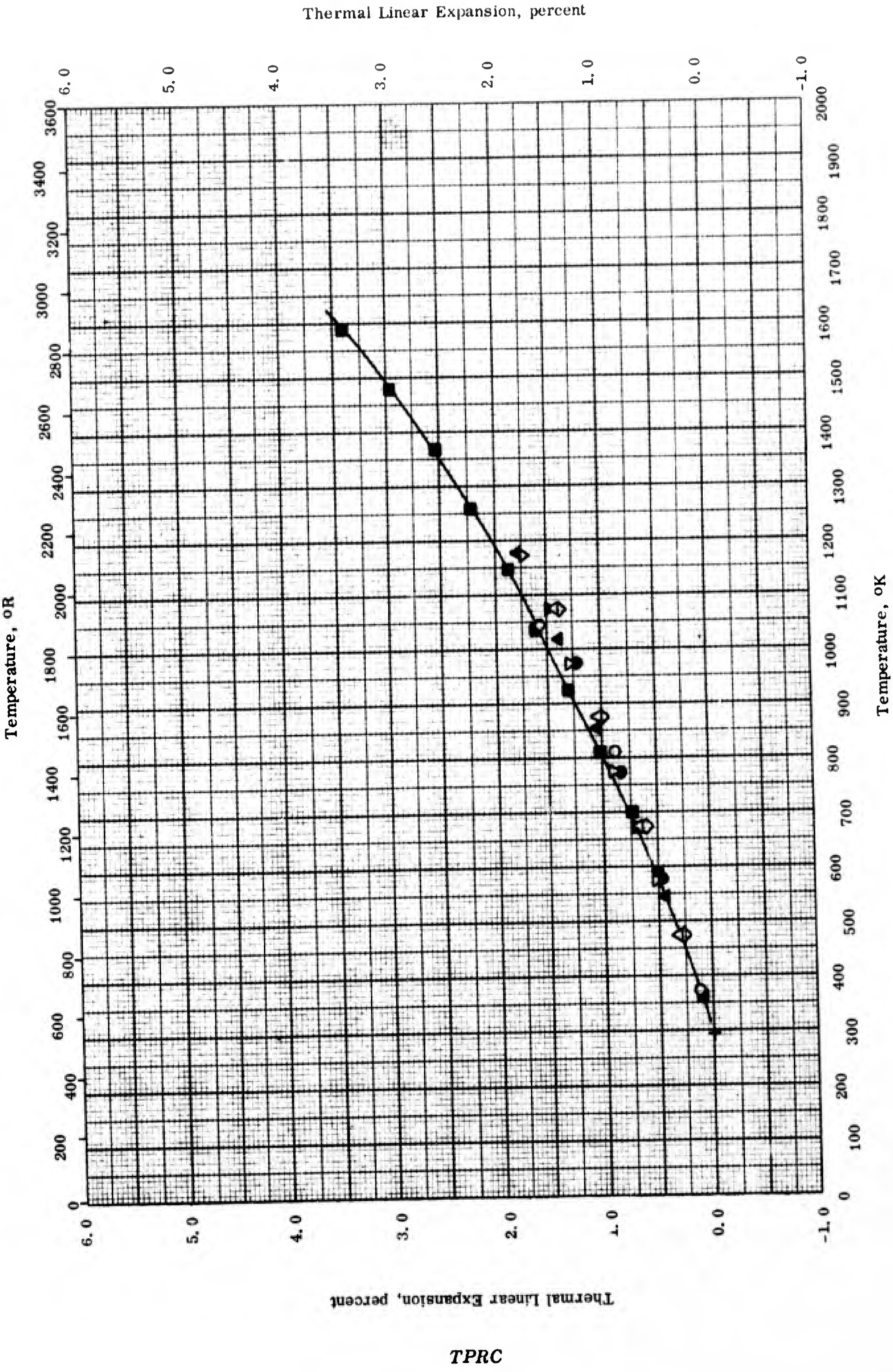


THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(17 - 26 Cr, 8 - 22 Ni, and 1 - 3 Si)

THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(17 -26 Cr, 8 - 22 Ni, and 1 - 3 Si)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
□	60-10	273-1089		AISI 314; 23 - 26.0 Cr, 19 - 22 Ni, 1.50 - 3.00 Si, 2.00 max Mn, 0.25 max C, 0.04 max P, and 0.03 max S; nominal composition; 0.279 lb in.$^{-3}$	
○	47-3	473-1073		V 444 D (German design.); 19.2 Cr, 8.8 Ni, 3.0 Si, 1.9 W, and 0.43 C; density 496 lb ft^{-3}.	Forged at 800 C for extended period.
△	43-1	293-1173		17.4 - 17.6 Cr, 9.1 - 9.2 Ni, 1.75 - 1.81 Si, 1.13 - 1.20 Mn, 1.1 - 1.15 W, and 0.44 - 0.48 C.	Tested in vacuum at 1.5 C min^{-1} rise.

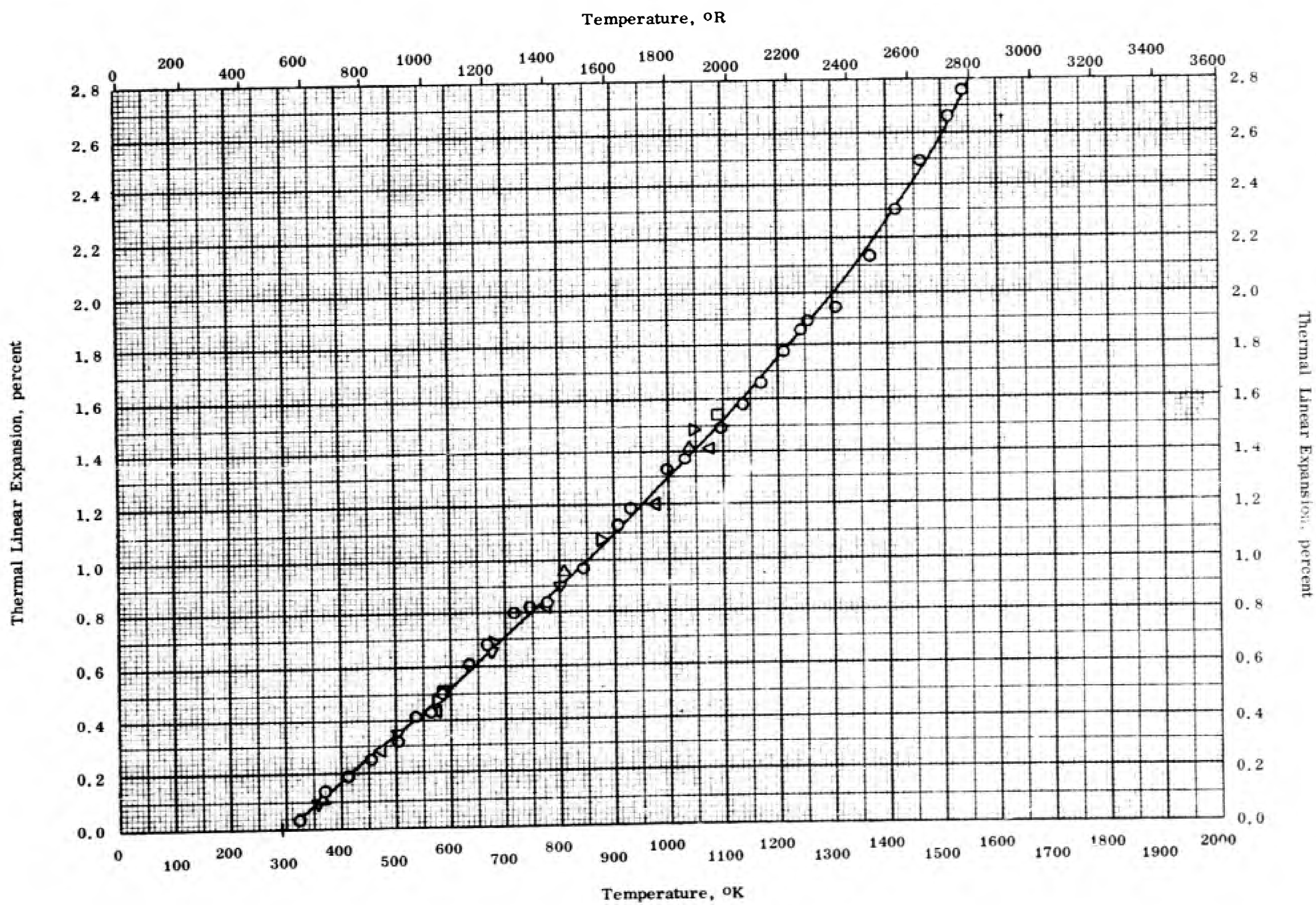


THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(13 - 22 Cr, 9 - 16 Ni, and 1 - 4 W)

THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(13 - 22 Cr, 9 - 16 Ni, and 1 - 4 W)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	52-11	294-1144		19 - 9 DX; 19 Cr, 9 Ni, 1.25 W, 1.25 Mo, 1.1 Mn, 0.6 Si, 0.4 Nb, 0.30 C, and 0.30 Ti; density 0.287 lb in.$^{-3}$ and melting point 2600 F.	
△	47-3	473-1073		WF 100D (German design.); 14.8 Cr, 12.9 Ni, 2.5 W, 1.84 Si, 0.52 Mn, 0.38 C, and 0.23 Mo; density 495.3 lb ft^{-3}.	Forged at 300 C for extended period.
▽	52-1	373-1173		Jessop G-21 steel (Brit. design.); 13.0 Cr, 13.0 Ni, 2.3 W, 1.4 Si, 0.9 Mn, 0.9 Nb, and 0.4 C; density 501 lb ft^{-3}.	
◇	47-3	473-1073		DVL 30 (German design.); 21.0 Cr, 14.3 Ni, 3.2 W, 1.61 Mn, 1.60 Si, 1.29 Ti, and 0.25 C; density 491.6 lb ft^{-3}.	Forged.
●	47-3	473-1073		DVL 52 (German design.); 21.1 Cr, 15.3 Ni, 3.3 W, 1.84 Mn, 1.57 Si, 0.88 Ti, and 0.22 C; density 493.7 lb ft^{-3}.	Forged.
■	51-4	295-1589		E. M. E.; 19.5 Cr, 12.2 Ni, 3.25 W, 1.05 Nb, 0.57 Si, 0.52 Mn, 0.15 C, and 0.127 N.	Heating rate 200 F sec^{-1}.
▲	55-1	293-1173		15.3 - 18.1 Cr, 9.82 - 12.3 Ni, 0 - 2.76 W, 0.43 - 0.88 Mn, 0.59 - 0.74 Si, 0.072 Mo, 0 - 0.45 Ti, and 0.09 - 0.10 C.	Results of three samples: a) as received b) austenitized c) stabilized 10 hrs at 800 C; agreement ±2.5% of average value plotted; tested at 2 C min^{-1} rise.
▼	43-1	293-1073		15.8 Cr, 13.0 Ni, 2.1 W, 1.73 Si, 0.74 Mn, and 0.50 C.	Tested in vacuum at 1.5 C min^{-1} rise.

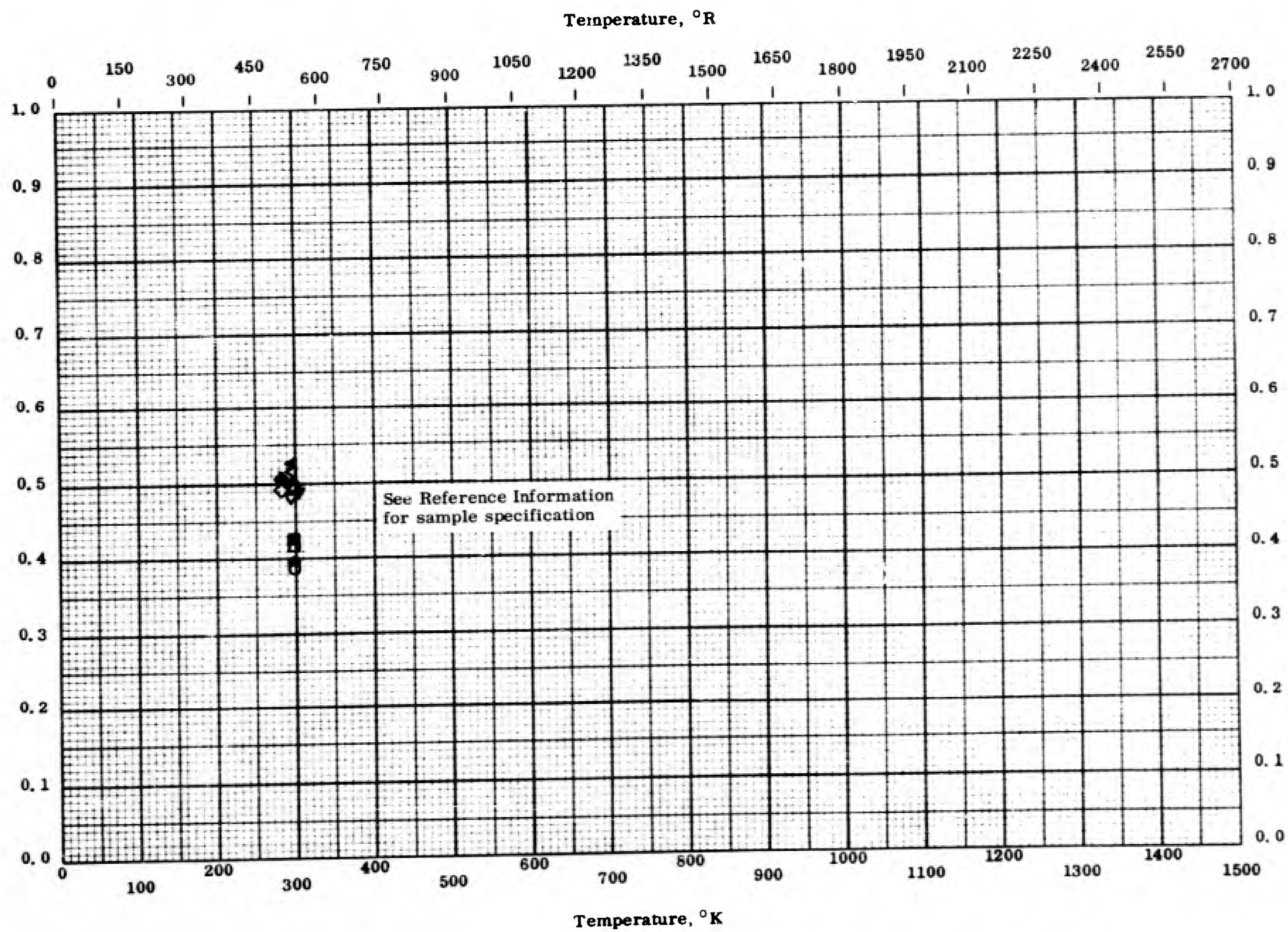


THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(Miscellaneous; 16 - 19 Cr and 8 - 16 Ni)

THERMAL LINEAR EXPANSION -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(Miscellaneous; 16 - 19 Cr and 8 - 16 Ni)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	61-4	294-1538		Crucible HNM; 68 Fe, 18.5 Cr, 9.5 Ni, 3.50 Mn, 0.30 C, 0.23 P, 0.05 Si, and traces of Al, Mo, and W; density 7.67 g cm^{-3}.	
□	59-10	300-1089		Same as above.	Aged.
△	59-10	294-1033		17 - 10 P; 16.5 - 17.5 Cr, 9.75 - 10.75 Ni, 0.5 - 1.00 Mn, 0.6 max Si, 0.25 - 0.30 P, and 0.10 - 0.14 C.	Aged.
▽	56-17	303-772		AISI 302; 17.0 - 19.00 Cr, 8.00 - 10.00 Ni, 2.00 max Mn, and 0.08 - 0.20 C; nominal composition.	
◁	47-3	473-1073		DVL 51 (German design.); 16.8 Cr, 12.3 Ni, 1.03 B, 0.88 Si, 0.70 Mn, and 0.16 C; density 484.8 lb ft^{-3}.	Forged.
▷	47-3	473-1073		SAS - 8 (German design.); 17.6 Cr, 15.2 Ni, 2.2 Mo, 1.8 Cu, 1.06 total Ta and Nb, and 0.1 C; density 492 lb ft^{-3}.	Rolled, heated to 1050 C, and air-cooled.

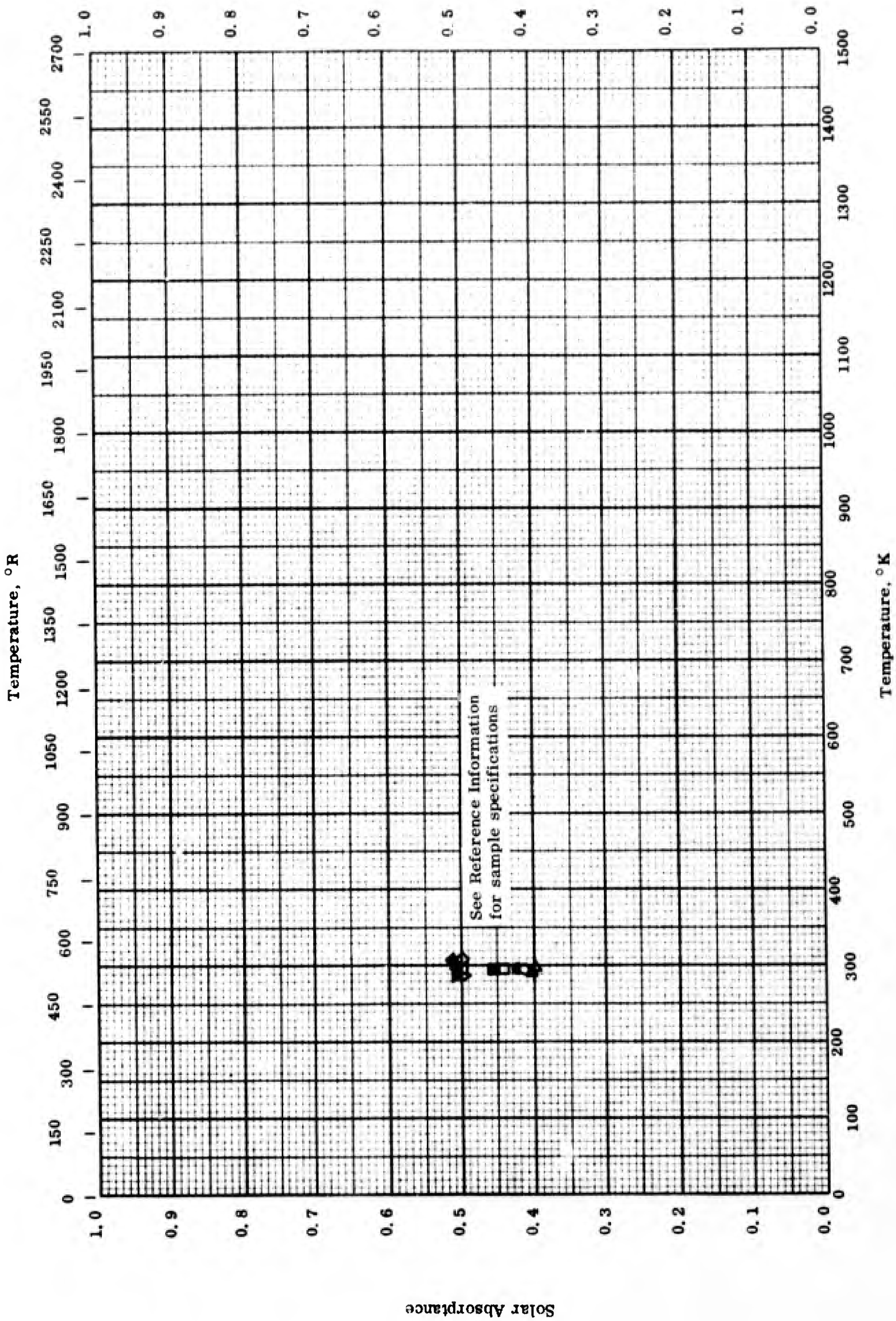


SOLAR ABSORPTANCE — IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(AISI Stainless Steel)

SOLAR ABSORPTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(AISI Stainless Steel)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	57-13	298		Stainless steel 316; nominal: 16 - 18 Cr, 10 - 14 Ni, 2.00 - 3.00 Mo, 2.00 > Mn, 1.00 > Si, 0.08 > C, 0.045 > P, and 0.030 > S, grade MIL-S-5059 A; surface roughness 2 μ in. RMS.	Annealed;above atmosphere.
●	57-13	298		Same as above.	The above specimen at sea level.
△	57-13	298		Stainless steel 316; grade MIL-S-5059A; surface roughness 15 μ in. RMS.	Annealed; above atmosphere.
▲	57-13	298		Same as above.	The above specimen at sea level.
□	57-13	298		Stainless steel 321; nominal: 17-19 Cr, 9 - 12 Ni, 2.00 > Mn, 1.00 > Si, 0.08 > C, 0.045 > P, 0.030 > S, and 5 (C) < Ti; grade MIL-S-6721A; surface roughness 2 μ in. RMS.	Annealed; above atmosphere.
■	57-13	298		Same as above.	The above specimen at sea level.
▽	57-13	298		Stainless steel 321; grade MIL-S-6721A; surface roughness 15 μ in. RMS.	Annealed; above atmosphere.
▼	57-13	298		Same as above.	The above specimen at sea level.
◇	57-13	298		Stainless steel 321; grade MIL-S-6721A; surface No. 2 bright.	Annealed; above atmosphere.
◆	57-13	298		Same as above.	The above specimen at sea level.
◁	57-13	298		Stainless steel 321; grade MIL-S-6721A; surface No. 2 dull, 6 μ in. RMS.	Annealed; above atmosphere.
◀	57-13	298		Same as above.	The above specimen at sea level.

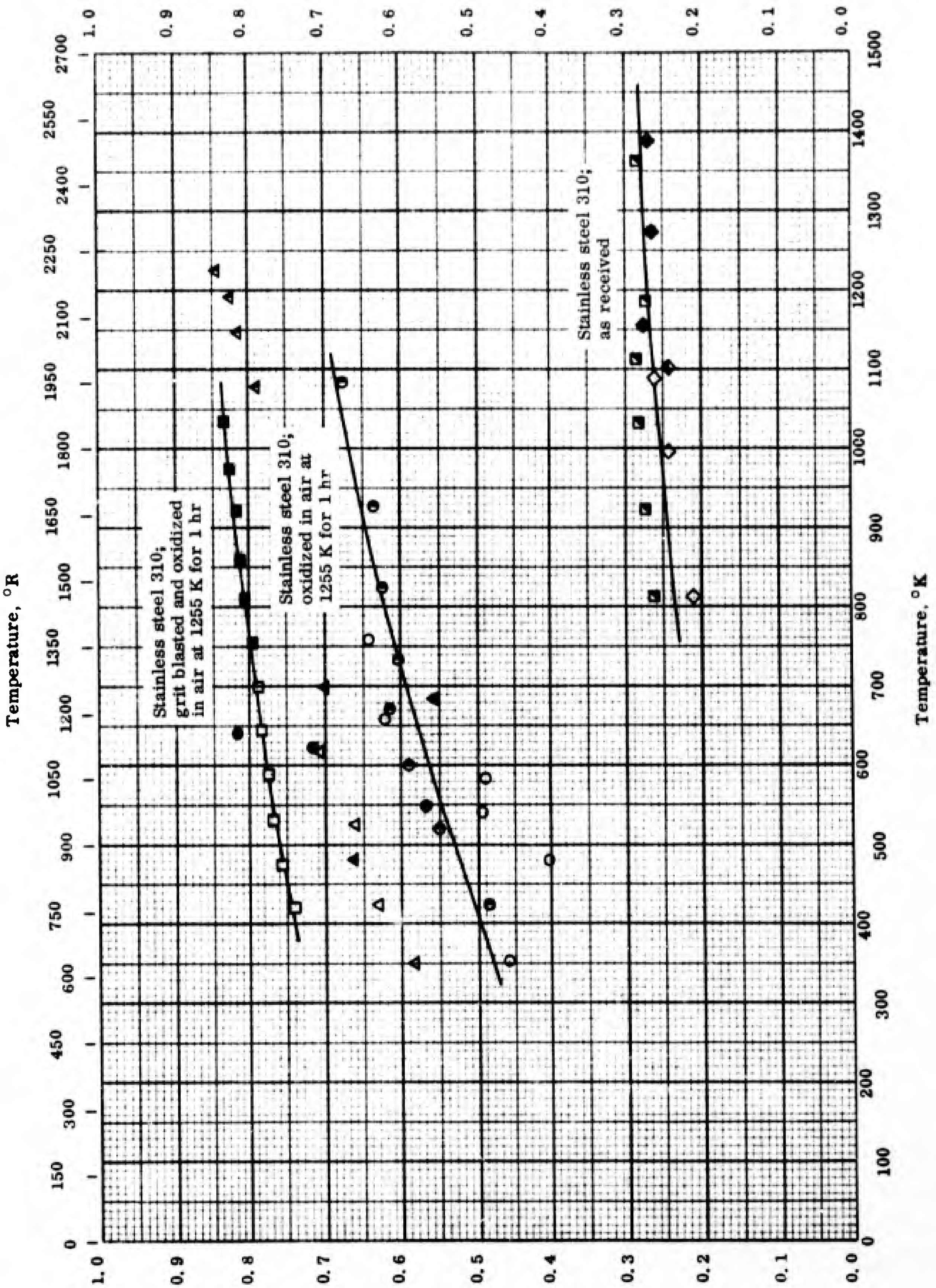


SOLAR ABSORPTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(PH and AM-350 Stainless Steels)

SOLAR ABSORPTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(PH and AM-350 Stainless Steels)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	57-13	298		Stainless steel 17-7 PH; nominal: 16.00 - 18.00 Cr, 6.50 - 7.75 Ni, 0.75 - 1.50 Al, 0.09 > C, 1.00 > Mn, and 1.00 > Si; grade MIL-S-25043A; surface roughness 2 μ in. RMS.	RH 950 condition; above atmosphere.
●	57-13	298		Same as above.	The above specimen at sea level.
△	57-13	298		Stainless steel 17-7 PH; grade MIL-S-25043A; surface roughness 15 μ in. RMS.	RH 950 condition; above atmosphere.
▲	57-13	298		Same as above.	The above specimen at sea level.
□	57-13	298		Stainless steel PH 15-7 Mo; nominal: 14.00 - 16.00 Cr, 6.50 - 7.50 Ni, 2.00 - 3.00 Mo, 0.75 - 1.50 Al, 0.09 > C, 1.00 > Mn, and 1.00 > Si; surface roughness 2 μ in. RMS.	RH 950 condition; above atmosphere.
■	57-13	298		Same as above.	The above specimen at sea level.
▽	57-13	298		Stainless steel PH 15-7 Mo; surface roughness 15 μ in. RMS.	RH 950 condition; above atmosphere.
▼	57-13	298		Same as above.	The above specimen at sea level.
▷	57-13	298		Stainless steel AM-350; nominal: 16.5 - 17.5 Cr, 4.0 - 4.5 Ni, 2.5 - 3.0 Mo, 0.5 - 0.75 Mn, 0.2 - 0.5 Si, and 0.1 C; aircraft grade; surface roughness 2 μ in. RMS.	Subzero cooled and tempered; above atmosphere.
▶	57-13	298		Same as above.	The above specimen at sea level.
◇	57-13	298		Stainless steel AM-350; aircraft grade; surface roughness 15 μ in. RMS.	Subzero cooled and tempered; above atmosphere.
◆	57-13	298		Same as above.	The above specimen at sea level.



HEMISPHERICAL TOTAL EMITTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(AISI 310)

HEMISPHERICAL TOTAL EMITTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(AISI 310)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	64-1	356-761		Stainless steel 310, nominal: 24 - 26 Cr, 19 - 22 Ni, 0.25 > C, 2.00 > Mn, 1.50 > Si, 0.045 > P and 0.030 > S.	Oxidized in air at 1255 K for 1 hr; 10^{-4} mm Hg vacuum or higher; 1st run, heating.
●	64-1	530-1013		Same as above.	The above specimen; cooling.
◐	64-1	425-1084		Same as above.	The above specimen, fifth run.
△	64-1	350-700		Stainless steel 310.	Grit blasted, oxidized in air at 1255 K for 1 hr; 10^{-4} mm Hg vacuum or higher; 1st run heating.
▲	64-1	480-563		Same as above.	The above specimen, cooling.
▲	64-1	1079-1250		Same as above.	The above specimen, 4th run.
□	64-1	422-700		Stainless steel 310.	Grit blasted; oxidized in air at 1255 K for 1 hr; 2.7×10^{-7} mm Hg vacuum or higher; 1st run.
■	64-1	422-1033		Same as above.	The above specimen, 2nd run.
◪	63-9	810-1366		Stainless steel 310; nominal: 24 - 26 Cr, 19 - 22 Ni, 2.00 > Mn, 1.50 > Si, 0.25 > C, 0.045 > P, and 0.030 > S.	As received; measured in vacuum (4.4×10^{-7} - 2.0×10^{-6} mm Hg); temperature measured with thermocouples; 1st run.
◇	63-9	810-1088		Same as above.	The above specimen measured in vacuum (1.1×10^{-6} mm Hg); 2nd run.
◆	63-9	1156-1388		Same as above.	The above specimen measured in vacuum (9.2×10^{-7} - 2.0×10^{-6} mm Hg); temperatures measured with optical pyrometer; first run.

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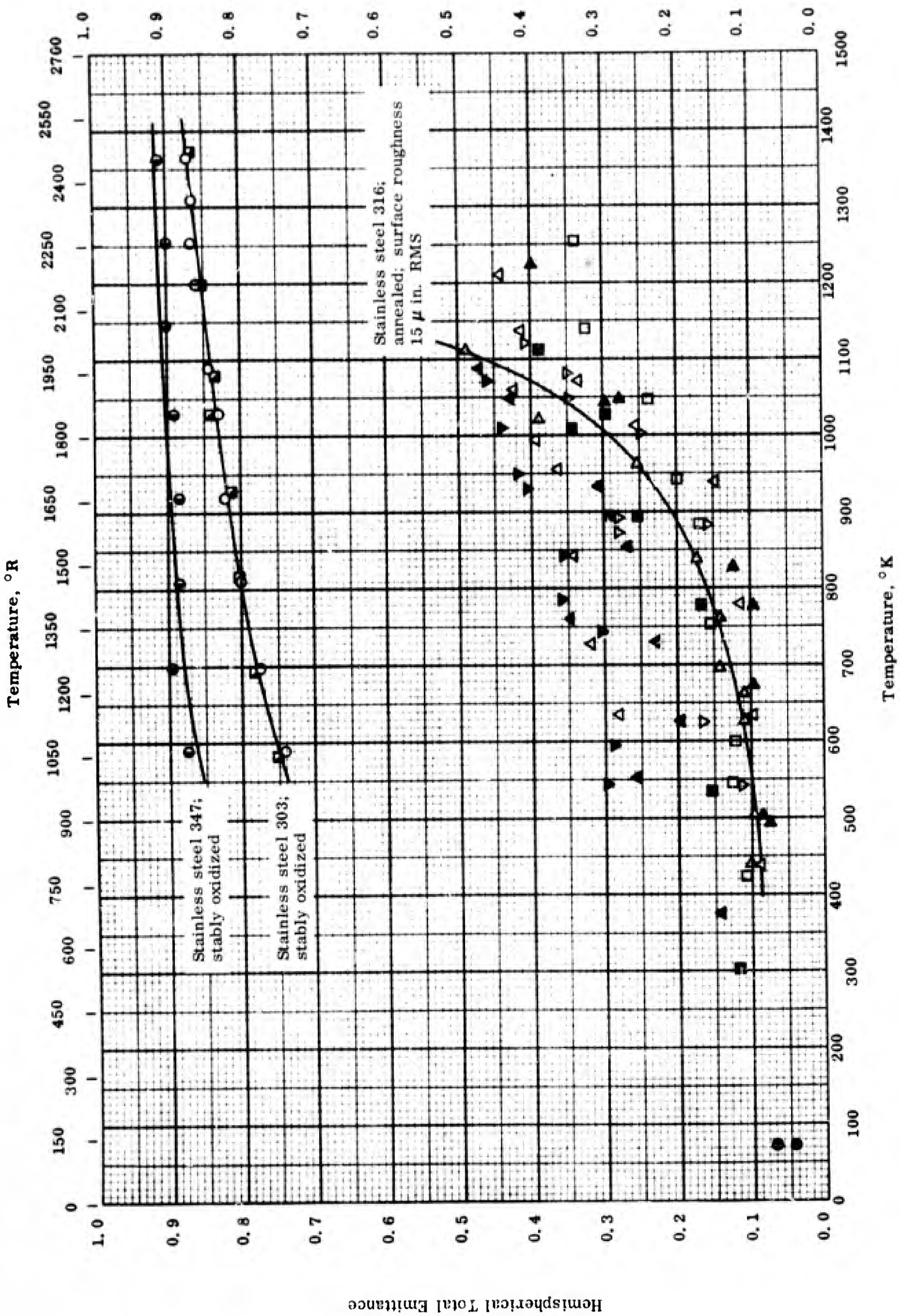
HEMISPHERICAL TOTAL EMITTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II (Continued)
(AISI 310)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
◆	63-9	1100		Same as above.	The above specimen, measured in vacuum (1.1×10^{-6} mm Hg); temperatures measured with optical pyrometer; second run.



HEMISPHERICAL TOTAL EMITTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II (Miscellaneous)

HEMISPHERICAL TOTAL EMITTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(Miscellaneous)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	58-13	589-1366	>2	Stainless steel 303; nominal: 17 - 19 Cr, 8 - 10 Ni, 2.00 > Mn, 1.00 > Si, 0.60 > Mo, 0.20 > P, 0.15 < S, and 0.15 > C.	Stably oxidized in quiescent air at 1366 K.
●	60-8	76	5	Stainless steel 302; nominal: 17 - 19 Cr, 8 - 10 Ni, 2.00 > Mn, 1.00 > Si, 0.15 > C, 0.045 > P, and 0.030 > S.	Cleaned with solvent; emittance for 300 K black body radiation.
◑	60-8	76	5	Commercial ball type 302 stainless steel.	Cleaned with solvent; emittance for 300 K black body radiation.
◐	59-6	589-1366		Stainless steel 347; nominal: 17 - 19 Cr, 9 - 13 Ni, 2.00 > Mn, 1.00 > Si, 0.08 > C, 0.045 > P, 0.030 > S, and 10(C) < Cb - Ta.	Cleaned, polished, washed, and stably oxidized in still air at 1366 K for 30 min.
△	57-13	483-1211	± 10	Stainless steel 321; nominal: 17-19 Cr, 9 - 12 Ni, 2.00 > Mn, 1.00 > Si, 0.08 > C, 0.045 > P, 0.030 > S, 5(C) < Ti; grade MIL-S-6721 A; surface roughness 2 μin. RMS.	Measured in vacuum (5 x 10^{-4} mm Hg).
▲	57-13	377-1089	± 10	Same as above except with 6 μ in. RMS surface roughness.	Measured in vacuum (5 x 10^{-4} mm Hg).
▽	57-13	544-1122	± 10	Same as above except with No. 2 bright surface.	Measured in vacuum (5 x 10^{-4} mm Hg).
▼	57-13	544-1072	± 10	Same as above except with No. 2 dull surface (6 μ in. RMS).	Annealed; oxidized in air at red heat for 30 min.; measured in vacuum (5 x 10^{-4} mm Hg).
▷	57-13	444-1111	± 10	Stainless steel 316, nominal: 16 - 18 Cr, 10 - 14 Ni, 2.0 - 3.0 Mo, 2.00 > Mn, 1.00 > Si, 0.08 > C, 0.045 > P, and 0.030 > S; grade MIL-S-5059 A; surface roughness 15 μ in. RMS.	Annealed; measured in vacuum (5 x 10^{-4} mm Hg).
▶	57-13	494-1222	± 10	Same as above except with 2 μ in. RMS surface roughness.	Annealed; measured in vacuum (5 x 10^{-4} mm Hg).

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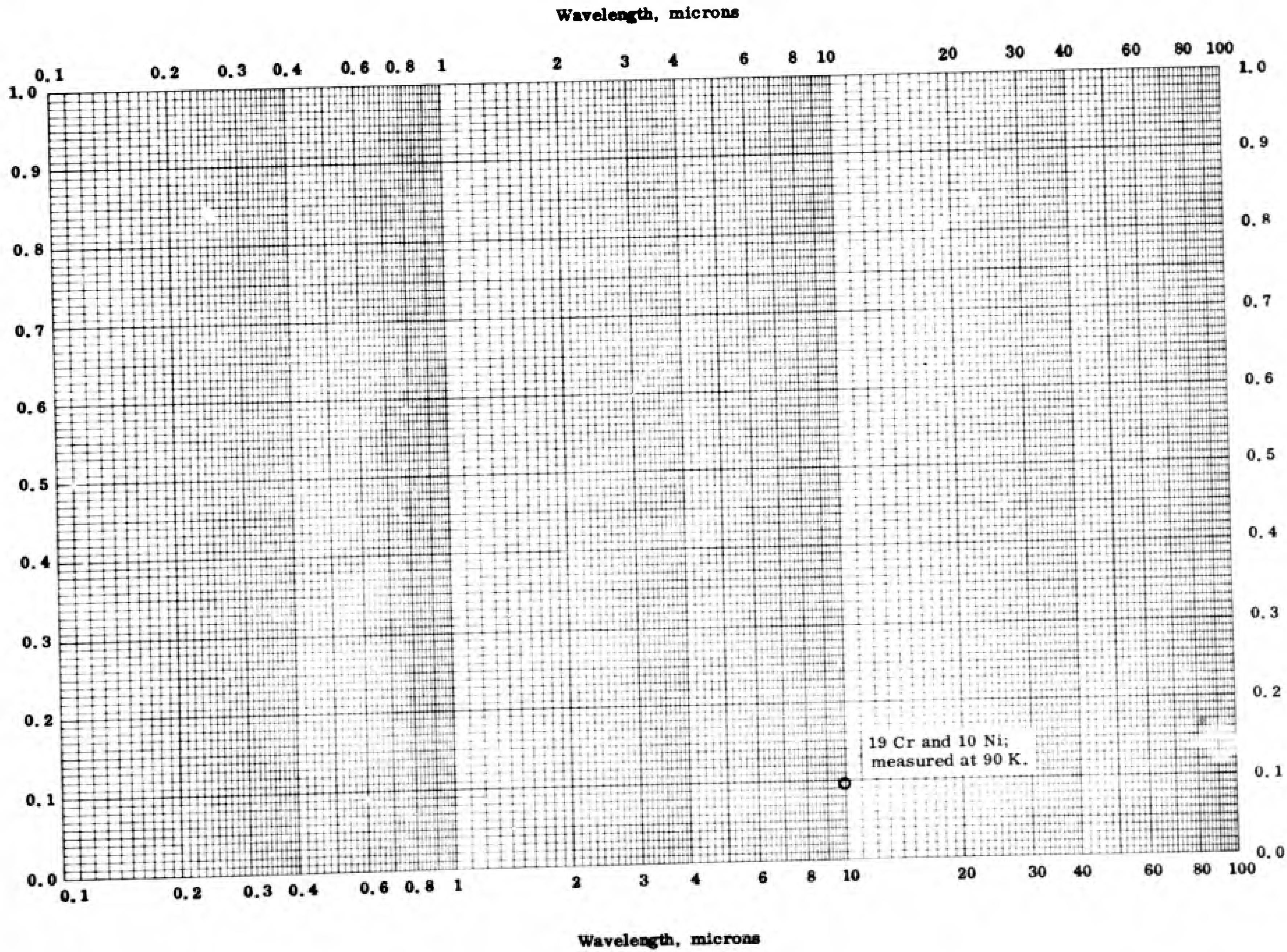
HEMISPHERICAL TOTAL EMITTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II (Continued)
(Miscellaneous)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
□	57-13	427-1255	± 10	Stainless steel AM 350, nominal: 16.5 - 17.5 Cr, 4.0 - 4.5 Ni, 2.5 - 3.0 Mo, 0.50 - 0.75 Mn, 0.2 - 0.5 Si, and 0.1 C; aircraft grade; surface roughness 2 μ in. RMS.	Subzero cooled and tempered; measured in vacuum (5×10^{-4} mm Hg).
■	57-13	538-1161	± 10	Same as above.	Subzero cooled and tempered; oxidized in air at red heat for 30 min.; measured in vacuum (5×10^{-4} mm Hg).
◪	48-3	301		Stainless steel 18 - 8; nominal: 18 Cr and 8 Ni, airbright finish.	Measured in air.
◩	61-11	589-1366	±2.5	Stainless steel 303; diffuse surface.	Mechanically polished and cleaned by scrubbing with alcohol and distilled water; oxidized at 1366.5 K in quiescent air for 60 min.; measured in air.

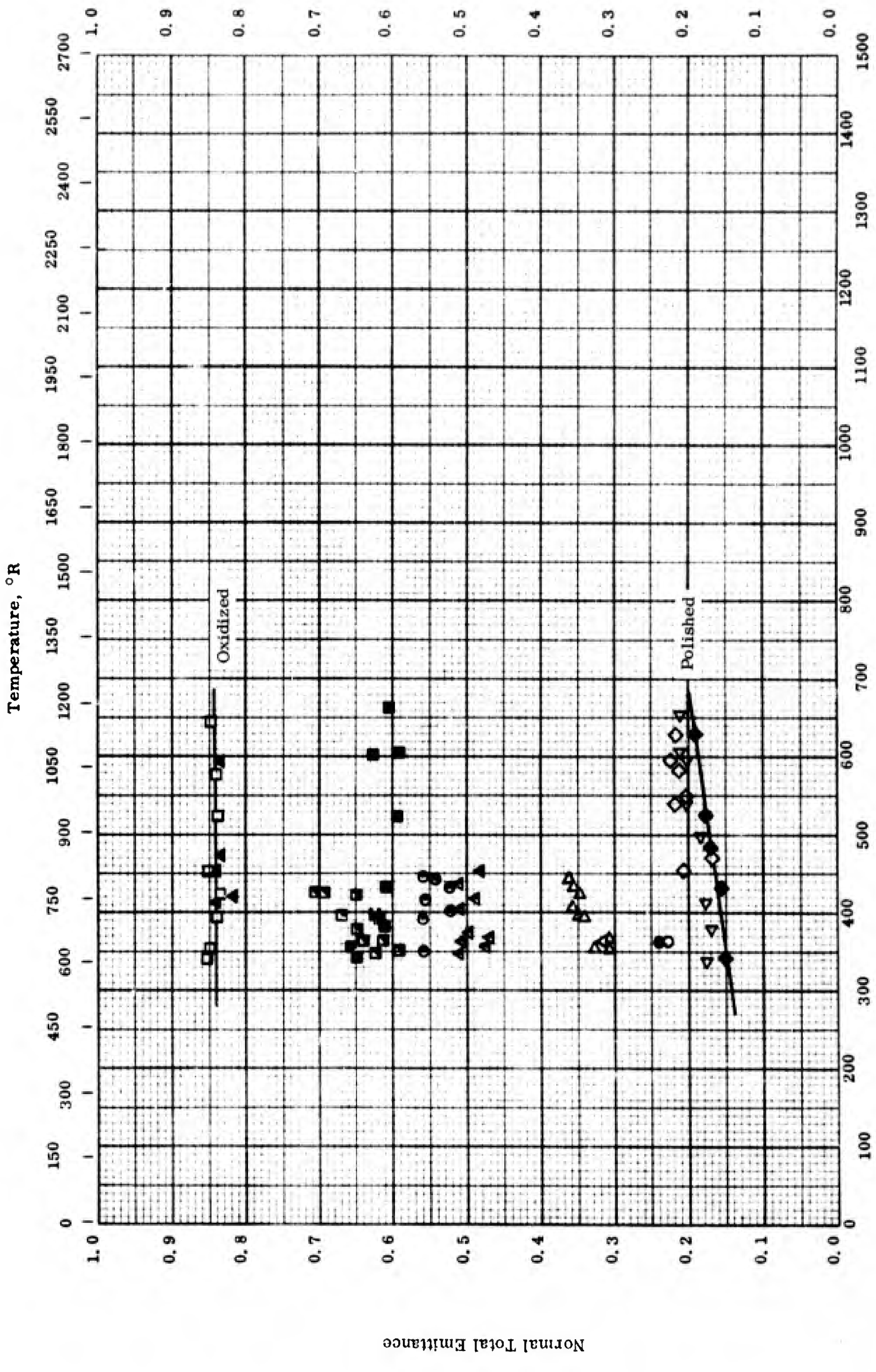


HEMISPHERICAL SPECTRAL EMITTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II

HEMISPHERICAL SPECTRAL EMITTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
o	48-2	90	9.96	<20	Bal. Fe, 19 Cr, 10 Ni, 0.5 Si, 0.4 Mn, and 0.05 C.	Measured in vacuum (10^{-5} mm Hg).

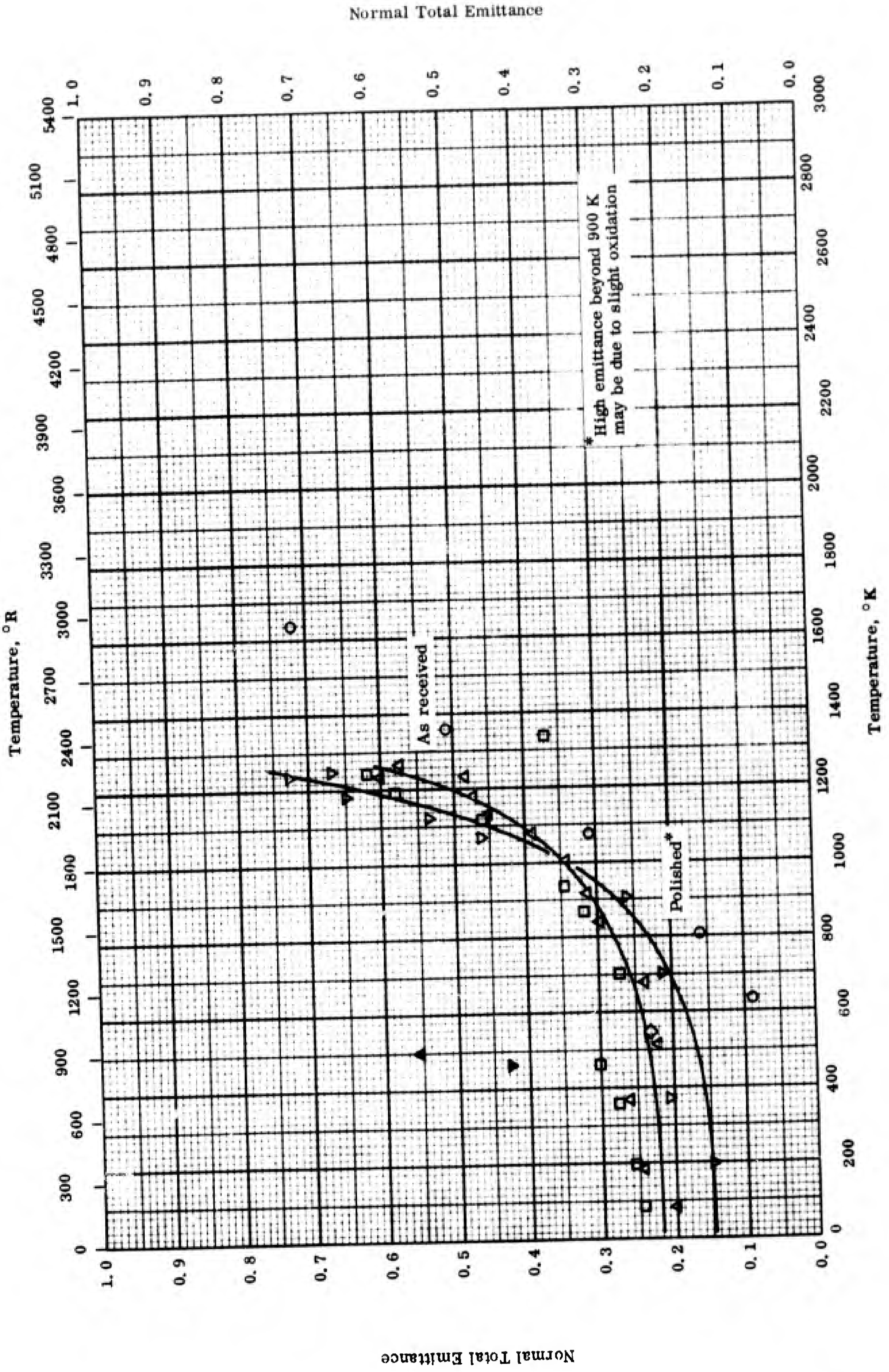


NORMAL TOTAL EMITTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(18-8 Stainless Steel)

NORMAL TOTAL EMITTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(18-8 Stainless Steel)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	62-10	366		18-8 stainless steel, nominal: 18 Cr and 8 Ni; porosity 28%.	Measured in air.
●	62-10	366		18-8 stainless steel, nominal: 18 Cr and 8 Ni; porosity 31%.	Measured in air.
△	62-10	366		18-8 stainless steel, nominal: 18 Cr and 8 Ni; porosity 43%.	Measured in air.
▲	55-10	416-597		18-8 stainless steel, nominal: 18 Cr and 8 Ni.	Sandblasted and weathered.
□	55-10	341-647		18-8 stainless steel.	Oxidized at 1089 K and weathered.
■	55-10	344-664		18-8 stainless steel.	Chromic and sulphuric acid treated and weathered.
◇	55-10	455-630		18-8 stainless steel.	Unpolished.
◆	55-10	344-630		18-8 stainless steel.	Polished with Aerobright and BonAmi.
◁	55-10	339-655		18-8 stainless steel.	Unpolished.
▷	44-1	356-441	± 10	18-8 stainless steel, nominal: 18 Cr and 8 Ni.	Oxidized at 811 K.
◐	44-1	351-446	± 10	18-8 stainless steel.	Chromic and sulfuric blackened.
◪	44-1	350-429	± 10	18-8 stainless steel.	Oxidized at 1089 K.
▲	44-1	355-456	± 10	18-8 stainless steel.	Sandblasted.

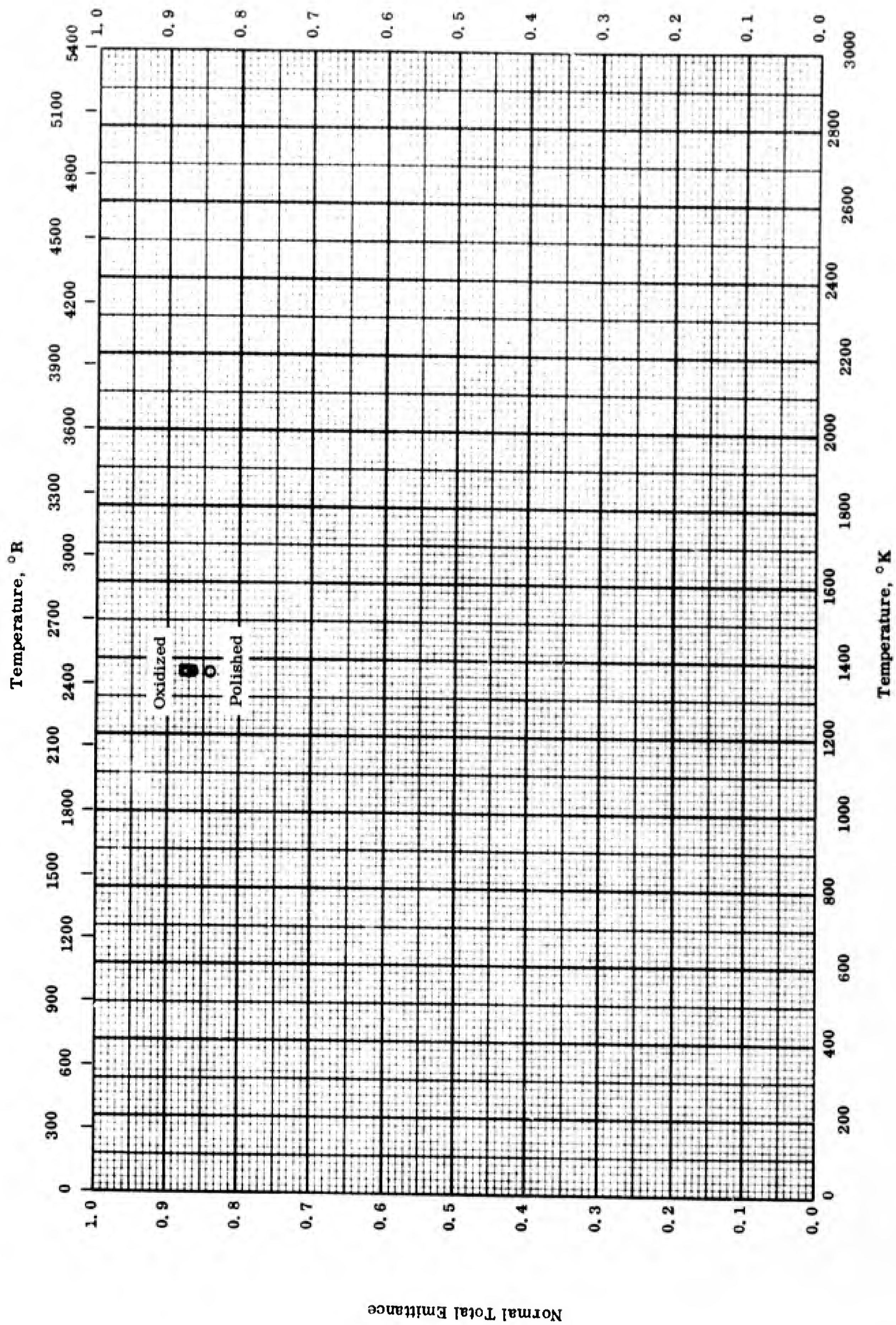


NORMAL TOTAL EMITTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(AISI 301)

NORMAL TOTAL EMITTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(AISI 301)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-7	644-1644	± 20	Stainless steel 301, nominal: 16 - 18 Cr, 6 - 8 Ni, 2.00 > Mn, 1.00 > Si, 0.15 > C, 0.045 > P, and 0.030 > S; surface finish 63.	System purged with moisture removed helium.
△	54-9	89-1272		Stainless steel 301.	As received; wiped and measured in helium (10 μ) ; heating.
▲	54-9	505		Same as above.	The above specimen, cooling.
□	54-9	89-1339		Stainless steel 301.	Scrubbed, washed, and wiped; measured in helium (10μ) ; heating.
◇	54-9	555		Same as above.	The above specimen; cooling.
▽	54-9	205-1255		Stainless steel 301.	Polished to a mirror like finish, and washed; measured in helium (10μ) ; heating.
▼	54-9	472		Same as above.	The above specimen, cooling.

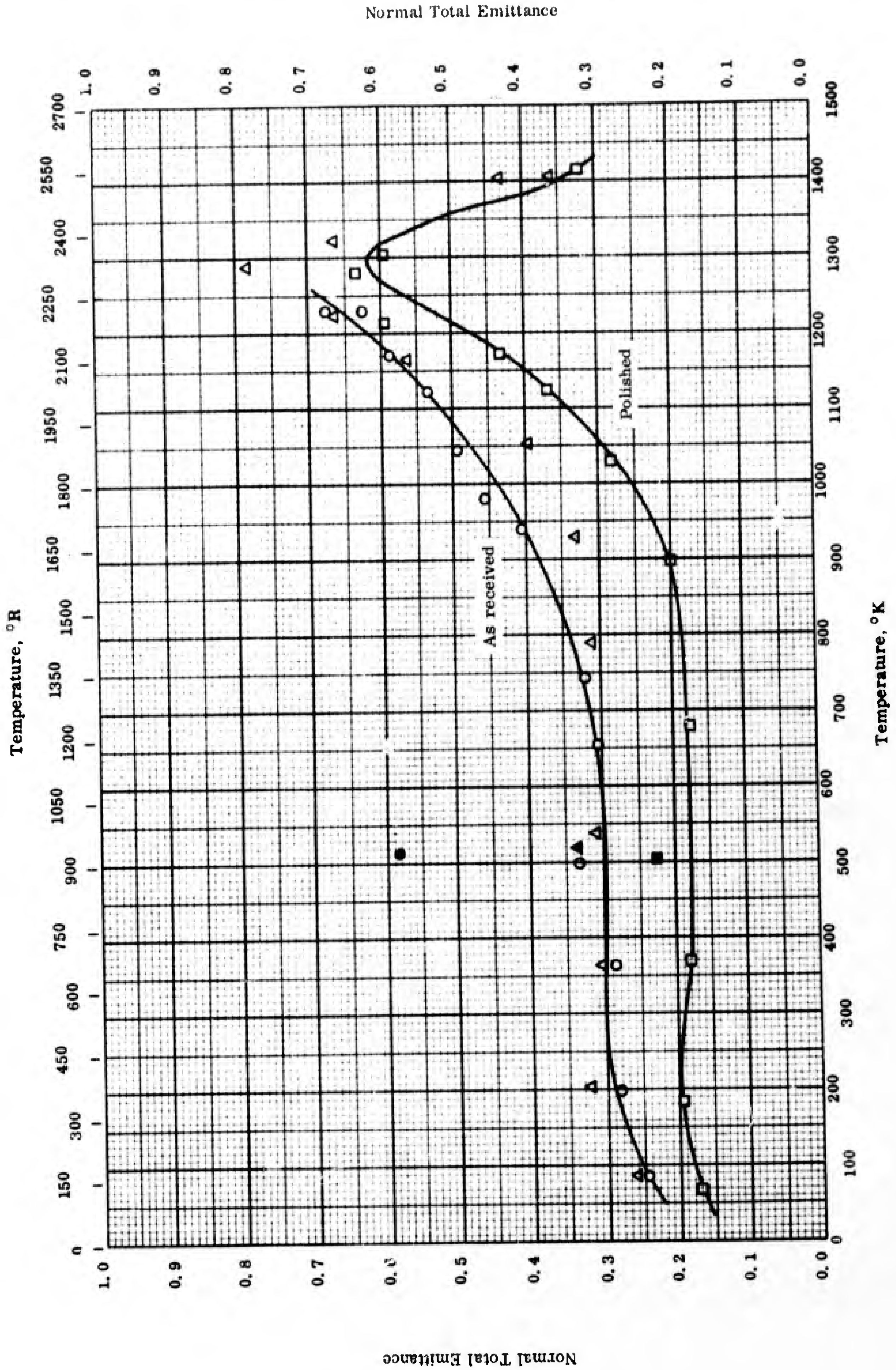


NORMAL TOTAL EMITTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(AISI 303)

NORMAL TOTAL EMITTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(AISI 303)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	61-11	1366.5	± 2.5	Stainless steel 303; nominal: 17 - 19 Cr, 8 - 10 Ni, 2.00 > Mn, 1.00 > Si, 0.60 > Mo. 0.20 > P, 0.15 > C, and 0.15 > S.	Mechanically polished and cleaned by scrubbing with alcohol and distilled water; oxidized at 1366.5 K in quiescent air for 10 min.; measured in air.
●	61-11	1366.5	± 2.5	Same as above.	The above specimen with 25 min. total oxidation time.
△	61-11	1366.5	± 2.5	Same as above.	The above specimen with 40 min. total oxidation time.
□	61-11	1366.5	± 2.5	Same as above.	The above specimen with 70 min. total oxidation time.

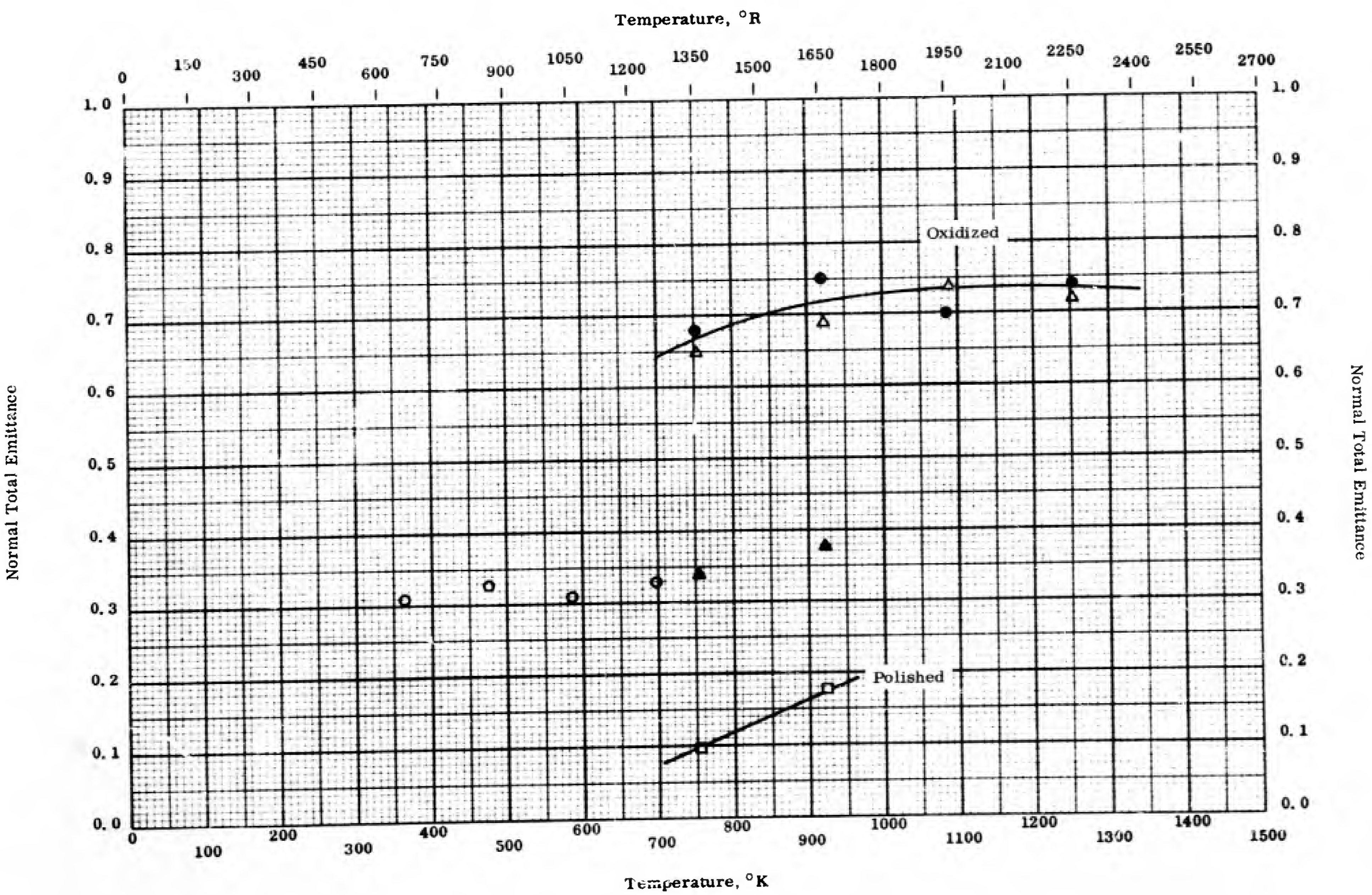


NORMAL TOTAL EMITTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(AISI 316)

NORMAL TOTAL EMITTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(AISI 316)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-9	89-1230		Stainless steel 316, nominal: 16 - 18 Cr, 10 - 14 Ni, 2.00 > Mn, 2.0 - 3.0 Mo, 1.00 > Si, 0.08 > C, 0.045 > P, and 0.030 > S.	As received; wiped; measured in helium (10 microns); heating.
●	54-9	514		Same as above.	The above specimen; cooling.
△	54-9	89-1405		Stainless steel 316.	Scrubbed, washed, and wiped; measured in helium (10 microns); heating.
▲	54-9	522		Same as above.	The above specimen, cycle 1 cooling.
□	54-9	72-1414		Stainless steel 316.	Polished to a mirror like finish and washed; measured in helium (10 microns); heating.
■	54-9	505		Same as above.	The above specimen; cooling.

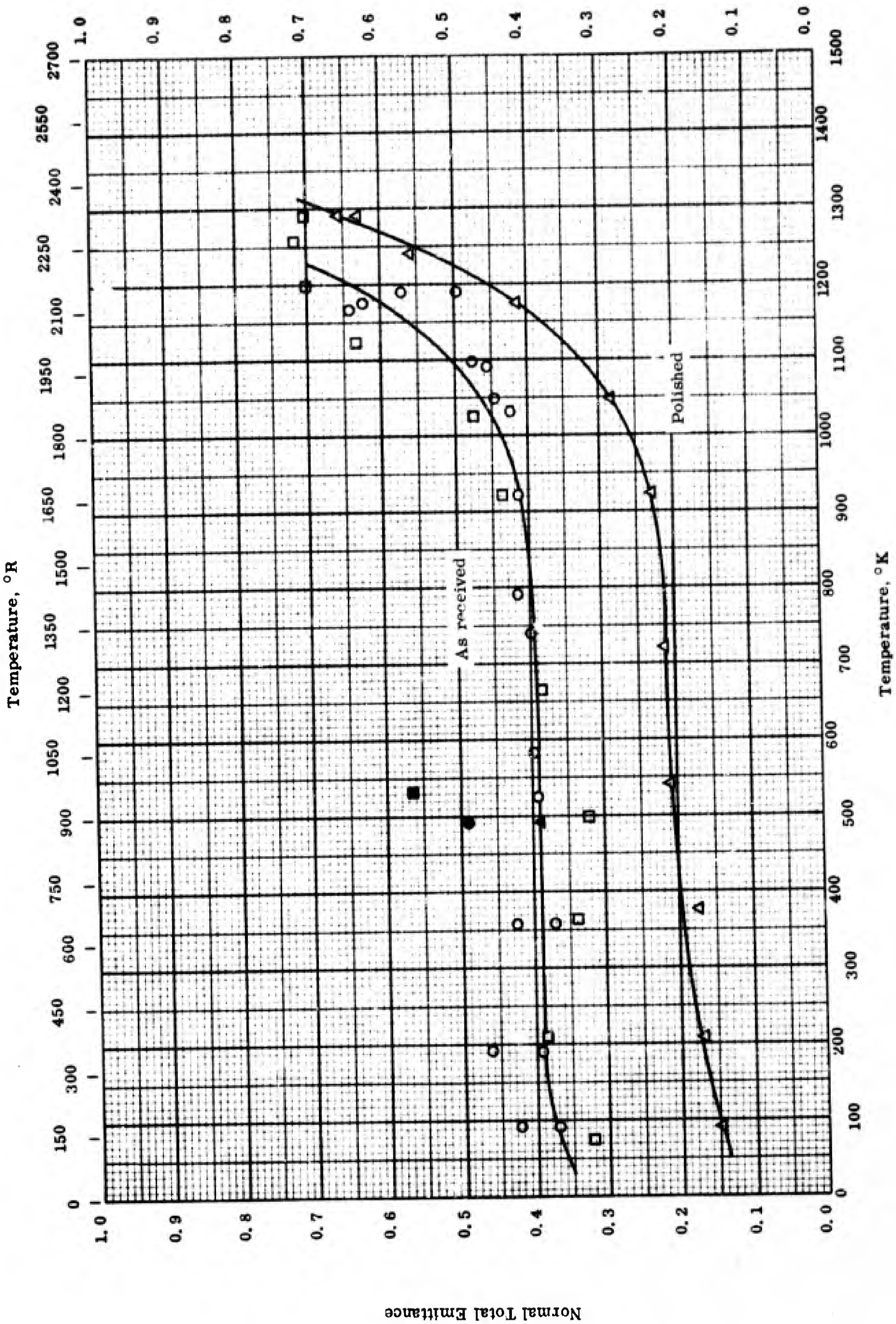


NORMAL TOTAL EMITTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(AISI 321)

NORMAL TOTAL EMITTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(AISI 321)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	58-14	366-700	± 9.7	Stainless steel 321, nominal: 17 - 19 Cr, 9 - 12 Ni, 2.00 > Mn, 1.00 > Si, 0.08 > C, 0.045 > P, 0.030 > S, and 5 (C) < Ti; grade MIL-S-6721.	Oxidized at 647 K for 1000 hrs.
●	59-7	755-1255	8	Stainless steel 321; 18 Cr and 8 Ni.	Sandblasted, and oxidized in air at 1255 K for 30 min.
△	59-7	755-1255	8	Stainless steel 321; 18 Cr and 8 Ni.	Electropolished and oxidized in air at 1255 K for 30 min.
▲	59-7	755-922	8	Stainless steel 321; 18 Cr and 8 Ni.	Sandblasted.
□	59-7	755-922	8	Stainless steel 321; 18 Cr and 8 Ni.	Electropolished.

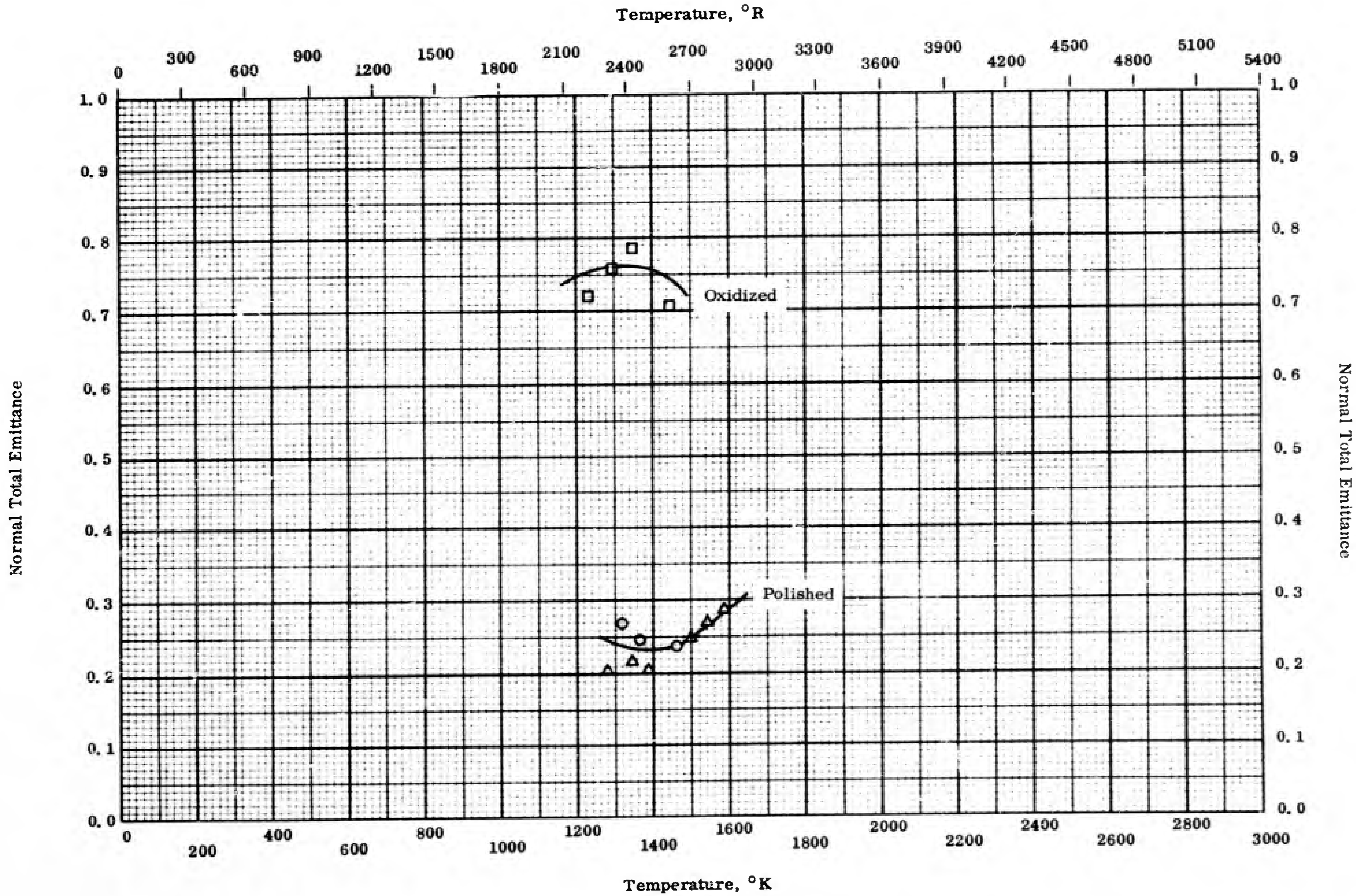


NORMAL TOTAL EMITTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(AISI 347)

NORMAL TOTAL EMITTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(AISI 347)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-9	89-1164		Stainless steel 347, nominal: 17 - 19 Cr, 9 - 13 Ni, 2.00 > Mn, 1.00 > Si, 0.08 > C, 0.045 > P, 0.030 > S, and 10 (C) < Cb - Ta.	As received; wiped; measured in helium (10 microns); heating.
●	54-9	489		Same as above.	The above specimen; cooling.
□	54-9	72-1289		Stainless steel 347.	Scrubbed, washed and wiped; measured in helium (10 microns); heating.
■	54-9	530		Same as above.	The above specimen, cycle 1 cooling.
△	54-9	89-1289		Stainless steel 347.	Polished to a mirror like finish and washed; measured in helium (10 microns); heating.
▲	54-9	489		Same as above.	The above specimen; cooling.

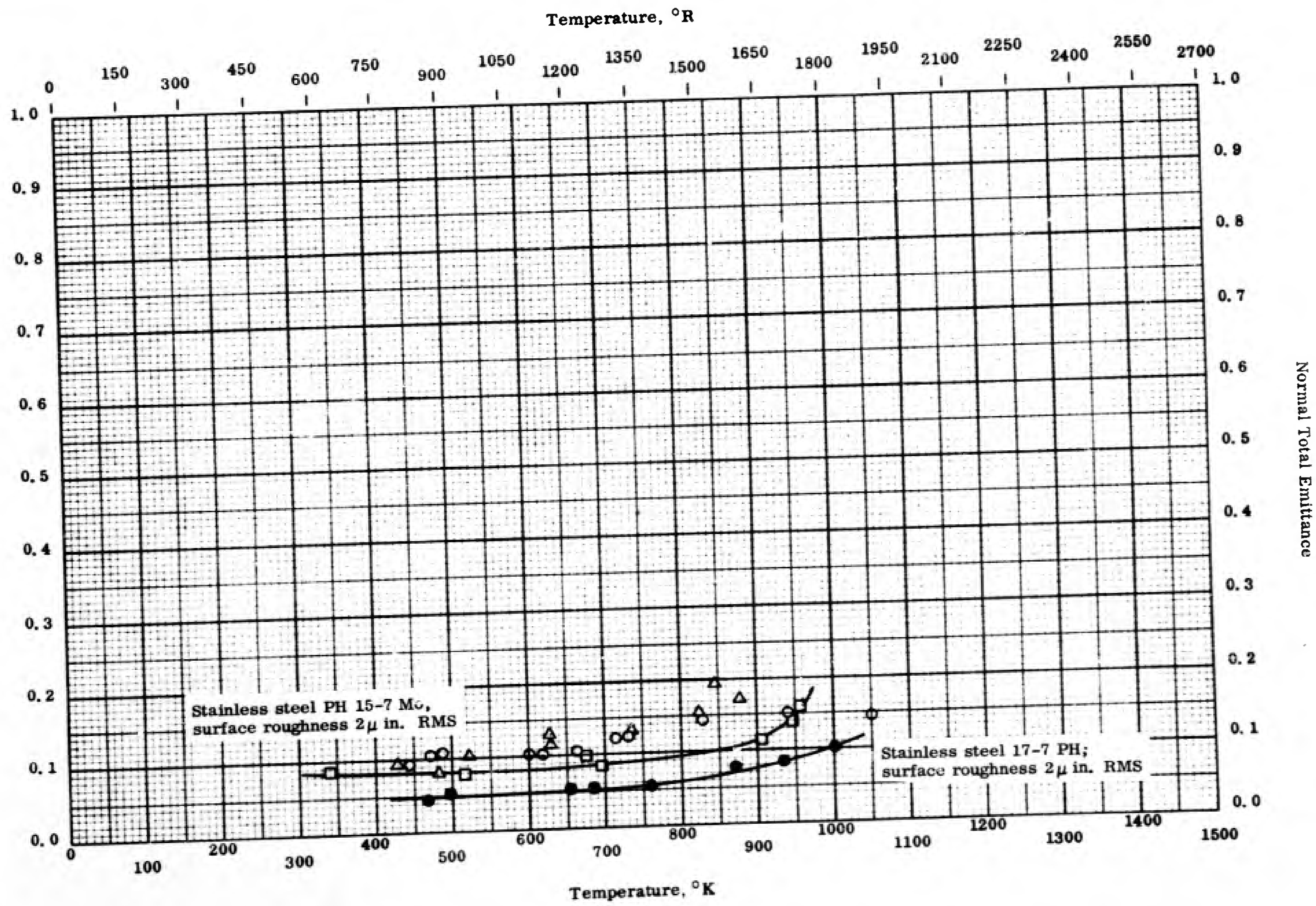


NORMAL TOTAL EMITTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(Multimet N-155)

NORMAL TOTAL EMITTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(Multimet N-155)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	63-10	1327-1466		Haynes alloy N-155 (multimet), nominal: 23.98 - 36.15 Fe, 20 - 22.5 Cr, 19 - 21 Ni, 18.5 - 21 Co, 2 - 3 W, 0.75 - 1.25 Nb, Ta, 2.5 - 3.5 Mo, 1.0 - 2.0 Mn, 0.5 max. Cu, 1.0 max. Si, 0.03 max. S, 0.04 max. Ph, 0.1 - 0.2 N and 0.08 - 0.16 C; surface roughness 1 - 2 μ RMS.	Polished; measured in vacuum (3 - 4 μ Hg); first cycle.
△	63-10	1288-1594		Same as above.	The above specimen, 2nd cycle.
□	63-10	1238-1452		Same as above.	Oxidized; measured in vacuum (3-4 μ Hg).

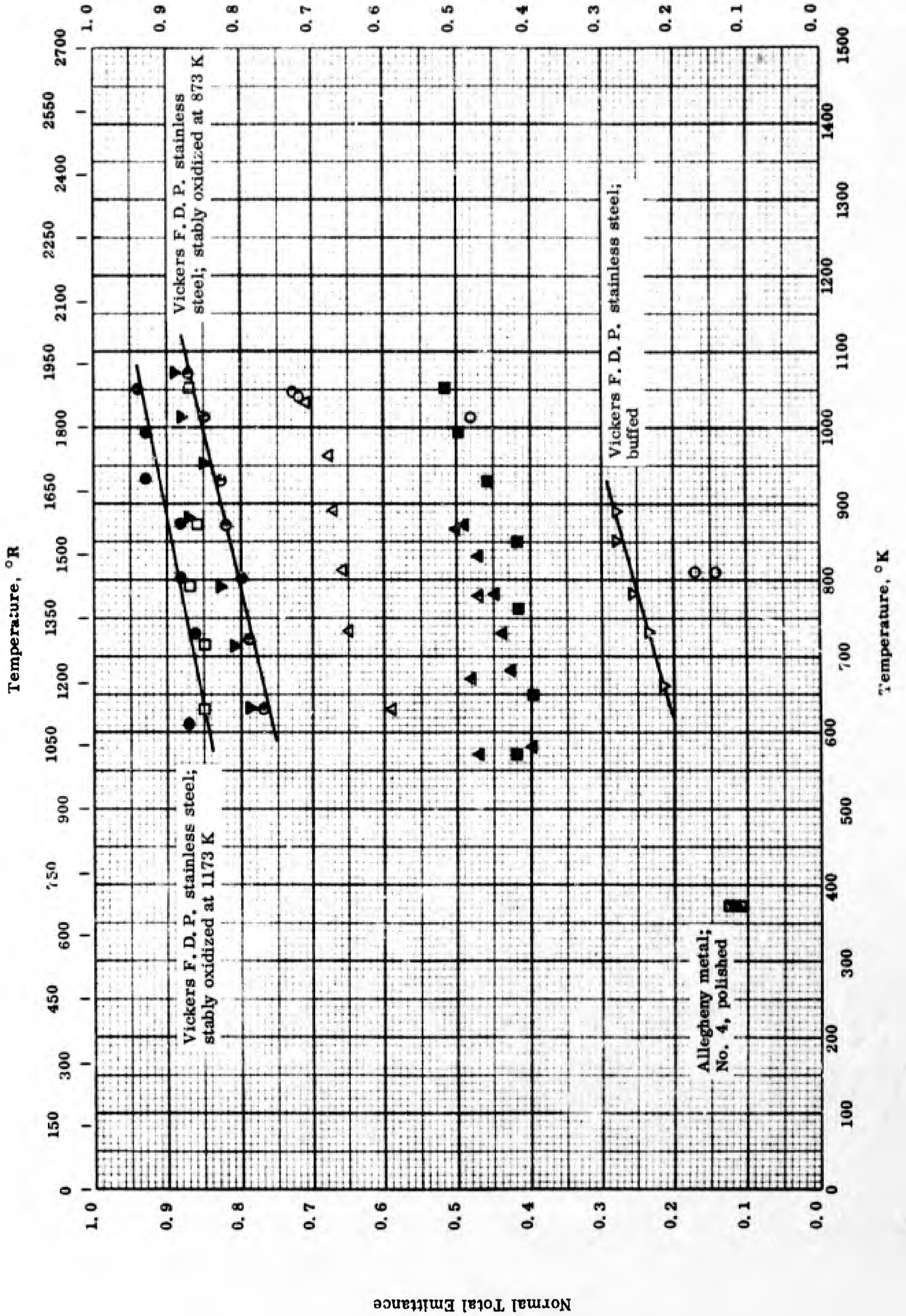


NORMAL TOTAL EMITTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(PH Stainless Steel)

NORMAL TOTAL EMITTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(PH Stainless Steel)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	57-13	444-1050	± 10	Stainless steel 17-7 PH, nominal: 16.00 - 18.00 Cr, 6.50 - 7.75 Ni, 1.00 > Mn, 1.00 > Si, 0.75 - 1.50 Al, and 0.09 > C; grade MIL-S-25043A; surface roughness 15 μ in. RMS.	Measured in vacuum 5×10^{-4} mm Hg.
●	57-13	466-1005	± 10	Stainless steel 17 - 7 PH; grade MIL-S-25043A; surface roughness 2 μ in. RMS.	Measured in vacuum 5×10^{-4} mm Hg.
△	57-13	427-878	± 10	Stainless steel PH 15 - 7 Mo, nominal: 14.00 - 16.00 Cr, 6.50 - 7.50 Ni, 2.00 - 3.00 Mo, 1.00 > Mn, 1.00 > Si, 0.75 - 1.50 Al, and 0.09 > C; surface roughness 15 μ in.	Measured in vacuum 5×10^{-4} mm Hg.
□	57-13	339-955	± 10	Stainless steel Ph 15 - 7 Mo; surface roughness 2 μ in.	Measured in vacuum 5×10^{-4} mm Hg.

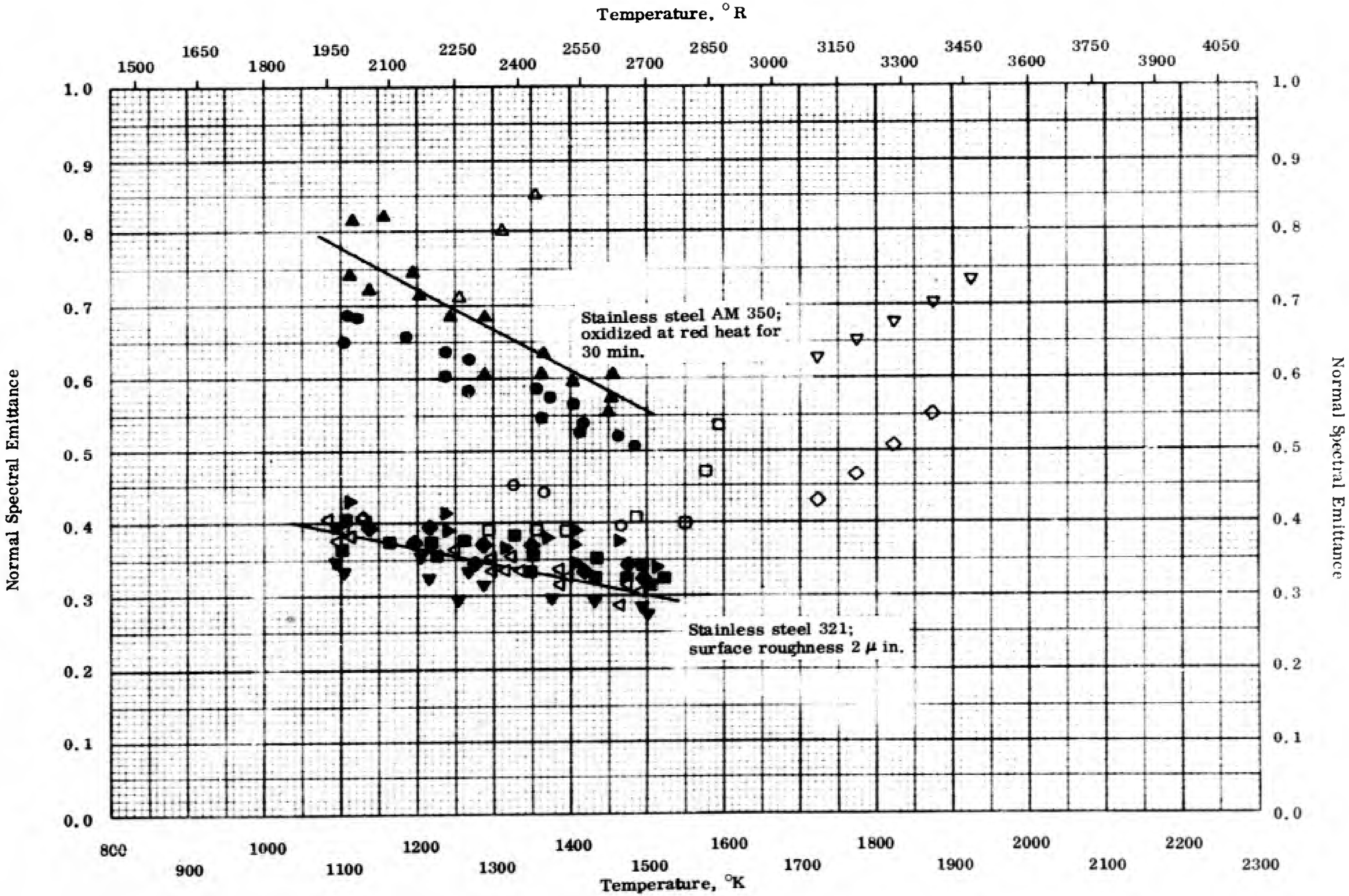


NORMAL TOTAL EMITTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(Miscellaneous)

NORMAL TOTAL EMITTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II (Miscellaneous)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	62-7	811-1444		Stainless steel 304, nominal: 18 - 20 Cr, 8 - 12 Ni, 2.00 > Mn, 1.00 > Si, 0.08 > C, 0.045 > P, and 0.030 > S.	Machine finished; system purged with helium.
●	52-10	613-1053		Vickers F.D.P. stainless steel; nominal: 18 Cr and 8 Ni.	Blasted with fused alumina; stably oxidized at 1173 K and cleaned with CCl_4; measured in air.
△	52-10	633-1033		Vickers F.D.P. stainless steel; nominal: 18 Cr and 8 Ni.	Same as above except being stably oxidized at 873 K.
▲	52-10	583-873		Vickers F.D.P. stainless steel; nominal: 18 Cr and 8 Ni.	Blasted with fused alumina and cleaned with CCl_4; measured in air.
□	52-10	633-1053		Vickers F.D.P. stainless steel; nominal: 18 Cr and 8 Ni.	Buffed, stably oxidized at 1173 K and cleaned with CCl_4; measured in air.
■	52-10	573-1053		Vickers F.D.P. stainless steel; nominal: 18 Cr and 8 Ni.	Same as above except being stably oxidized at 873 K.
▽	52-10	663-893		Vickers F.D.P. stainless steel; nominal: 18 Cr and 8 Ni.	Buffed and cleaned with CCl_4; measured in air.
▼	52-10	633-1073		Vickers F.D.P. stainless steel; nominal: 18 Cr and 8 Ni.	As rolled; stably oxidized at 1173 K and cleaned with CCl_4; measured in air.
◑	52-10	633-1073		Vickers F.D.P. stainless steel; nominal: 18 Cr and 8 Ni.	Same as above except being stably oxidized at 873 K.
▲	52-10	573-873		Vickers F.D.P. stainless steel; nominal: 18 Cr and 8 Ni.	As rolled; cleaned with CCl_4; measured in air.
◪	47-5	373		Allegheny metal; No. 4 polish.	
◩	47-5	373		Allegheny alloy No. 66.	Polished.



NORMAL SPECTRAL EMITTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II

NORMAL SPECTRAL EMITTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II

REFERENCE INFORMATION

Symbol	Ref.	Wavelength μ	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	63-10	0.65	1327-1466		Haynes Alloy N-155 (multimet); nominal: 20 - 22.5 Cr, 19 - 21 Ni, 18.5 - 21 Co, 2 - 3 W, 0.75 - 1.25 Nb, Ta, 2.5 - 3.5 Mo, 1.0 - 2.0 Mn, < 0.5 Cu, < 1.0 Si, < 0.03 S, < 0.04 Ph, 0.1 - 0.2 N, 23.98 - 36.15 Fe, and 0.08 - 0.16 C; surface roughness 1 - 2 μ RMS.	Polished; measured in a vacuum of 3 - 4 μ Hg; first cycle.
□	63-10	0.65	1291-1594		Same as above.	The above specimen, 2nd cycle.
△	63-10	0.65	1255-1454		Same as above.	Oxidized; measured in vacuum of 3 - 4 μ Hg.
◇	47-4	0.655	1723-1873		25 Cr, 18 Ni; liquid state.	Lab. high frequency furnace (sillimanite lining); data taken from smooth curve; same data for 0.648μ.
▽	47-4	0.655	1723-1923		25 Cr, 18 Ni; liquid state.	Foundry high frequency furnace (1/4 - 1 ton), acid and basic lining; data taken from smooth curve; same data for 29 Cr or 0.648 μ.
◁	57-13	0.665	1085-1489		Stainless steel 321; nominal: 17 - 19 Cr, 9 - 12 Ni, < 0.08 C, < 2.00 Mn, < 1.00 Si, < 0.045 P, < 0.030 S; > 5 (% C) Ti; surface roughness 2 μ in. RMS.	Annealed; measured in vacuum; same data for a finish of 6 μ in., No. 2 dull and No. 2 bright.
●	57-13	0.665	1105-1486		Stainless steel 321; surface roughness 6 μ in. RMS.	Oxidized at red heat for 30 min.; measured in vacuum.

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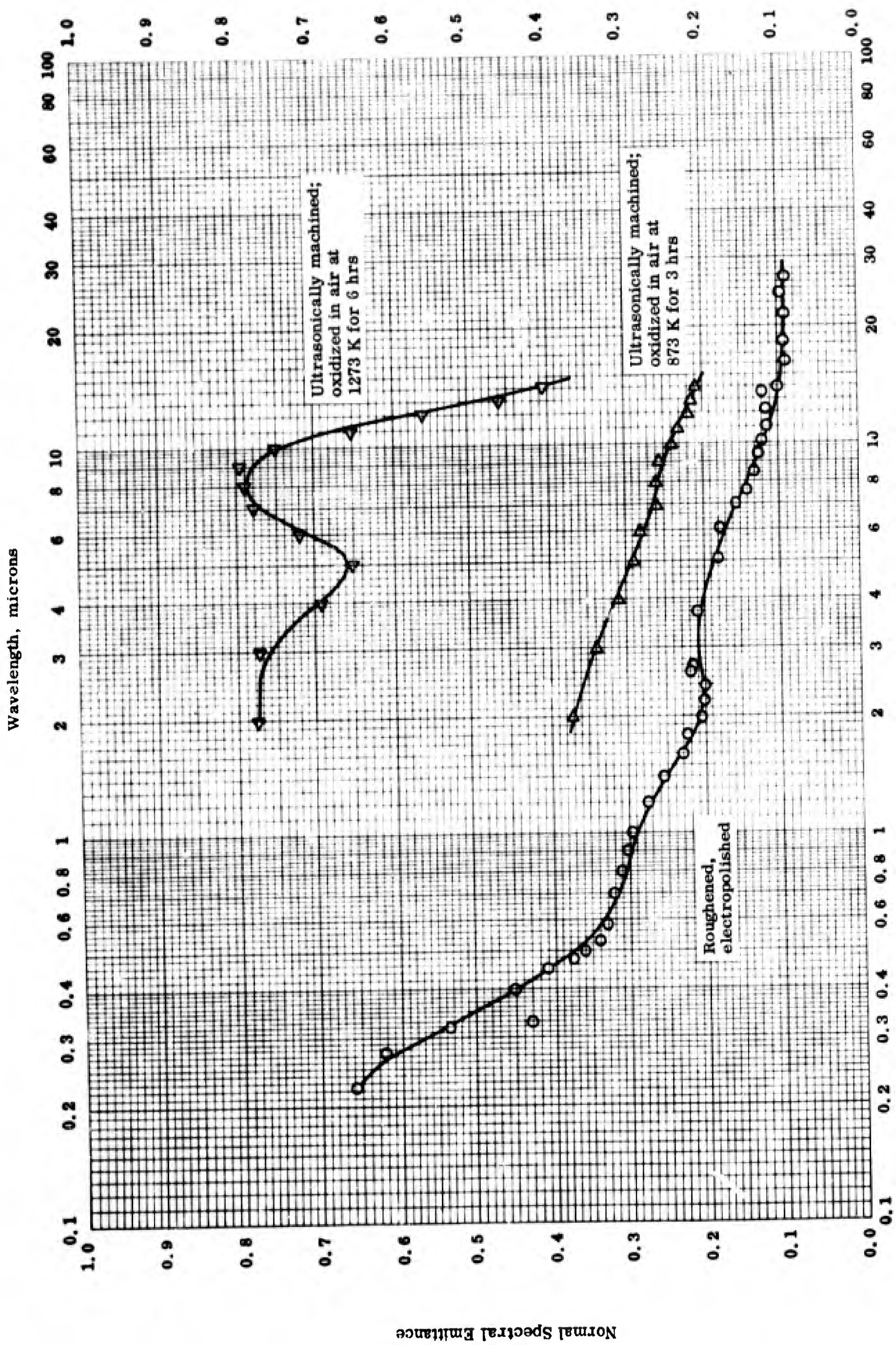
REFERENCE INFORMATION

Symbol	Ref.	Wavelength μ	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
■	57-13	0.665	1097-1522		Stainless steel 316; nominal: 16 - 18 Cr, 10 - 14 Ni, 2.00 - 3.00 Mo, < 2.00 Mn, < 1.00 Si, < 0.045 P, < 0.030 S, and 0.08 > C; surface roughness 15 μ in. RMS.	Measured in vacuum; same data for a finish of 2 μ in.
▲	57-13	0.665	1111-1455		Stainless steel AM 350; nominal: 16.5 - 17.5 Cr, 4.0 - 4.5 Ni, 2.5 - 3.0 Mo, 0.5 - 0.75 Mn, 0.2 - 0.5 Si, and 0.10 C; aircraft grade; surface roughness 2 μ in. RMS.	Subzero cooled and tempered; oxidized at red heat for 30 min.; measured in vacuum.
◆	57-13	0.665	1108-1497		Stainless steel AM 350; surface roughness 15 μ in.	Subzero cooled and tempered; measured in vacuum.
▼	57-13	0.665	1091-1503		Stainless steel 17 - 7 PH; nominal: 16.00 - 18.00 Cr, 6.50 - 7.75 Ni, < 0.09 C, < 1.00 Mn, < 1.00 Si, and 0.75 - 1.50 Al; surface roughness 15 μ in.	RH 950 condition; measured in vacuum; same data for a finish of 2 μ in.
▶	57-13	0.665	1100-1516		Stainless steel PH 15 - 7 Mo; nominal: 14.00 - 16.00 Cr, 6.50 - 7.50 Ni, 2.00 - 3.00 Mo, < 1.00 Mn, < 1.00 Si, 0.75 - 1.50 Al, and 0.09 > C; surface roughness 15 μ in.	RH 950 condition; measured in vacuum; same data for a finish of 2 μ in.

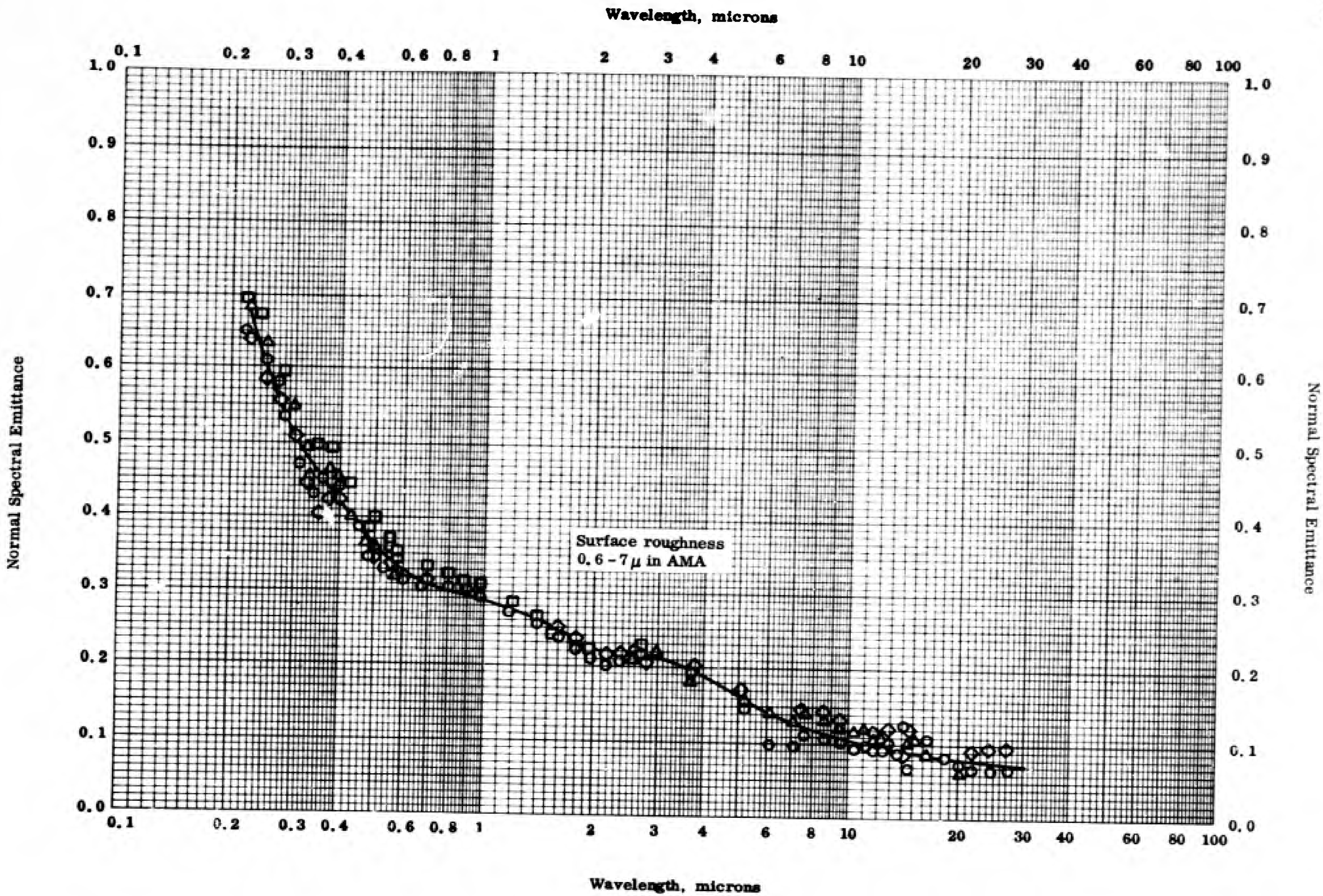


NORMAL SPECTRAL EMITTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(AISI 304)

NORMAL SPECTRAL EMITTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i (AISI 304) GROUP II

REFERENCE INFORMATION

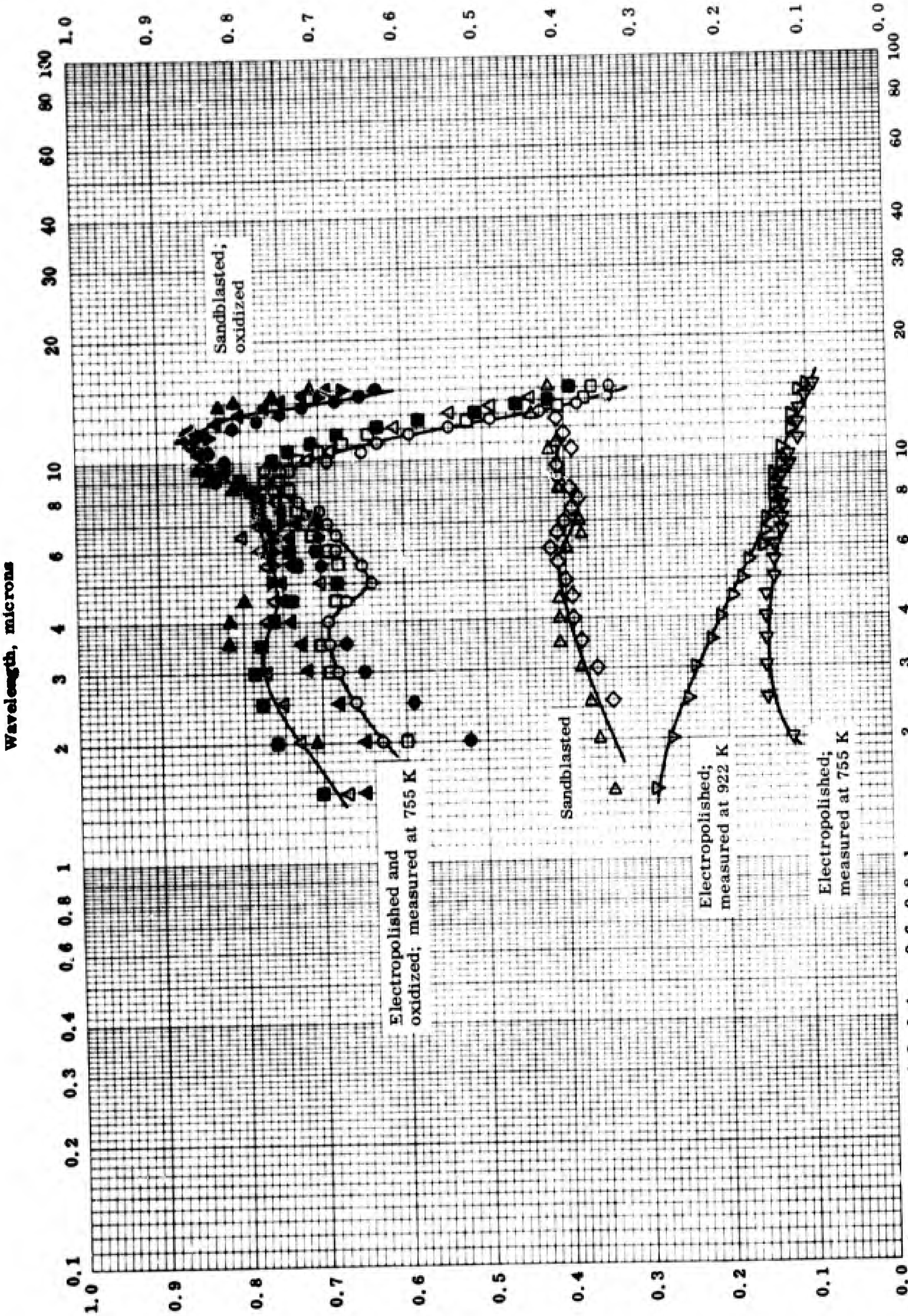
Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error%	Sample Specifications	Remarks
○	63-8	323	0.225-27		Stainless steel 304, nominal: 18 - 20 Cr, 8 - 12 Ni, < 2.00 Mn, < 1.00 Si, < 0.08 C, < 0.045 P, < 0.030 S; surface roughness 0.75 μ in. AMA.	Roughened, electropolished; measured in nitrogen; error introduced at wavelength ranges 2.5 - 6.5 μ and 24 - 27 μ.
△	60-6	873	2-14	±4	Stainless steel 304.	Ultrasonic machined; oxidized in air at 873 K for 3 hrs; measured in air.
▽	60-6	1273	2-14	±4	Stainless steel 304.	Ultrasonic machined; oxidized in air at 1273 K for 6 hrs; measured in air.



NORMAL SPECTRAL EMITTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(AISI 316)

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error%	Sample Specifications	Remarks
○	63-8	323	0.22-27.1		Stainless steel 316, nominal: 16 - 18 Cr, 10 - 14 Ni, 2 - 3 Mo, < 2 Mn, < 1 Si, < 0.08 C, < 0.045 P, < 0.030 S; surface roughness 0.6 μ in. AMA.	Roughened, electropolished; measured in nitrogen; error introduced at 3 μ and 14 μ.
□	63-8	323	0.22-2.7		Stainless steel 316; surface roughness 0.75 μ in. AMA, 1.3 μ in. AMA in x, y direction respectively.	Roughened, electropolished; measured in nitrogen.
△	63-8	323	0.225-27.1		Stainless steel 316; surface roughness 2 μ in. AMA, 1.75 μ in. AMA in x, y direction respectively.	Roughened, electropolished; measured in nitrogen; error introduced at 3 μ and 14 μ.
◇	63-8	323	0.225-27		Stainless steel 316; surface roughness 7 μ in. AMA, 4.5 μ in. AMA in x, y direction respectively.	Roughened, electropolished; measured in nitrogen; error introduced at 3 μ and 14 μ.

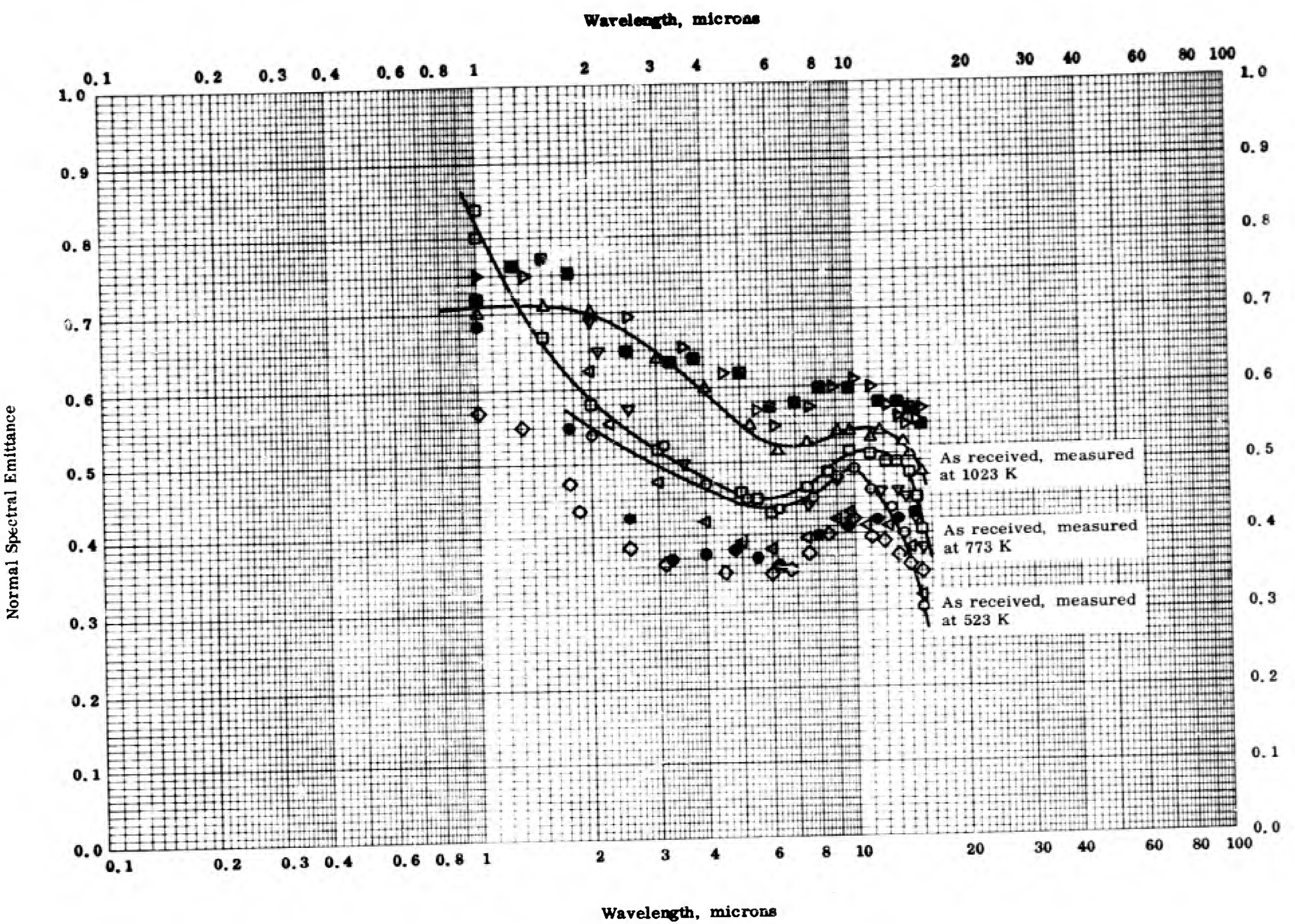


NORMAL SPECTRAL EMITTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(AISI 321)

NORMAL SPECTRAL EMITTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(AISI 321)

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error%	Sample Specifications	Remarks
○	59-7	755	2-15	5	Stainless steel 321; 18 Cr, 8 Ni.	Electropolished, oxidized in air at 1255 K for 30 min.
□	59-7	922	2-15	8	Same as above.	The above specimen measured at 922 K.
■	59-7	1089	1.5-15	8	Same as above.	The above specimen measured at 1089 K.
△	59-7	1255	1.5-15	8	Same as above.	The above specimen measured at 1255 K.
◇	59-7	755	2.5-15	8	Same as above.	Sandblasted.
▷	59-7	922	1.5-15	8	Same as above.	The above specimen measured at 922 K.
◁	59-7	755	2.0-15	8	Same as above.	Electropolished.
▽	59-7	922	1.5-15	8	Same as above.	The above specimen measured at 922 K.
●	59-7	755	2.0-15	8	Same as above.	Sandblasted, oxidized in air at 1255 K for 30 min.
▲	59-7	922	1.5-15	8	Same as above.	The above specimen measured at 922 K.
▼	59-7	1089	1.5-15	8	Same as above.	The above specimen measured at 1089 K.
▶	59-7	1255	1.5-15	8	Same as above.	The above specimen measured at 1255 K.

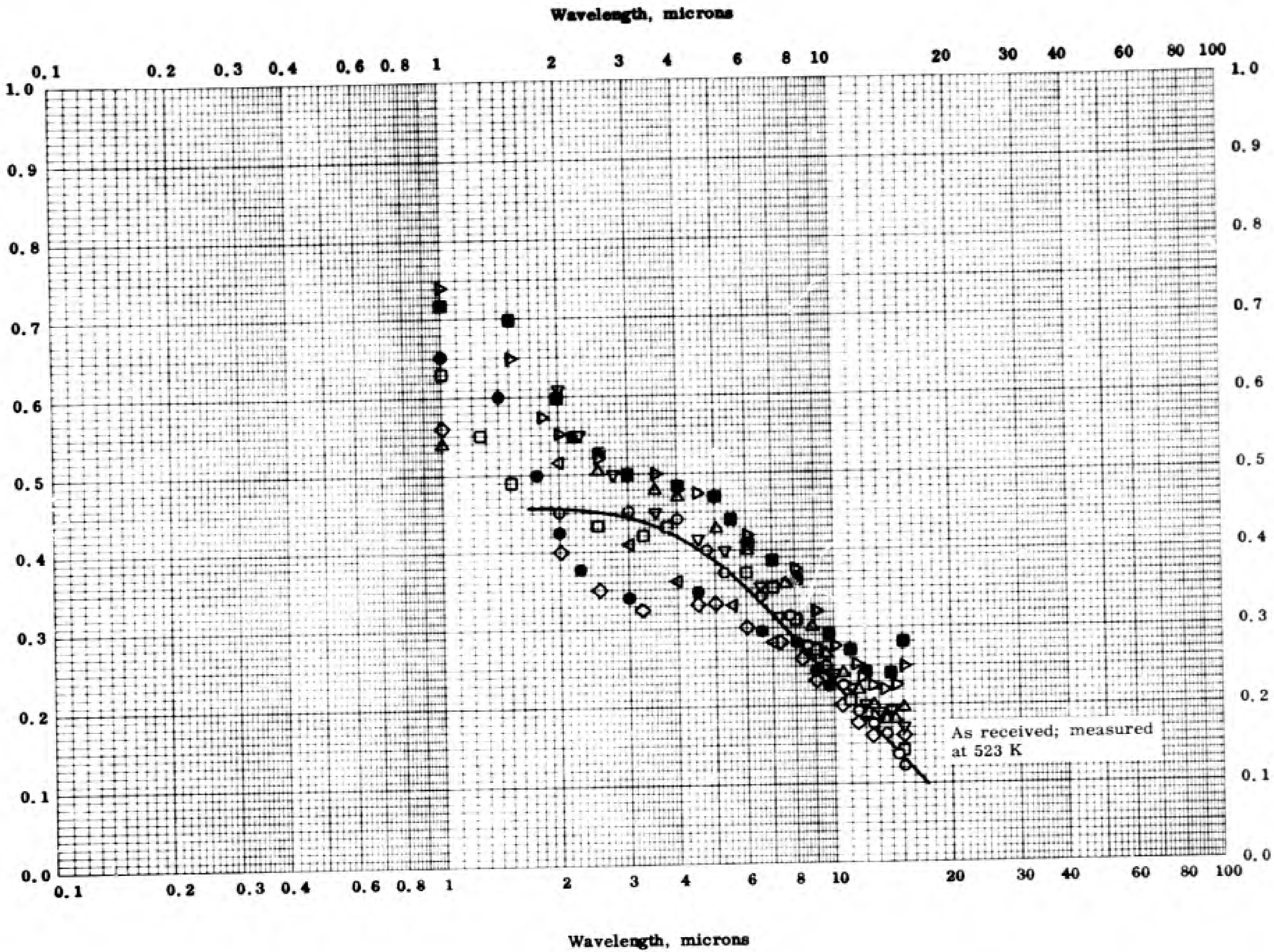


NORMAL SPECTRAL EMITTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(Stainless steel AM-350)

NORMAL SPECTRAL EMITTANCE — IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(Stainless steel AM-350)

REFERENCE INFORMATION

Symbol	Ref.	Temp. ° K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
○	62-8	523	2.00-15.00		Stainless steel AM-350, nominal: 16.5-17.5 Cr, 4.0-4.5 Ni, 5-3.0 Mo, 0.5-0.75 Mn, 0.2-0.5 Si, 0.1 C.	As received.
□	62-8	773	1.00-15.00		Same as above.	As received.
△	62-8	1023	1.00-15.00		Same as above.	As received.
▽	62-8	523	2.00-15.00		Same as above.	Heated in air at 755.4 K for 30 min.
◇	62-8	773	1.00-15.00		Same as above.	Same as above.
▷	62-8	1023	1.00-15.00		Same as above.	Same as above.
◁	62-8	523	2.00-15.00		Same as above.	Heated in a 4.4×10^{-5} mm Hg vacuum at 755.4 K for 30 min.
●	62-8	773	1.00-15.00		Same as above.	Same as above.
■	62-8	1023	1.00-15.00		Same as above.	Same as above.

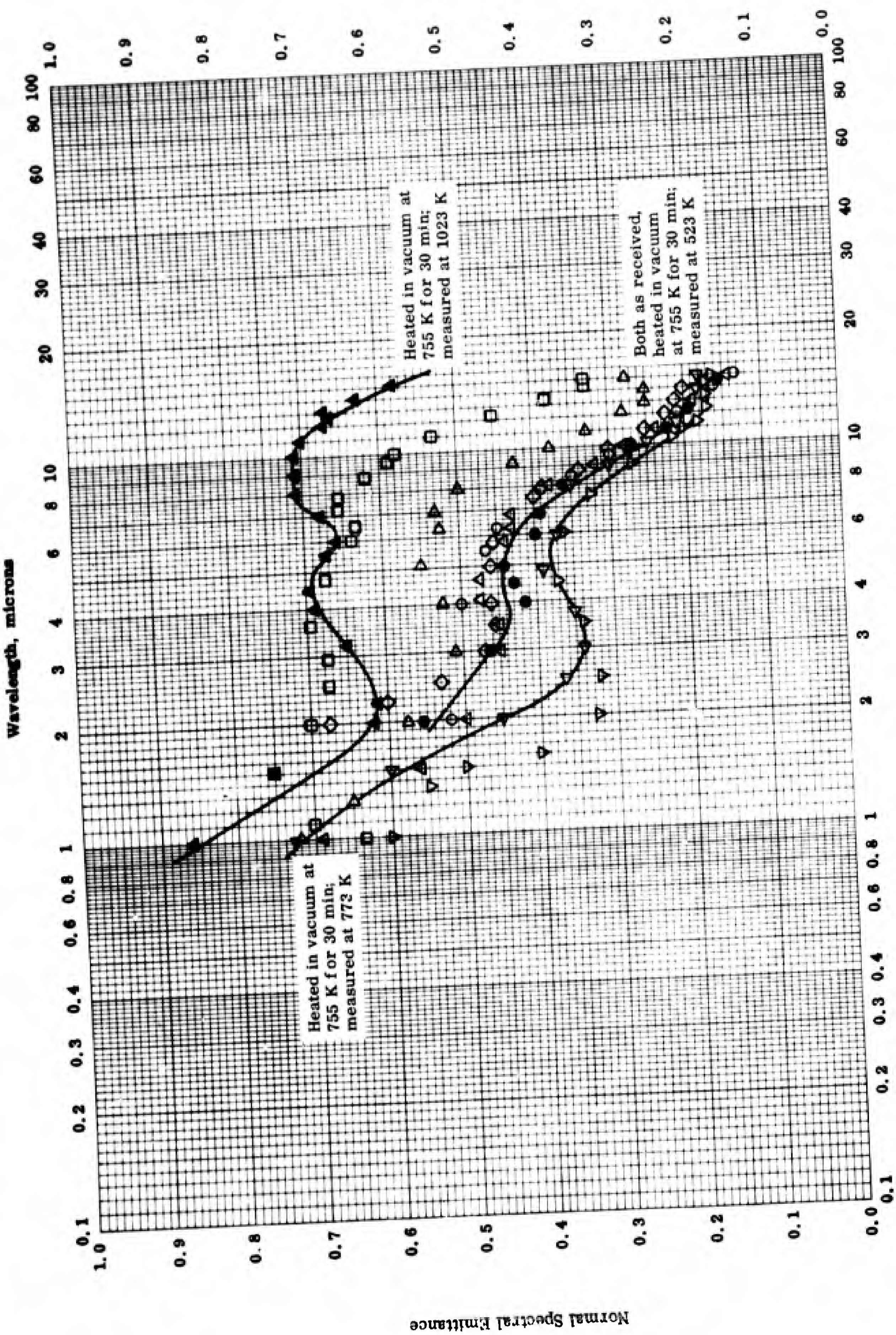


NORMAL SPECTRAL EMITTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(Stainless steel 17 - 7 PH)

NORMAL SPECTRAL EMITTANCE — IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(Stainless steel 17 - 7 PH)

REFERENCE INFORMATION

Symbol	Ref.	Temp. ° K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
○	62-8	532	2.00-15.00		Stainless steel 17 - 7 PH, nominal: 16.00 - 18.00 Cr, 6.50 - 7.75 Ni, <1.00 Mn, <1.00 Si, 0.75 - 1.50 Al, <0.09 C; grade MIL-S-25043.	As received.
□	62-8	773	1.00-15.00		Same as above.	As received.
△	62-8	1023	1.00-15.00		Same as above.	As received.
▽	62-8	523	2.00-15.00		Same as above.	Heated in air at 811 K for 30 min.
◇	62-8	773	1.00-15.00		Same as above.	Same as above.
▷	62-8	1023	1.00-15.00		Same as above.	Same as above.
◁	62-8	523	2.00-15.00		Same as above.	Heated in a 4.4×10^{-5} mm Hg vacuum at 755.4 K for 30 min.
●	62-8	773	1.00-15.00		Same as above.	Same as above.
■	62-8	1023	1.00-15.00		Same as above.	Same as above.

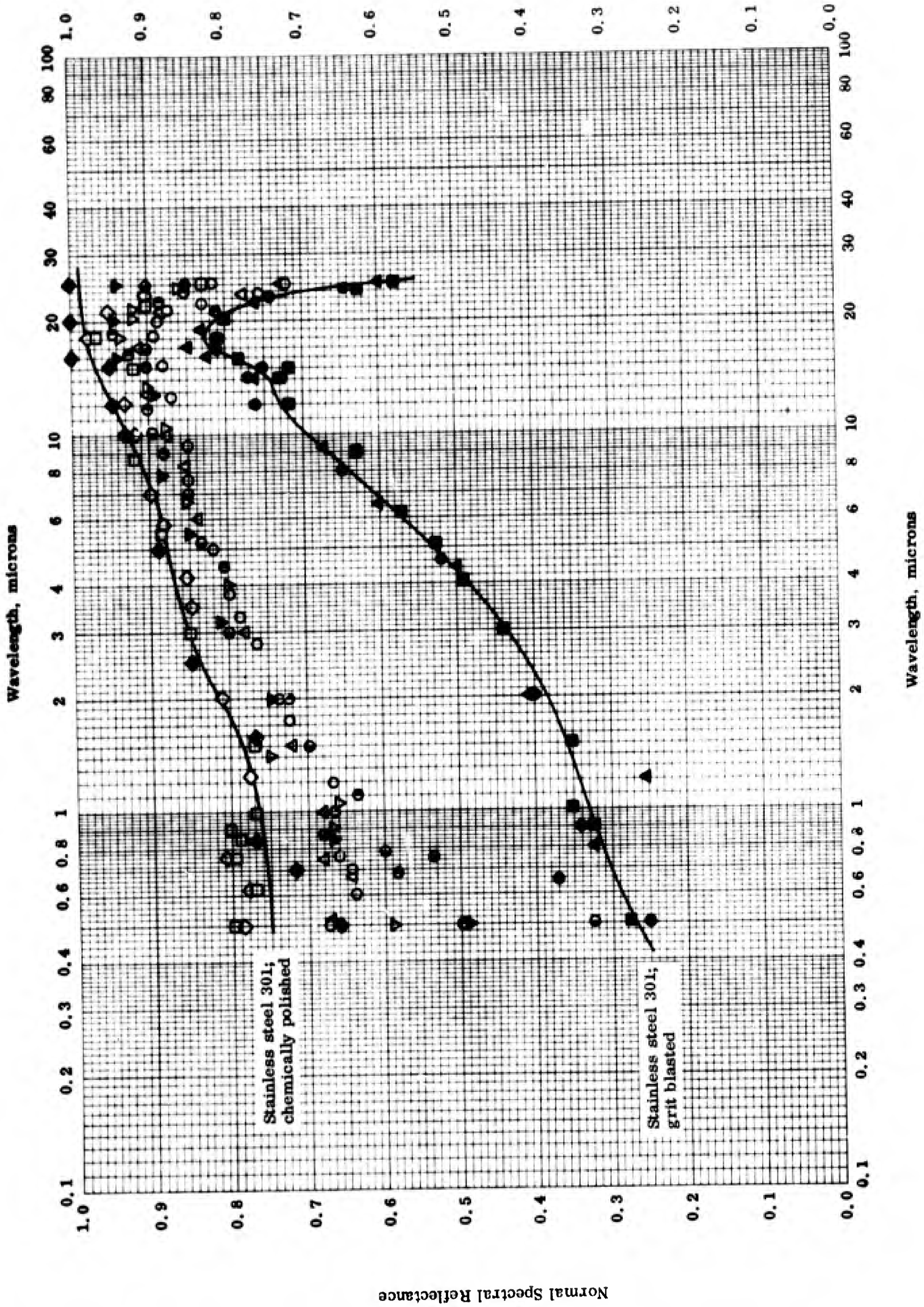


NORMAL SPECTRAL EMITTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(Stainless steel PH 15-7 Mo)

NORMAL SPECTRAL EMITTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(Stainless steel PH 15-7 Mo)

REFERENCE INFORMATION

Symbol	Ref.	Temp. ° K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
○	62-8	523	2.00-15.00		Stainless steel PH 15-7 Mo, nominal: 14.00-16.00 Cr, 6.50-7.50 Ni, 2.00-3.00 Mo, <1.00 Mn, <1.00 Si, 0.75-1.50 Al, <0.09 C; grade NAA LB0160-130.	As received.
△	62-8	773	1.00-15.00		Same as above.	As received.
□	62-8	1023	1.00-15.00		Same as above.	As received.
◇	62-8	523	2.00-15.00		Same as above.	Heated in air at 755.4 K for 30 min.
▽	62-8	773	1.00-15.00		Same as above.	Same as above.
▷	62-8	1023	1.00-15.00		Same as above.	Same as above.
●	62-8	523	2.00-15.00		Same as above.	Heated in a 4.4×10^{-5} mm Hg vacuum at 755.4 K for 30 min.
◁	62-8	773	1.00-15.00		Same as above.	Same as above.
▲	62-8	1023	1.00-15.00		Same as above.	Same as above.

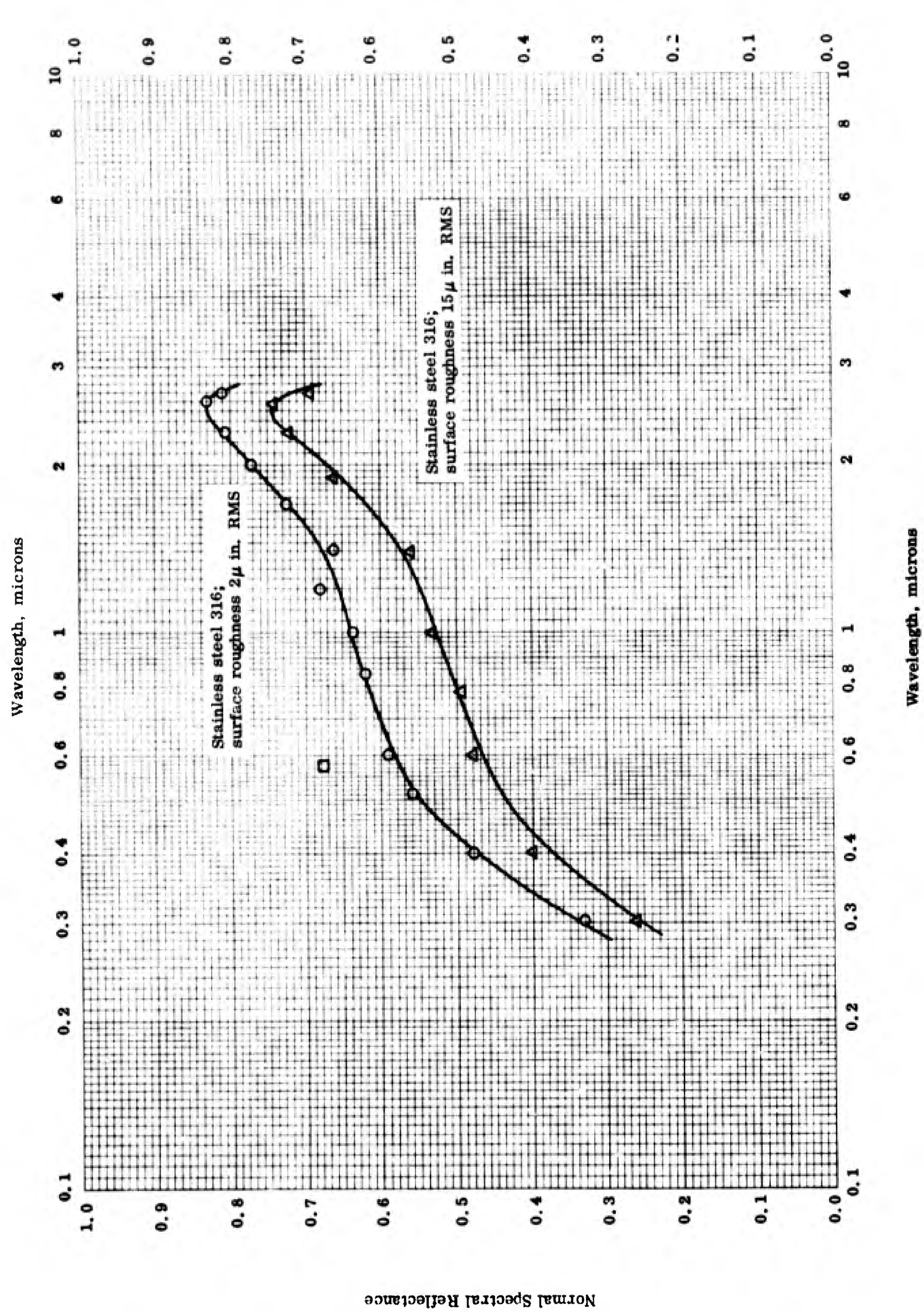


NORMAL SPECTRAL REFLECTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(AISI 301)

NORMAL SPECTRAL REFLECTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(AISI 301)

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
○	62-9	298	0.50-25.0		Stainless steel 301, nominal: 16 18 Cr, 6 - 8 Ni, 2.00 > Mn, 1.00 > Si, 0.15 > C, 0.045 > P, and 0.030 > S.	As received.
●	62-9	298	0.50-25.0		Stainless steel 301.	Grit blasted.
◑	62-9	298	0.50-25.0		Stainless steel 301.	Exposed to a vacuum of 4×10^{-8} mm Hg for 24 hrs.
◐	62-9	298	0.50-25.0		Stainless steel 301.	Exposed to x-ray in a vacuum of 4×10^{-8} mm Hg for 24 hrs.
△	62-9	298	0.50-25.0		Stainless steel 301.	Chemically milled.
▲	62-9	298	0.50-25.0		Stainless steel 301.	Chemically milled and grit blasted.
▽	62-9	298	0.50-25.0		Stainless steel 301.	Chemically milled and exposed to a vacuum of 4×10^{-8} mm Hg for 24 hrs.
▼	62-9	298	0.50-25.0		Stainless steel 301.	Chemically milled and exposed to x-ray in a vacuum of 4×10^{-8} mm Hg for 24 hrs.
□	62-9	298	0.50-25.0		Stainless steel 301.	Chemically polished.
■	62-9	298	0.50-25.0		Stainless steel 301.	Chemically polished and grit blasted.
◇	62-9	298	0.50-25.0		Stainless steel 301.	Chemically polished and exposed to a vacuum of 4×10^{-8} mm Hg for 24 hrs.
◆	62-9	298	0.50-25.0		Stainless steel 301.	Chemically polished and exposed to x-ray in a vacuum of 4×10^{-8} mm Hg for 24 hrs.

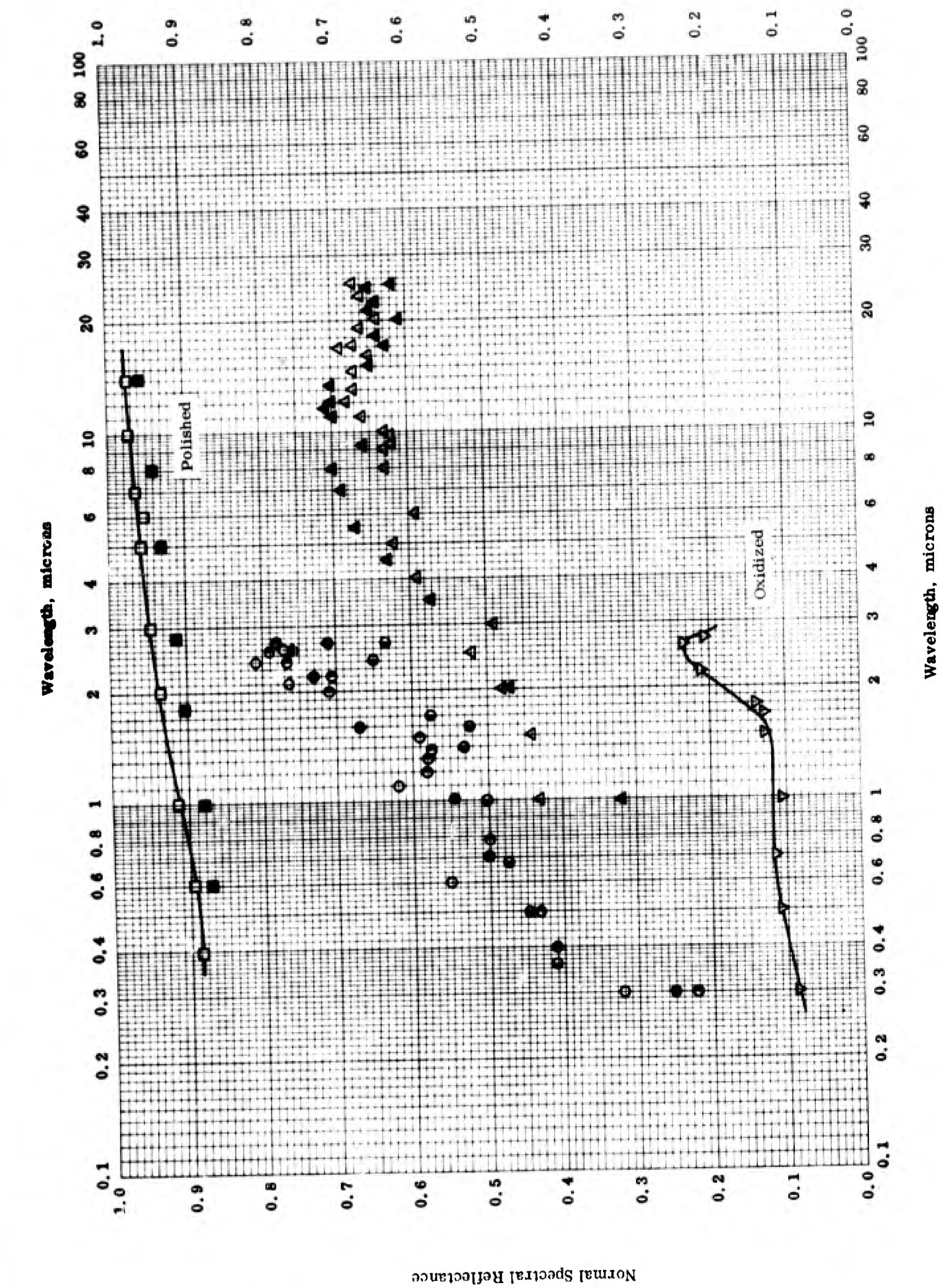


NORMAL SPECTRAL REFLECTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(AISI 316)

NORMAL SPECTRAL REFLECTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(AISI 316)

REFERENCE INFORMATION

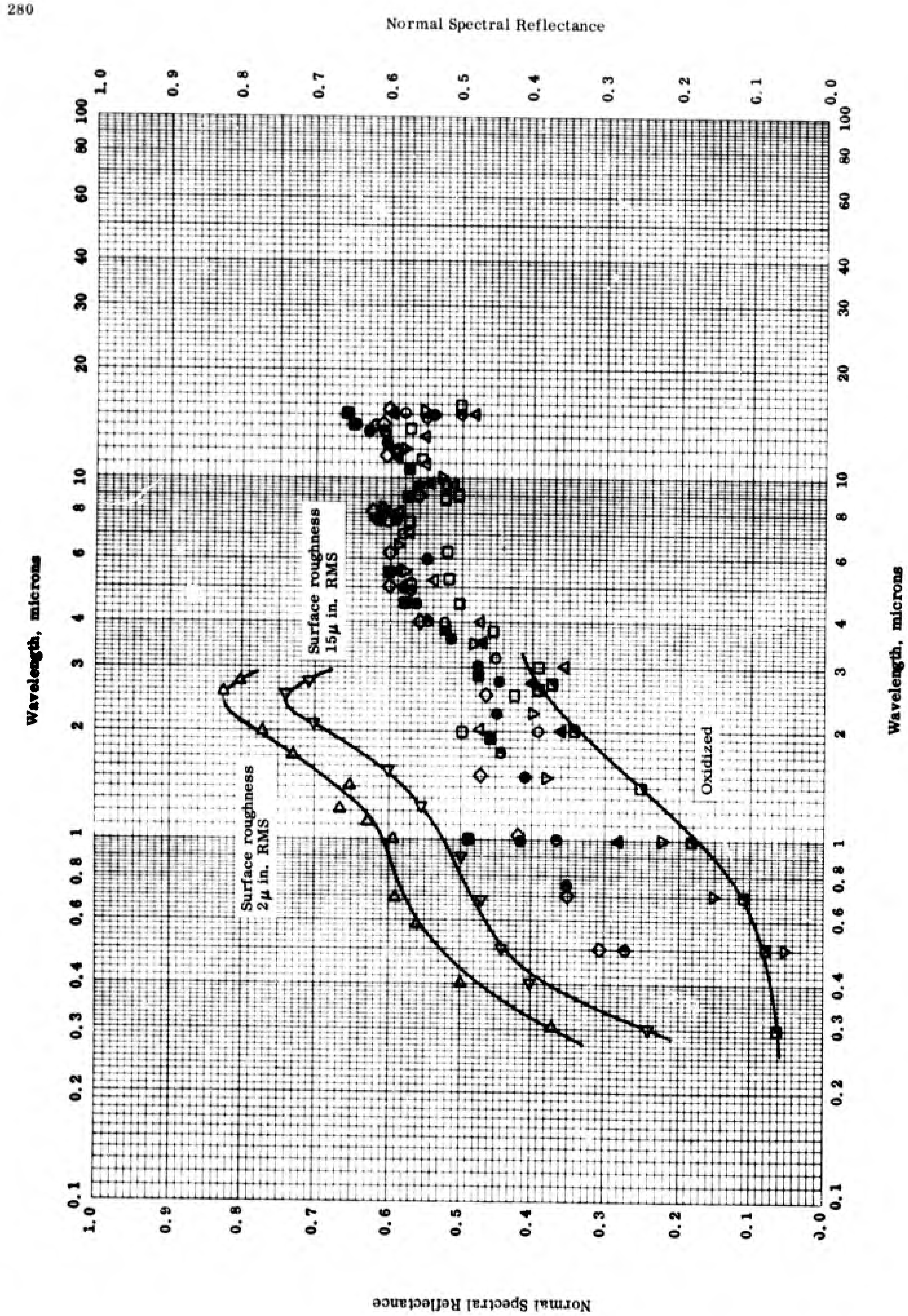
Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
○	57-13	298	0.3-2.7	± 4	Stainless steel 316; nominal: 16 - 18 Cr, 10 - 14 Ni, 2.00 - 3.00 Mo, 2.00 > Mn, 1.00 > Si, 0.08 > C, 0.045 > P. and 0.030 > S; grade MIL-S-5059A; surface roughness 2 μ in. RMS.	Annealed and polished.
△	57-13	298	0.3-2.7	± 4	Stainless steel 316; grade MIL-S-5059A; surface roughness 15 μ in. RMS.	Annealed and polished.
□	53-11	298	0.575		Stainless steel 316, 17.6 Cr, 12.5 Ni, and 2.77 Mo.	Metallographically polished.



NORMAL SPECTRAL REFLECTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(AISI 321)

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
○	57-13	298	0.3-2.7	±4	Stainless steel 321; nominal: 17 - 19 Cr, 9 - 12 Ni, 2.00 > Mn, 0.08 > C, 0.045 > P, 0.030 > S, and 5(C) < Ti; grade MIL-S-6721A; surface roughness 2 μin. RMS.	Annealed and polished.
●	57-13	298	0.3-2.7	±4	Stainless steel 321; grade MIL-S-6721 A; surface roughness 15 μin. RMS.	Annealed and polished.
◑	57-13	298	0.3-2.7	±4	Stainless steel 321; grade MIL-S-6721 A; surface No. 2 bright.	Annealed.
◐	57-13	298	0.36-2.7	±4	Stainless steel 321; grade MIL-S-6721 A; surface No. 2 dull with 6 μin. RMS surface roughness.	Annealed.
△	58-14	311	1.0-25.0	±5	Stainless steel 321; grade MIL-S-6721.	
▲	58-14	311	1.0-25.0	±6	Stainless steel 321; grade MIL-S-6721.	Oxidized at 647 K for 1000 hrs.
▽	58-12	298	0.3-2.7		Stainless steel 321.	Oxidized.
□	62-6	295	0.40-14.00		Stainless steel 321.	Mechanically polished; normal illumination, hemispherical viewing.
■	62-6	295	0.60-14.10		Stainless steel 321.	The above specimen roughened with sandpaper to roughness of 1.25 microns height; normal illumination, hemispherical viewing.

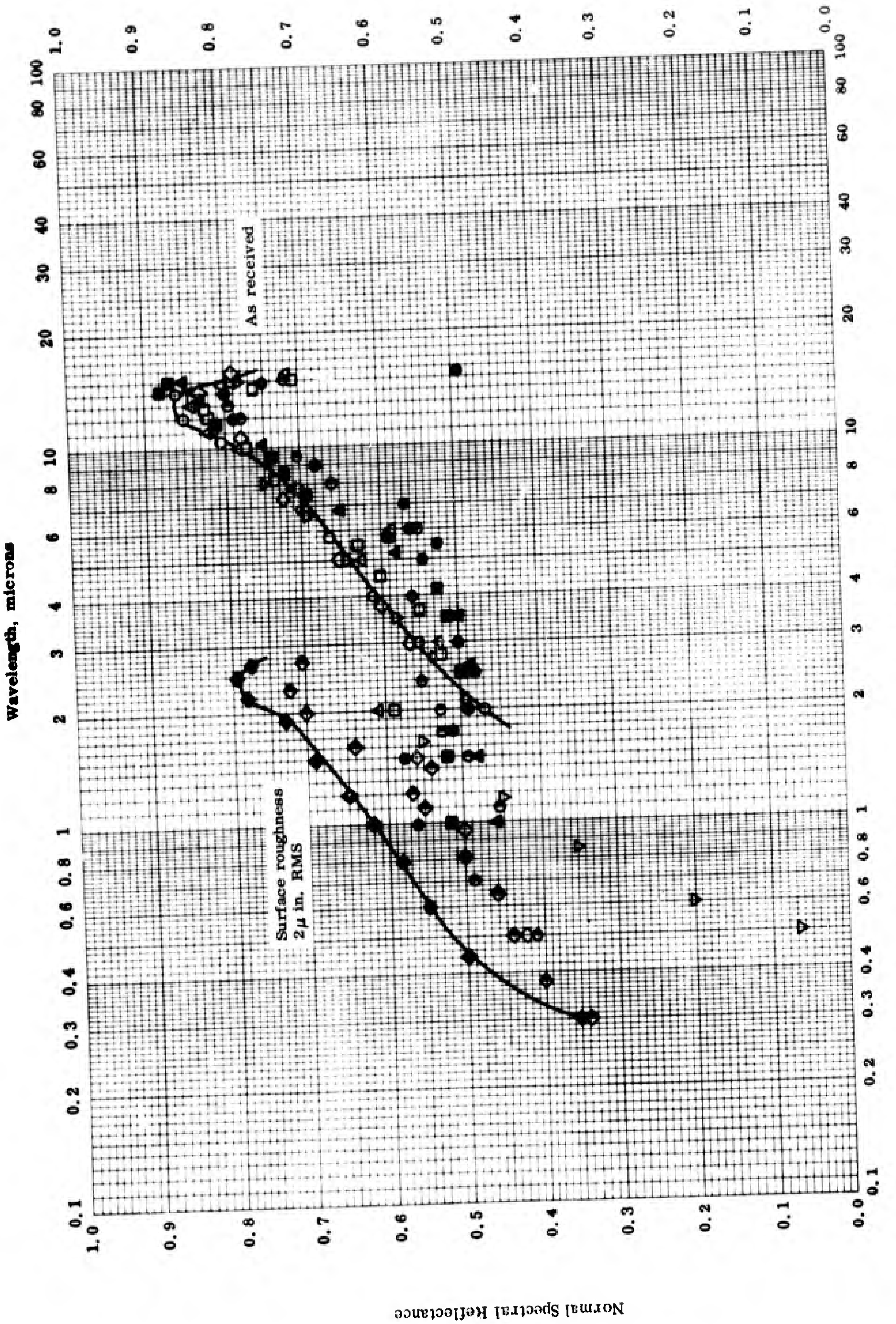


NORMAL SPECTRAL REFLECTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(Stainless Steel AM-350)

NORMAL SPECTRAL REFLECTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(Stainless Steel AM-350)

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
○	62-8	< 322	2.00-15.00		Stainless steel AM-350, nominal: 16.5 - 17.5 Cr, 4.0 - 4.5 Ni, 2.5 - 3.0 Mo, 0.5 - 0.75 Mn, 0.2 - 0.5 Si and 0.1 C.	As received; 523.2 K source.
●	62-8	< 322	1.00-15.00		Same as above.	The above specimen with 773.2 K source.
◑	62-8	< 322	0.50-15.00		Same as above.	The above specimen with 1273 K source.
△	62-8	< 322	2.00-15.00		Stainless steel AM-350.	Heated in air at 755.4 K for 30 min.; 523.2 K source.
▲	62-8	< 322	1.00-15.00		Same as above.	The above specimen with 773.2 K source.
▽	62-8	< 322	0.50-15.00		Same as above.	The above specimen with 1273 K source.
□	62-8	< 322	2.00-15.00		Stainless steel AM-350.	Heated in a 4.4 x 10^{-5} mm Hg vacuum at 755.4 K for 30 min.; 523.2 K source.
■	62-8	< 322	1.00-15.00		Same as above.	The above specimen with 773.2 K source.
◇	62-8	< 322	0.50-15.00		Same as above.	The above specimen with 1273 K source.
▷	57-13	298	0.3-2.7	± 4	Stainless steel AM-350; aircraft grade; surface roughness 2 μ in. RMS.	Subzero cooled and tempered.
◁	57-13	298	0.3-2.7	± 4	Stainless steel AM-350; aircraft grade; surface roughness 15 μ in. RMS.	Subzero cooled and tempered.
◪	58-12	298	0.3-2.7		Stainless steel AM-350.	Oxidized.

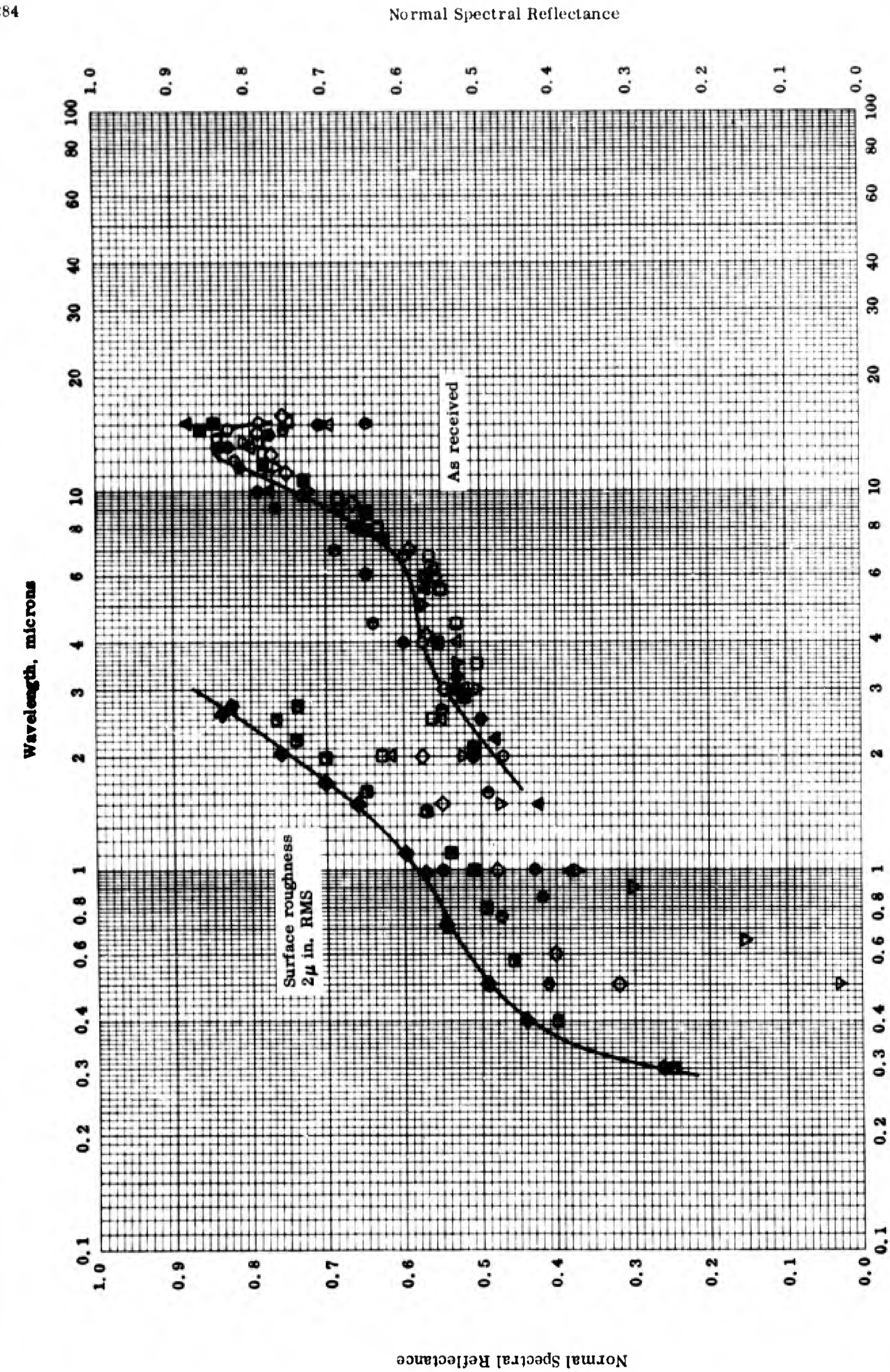


NORMAL SPECTRAL REFLECTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(Stainless Steel 17-7 PH)

NORMAL SPECTRAL REFLECTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(Stainless Steel 17-7 PH)

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
○	62-8	<322	2.00-15.00		Stainless steel 17-7 PH, nominal: 16.00 - 18.00 Cr, 6.50 - 7.75 Ni, 1.00 > Mn, 1.00 > Si, 0.75 - 1.50 Al and 0.09 > C; grade MIL-S-25043.	As received; 523.2 K source.
●	62-8	<322	1.00-15.00		Same as above.	The above specimen with 773.2 K source.
◑	62-8	<322	0.50-15.00		Same as above.	The above specimen with 1273 K source.
△	62-8	<322	2.00-15.00		Stainless steel 17-7 PH; grade MIL-S-25043.	Heated in air at 755.4 K for 30 min.; 523.2 K source.
▲	62-8	<322	1.00-15.00		Same as above.	The above specimen with 773.2 K source.
▽	62-8	<322	0.50-15.00		Same as above.	The above specimen with 1273 K source.
□	62-8	<322	2.00-15.00		Stainless steel 17-7 PH; grade MIL-S-25043.	Heated in a 4.4×10^{-5} mm Hg vacuum at 755.4 K for 30 min.; 523.2 K source.
■	62-8	<322	1.00-15.00		Same as above.	The above specimen with 773.2 K source.
◇	62-8	<322	0.50-15.00		Same as above.	The above specimen with 1273 K source.
◆	57-13	298	0.3-2.7	±4	Stainless steel 17-7 PH; nominal: 16-18 Cr, 6.50-7.75 Ni, 1.00 >Mn, 1.00 >Si, 0.75 - 1.50 Al, and 0.09>C; grade MIL-S-25043A; surface roughness 2 μ in. RMS.	RH 950 condition.
◆	57-13	298	0.3-2.7	±4	Stainless steel 17-7 PH; grade MIL-S-25043A; surface roughness 15 μ in. RMS.	RH 950 condition.

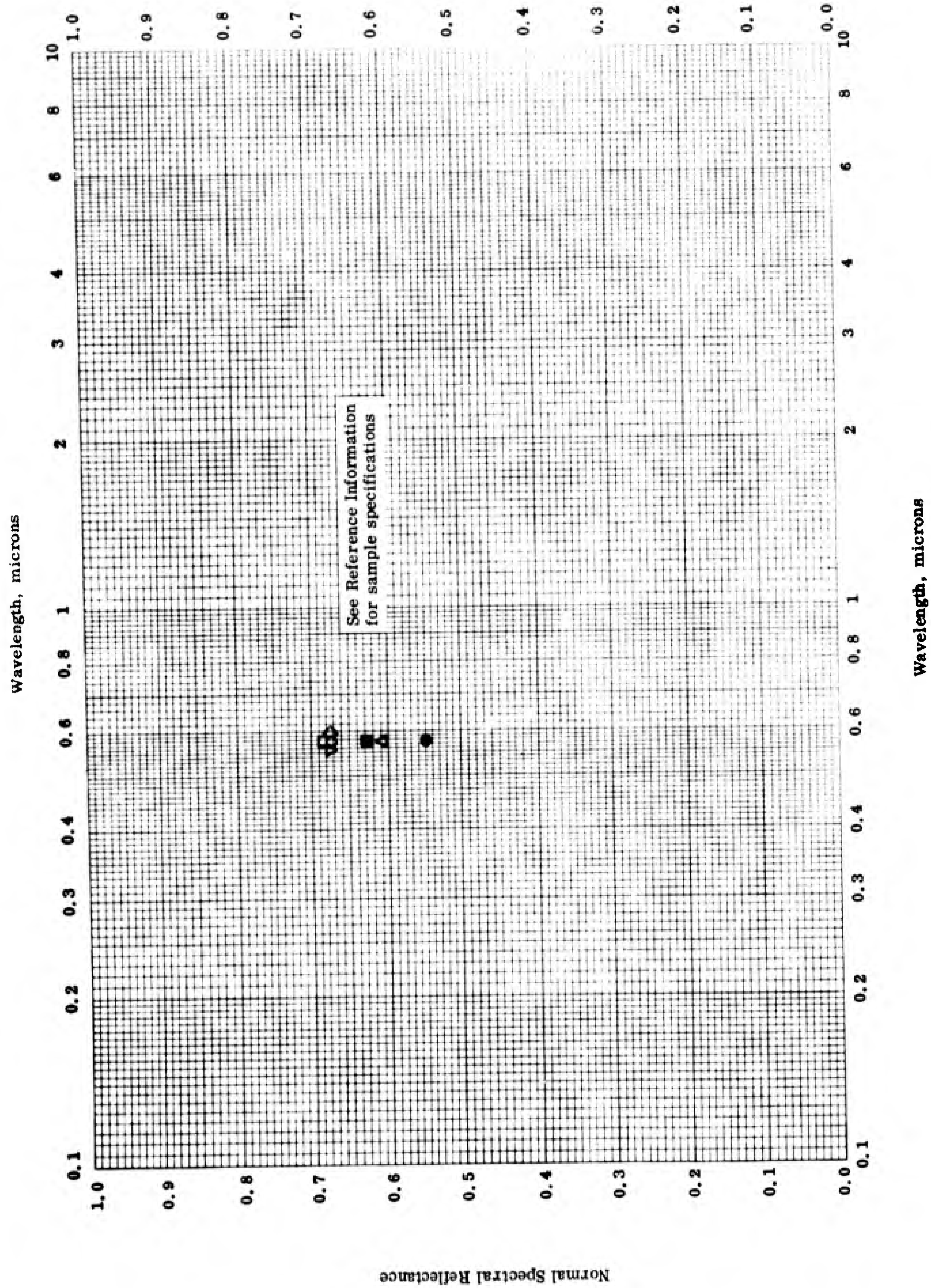


NORMAL SPECTRAL REFLECTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(Stainless Steel PH 15-7 Mo)

NORMAL SPECTRAL REFLECTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(Stainless Steel PH 15-7 Mo)

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
○	62-8	<322	2.00-15.00		Stainless steel PH 15-7 Mo, nominal: 14.00 - 16.00 Cr, 6.50 - 7.50 Ni, 2.00 - 3.00 Mo, 1.00 > Mn, 1.00 > Si, 0.75 - 1.50 Al and 0.09 > C; grade NAA LB0160-130.	As received; 523.2 K source.
●	62-8	<322	1.00-15.00		Same as above.	The above specimen with 773.2 K source.
◑	62-8	<322	0.50-15.00		Same as above.	The above specimen with 1273 K source.
△	62-8	<322	2.00-15.00		Stainless steel PH 15-7 Mo; grade NAA LB0160-130.	Heated in air at 755.4 K for 30 min.; 523.2 K source.
▲	62-8	<322	1.00-15.00		Same as above.	The above specimen with 773.2 K source.
▽	62-8	<322	0.50-15.00		Same as above.	The above specimen with 1273 K source.
□	62-8	<322	2.00-15.00		Stainless steel PH 15-7 Mo; grade NAA LB0160-130.	Heated in a 4.4×10^{-5} mm Hg vacuum at 755.4 K for 30 min.; 523.2 K source.
■	62-8	<322	1.00-15.00		Same as above.	The above specimen with 773.2 K source.
◇	62-8	<322	0.50-15.00		Same as above.	The above specimen with 1273 K source.
◆	57-13	298	0.3-2.7	±4	Stainless steel PH 15-7 Mo; surface roughness 2 μ in. RMS.	RH 950 condition.
◪	57-13	298	0.3-2.7	±4	Stainless steel PH 15-7 Mo; surface roughness 15 μ in. RMS.	RH 950 condition.

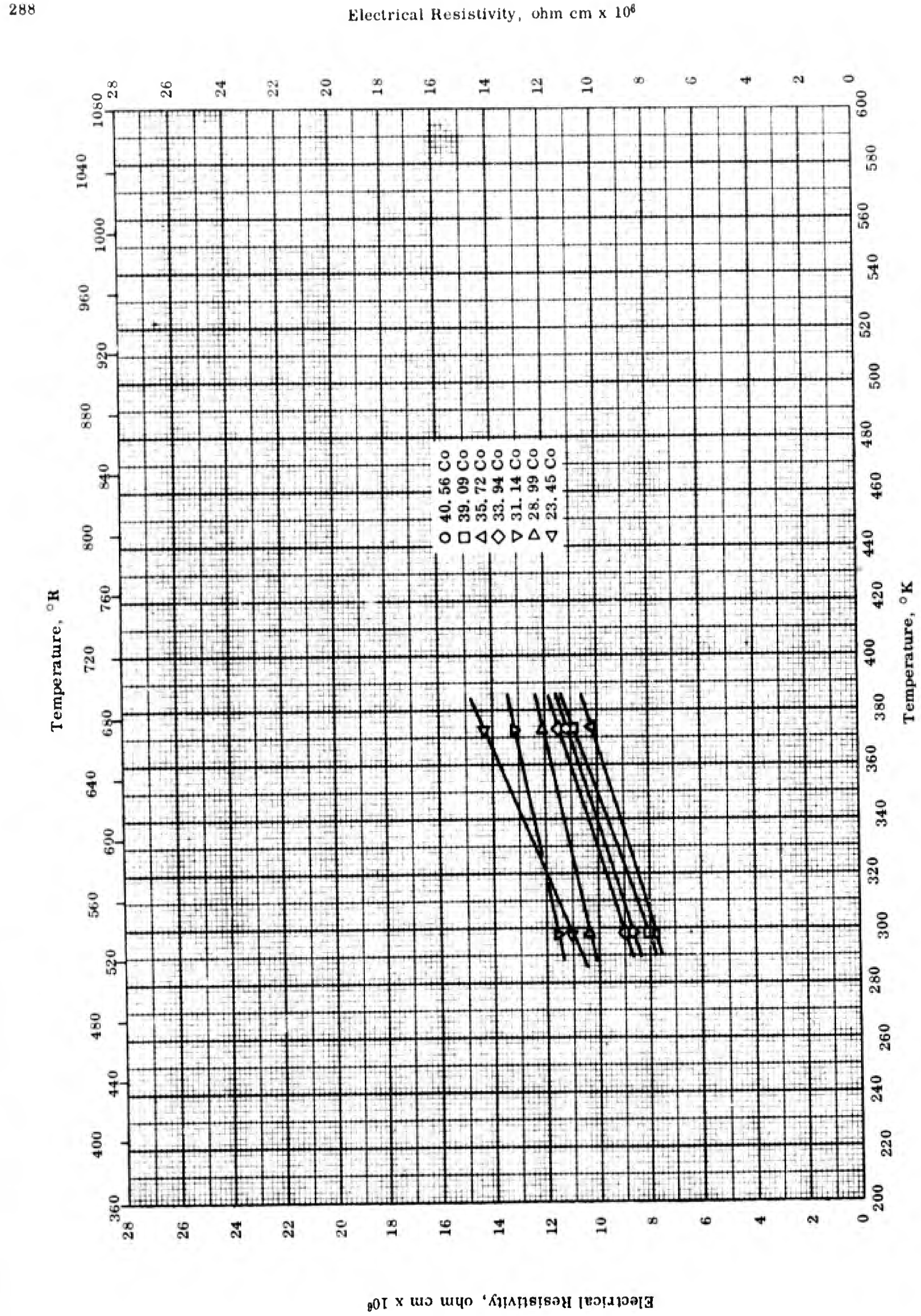


NORMAL SPECTRAL REFLECTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(Miscellaneous)

NORMAL SPECTRAL REFLECTANCE -- IRON + CHROMIUM + NICKEL + ΣX_i GROUP II
(Miscellaneous)

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
○	53-11	298	0.575		Stainless steel 304; 18.5 Cr, 9.0 Ni and 0.04 C.	Metallographically polished.
●	53-11	298	0.575		Same as above.	Buff-cut, ground to No. 000 emery, and polished on cloth.
△	53-11	298	0.575		Same as above.	Color buffed with chrome oxide.
▽	53-11	298	0.575		Same as above.	Electropolished in citric-sulpheric bath for 10 min.
□	53-11	298	0.575		Stainless steel 309; 24.3 Cr, 12.8 Ni and 0.07 C.	Metallographically polished.
◇	53-11	298	0.575		Stainless steel 310; 26.9 Cr, 21.5 Ni and 0.10 C.	Metallographically polished.
■	53-11	298	0.575		Stainless steel 431; 16.4 Cr, 1.6 Ni and 0.12 C.	Metallographically polished.

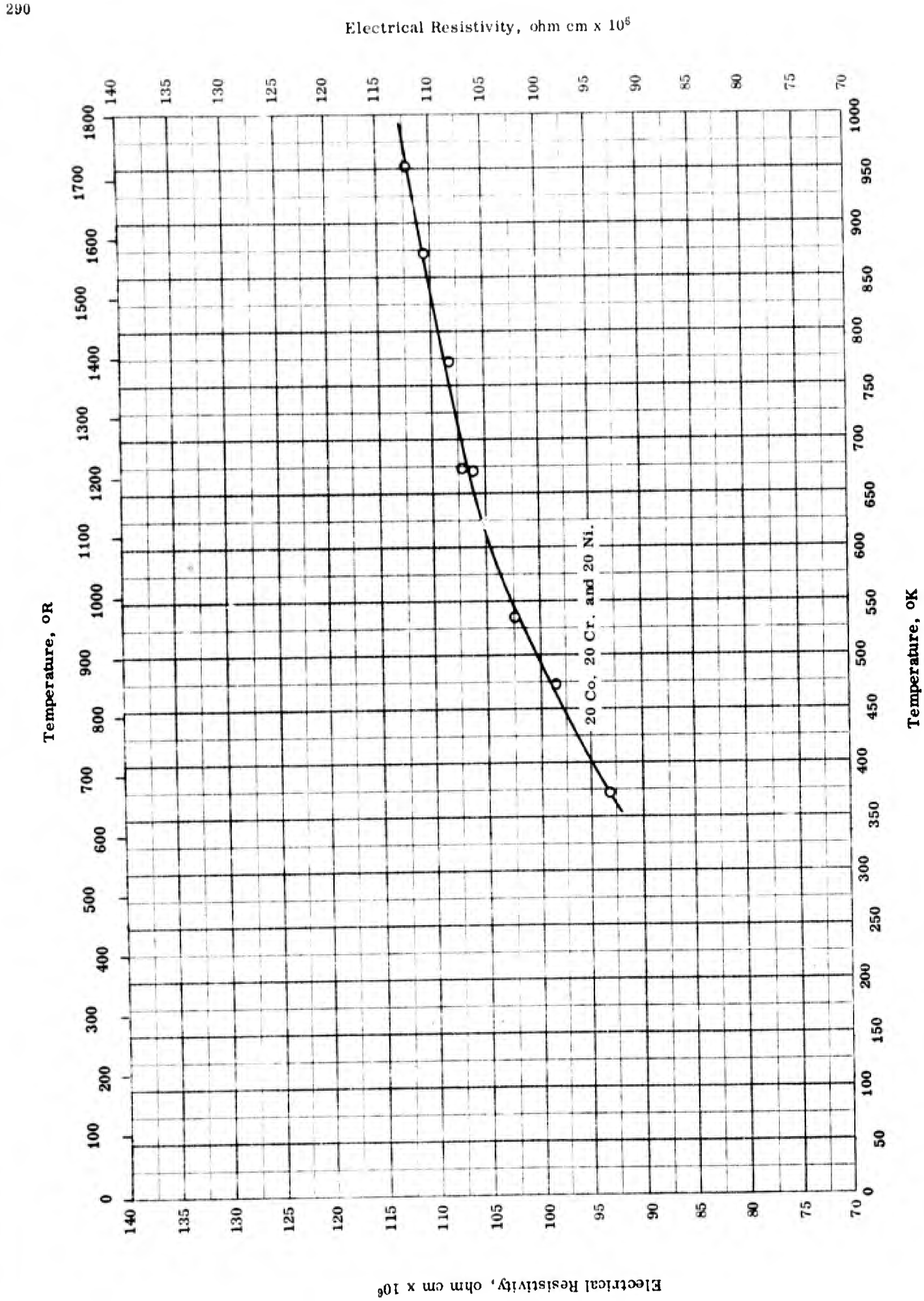


ELECTRICAL RESISTIVITY -- IRON + COBALT + ΣX_i GROUP I

ELECTRICAL RESISTIVITY -- IRON + COBALT + ΣX_i GROUP I

REFERENCE INFORMATION

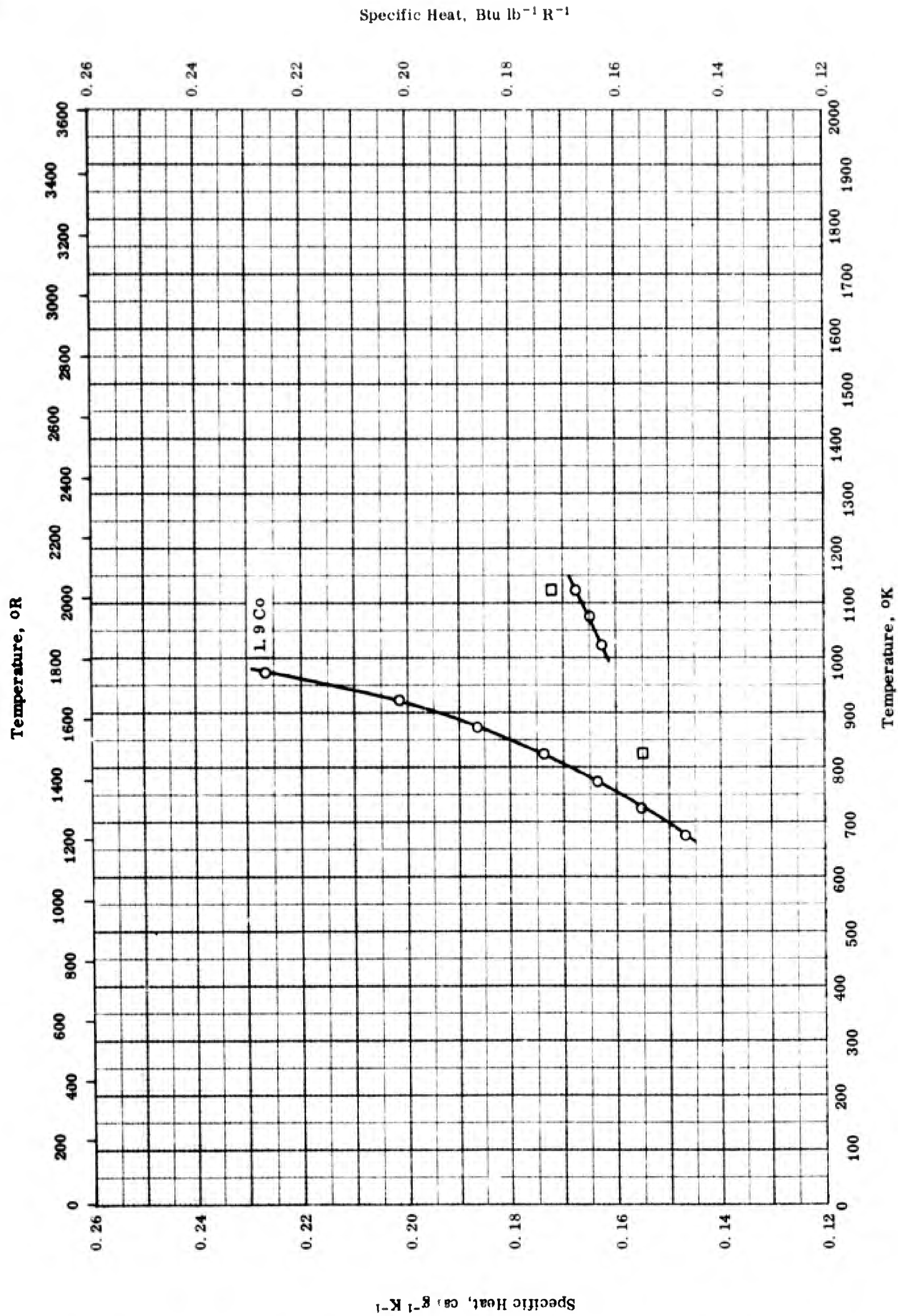
Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	57-10	298-317		59. 44 Fe and 40. 56 Co; prepared from electrolytic Co and "Armco" iron (0. 02 > C).	Annealed 1500 hrs at 500 C.
□	57-10	298-317		60. 91 Fe and 39. 09 Co; raw material same as above.	Same as above.
△	57-10	298-317		64. 28 Fe and 35. 72 Co; raw material same as above.	Same as above.
◇	57-10	298-317		66. 06 Fe and 33. 94 Co; raw material same as above.	Same as above.
▽	57-10	298-317		68. 86 Fe and 31. 14 Co; raw material same as above.	Same as above.
▷	57-10	298-317		71. 01 Fe and 28. 99 Co; raw material same as above.	Same as above.
◁	57-10	298-317		76. 55 Fe and 23. 45 Co; raw material same as above.	Same as above.



ELECTRICAL RESISTIVITY -- IRON + COBALT + ΣX_i GROUP II.

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	57-3	373-955	±1	20 Co, 20 Cr, and 20 Ni.	Forged, quenched in oil from 1200 C, aged 70 hrs at 760 C.

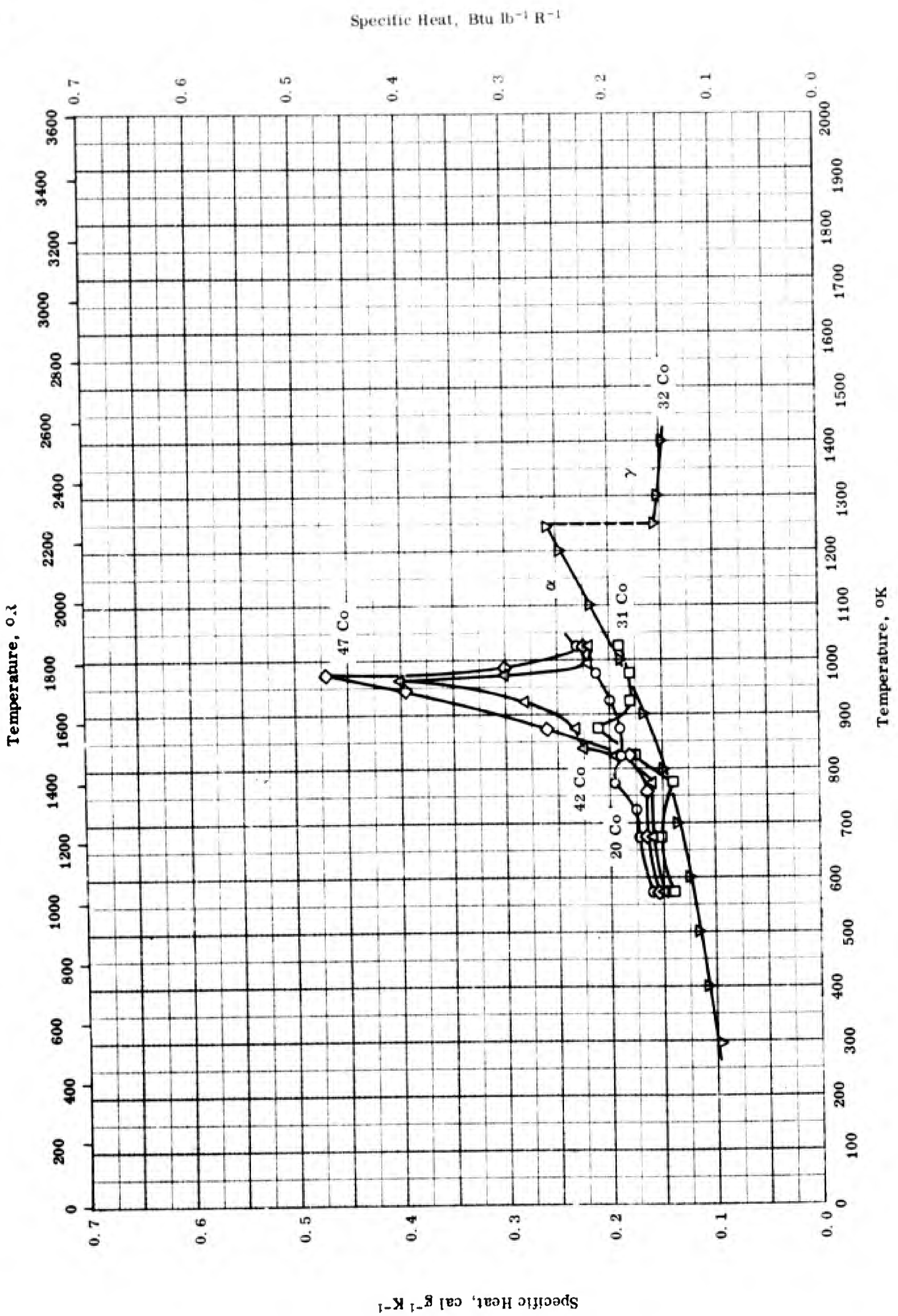


SPECIFIC HEAT -- IRON + COBALT + ΣX_i GROUP I
($Co < 2.0$)

SPECIFIC HEAT -- IRON + COBALT + ΣX_i GROUP I
(Co < 2.0)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-4	673-1123		Eutectoic steel, pearlite; 1.91 Co, 0.79 C, 0.22 Si, 0.12 Mn, 0.014 S, and 0.005 P.	Hammer-cogged to 1.57-inch square billets from 1040 C, and annealed 20 hrs at 900 C.
□	54-4	823-1123		Austentic; same composition as above.	Same as above.

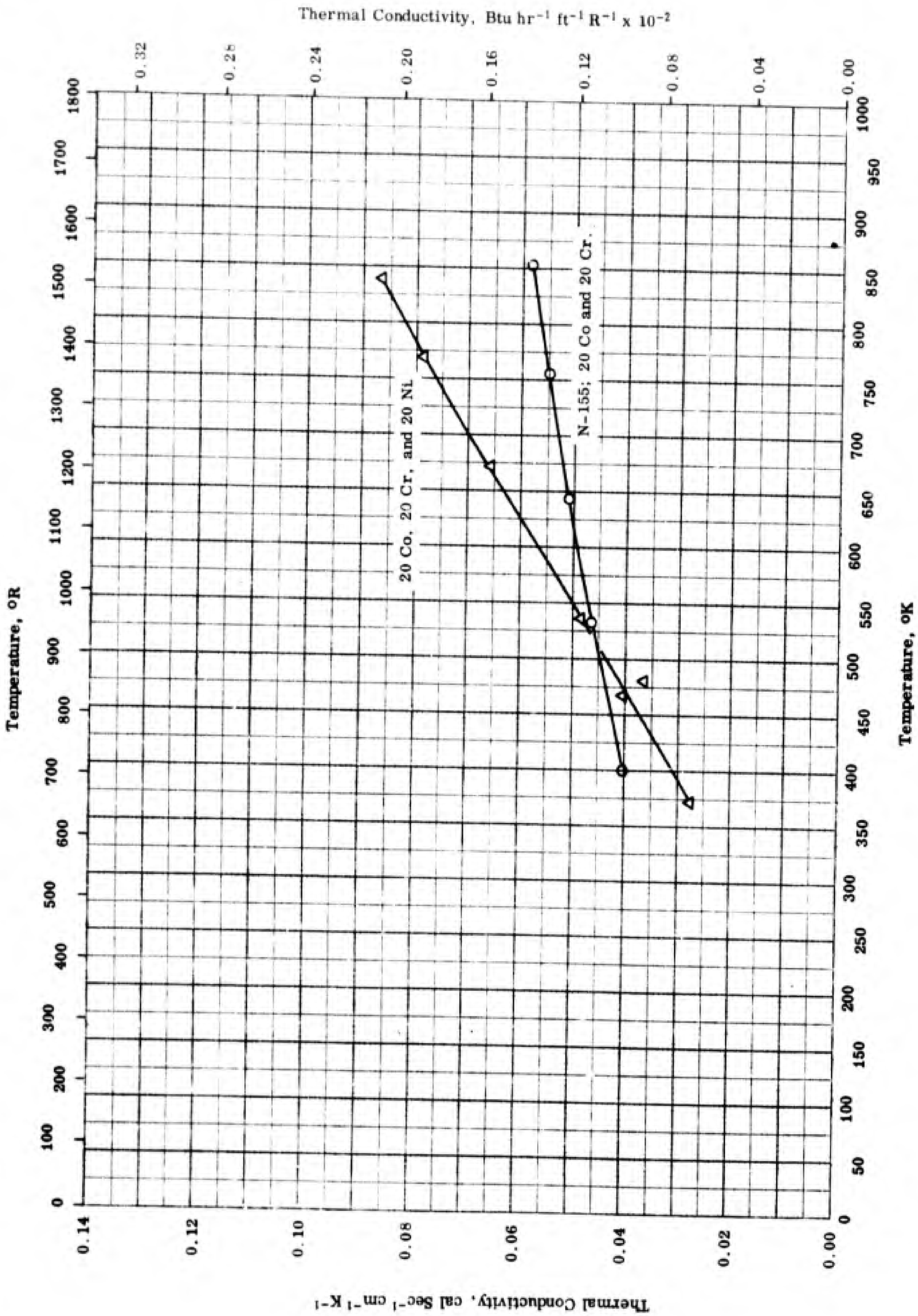


SPECIFIC HEAT -- IRON + COBALT + ΣX_i GROUP I
($20 \leq Co < 50$)

SPECIFIC HEAT -- IRON + COBALT + ΣX_i GROUP I
($20 \leq Co < 50$)

REFERENCE INFORMATION

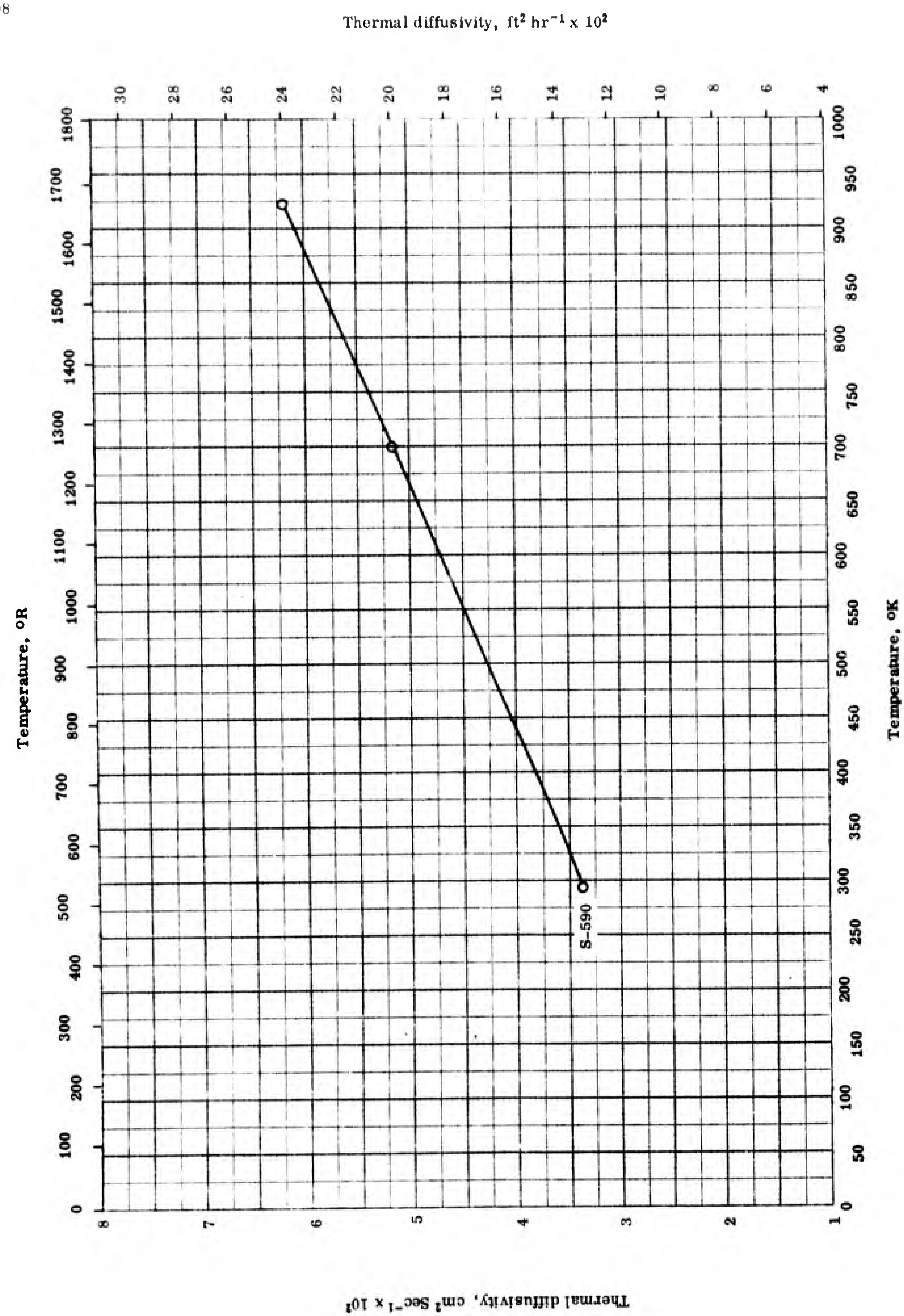
Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
▽	63-4	298-1400	± 0.5	67.9 Fe and 32.1 Co.	Homogenized 4 days at 1350 C under helium atm. and air cooled to room temperature.
○	54-5	573-1023		80 Fe and 20 Co.	Melted in H_2 from electrolytic Co and Fe; forged, machined, annealed 2 hrs at 1000 C, and cooled to 420 C at 30 C hr^{-1}; held 10 days at 420 C and cooled to room temperature at 30 C hr^{-1}.
□	54-5	573-1023		69 Fe and 31 Co.	Same as above.
△	54-5	573-1023		58 Fe and 42 Co.	Same as above.
◇	54-5	573-1023		53 Fe and 47 Co.	Same as above.



THERMAL CONDUCTIVITY -- IRON + COBALT + ΣX_i GROUP II

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
△	57-3	373-955	± 4	20 Co, 20 Cr, and 20 Ni.	Forged beginning at 1180 C and ending 950 C, oil-quenched from 1200 C and then aged 70 hrs at 760 C; data probably high.
○	51-1	400-853	± 4	N-155 (low C); 20 Co, 20 Cr, 3.25 Mo, 2.5 W, 1.1 Nb, and 0.2 C.	

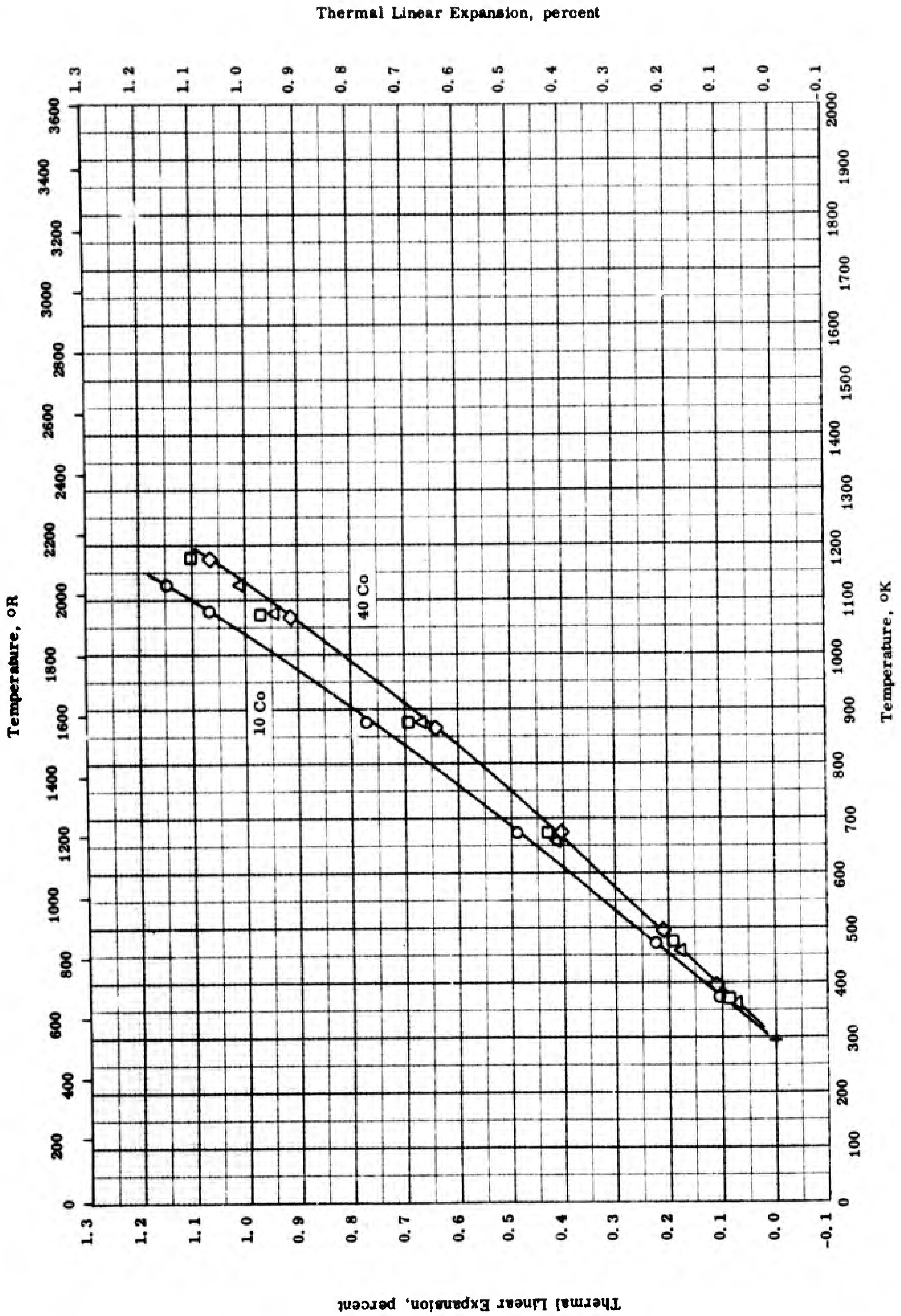


THERMAL DIFFUSIVITY -- IRON + COBALT + ΣX_i GROUP II

THERMAL DIFFUSIVITY -- IRON + COBALT + ΣX_i GROUP II

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	56-2	294-922		S-590; 20 Co, 20 Cr, 20 Ni, 4 Mo, 4 W, 4 Nb, 1.2 Mn, 0.4 C and 0.4 Si.	

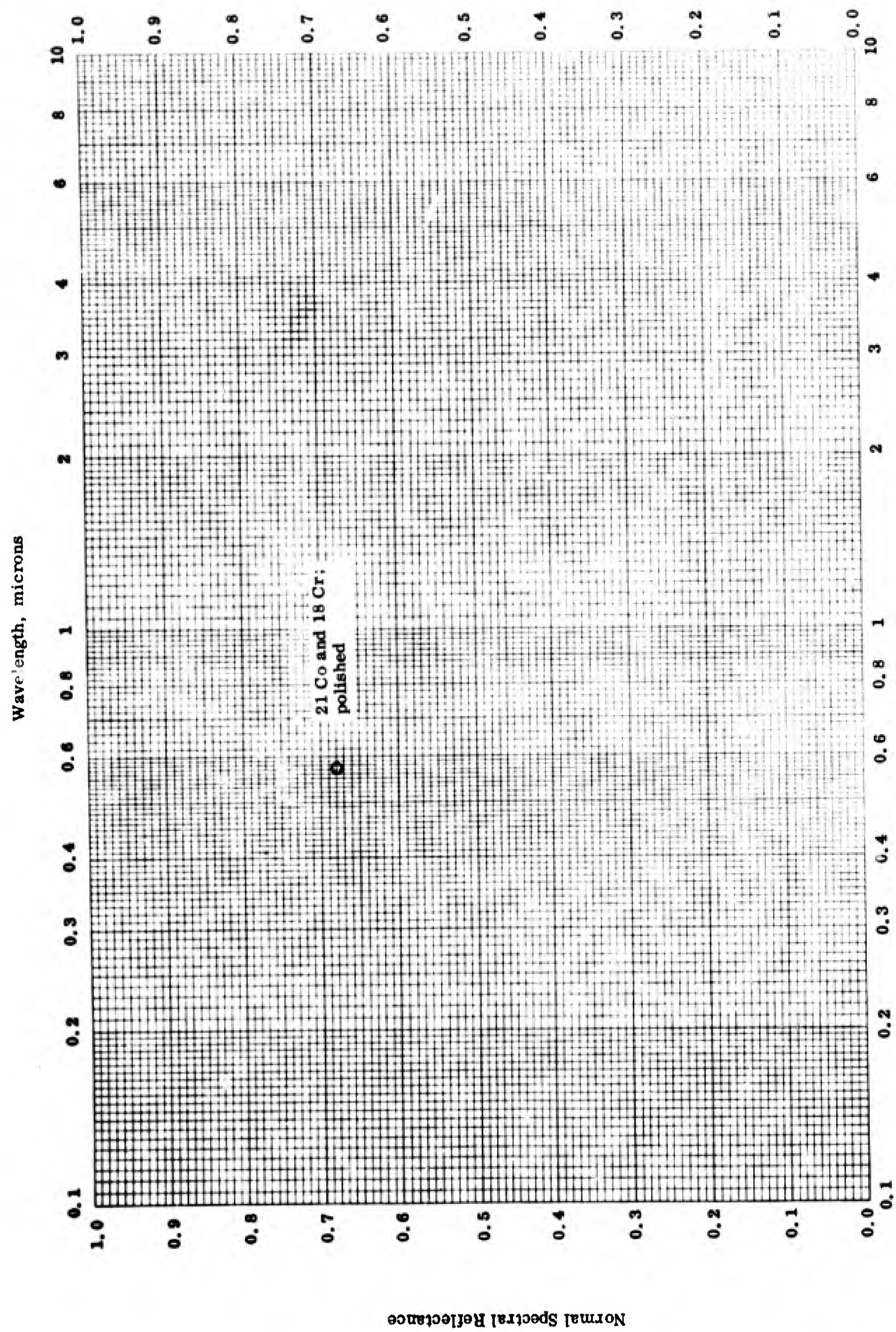


THERMAL LINEAR EXPANSION -- IRON + COBALT + ΣX_i GROUP I

THERMAL LINEAR EXPANSION -- IRON + COBALT + ΣX_i GROUP I

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	48-5	473-1123		89.4 Fe, 10.2 Co, 0.31 Mn, and < 0.01 Si.	Induction melted in vacuum from Armco Iron and cobalt rondelles; swaged, annealed 1 hr at 900 C in H_2 atm and cooled slowly.
□	48-5	473-1173		79.2 Fe, 20.0 Co, 0.47 Mn, and nil Si.	Same as above.
△	48-5	473-1123		69.4 Fe, 30.2 Co, 0.45 Mn, and nil Si.	Same as above.
◇	48-5	473-1173		59.4 Fe, 40.1 Co, 0.44 Mn, and nil Si.	Same as above.

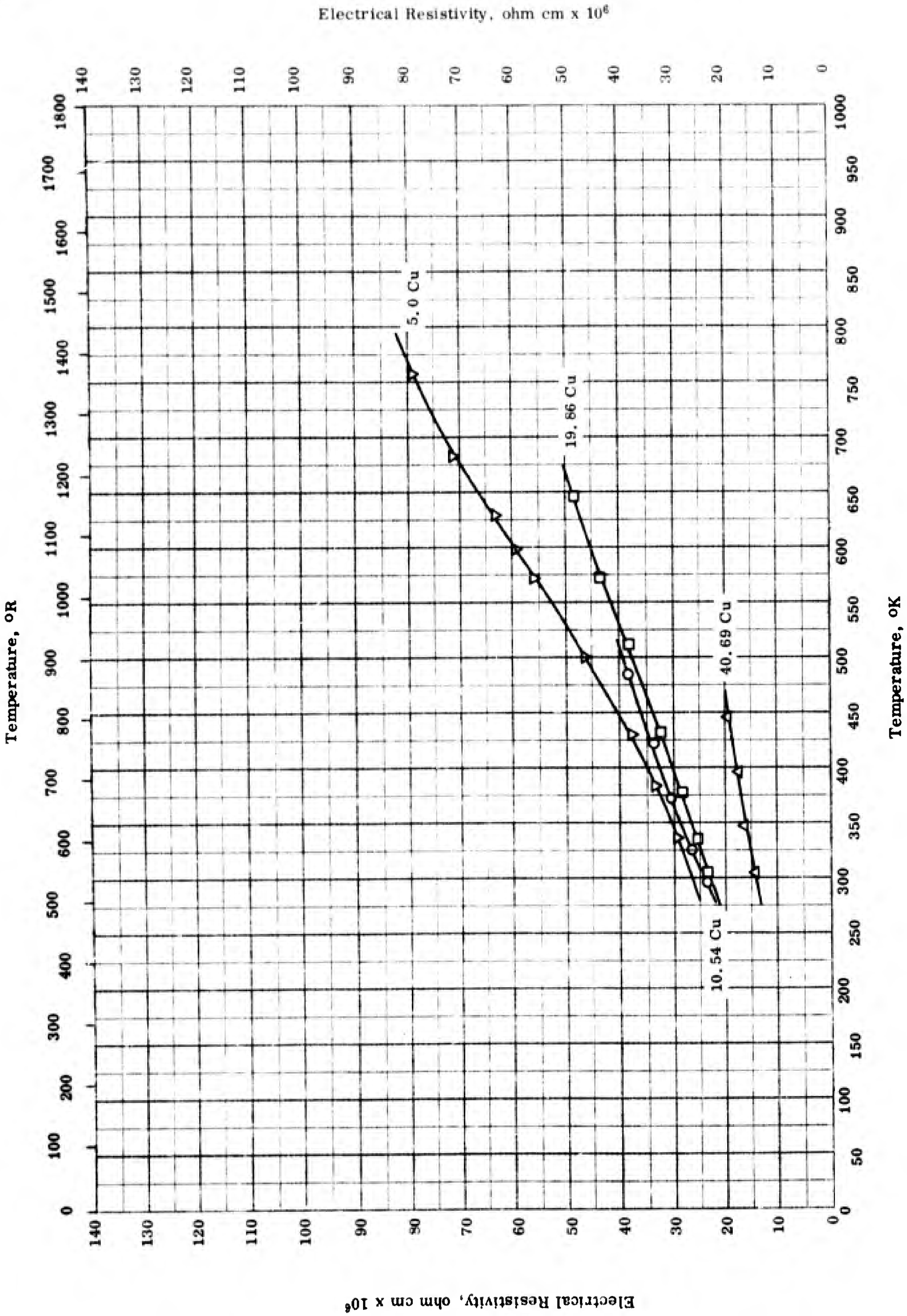


NORMAL SPECTRAL REFLECTANCE -- IRON + COBALT + ΣX_i GROUP II

NORMAL SPECTRAL REFLECTANCE -- IRON + COBALT + ΣX_i GROUP II

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
O	53-11	298	0.575		Stainless steel 18 - 21 Cr - Co; 21.0 Co, and 18.3 Cr.	Metallographically polished.

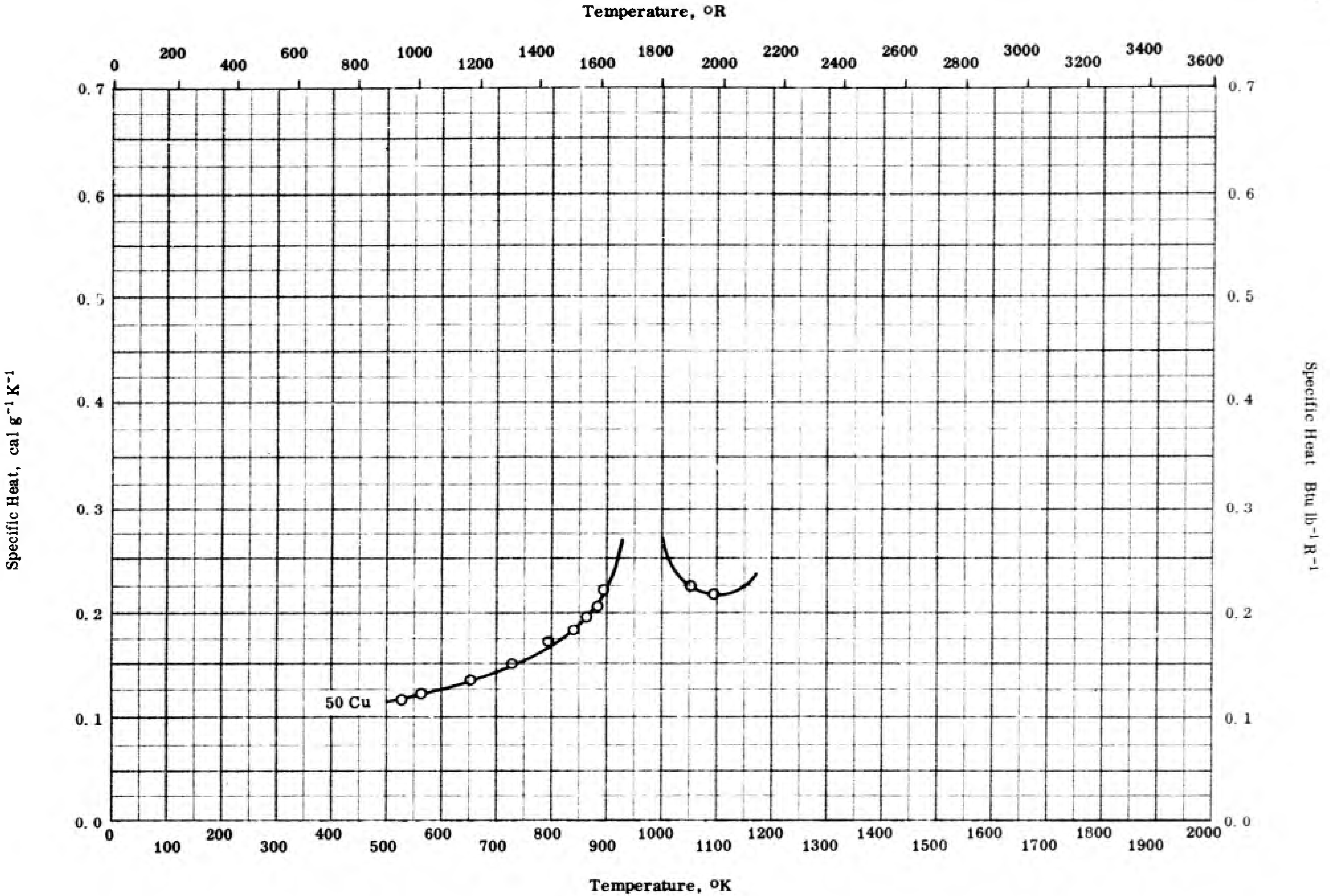


ELECTRICAL RESISTIVITY -- IRON + COPPER + ΣX_i GROUP I

ELECTRICAL RESISTIVITY -- IRON + COPPER + ΣX_i GROUP I.

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-2	298-485		86.26 Fe, 10.54 Cu, 1.6 C, 0.42 Mn, and 0.29 Si; porosity 10%; density 465 lb ft^{-3}.	Sintered 1 1/2 hrs at 1150 C in H_2 atmos.
□	54-2	310-646		76.80 Fe, 19.86 Cu, 1.52 C, 0.39 Mn, and 0.31 Si; porosity 10.5%; density 479 lb ft^{-3}.	Same as above.
△	54-2	310-448		56.15 Fe, 40.69 Cu, 1.5 C, 0.40 Mn, and 0.29 Si; porosity 10.7%; density 488 lb ft^{-3}.	Same as above.
▽	54-2	336-762		91.84 Fe, 5.0 Cu, 1.66 C, 0.44 Mn, 0.35 Si, and 0.30 ($FeO + Fe_2O_3$); porosity 17%.	Same as above.

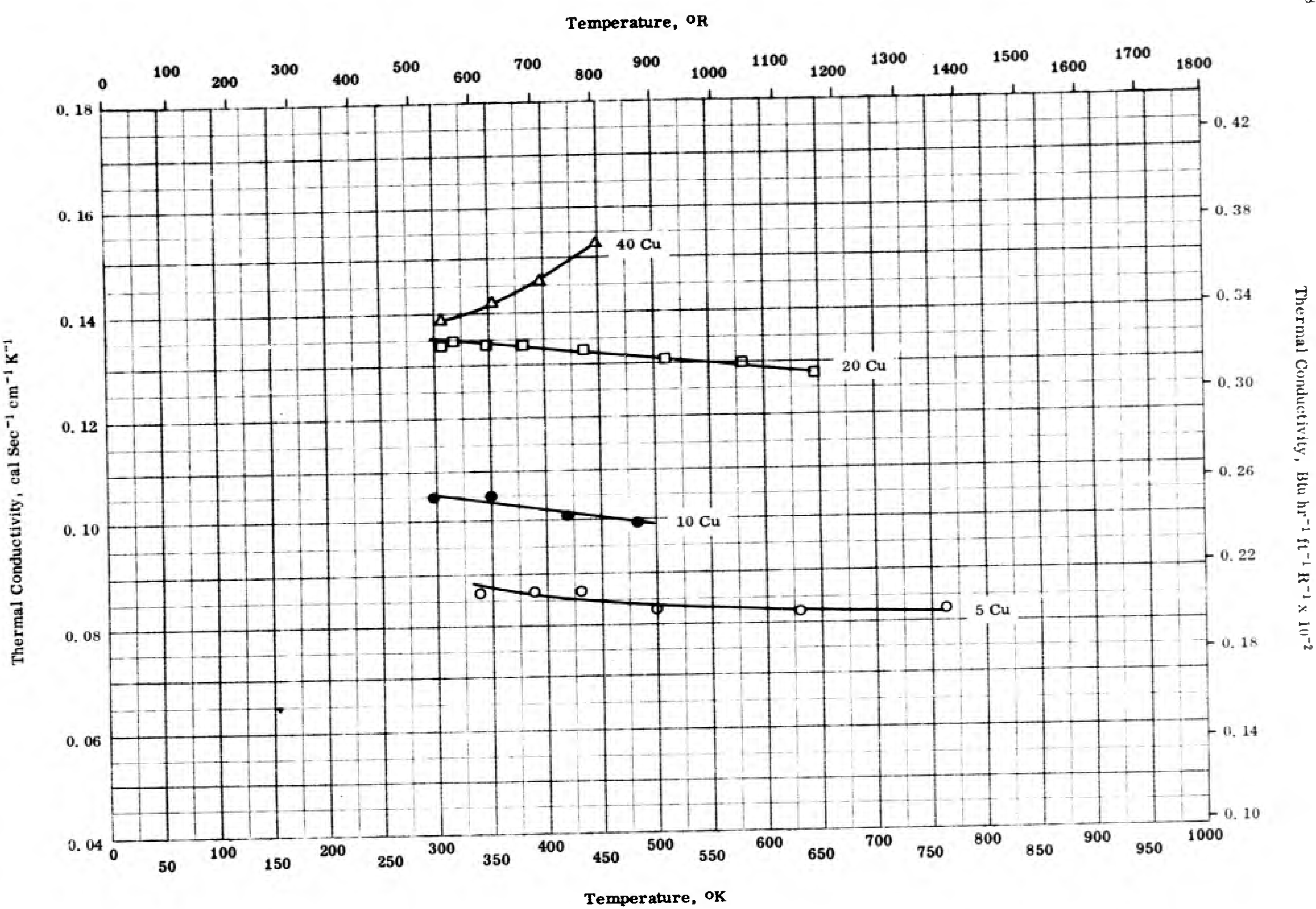


SPECIFIC HEAT -- IRON + COPPER + ΣX_i GROUP I

SPECIFIC HEAT -- IRON + COPPER + ΣX_i GROUP I

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	55-2	528-1095	≤5.0	50 Cu.	



THERMAL CONDUCTIVITY -- IRON + COPPER + ΣX_i GROUP I

THERMAL CONDUCTIVITY -- IRON + COPPER + ΣX_i GROUP I

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-2	333-763		91.84 Fe, 5.0 Cu, 1.66 C, 0.44 Mn, 0.35 Si, and 0.30 ($FeO + Fe_2O_3$); porosity 17%.	Sintered 1 1/2 hrs at 1150 C in H_2 atm.
●	54-2	298-488		86.26 Fe, 10.54 Cu, 1.6 C, 0.42 Mn, and 0.29 Si; density 465 lb ft^{-3} and porosity 10%.	Same as above.
□	54-2	305-646		76.80 Fe, 19.86 Cu, 1.52 C, 0.39 Mn, and 0.31 Si; density 479 lb ft^{-3} and porosity 10.5%.	Same as above.
△	54-2	305-448		56.15 Fe, 40.69 Cu, 1.51 C, 0.40 Mn, and 0.29 Si; density 488 lb ft^{-3} and porosity 10.7%.	Same as above.

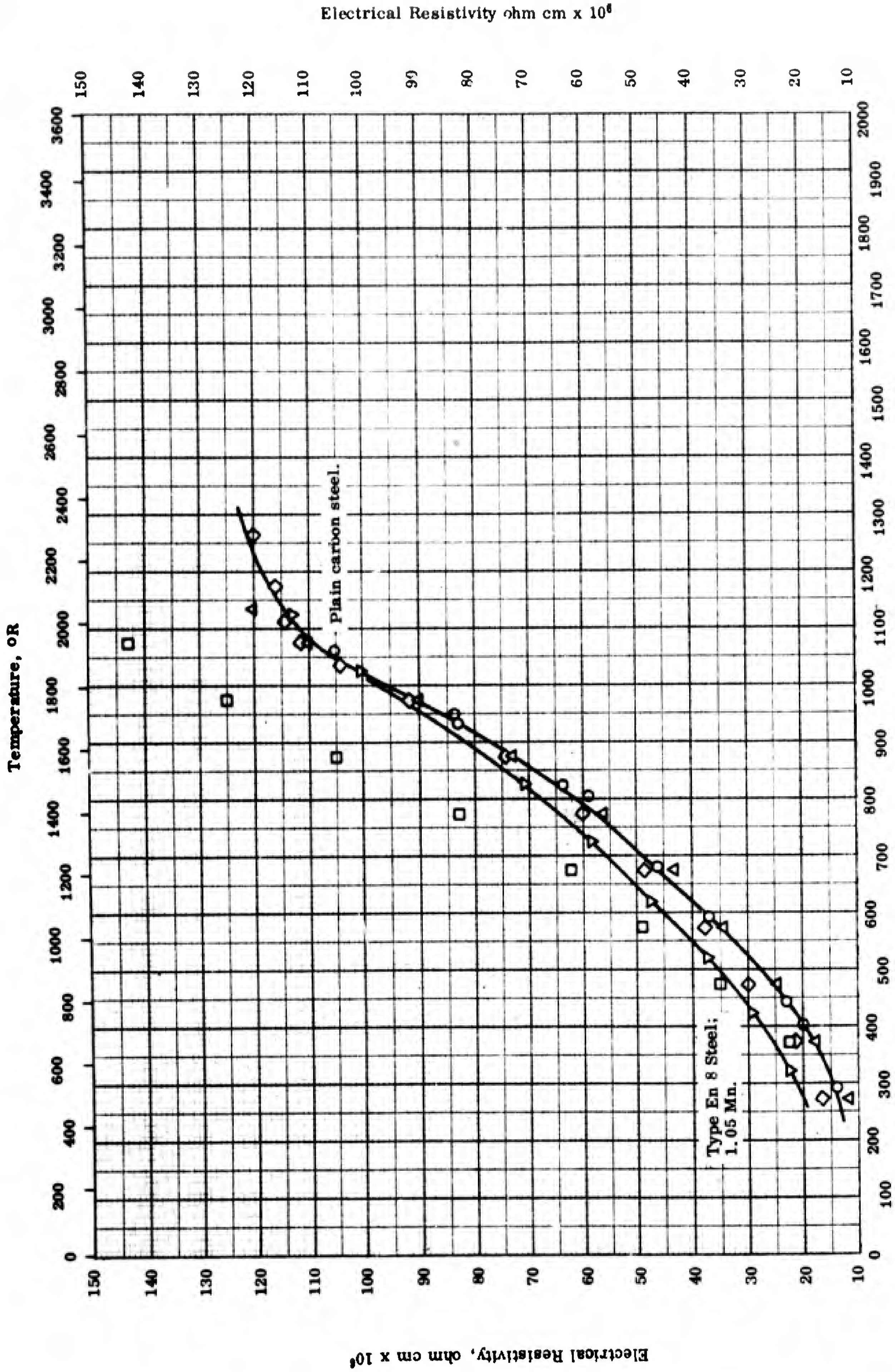
PROPERTIES OF IRON + MANGANESE + ΣX_i

REPORTED VALUES

Density	g cm^{-3}	lb ft^{-3}
○ 19.96 Mn and 12.05 Cr	7.660	478.2
□ 20.88 Mn and 14.66 Cr	7.661	478.3
△ 16 Mn and 12 Cr	7.786	485.8
◇ 15.9 - 16.5 Mn and 15 - 15.8 Cr	7.789	486.0
● 0.3 - 0.6 Mn	7.858	490.6
▼ 0.42 Mn	7.85	490
▲ 0.61 Mn	7.84	489

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	55-1	298	±0.2	19.96 Mn, 12.05 Cr, 0.83 Si, 0.51 V, and 0.26 C.	Stabilized 10 hrs at 800 C.
□	55-1	298	±0.2	20.88 Mn, 14.66 Cr, 0.66 Si, 0.25 Ti, and 0.05 C.	Same as above.
△	47-3	298		815 (German design.); 16 Mn, 12 Cr, 0.3 Si, 0.3 Ti, and 0.12 C.	Forged.
◇	47-3	298		FCM (German design.); 63.7 - 67.2 Fe, 15.9 - 16.5 Mn, 15.0 - 15.8 Cr, 0 - 2.1 Mo, 0.9 - 1.25 Ni, 0.30 - 1.07 Si, and 0.15 - 0.17 C.	Rolled.
●	58-1	293		SAE 1010; 0.30 - 0.60 Mn and 0.08 - 0.13 C.	Density from weight and volume by water displacement.
▲	51-2	293		SAE 1010; 0.42 Mn, 0.10 C, 0.028 S, and 0.008 P.	Hot rolled; density by weight in air and in water.
▼	57-9	298		Mild steel; 0.61 Mn, 0.20 Si, 0.13 C, 0.12 Ni and 0.01 Cr.	

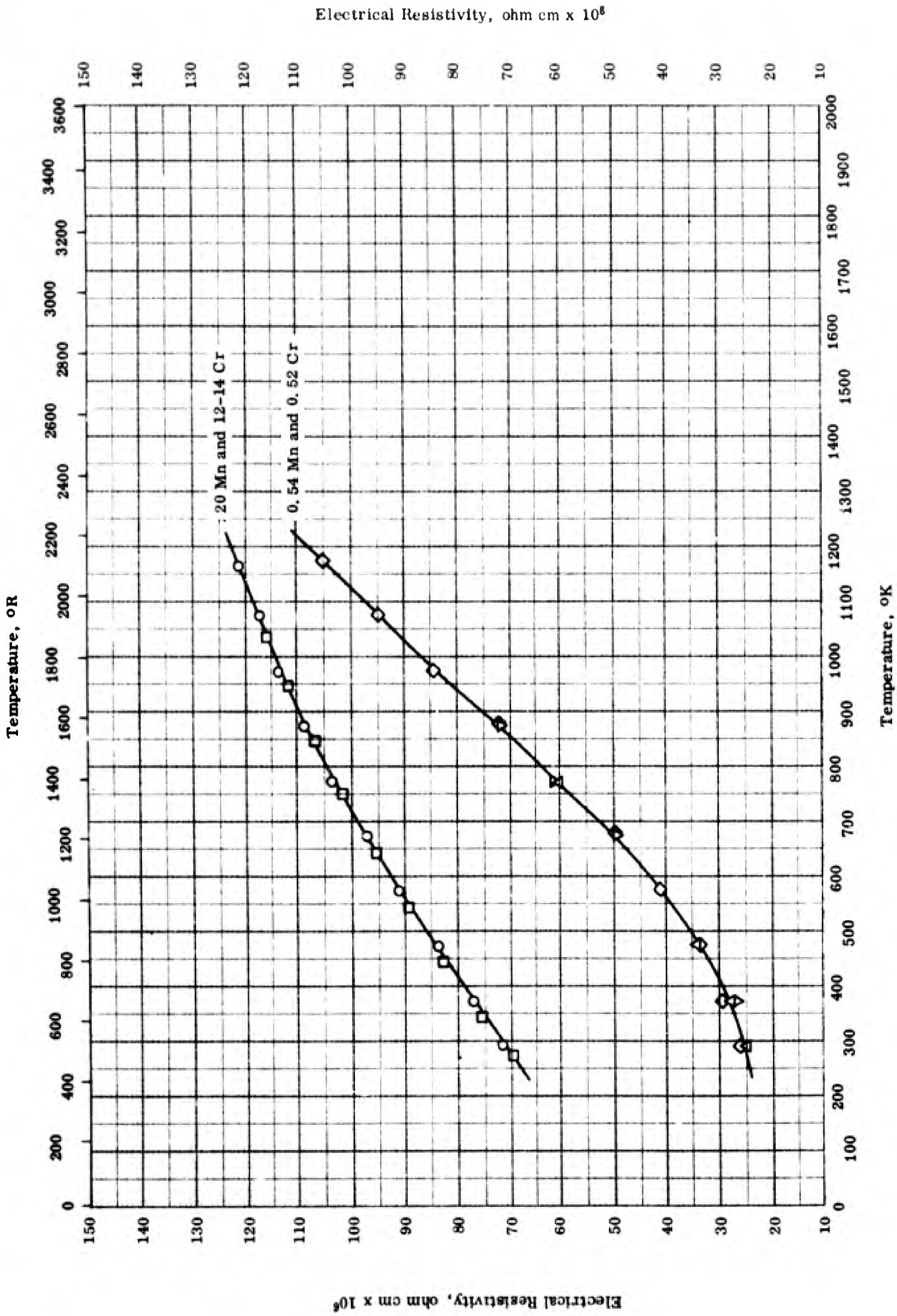


ELECTRICAL RESISTIVITY -- IRON + MANGANESE + ΣX_i GROUP I.

ELECTRICAL RESISTIVITY -- IRON + MANGANESE + ΣX_i GROUP I.

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-1	297-1058		0.42 Mn, 0.10 Si, 0.08 C, 0.03 S, and 0.015 P.	Annealed at 600 C in N_2 atm.; test run in N_2 atm. at 10 psi.
△	55-7	273-1133		SAE 1010 steel.	
□	52-3	273-1173		SAE 1010 steel.	
◇	57-9	273-1273		0.61 Mn, 0.20 Si, 0.13 C, 0.12 Ni, 0.01 Cr; density 489 lb ft^{-3}.	
▽	56-9	322-1122		Type En 8 Steel (British design.); 1.05 Mn, 0.39 C, 0.14 Si, 0.12 Ni, 0.043 S, and 0.032 P.	Normalized.

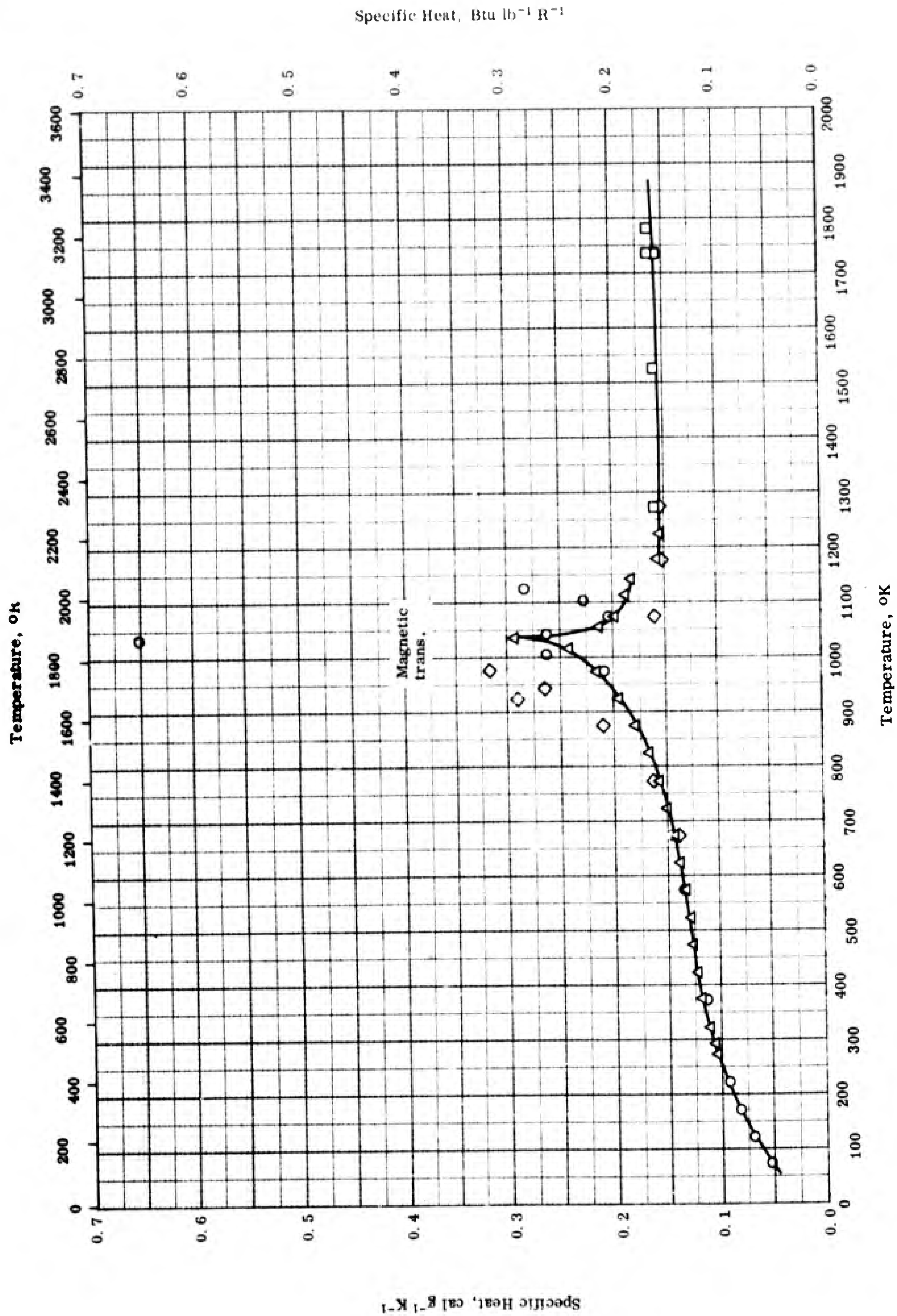


ELECTRICAL RESISTIVITY -- IRON + MANGANESE + ΣX_i GROUP II.

ELECTRICAL RESISTIVITY -- IRON + MANGANESE + ΣX_i GROUP II.

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	55-1	293-1173		Alloy steel; 20.88 Mn, 14.66 Cr, 0.66 Si, 0.25 Ti, and 0.05 C.	Stabilized at 800 C for 10 hr.
□	55-1	293-1173		19.96 Mn, 12.05 Cr, 0.83 Si, 0.51 V, and 0.26 C.	Same as above.
△	55-1	293-1173		0.54 Mn, 0.52 Cr, 0.50 Mo, 0.28 Si, and 0.15 C.	As received.
▽	55-1	293-1173		Same as above.	Normalized.
◇	55-1	293-1173		Same as above.	Annealed.



SPECIFIC HEAT -- IRON + MANGANESE + ΣX_i GROUP I
($0.4 < Mn < 0.7$)

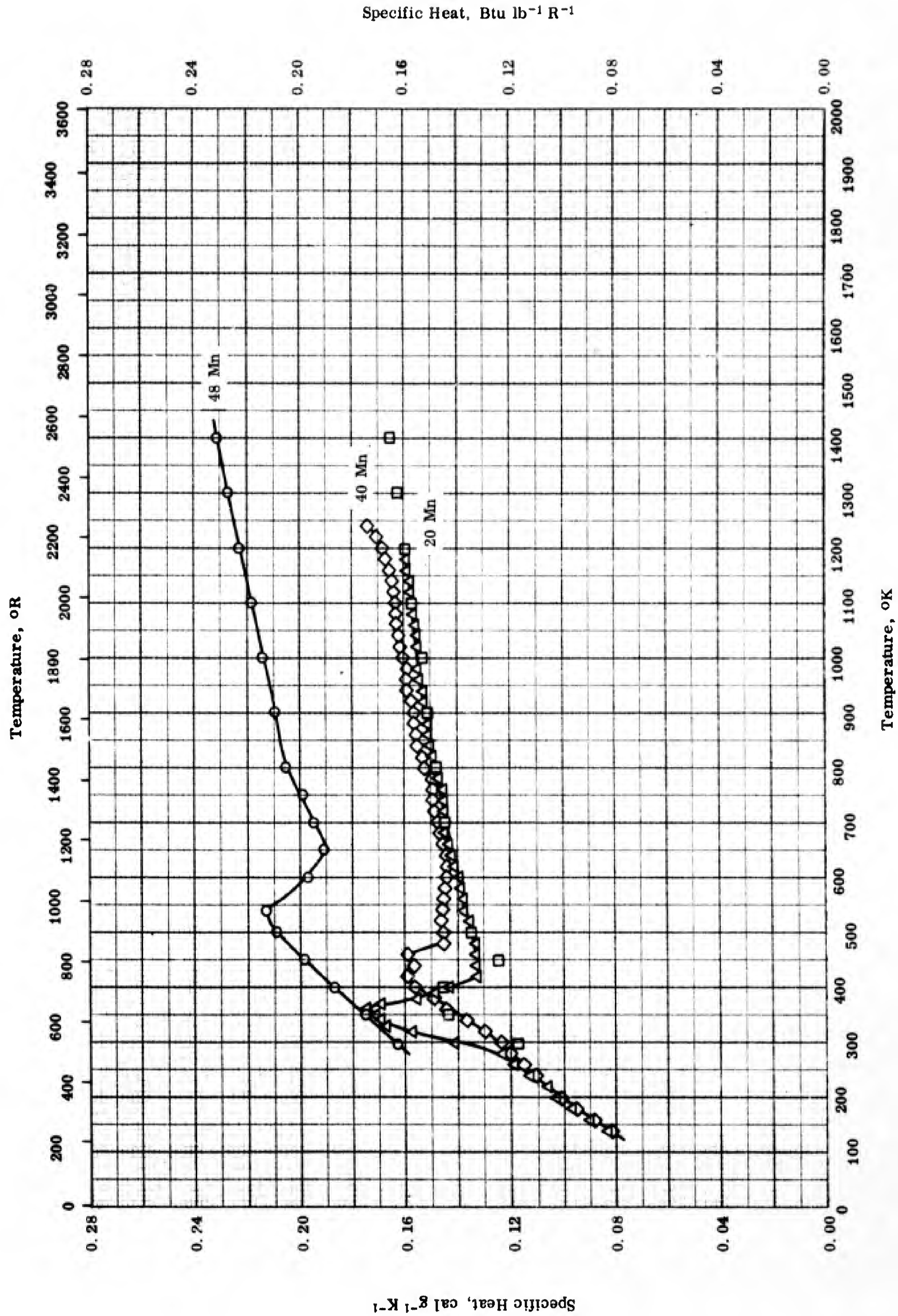
REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
□	56-12	273-1783		0.44 Mn, 0.14 Cu, 0.12 C, 0.08 Ni, 0.035 P, 0.03 Cr, 0.022 S, < 0.02 Al, < 0.01 Si, and 0.003 N_2.	
△	56-11	273-1273		Mild steel; 0.61 Mn, 0.20 Si, 0.13 C, 0.12 Ni, and 0.01 Cr; density 489 lb ft^{-3}.	
○	58-1 also 54-6	116-1170		SAE 1010; nominal composition: 0.30-0.60 Mn, 0.08-0.13 C, < 0.050 S, and < 0.04 P.	Hot rolled; sealed under helium atmosphere.
◇	40-2	573-1273		0.53 Mn, 0.15 C, 0.045 P, 0.038 S, and 0.004 Si.	Cooling rate (C sec^{-1}) C 13.3-14.5 900 7.0- 8.0 700 3.1- 3.8 500 1.5- 1.6 300 transformation temperature depressed by high cooling rates.

SPECIFIC HEAT -- IRON + MANGANESE + ΣX_i GROUP I (continued)
($0.7 < Mn < 1.5$)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
◀	57-6	353-993	≤0.9	Same as above.	Slow cooled.
⬓	57-6	993-1218	≤0.9	Same as above.	Austenite.
◨	40-2	1032-1123		1.04 Mn, 0.33 C, 0.110 P, 0.100 Si, and 0.050 S.	Tungsten used as standard: Cooling rate (C sec^{-1}) — C 13.3-14.5 — 900 7.0- 8.0 — 700 3.1- 3.8 — 500 1.5- 1.6 — 300 Transformation temperature depressed by high cooling rates.
◑	40-2	1032-1123		0.72 Mn, 0.50 C, 0.3 Si, 0.035 P, and 0.030 S.	Same as above.
◒	57-8	495-1573		Very low carbon steel.	
◁	54-4	673-1123		Eutectoid steel, Pearlite; 0.27-1.85 Mn, 0.79-0.80 C, 0.22 Si, 0.011-0.02 P, and 0.011-0.016 S.	
⬙	54-4	823-1124		Eutectoid steel, Austenite; same composition as above.	

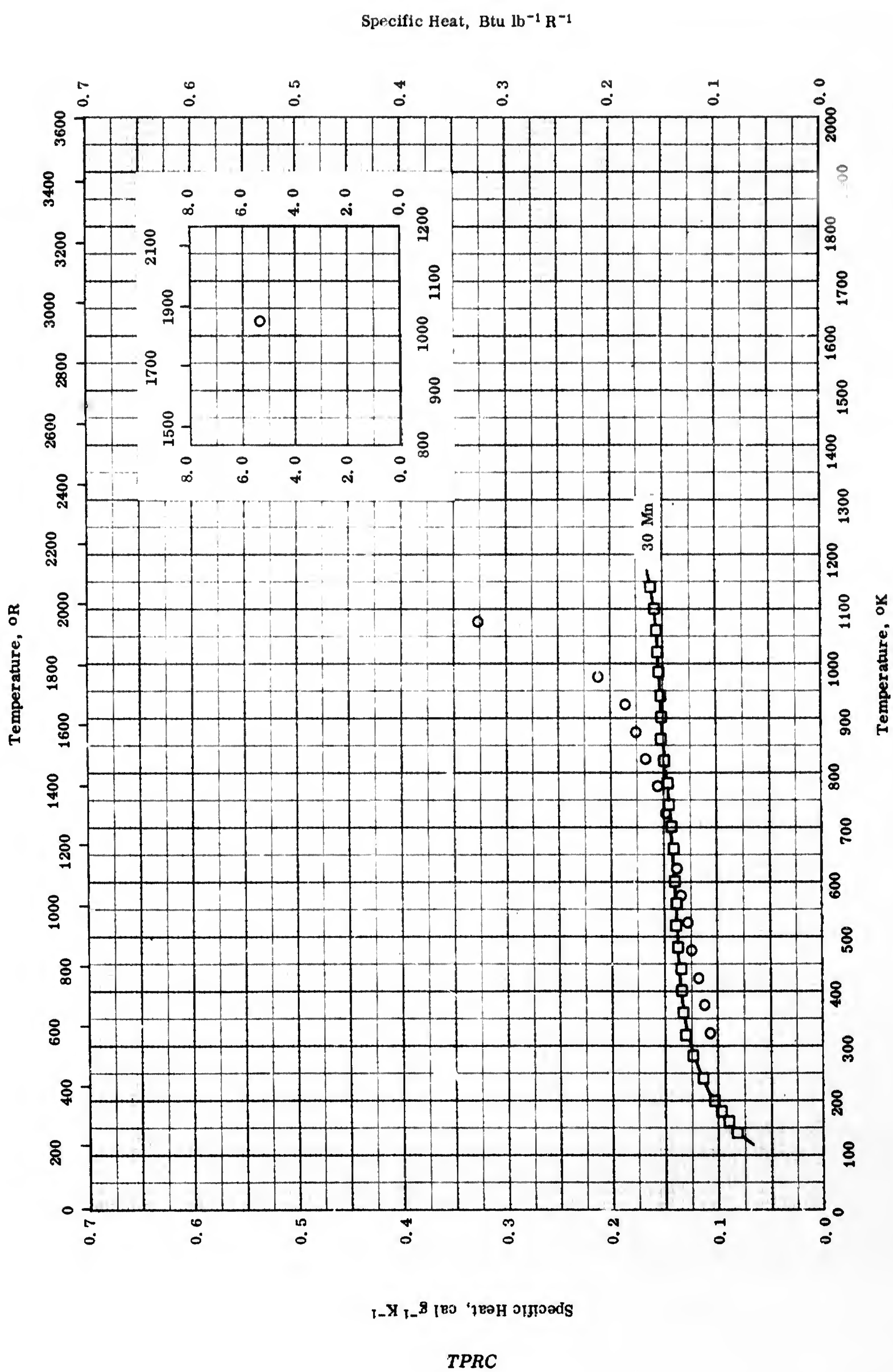


SPECIFIC HEAT -- IRON + MANGANESE + ΣX_i GROUP I
($20 < Mn < 50$)

SPECIFIC HEAT -- IRON + MANGANESE + ΣX_i GROUP I
(20 < Mn < 50)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	59-2	298-1400	0.50	51.6 Fe and 48.4 Mn. [Author's design.: No. 50 Mn]	Homogenized 4 days at 1350 C under helium atm.; air cooled to room temperature.
□	59-2	298-1400	0.50	70.0 Fe and 30.0 Mn. [Author's design.: No. 30 Mn]	Same as above.
△	62-4 also 63-3	120-1180		20% Mn-Fe alloy; 79.005 Fe, 20.55 Mn, 0.39 Si, and 0.055 C.	
◇	62-4 also 63-3	120-1240		40% Mn-Fe alloy; 59.165 Fe, 40.4 Mn, 0.41 Si, and 0.025 C.	

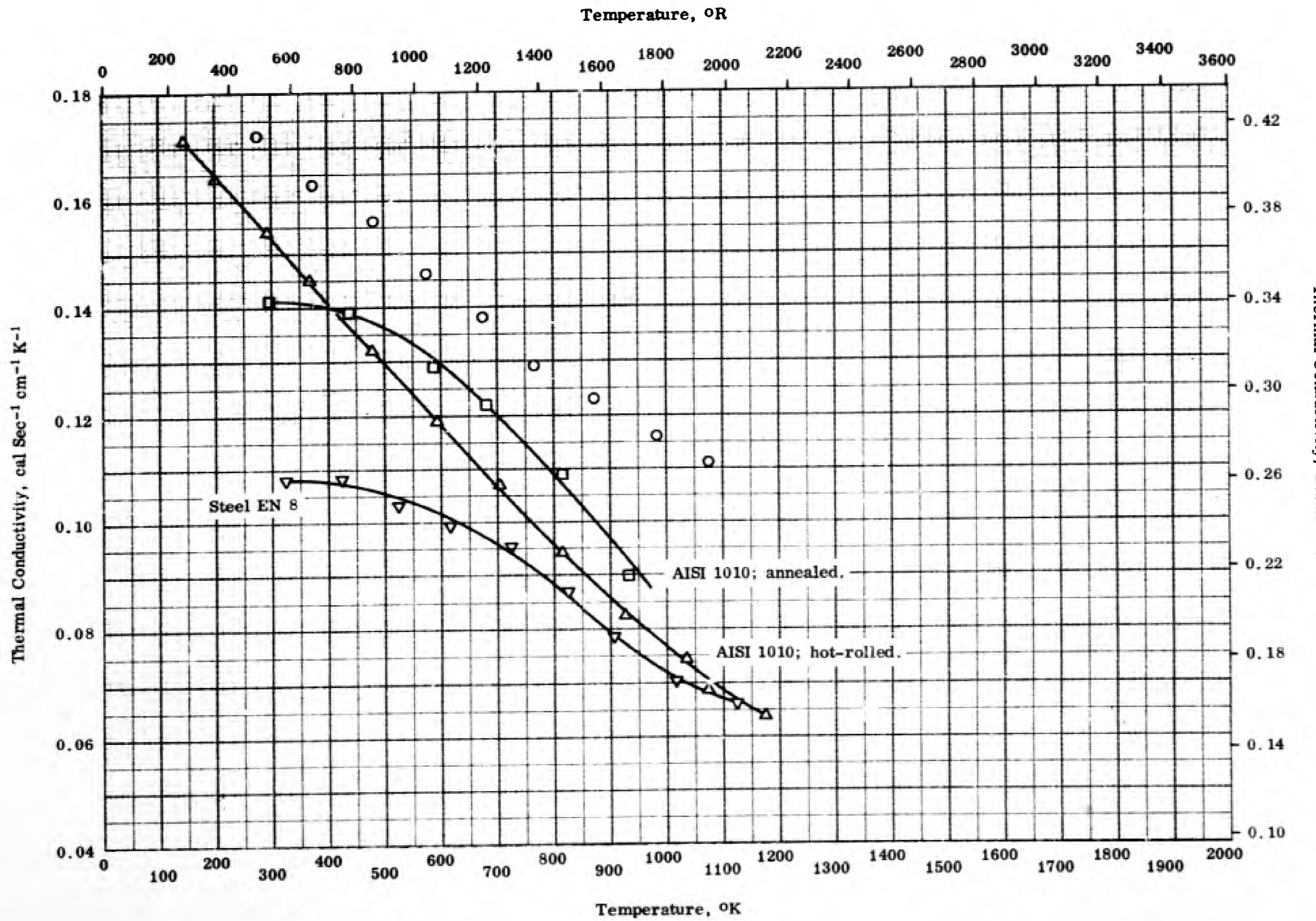


SPECIFIC HEAT -- IRON + MANGANESE + ΣX_i GROUP II

SPECIFIC HEAT -- IRON + MANGANESE + ΣX_i GROUP II

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	59-4	298-1073	1.0	Steel mark 12 MX; nominal composition: 0.40-0.70 Mn, 0.40-0.60 Cr, 0.40-0.60 Mo, 0.30 Ni 0.15-0.30 Si, 0.25 Cu, 0.09-0.16 C, 0.040 P, and 0.040 S.	Tempered.
□	62-4 also 63-3	120-1140		30 % Mn-Fe alloy; 65.935 Fe, 32.8 Mn, 1.21 Si, and 0.055 C.	

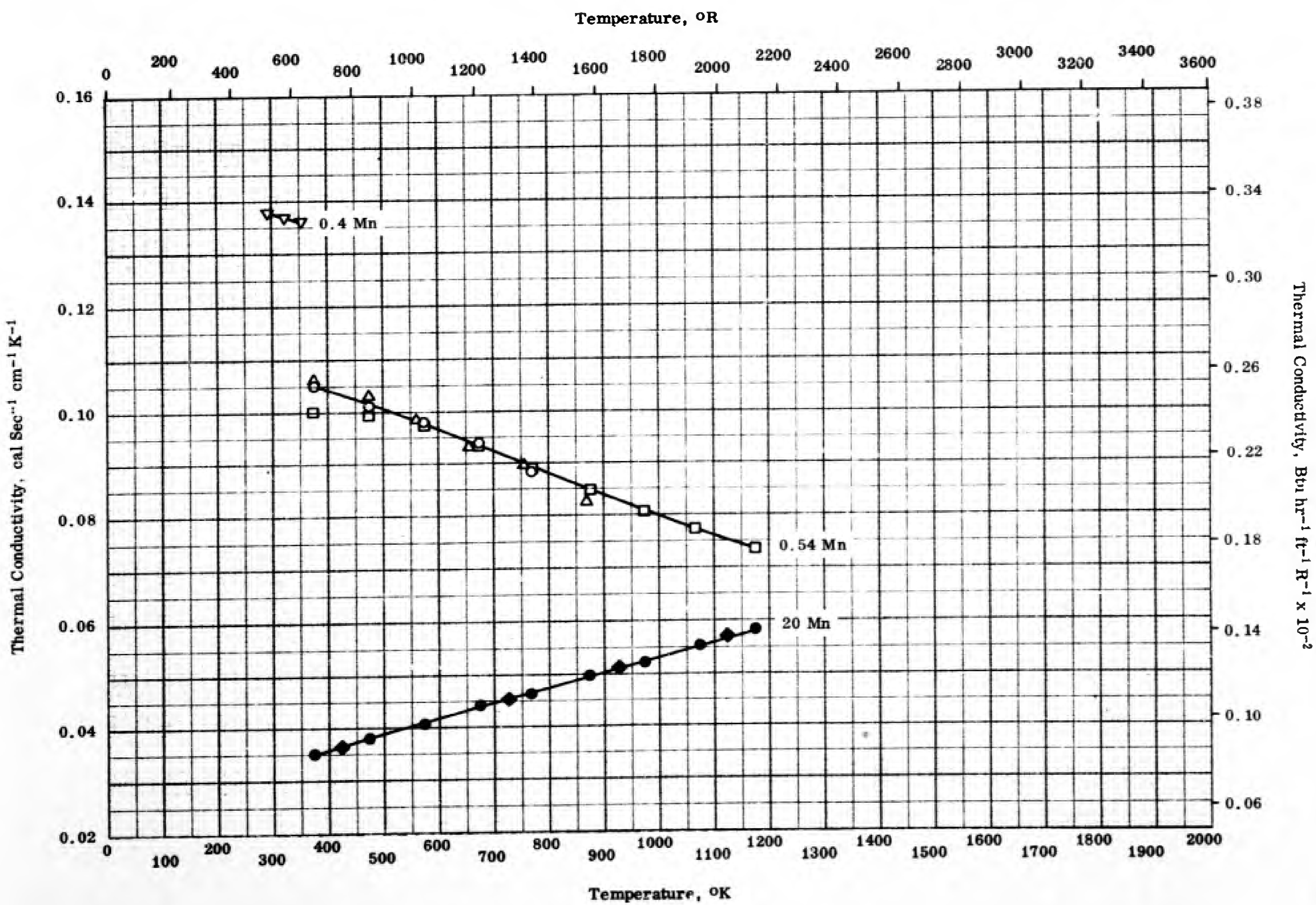


THERMAL CONDUCTIVITY -- IRON + MANGANESE + ΣX_i GROUP I

THERMAL CONDUCTIVITY -- IRON + MANGANESE + ΣX_i GROUP I

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	52-3	273-1073		Carbon steel AISI 1010; 0.30-0.60 Mn, 0.08-0.13 C, 0.05 max S, and 0.04 max P; from Metal's Handbook composition.	Measured in controlled atm furnace.
□	54-1	297-1056		Carbon steel AISI 1010; 0.42 Mn, 0.10 Si, 0.08 C, 0.03 S, and 0.015 P.	Annealed at 600 C in N_2 atm; measured under 10 psig N_2.
△	51-2	145-1172		Carbon steel AISI 1010; 0.30-0.60 Mn, 0.08-0.13 C, 0.05 max S, and 0.04 max P; from Metal's Handbook composition.	Hot rolled.
▽	56-9	322-1122		Steel EN8 (Brit. Design.); 1.05 Mn, 0.39 C, 0.14 Si, 0.12 Ni, 0.043 S, and 0.032 P.	Normalized rod.

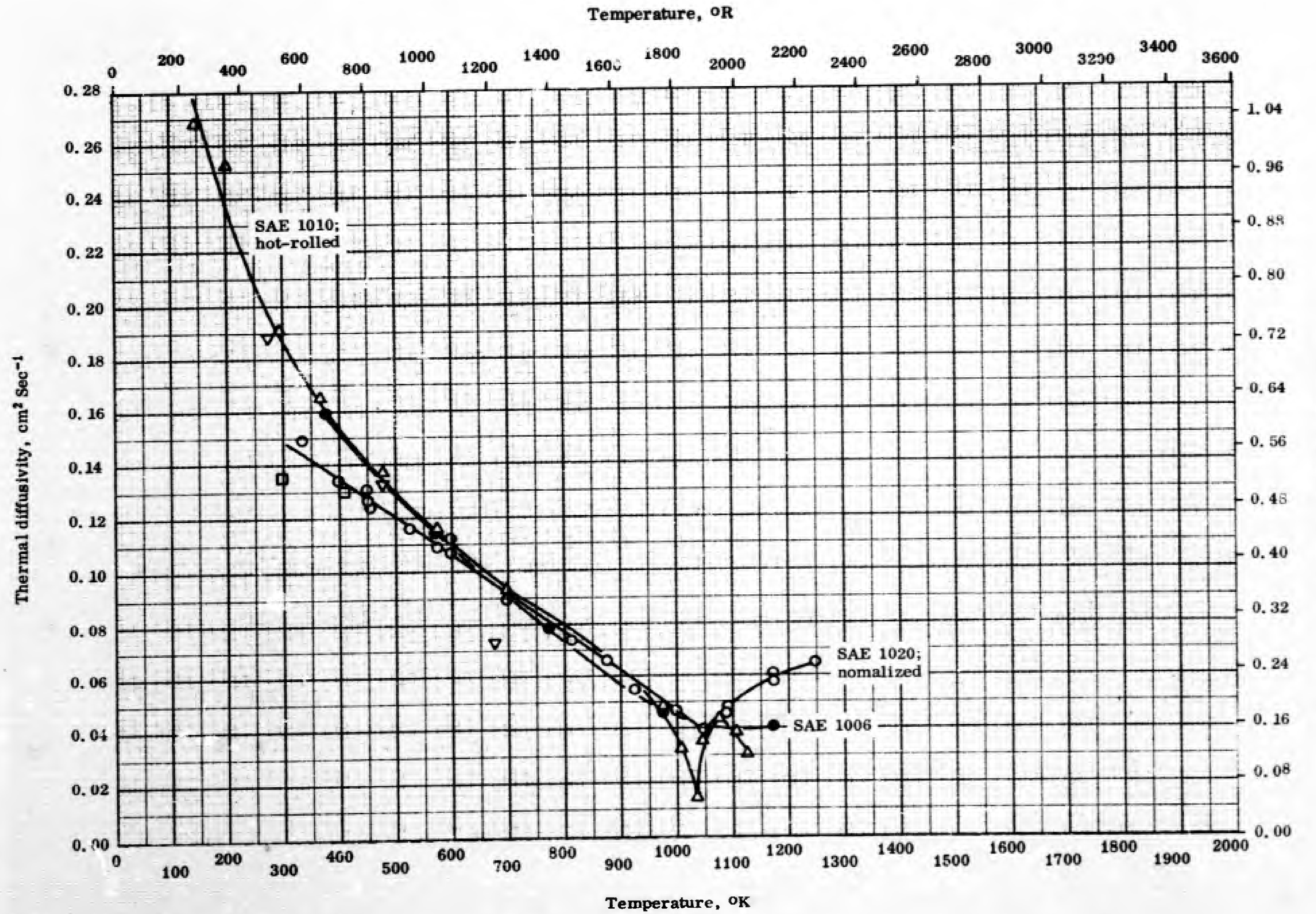


THERMAL CONDUCTIVITY -- IRON + MANGANESE + ΣX_i GROUP II

THERMAL CONDUCTIVITY -- IRON + MANGANESE + ΣX_i GROUP II

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	55-1	373-1173		0.54 Mn, 0.52 Cr, 0.50 Mo, 0.28 Si, and 0.15 C.	Initial condition.
□	55-1	373-1173		Same as above.	Normalized.
△	55-1	373-1173		Same as above.	Annealed.
●	55-1	373-1173		19.96 Mn, 12.05 Cr, 0.83 Si, 0.51 V, and 0.26 C.	Stabilized at 1932 R for 10 hrs.
◆	55-1	373-1173		20.88 Mn, 14.66 Cr, 0.66 Si, 0.25 Ti, and 0.05 C.	Same as above.
▽	58-3	293-353	1	0.40 Mn, 0.33 C, 0.25 Cu, 0.08 Cr, 0.05 > Ti, 0.3 > Si, 0.03 > Mg, and 0.03 > Mo.	

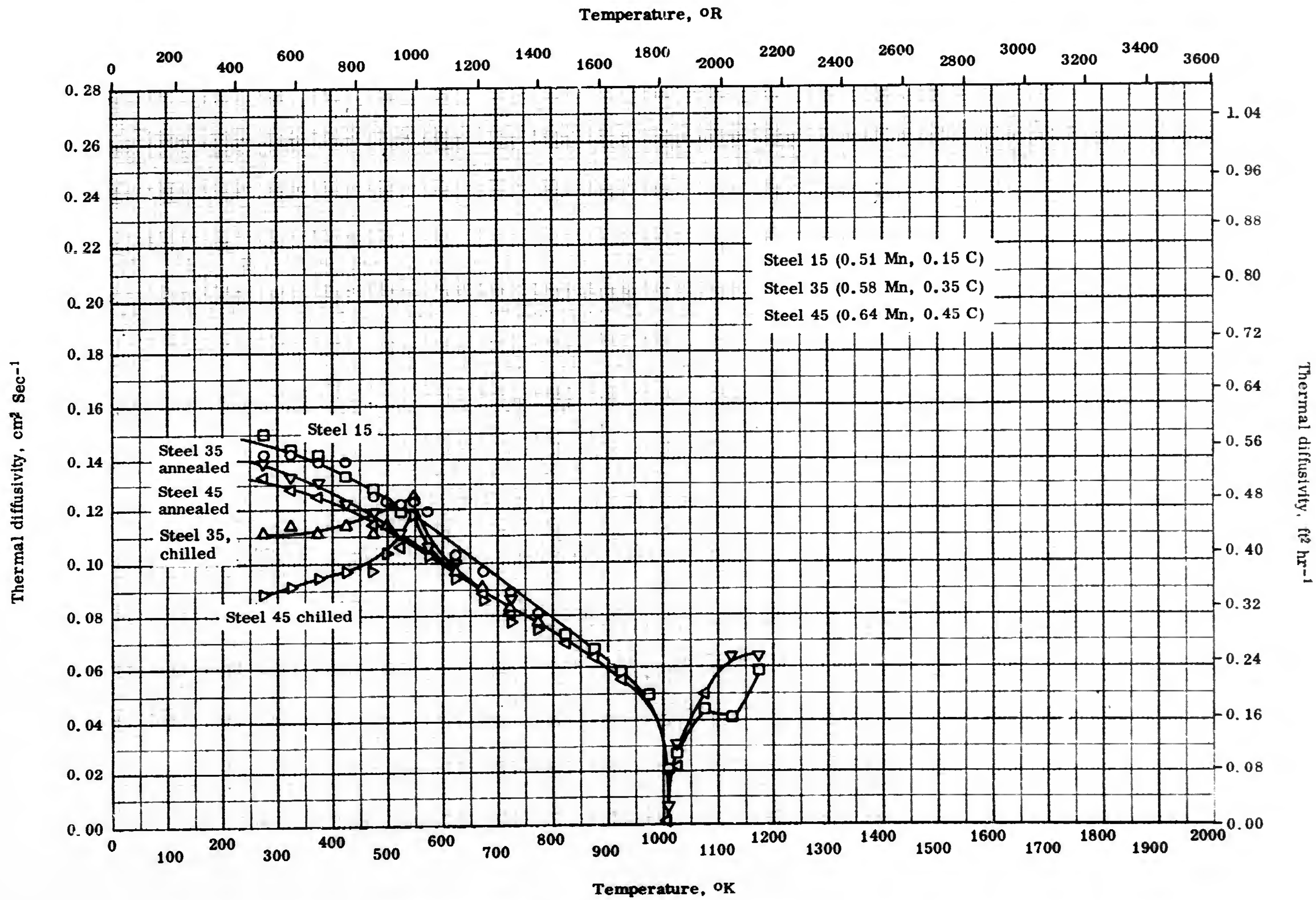


THERMAL DIFFUSIVITY -- IRON + MANGANESE + ΣXi GROUP I
(0.25 - 0.60 Mn)

THERMAL DIFFUSIVITY -- IRON + MANGANESE + ΣX_i GROUP I
(0.25 - 0.60 Mn)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
△	58-1	114-1122		SAE 1010; 0.42 Mn, 0.1 C, 0.028 S, and 0.008 P.	Hot rolled.
▽	56-3	273-873		SAE 1010; 0.3-0.6 Mn, 0.08-0.13 C, 0.05 max S, and 0.04 max P; composition from Metal's Handbook.	
●	56-2	450-811		AISI 1006; 0.25-0.45 Mn, 0.08 max C, 0.05 max S, and 0.04 max P; composition from Metal's Handbook.	
○	57-1	333-1248		SAE 1020; 0.3-0.6 Mn, 0.18-0.23 C, 0.05 max S, and 0.04 max P; composition from Metal's Handbook.	Normalized
□	61-3	295-408		Same as above; sample 19 cm square cross-section and 0.100 cm long.	

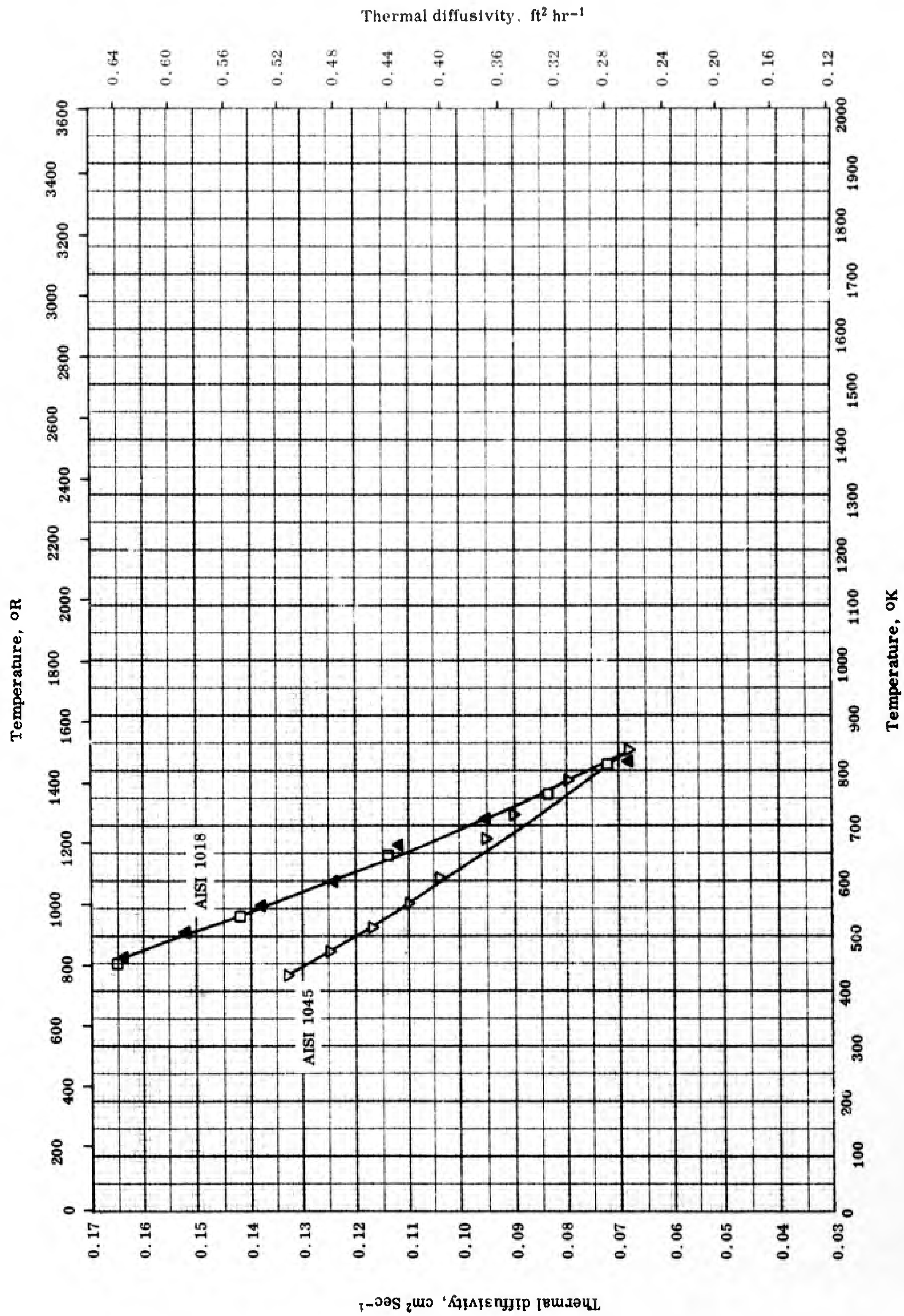


THERMAL DIFFUSIVITY -- IRON + MANGANESE + ΣX_i GROUP I
($0.5 - 0.65$ Mn and $0.17 - 0.24$ Si)

THERMAL DIFFUSIVITY -- IRON + MANGANESE + ΣX_i GROUP I
(0.5 - 0.65 Mn and 0.17 - 0.24 Si)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-1	273-773	± 2	Steel 15 (USSR design.); 0.51 Mn, 0.23 Si, 0.15 C, 0.036 S, and 0.034 P.	Chilled.
□	60-1	273-1173	± 2	Same as above.	Annealed.
△	60-1	273-773	±2	Steel 35 (USSR design.); 0.58 Mn, 0.35 C, 0.17 Si, 0.028 S, and 0.021 P.	Chilled.
▽	60-1	273-1173	± 2	Same as above.	Annealed.
▷	60-1	273-773	± 2	Steel 45 (USSR design.); 0.64 Mn, 0.45 C, 0.24 Si, 0.022 S, and 0.017 P.	Chilled.
◁	60-1	273-1073	± 2	Same as above.	Annealed.

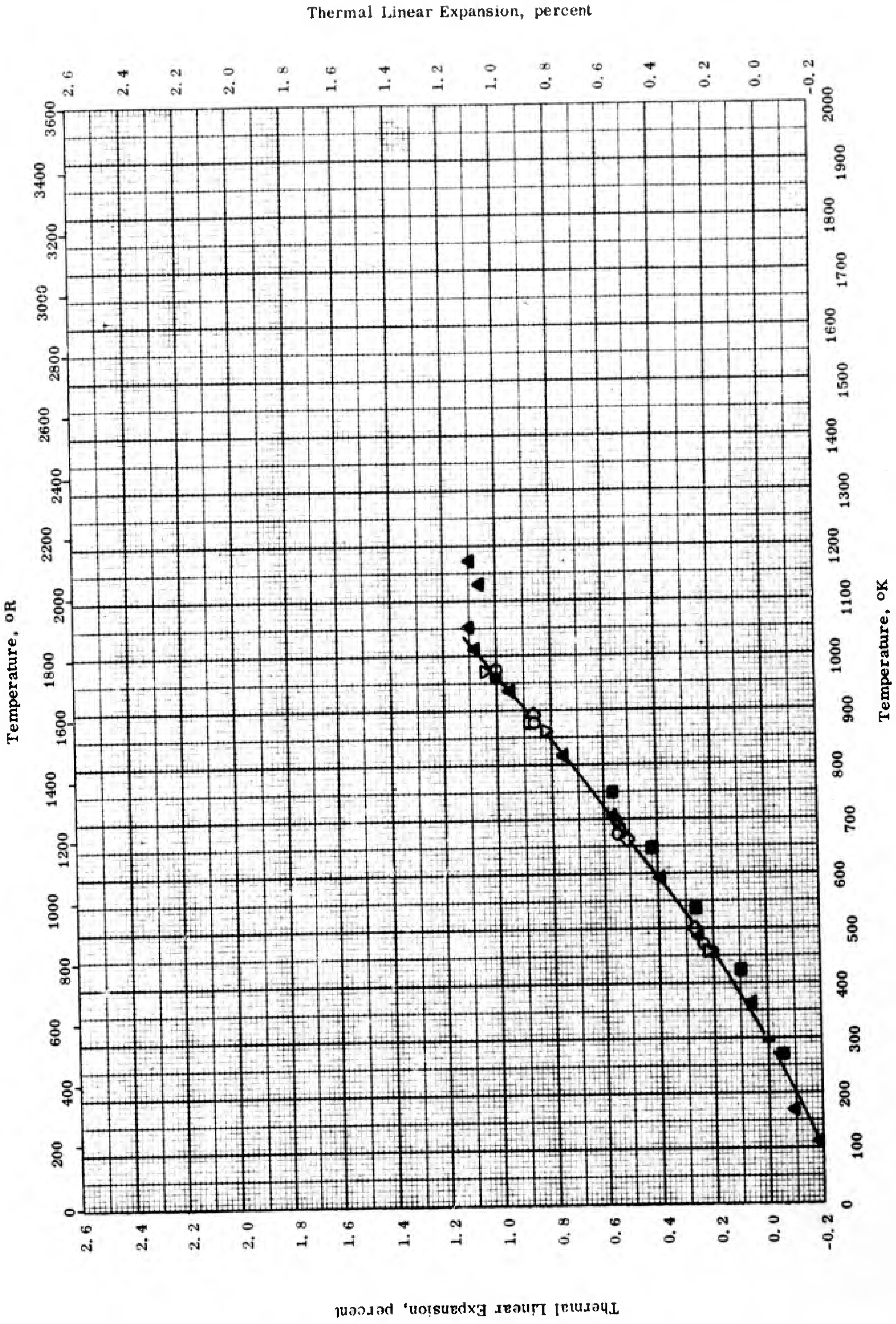


THERMAL DIFFUSIVITY -- IRON + MANGANESE + ΣX_i GROUP I
(0.6 - 0.9 Mn)

THERMAL DIFFUSIVITY -- IRON + MANGANESE + ΣX_i GROUP I
(0.6 - 0.9 Mn)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
□	56-2	450-811		AISI 1018; 0.6 - 0.9 Mn, 0.14 - 0.21 C, 0.05 max S, and 0.04 max P; composition from Metal's Handbook.	
▲	56-1	459-817		Same as above.	
▽	56-1	422-836		AISI 1045; 0.60 - 0.90 Mn. 0.43 - 0.50 C, 0.05 max S, and 0.04 max P; composition from Metal's Handbook.	

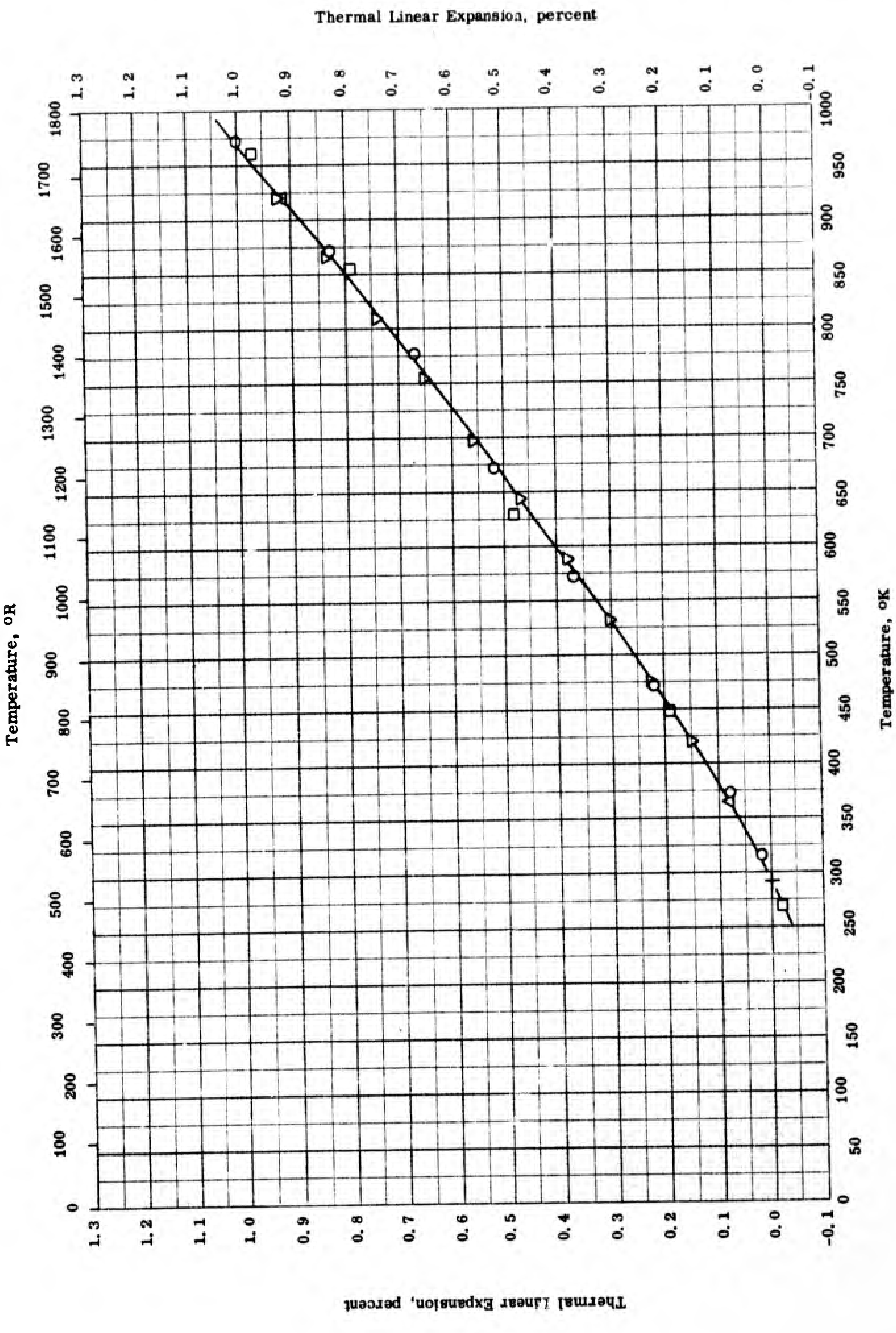


THERMAL LINEAR EXPANSION -- IRON + MANGANESE + ΣX_i GROUP I

THERMAL LINEAR EXPANSION -- IRON + MANGANESE + ΣX_i GROUP I

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	43-1	293-1173		2. 0 - 2. 4 Mn, 0. 30 - 0. 60 Si, 0. 12 - 0. 20 C, 0. 02 P, and 0. 02 S.	Heating rate 1. 5 C min^{-1}.
□	43-1	293-1173		1. 65 Mn, 0. [illegible] C, 0. 26 Si, 0. 15 V, 0. 025 Si, and 0. 017 P.	Tested at 1. 5 C min^{-1} temperature rise.
▽	43-1	293-973		0. 62 Mn, 0. 24 Si, 0. 25 C, 0. 026 S, and 0. 020 P.	Same as above.
◇	43-1	293-973		0. 46 Mn, 0. 17 Si, 0. 07 C, 0. 014 S, and 0. 012 P.	Same as above.
●	43-1	293-973		1. 51 Mn, 0. 34 Si, 0. 08 C, 0. 013 Si, and 0. 012 P.	Normalized so that initial structure is ferrite and lamellar pearlite.
△	50-3	273-998		0. 60 Mn, 0. 27 C, and 0. 21 Si.	
■	50-3	273-1007		0. 63 Mn, 0. 16 C, 0. 07 Si, 0. 012 P, and 0. 10 S.	Same as above.
▲	51-2 also 53-1	373-1427		SAE 1010 from U. S. Steel; density 490 lb ft^{-3}.	Hot-rolled; tested in vacuum.



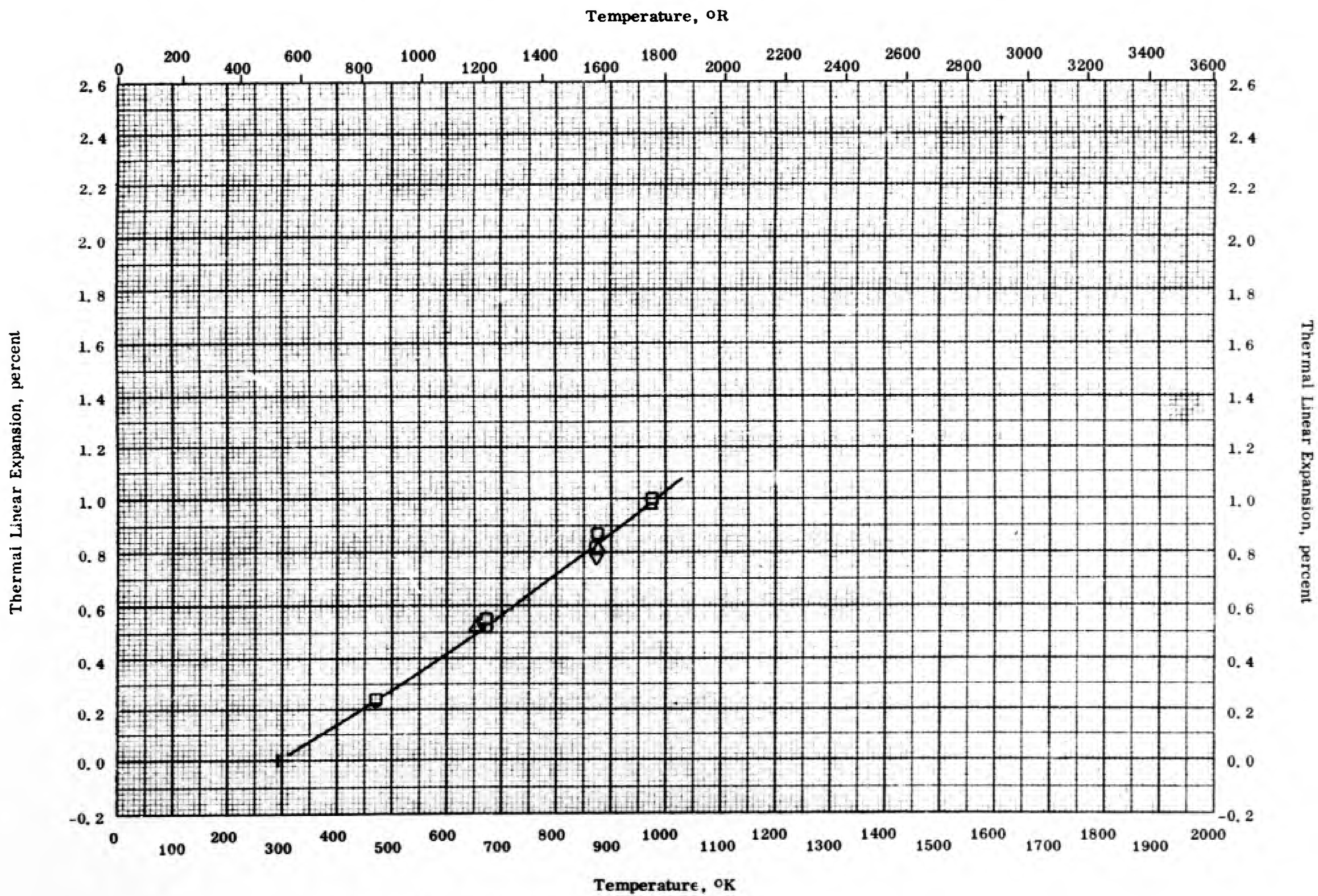
THERMAL LINEAR EXPANSION -- IRON + MANGANESE + ΣX_i GROUP II
($0.5 < Mn < 1.0$)

THERMAL LINEAR EXPANSION -- IRON + MANGANESE + ΣX_i GROUP II

(0.5 < Mn < 1.0)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	55-1	293-973	±1-1.5	0.54 Mn, 0.52 Cr, 0.50 Mo, 0.28 Si, and 0.15 C.	Average of 4 samples (1) as received, (2) normalized, (3) annealed, and (4) spheroidized; all results within ±1.5%; tested at 2 C min^{-1}.
□	43-1	293-973		0.66 Mn, 0.55 Mo, 0.27 Si, 0.08 C, 0.016 S, and 0.009 P.	
△	56-21	255-922		AISI 8630; 0.7-0.9 Mn, 0.4-0.7 Ni, 0.4-0.6 Cr, 0.28-0.33 C, 0.2-0.35 Mo, and 0.04 max P and S each; density 0.283 g cm^{-3} and M.P. 2740 F.	
▽	63-11	294-922		Carbon steel ASTM A105 grade II.	

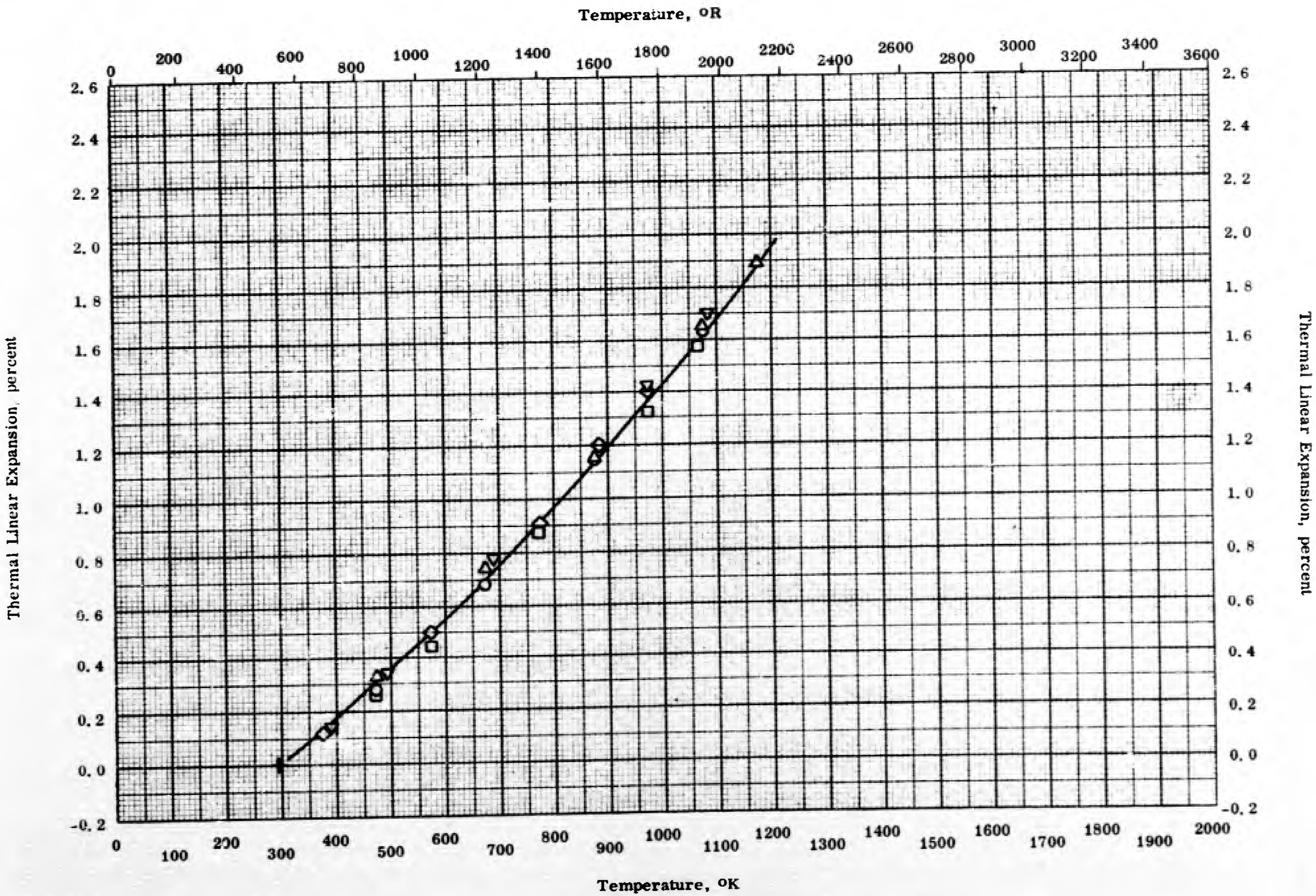


THERMAL LINEAR EXPANSION -- IRON + MANGANESE + ΣX_i GROUP II
(1.0 < Mn < 4.0)

THERMAL LINEAR EXPANSION -- IRON + MANGANESE + ΣX_i GROUP II
(1. 0< Mn < 4. 0)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	43-1	293-1176		Two samples: a) 1. 23 Mn, 0. 82 Cr, 0. 36 Si, and 0. 12 C. b) 1. 19 Mn, 0. 83 Cr, 0. 28 C, 0. 18 Si, 0. 12 V, 0. 019 P, and 0. 010 S.	Mean data values within 5% max deviation.
□	43-1	293-1173		Five samples: a) 2. 08 Mn, 0. 64 Al, 0. 52 Si, 0. 34 C, and 0. 24 V. b) 1. 81 Mn, 0. 71 Si, 0. 31 C, and 0. 26 V. c) 1. 22 Mn, 1. 13 Si, 0. 33 C, 0. 027 S, and 0. 020 P. d) 1. 78 Mn, 1. 17 Si, 0. 91 Cr, 0. 33 C, and 0. 23 Ti. e) 1. 77 Mn, 1. 18 Si, 0. 96 Th, and 0. 30 C.	Same as above except max deviation 3%.
△	43-1	293-973		2. 02 Mn, 1. 22 Al, 0. 86 Si, and 0. 31 C.	Heating rate 1. 5 C min^{-1} in vacuum.
▽	43-1	293-1173		3. 66 Mn, 0. 86 Si, 0. 14 C, 0. 023 S, and 0. 012 P.	

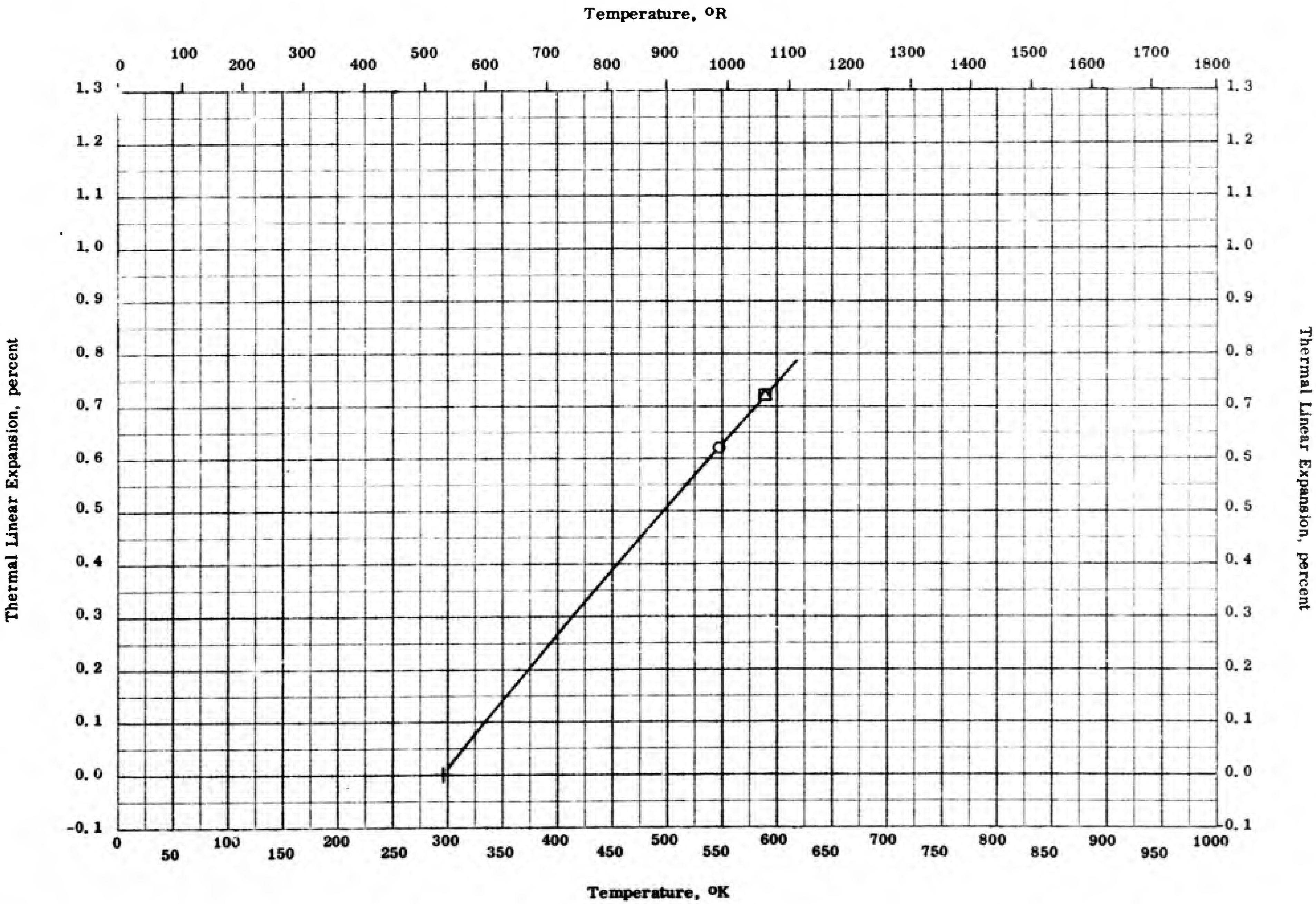


THERMAL LINEAR EXPANSION -- IRON + MANGANESE + ΣX_i GROUP II
(15< Mn < 21)

THERMAL LINEAR EXPANSION -- IRON + MANGANESE + ΣX_i GROUP II
(15< Mn <21)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	47-3	473-1073		815 (German design.); 71.3 Fe, 16 Mn, 12 Cr, 0.3 Si, 0.3 Ti, and 0.12 C; density 485.8 lb ft^{-3}.	Forged.
□	47-3	473-1073		FCM (German design.); 63.7 - 67.2 Fe, 15.9 - 16.5 Mn, 15.0 - 15.8 Cr, 0 - 2.1 Mn, 0.9 - 1.25 Ni, 0.30 - 1.07 Si, and 0.15 - 0.17 C; density 486.0 lb ft^{-3}.	Rolled.
△	43-1	293-1173		17 - 19 Mn, 10 - 13 Cr, 0.5 - 1.0 Si, 0.3 Ti, and 0.14 > C.	Tested in vacuum at 1.5 C min^{-1} rise.
◇	55-1	293-973		19.96 Mn, 12.05 Cr, 0.83 Si, 0.51 V, and 0.26 C.	Stabilized 10 hrs at 800 C and tested at 2 C min^{-1} rise.
▽	55-1	293-1073		20.88 Mn, 14.66 Cr, 0.66 Si, 0.25 Ti, and 0.05 C.	Same as above.

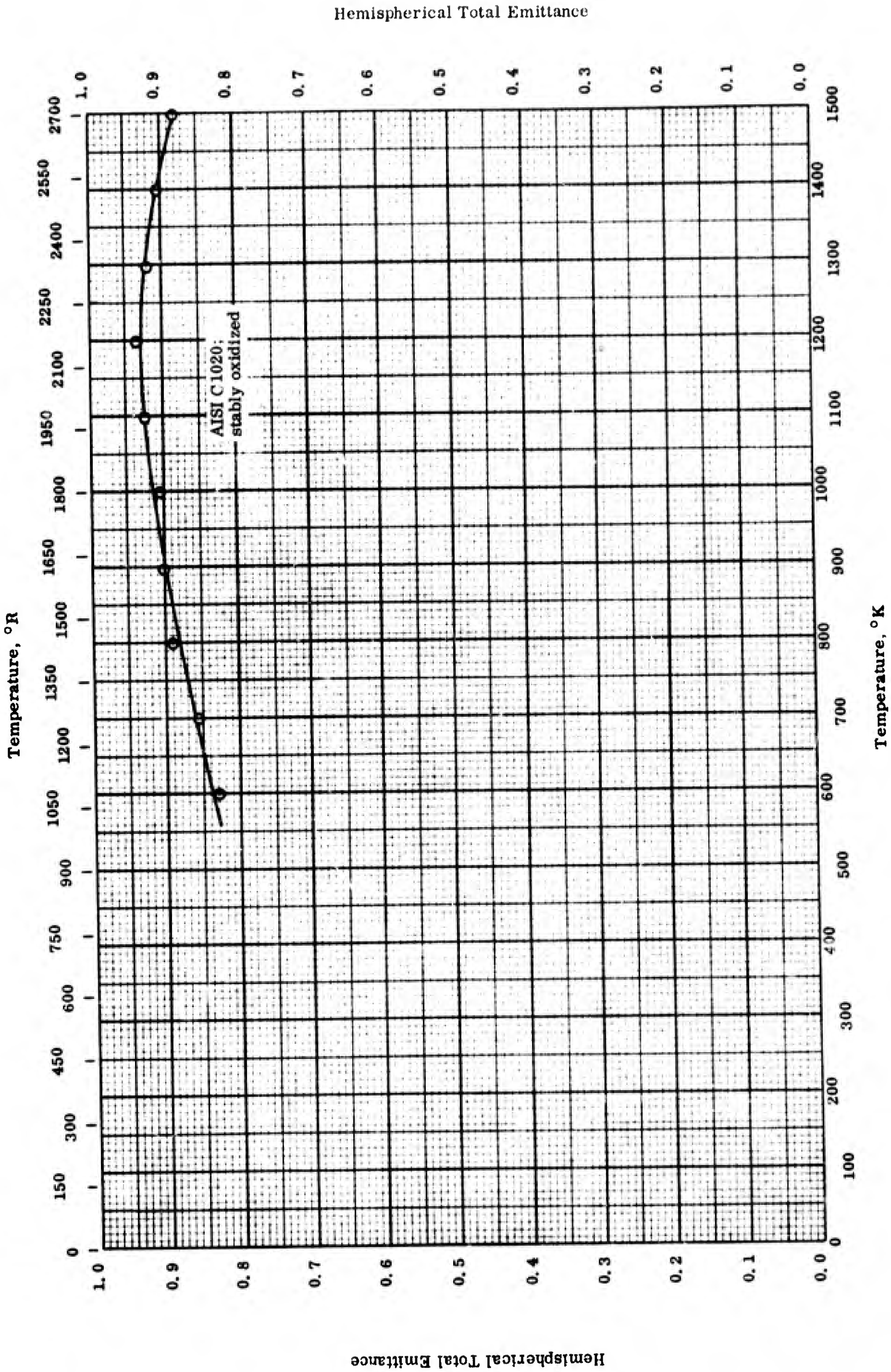


THERMAL LINEAR EXPANSION -- IRON + MANGANESE + ΣX_i GROUP II
($4.0 < Mn < 14.0$)

THERMAL LINEAR EXPANSION -- IRON + MANGANESE + ΣX_i GROUP II
($4.0 < Mn < 14.0$)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-15	295-589		Austenitic steel; 8.8 Mn, 8.8 Ni, 0.57 C, 0.33 Si, and 0.07 Cr.	Air-cooled from 2100 F.
□	56-15	295-589		9.1 Mn, 6.1 Ni, 0.69 C, and 0.11 Si.	Same as above.
△	56-15	295-589		Three austenitic steels: a) 13.6 Mn, 12.9 Ni, 0.73 C, 0.16 Si, and no Cr. b) 12.9 Mn, 6.0 Ni, 0.68 C, 0.13 Si, and 0.02 Cr. c) 12.8 Mn, 9.0 Ni, 0.66 C, 0.18 Si, and 0.02 Cr.	Same as above; author reported identical data for all three.

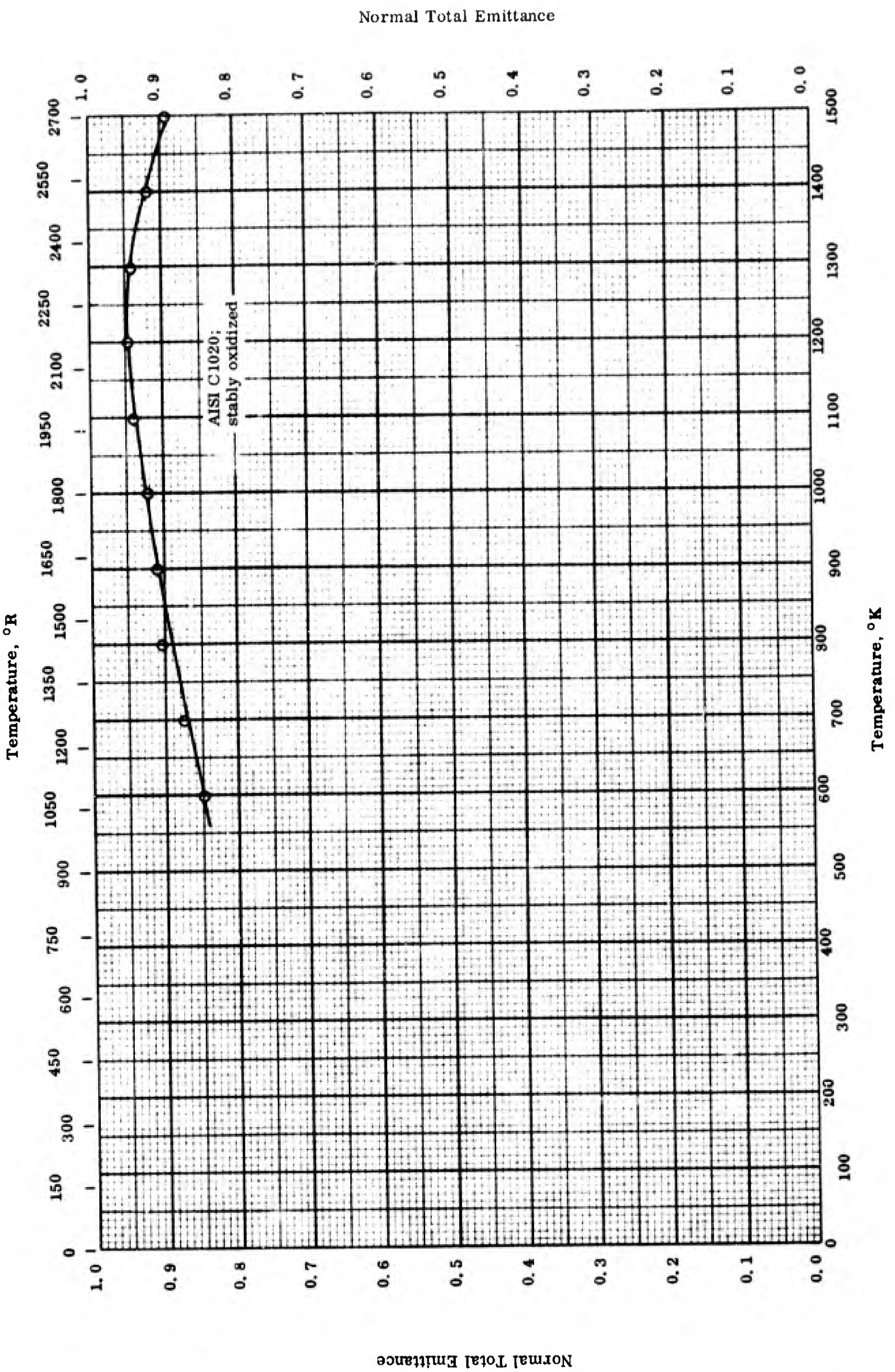


HEMISPHERICAL TOTAL EMITTANCE -- IRON + MANGANESE + ΣX_i GROUP I

HEMISPHERICAL TOTAL EMITTANCE -- IRON + MANGANESE + ΣX_i GROUP I

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	58-13	589-1089	>2	AISI C1020.	Stably oxidized at 1089 K.

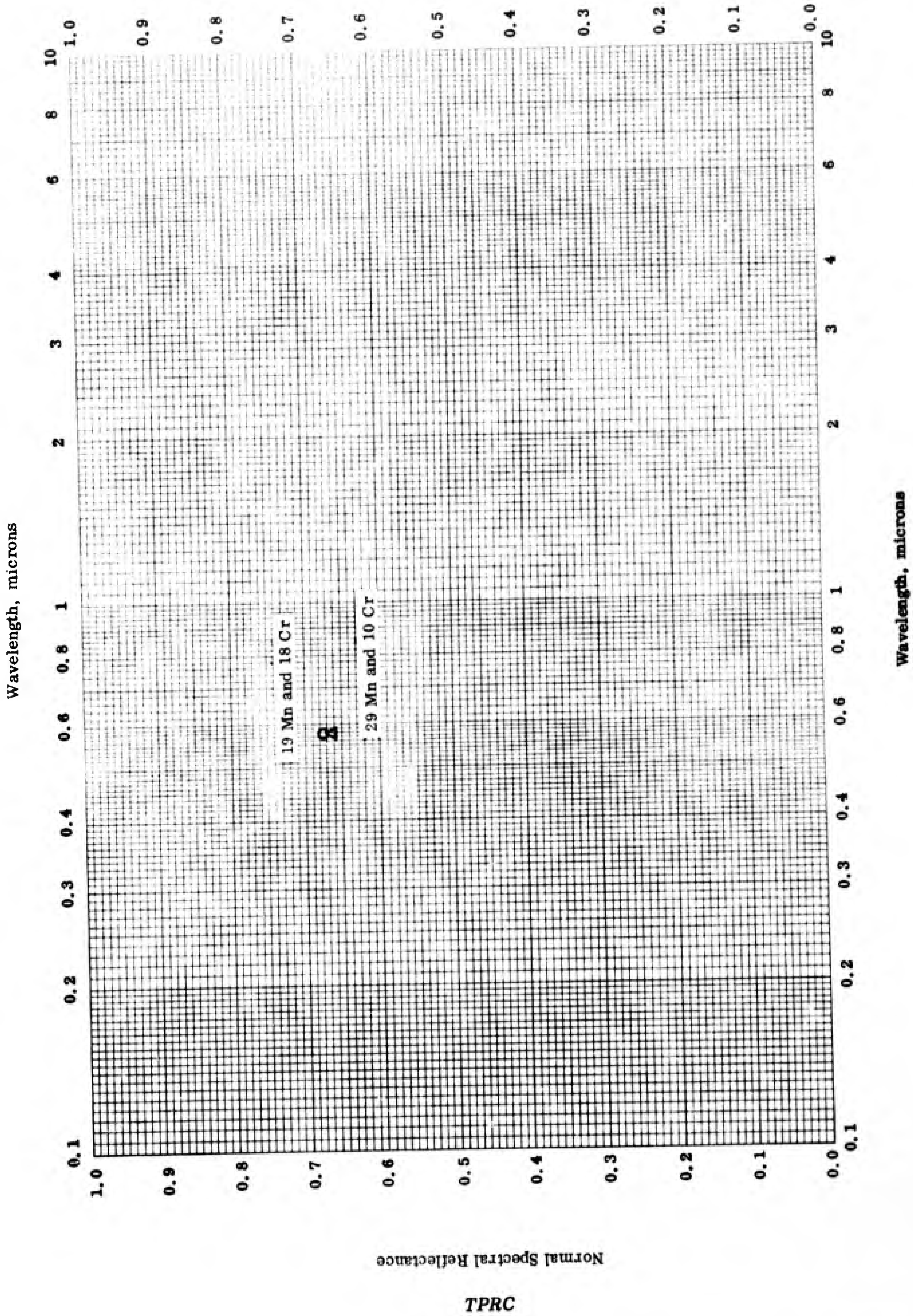


NORMAL TOTAL EMITTANCE -- IRON + MANGANESE + ΣX_i GROUP I

NORMAL TOTAL EMITTANCE -- IRON + MANGANESE + ΣX_i GROUP I

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	58-13	589-1089	>2	AISI C1020.	Stably oxidized at 1089 K.

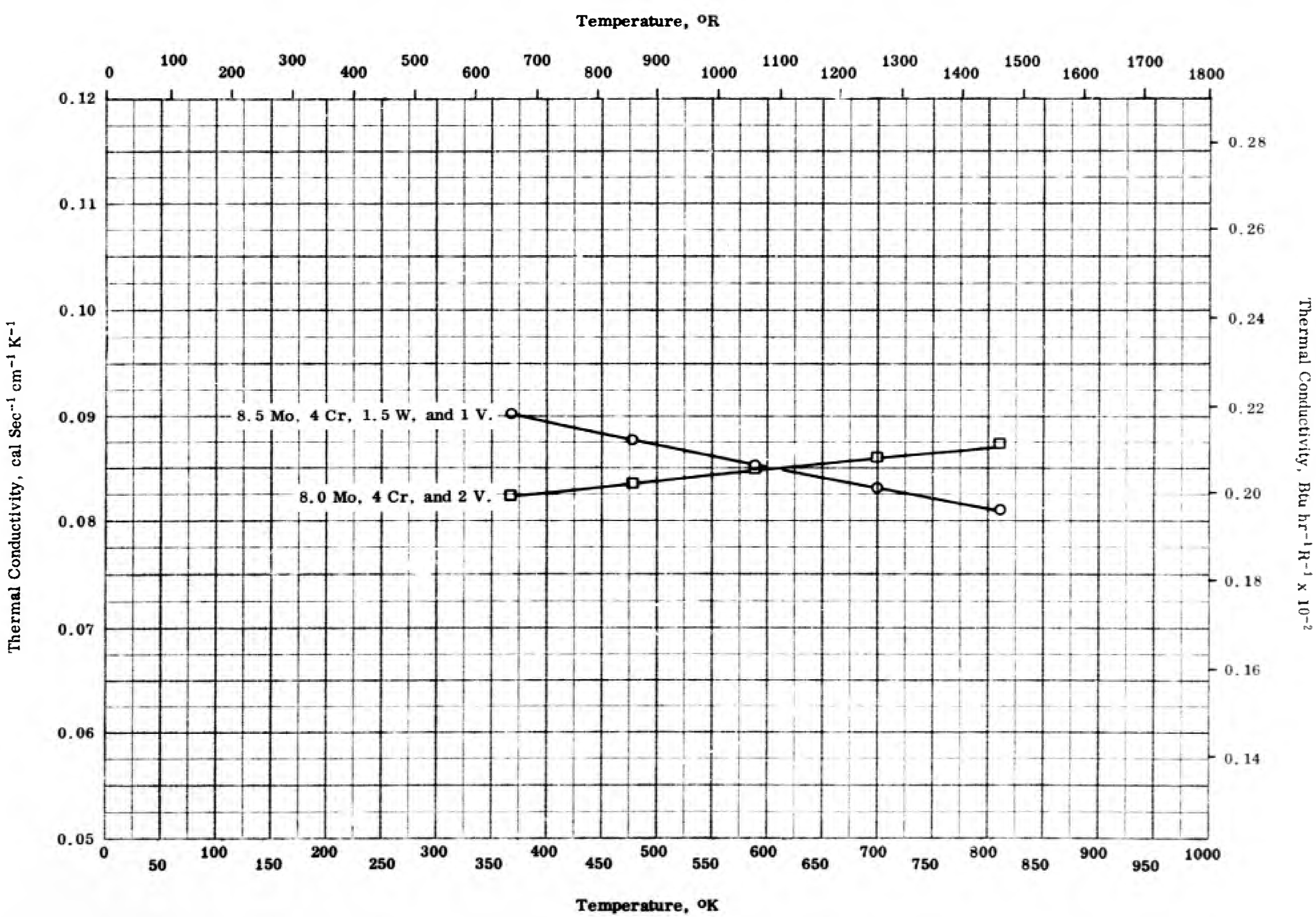


NORMAL SPECTRAL REFLECTANCE -- IRON + MANGANESE + ΣX_i - GROUP II

NORMAL SPECTRAL REFLECTANCE -- IRON + MANGANESE + ΣX_i GROUP II

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
○	53-11	298	0.575		Stainless steel 18 - 20 Cr - Mn; 18.6 Mn and 18.2 Cr.	Metallographically polished.
△	53-11	298	0.575		Stainless steel "Roneusil"; 29.2 Mn and 10.2 Cr.	

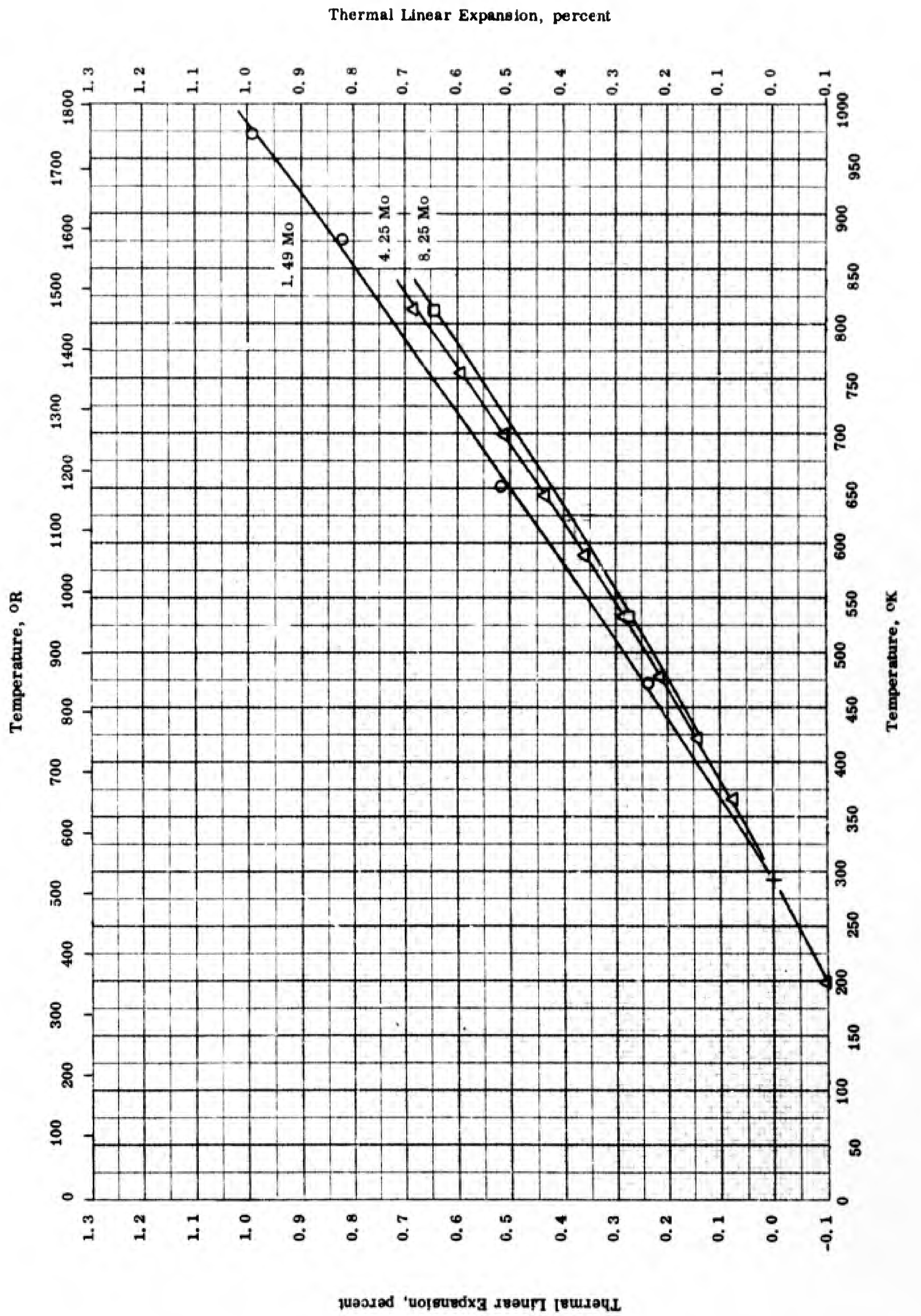


THERMAL CONDUCTIVITY -- IRON + MOLYBDENUM + ΣX_i GROUP II

THERMAL CONDUCTIVITY -- IRON + MOLYBDENUM + ΣX_i GROUP II

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-4	367-811	± 7-10	High speed steel (Ml); 85 Fe, 8.5 Mo, 4 Cr, 1.5 W, and 1 V.	
□	56-4	367-811	± 7-10	High speed steel (M-10); 86 Fe, 8 Mo, 4 Cr, and 2 V.	

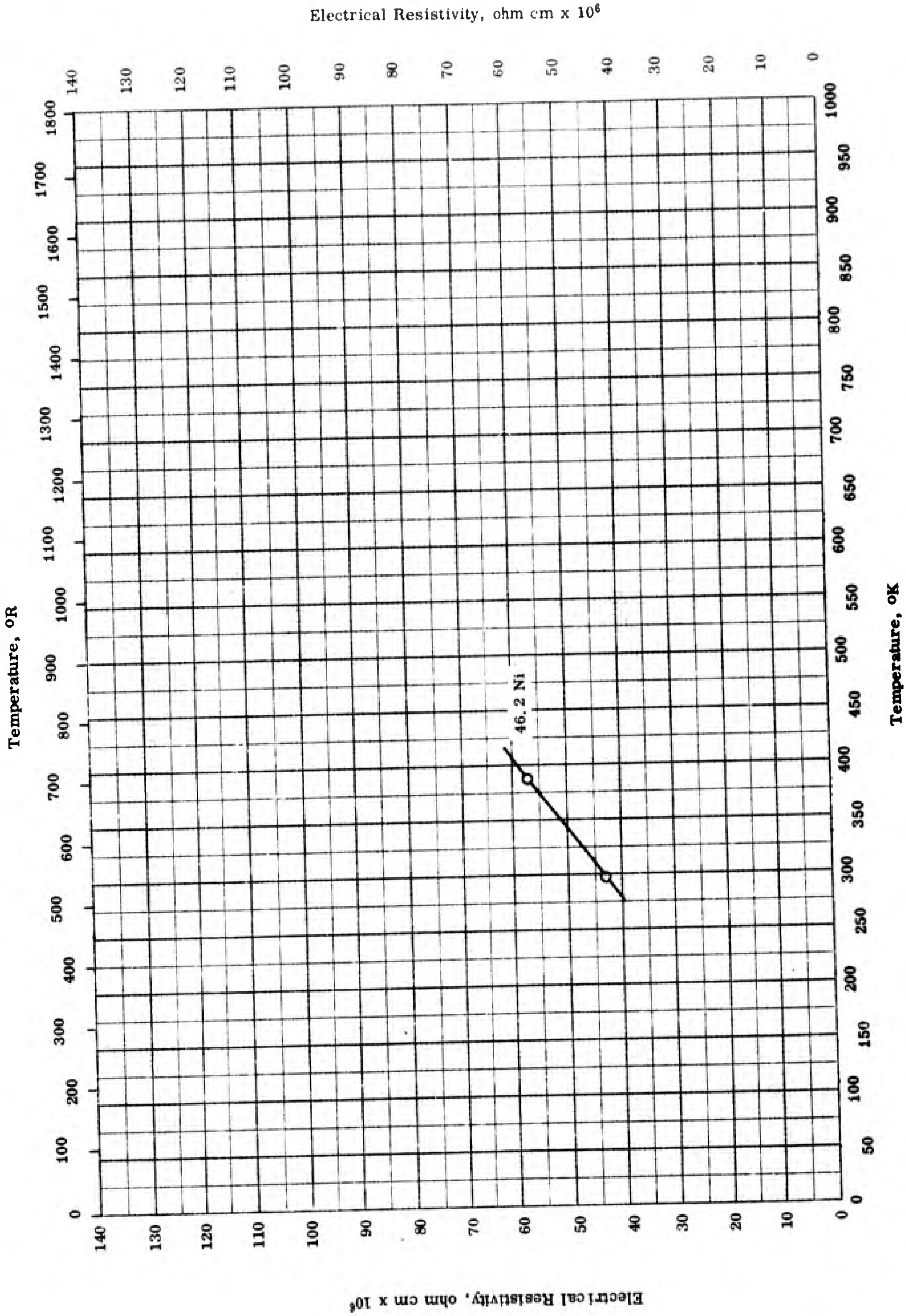


THERMAL LINEAR EXPANSION -- IRON + MOLYBDENUM + ΣX_i GROUP II

THERMAL LINEAR EXPANSION -- IRON + MOLYBDENUM + ΣX_i GROUP II

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	43-1	293-973		1. 49 Mo, 0. 69 Mn, 0. 28 Si, 0. 09 C, 0. 018 S, and 0. 012 P.	
□	63-12	294-811		AISI 612; 8. 25 Mo, 4. 0 Cr, 1. 90 V, 0. 87 C, 0. 3 Si, and 0. 2 Mn; density 7. 88 g cm^{-3}.	Heat treated.
△	63-12	200-811		AISI 613; 4. 25 Mo, 4. 08 Cr, 1. 00 V, 0. 81 C, 0. 3 Mn, and 0. 2 Si; density 7. 87 g cm^{-3} and melting range 2500 - 2600 F.	Heat treated.

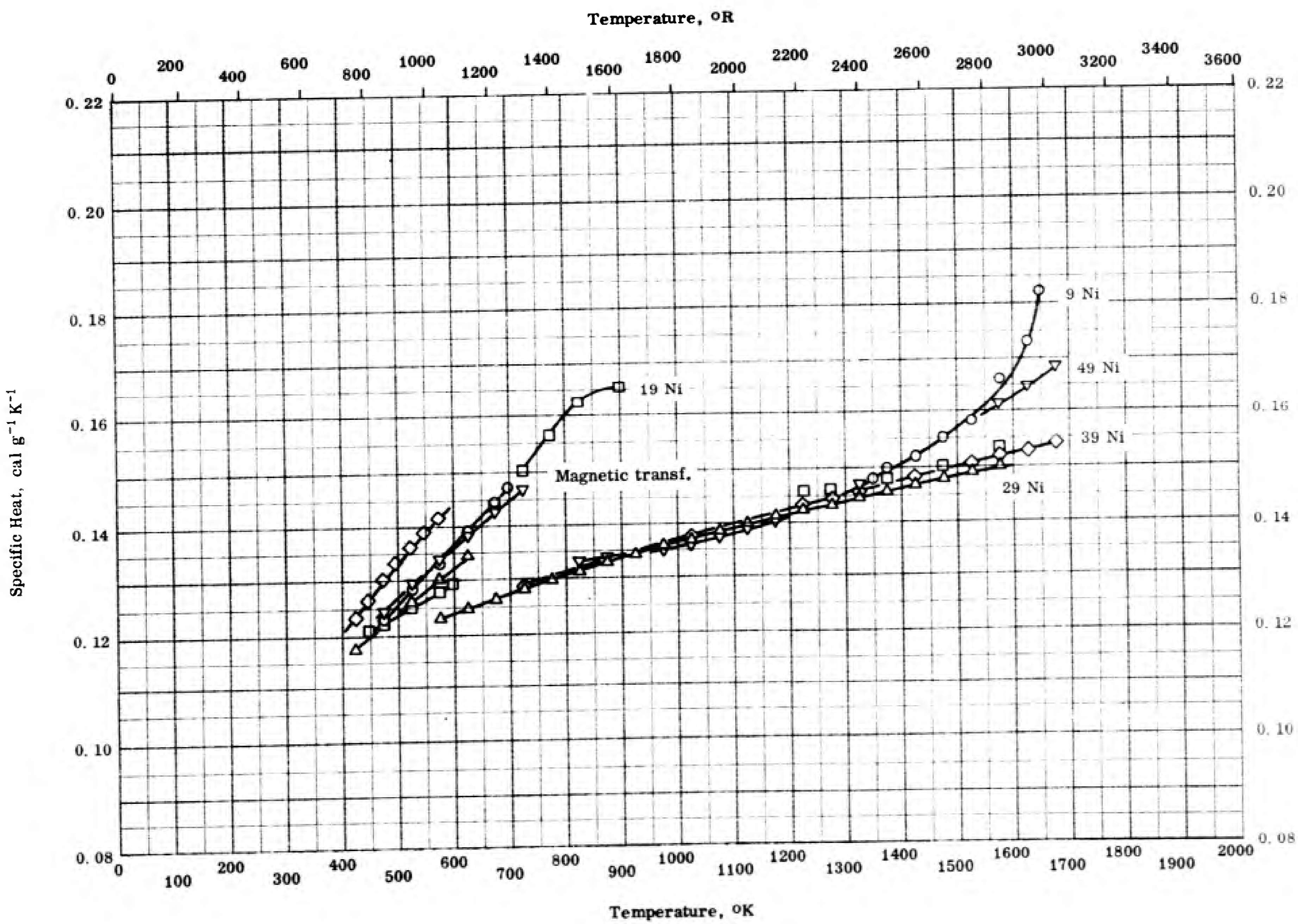


ELECTRICAL RESISTIVITY -- IRON + NICKEL + ΣX_i GROUP I

ELECTRICAL RESISTIVITY -- IRON + NICKEL + ΣX_i GROUP I.

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	57-11	298-373		46.2 Ni and 0.01 > C; prepared from electrolytic Ni and Fe.	Annealed by slow cooling from 490 to 400 C over 1200 hrs period.

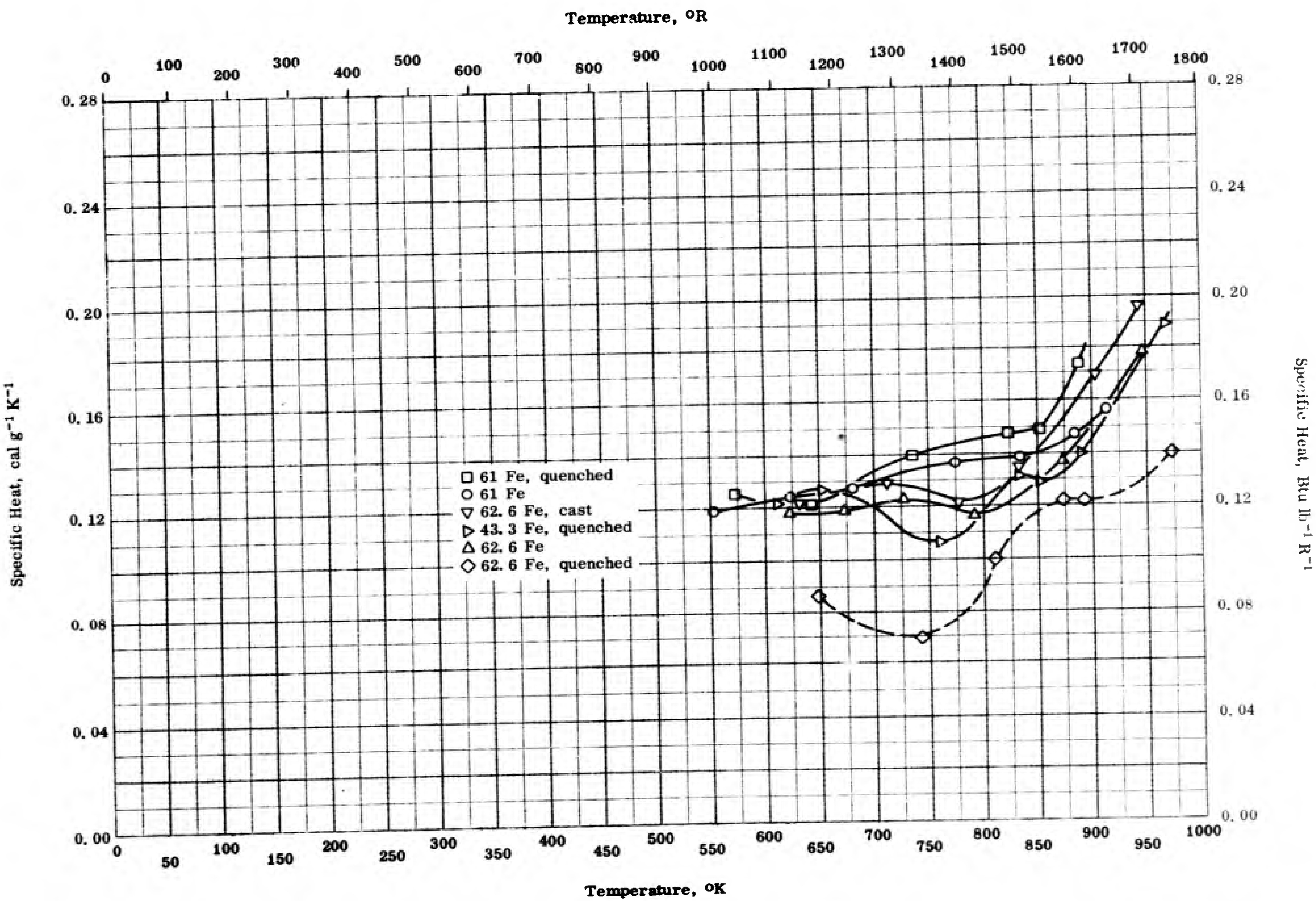


SPECIFIC HEAT -- IRON + NICKEL + ΣX_i GROUP I

SPECIFIC HEAT -- IRON + NICKEL + ΣX_i GROUP I

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	40-1	473-1648		90.9 Fe and 9.1 Ni; prepared from electrolytically deposited pure iron and pure nickel.	Vacuum melted; heated 5 hrs at 1100 C and cooled slowly.
□	40-1	448-1573		80.7 Fe and 19.3 Ni; same raw materials as above.	Vacuum melted.
△	40-1	423-1573		70.5 Fe and 29.5 Ni; same raw materials as above.	Same as above.
◇	40-1	423-1673		61.0 Fe and 29.0 Ni; same raw materials as above.	Same as above.
▽	54-7	473-1673		50.98 Fe and 49.02 Ni; same raw materials as above.	Same as above.

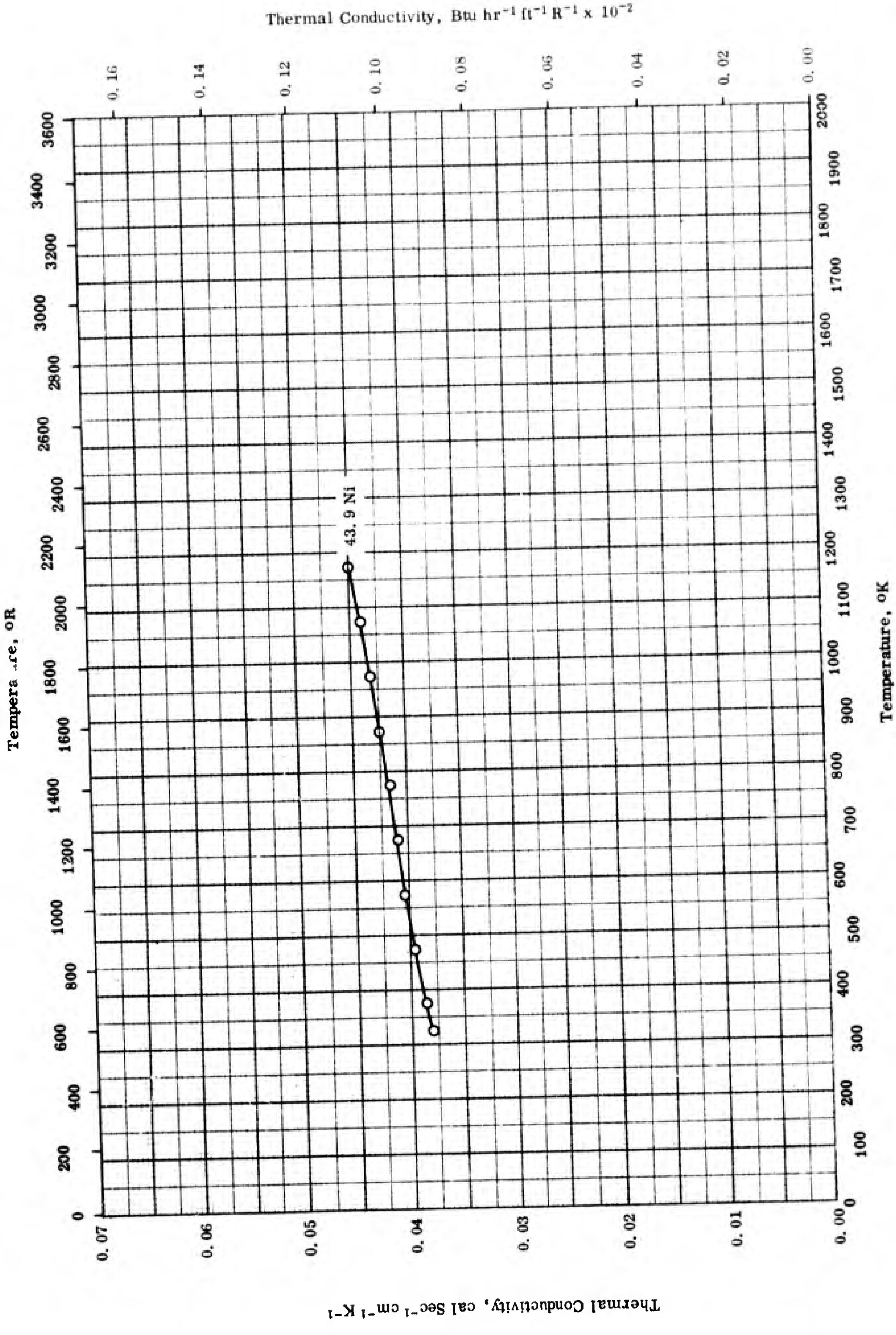


SPECIFIC HEAT — IRON + NICKEL + ΣX_i GROUP II
(24-33 Ni and 11-24 Al)

SPECIFIC HEAT -- IRON + NICKEL + ΣX_i GROUP II
(24-33 Ni and 11-24 Al)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-8	553-913	±1.5	60.98 Fe, 27.25 Ni, and 11.77 Al.	Tempered in vacuum at 800 C for 18 hrs followed by slow cooling (5 C/hr) to 400 C.
□	54-8	573-888	±1.5	Same as above.	As above, followed by quenching from 620 C.
△	54-8	648-973	±1.5	62.56 Fe, 24.79 Ni, and 12.65 Al.	Tempered in vacuum at 800 C for 18 hrs followed by slow cooling (5 C/hr) to 400 C.
◇	54-8	648-973	±1.5	Same as above.	As above, followed by quenching from 1300 C.
▽	54-8	633-973	±1.5	Same as above.	Cast.
▷	54-8	573-968	±1.5	43.28 Fe, 33.05 Ni, and 23.67 Al.	Quenched from 1300 C, then soaked at 800 C for 5 hrs, then quenched.

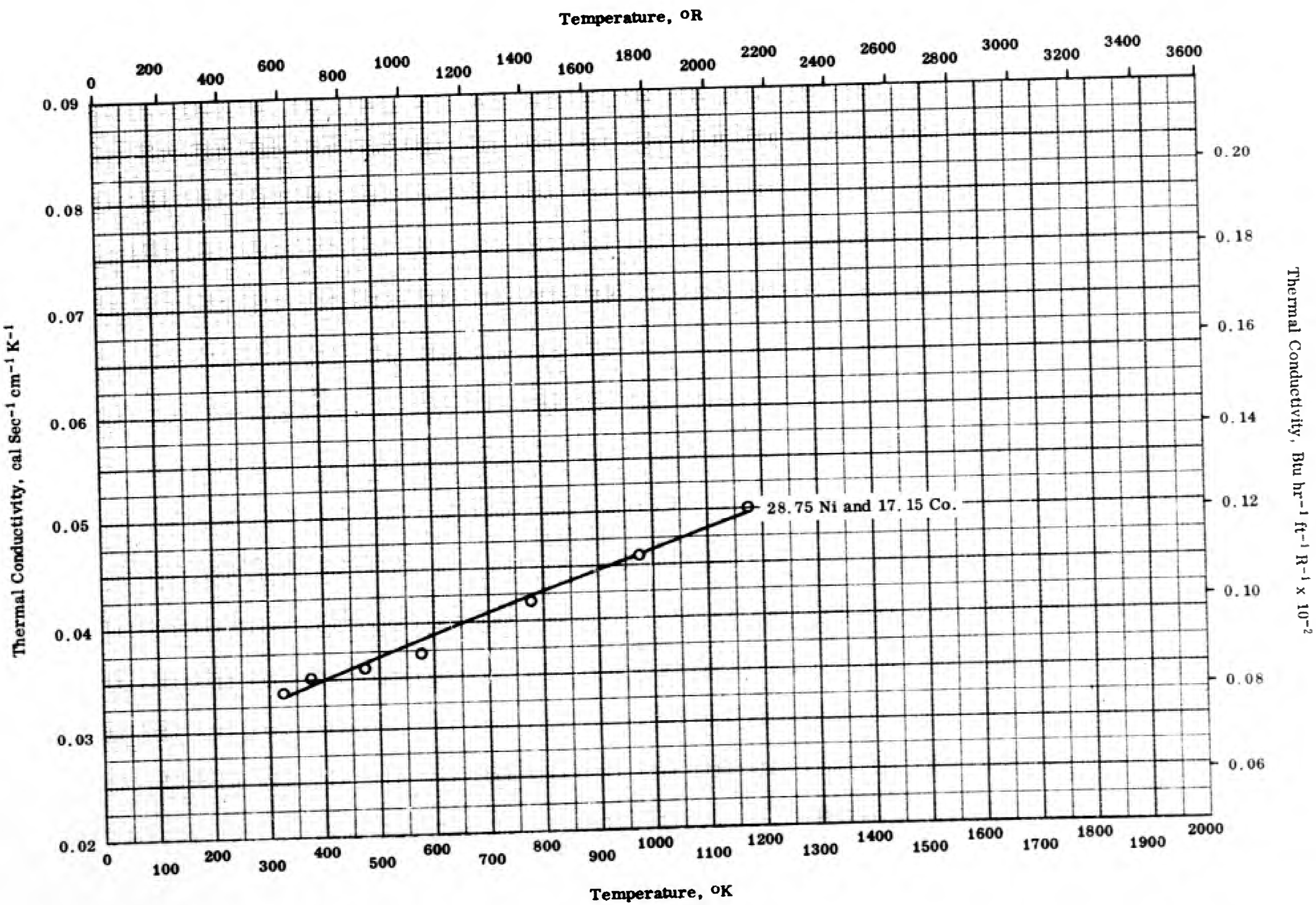


THERMAL CONDUCTIVITY -- IRON + NICKEL +ΣX_i GROUP I

THERMAL CONDUCTIVITY -- IRON + NICKEL + ΣX_i GROUP I

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	53-2	323-1173		55.8 Fe, 43.91 Ni, 0.22 Mn, 0.050 C and 0.003 S.	

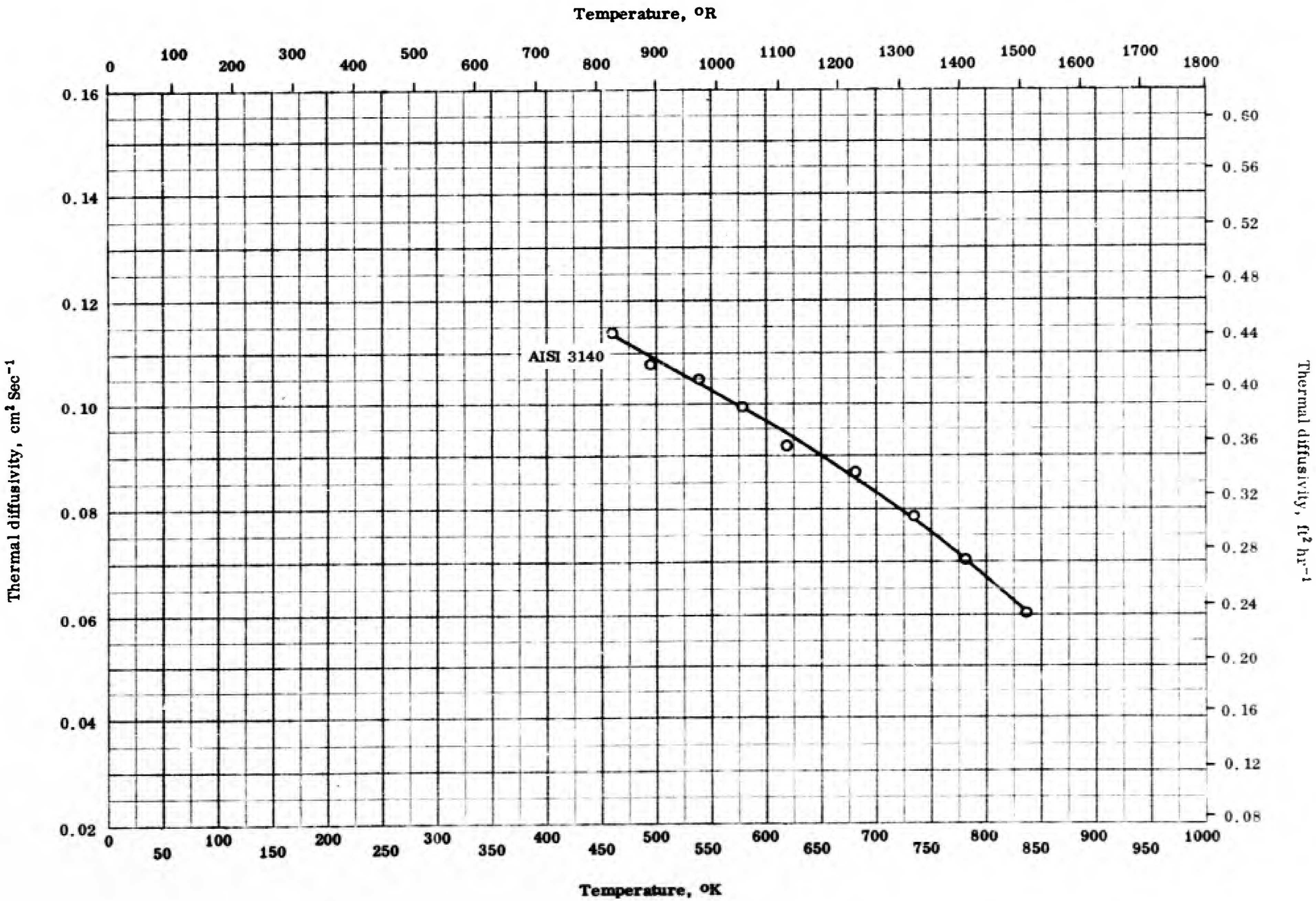


THERMAL CONDUCTIVITY -- IRON + NICKEL + ΣX_i GROUP II

THERMAL CONDUCTIVITY -- IRON + NICKEL + ΣX_i GROUP II

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	53-2	323-1173		Kovar; 53.7 Fe, 28.75 Ni, 17.15 Co, 0.47 Mn, and 0.017 C.	

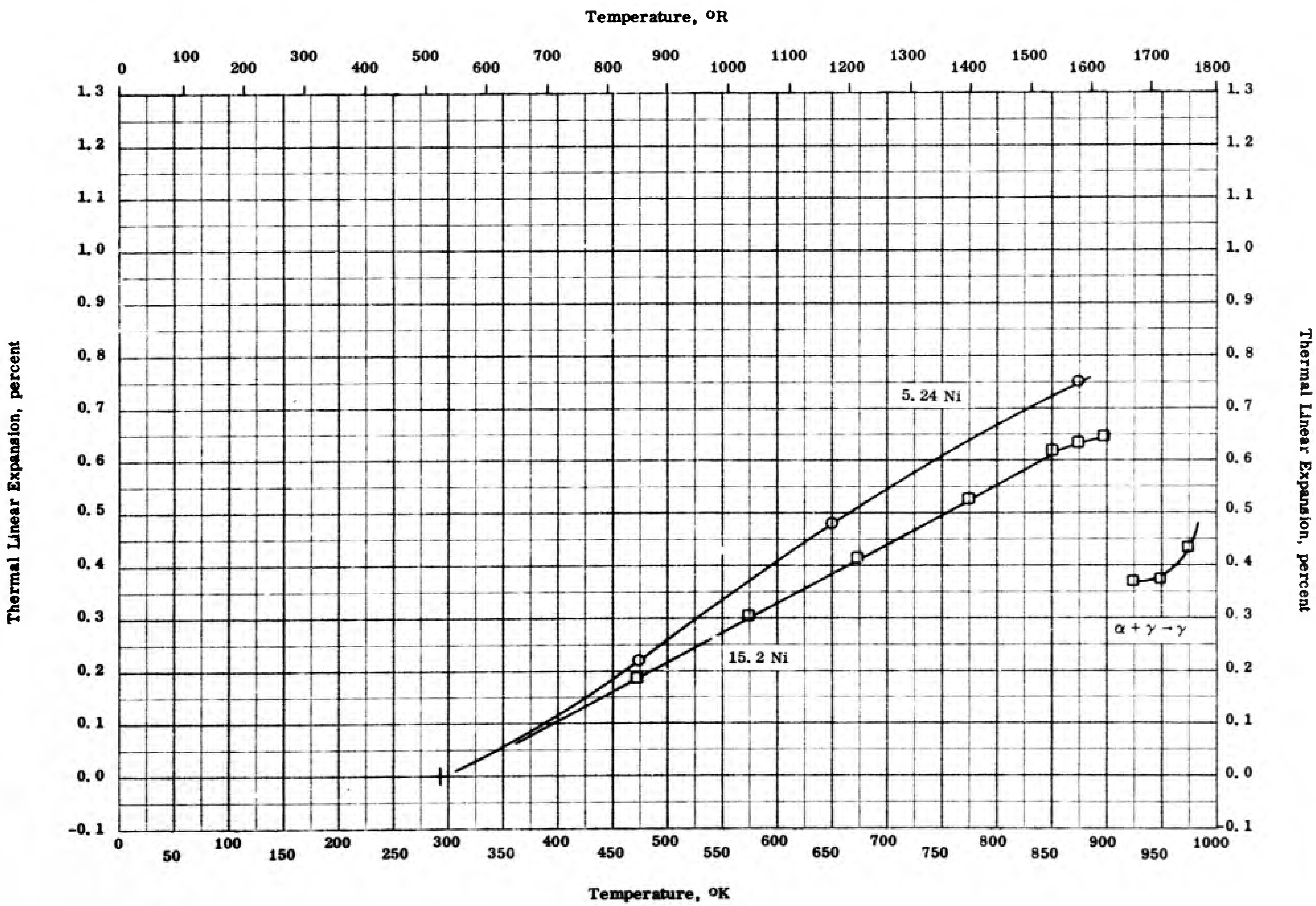


THERMAL DIFFUSIVITY -- IRON + NICKEL + ΣX_i GROUP II

THERMAL DIFFUSIVITY -- IRON + NICKEL + ΣX_i GROUP II

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	56-1	459-836		AISI 3140; 1.10-1.40 Ni, 0.70-0.90 Mn, 0.55-0.75 Cr, 0.38-0.43 C, 0.20-0.30 Si, 0.04 max S, and 0.04 max P; composition from Metal's Handbook.	

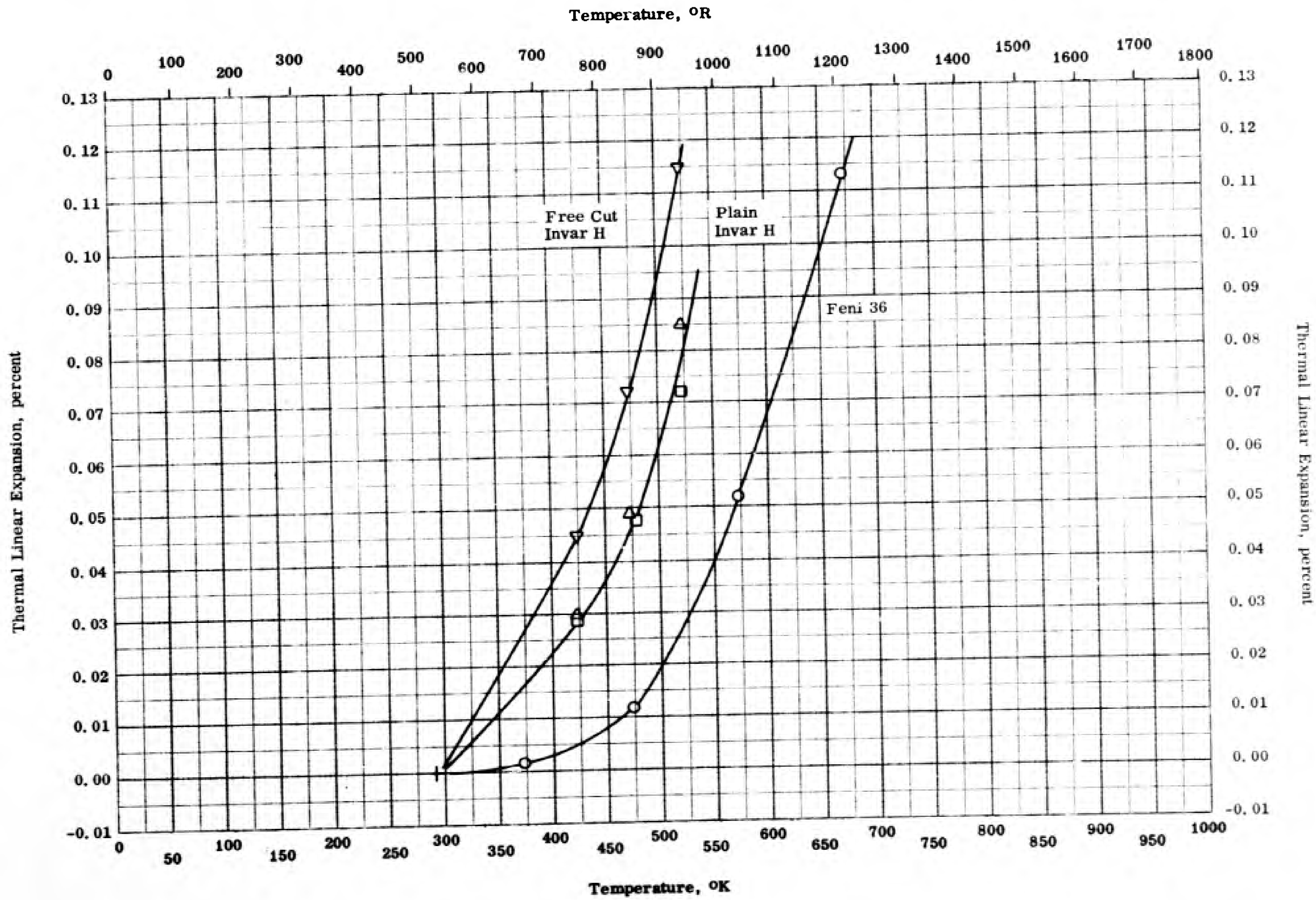


THERMAL LINEAR EXPANSION -- IRON + NICKEL + ΣX_i GROUP I
($5 < Ni < 16$)

THERMAL LINEAR EXPANSION -- IRON + NICKEL + ΣX_i GROUP I
(5< Ni < 16)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	43-1	293-1073		5.24 Ni, 0.60 Mn, 0.22 Si, 0.014 P, 0.011 S, and 0.08 C.	Heated at 1.5 C min^{-1} in vacuum.
□	49-1	473-873		15.2 Ni; prepared from 99.95 Fe and 99.91 Ni.	Remelted from raw materials in H_2 atm; forged, descaled, and homogenized at 1250 C in vacuum.

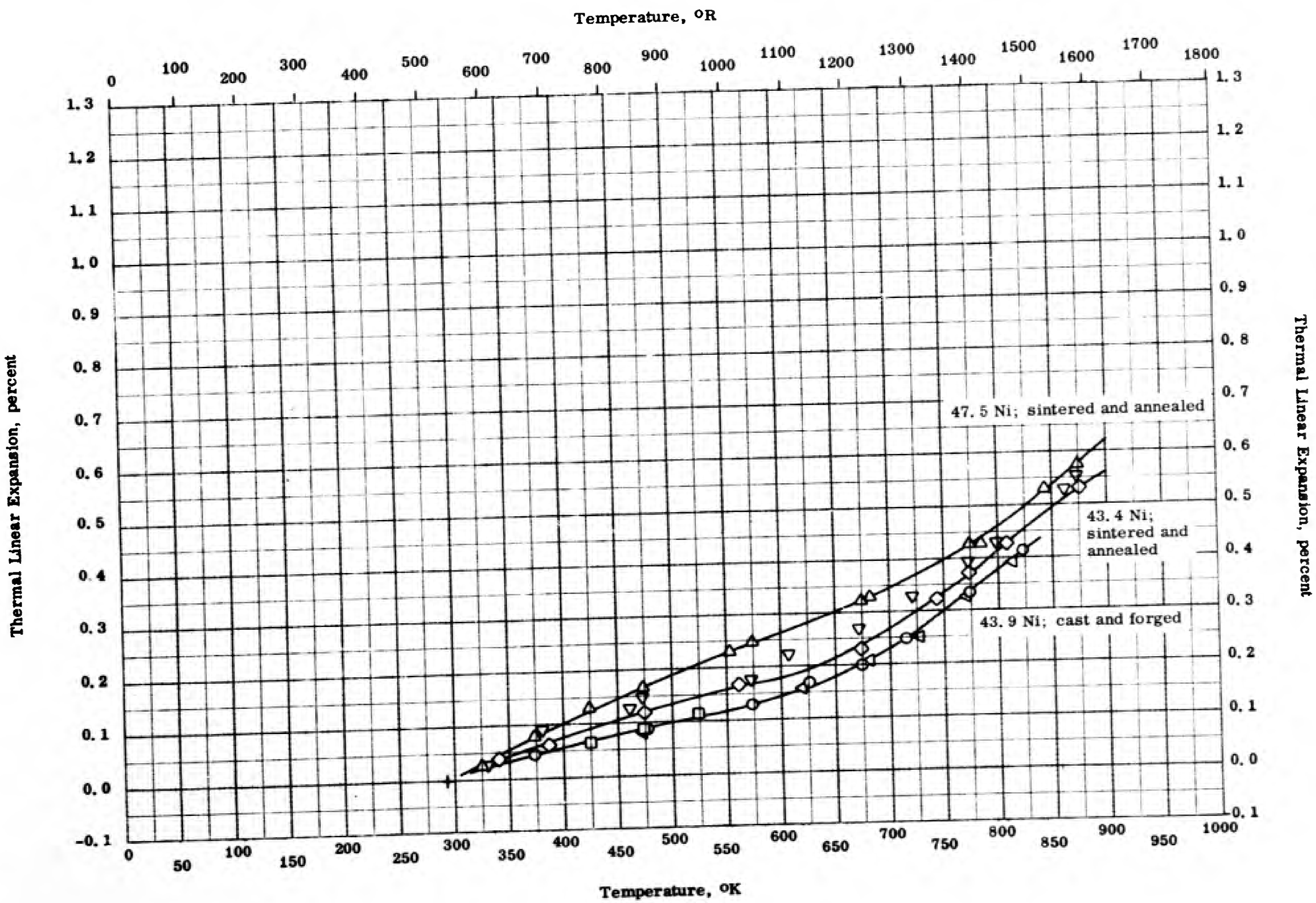


THERMAL LINEAR EXPANSION -- IRON + NICKEL + ΣX_i GROUP I
(30< Ni < 40)

THERMAL LINEAR EXPANSION -- IRON + NICKEL + ΣX_i GROUP I
(30< Ni <40)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	57-14	293-673		Feni 36; 36.3 Ni, 0.10 Mn, and 0.01 C.	Vacuum-melted, hot-rolled at 1200 C from 75 to 20 mm, reheated to 1000 C, water-quenched, cold-rolled to 1 mm, aged 8 hrs at 100 C, and cooled slowly.
□	50-5	423-523		Plain Invar H.	
△	50-5	425-523		Plain Invar H.	
▽	50-5	423-523		Free Cut Invar H.	

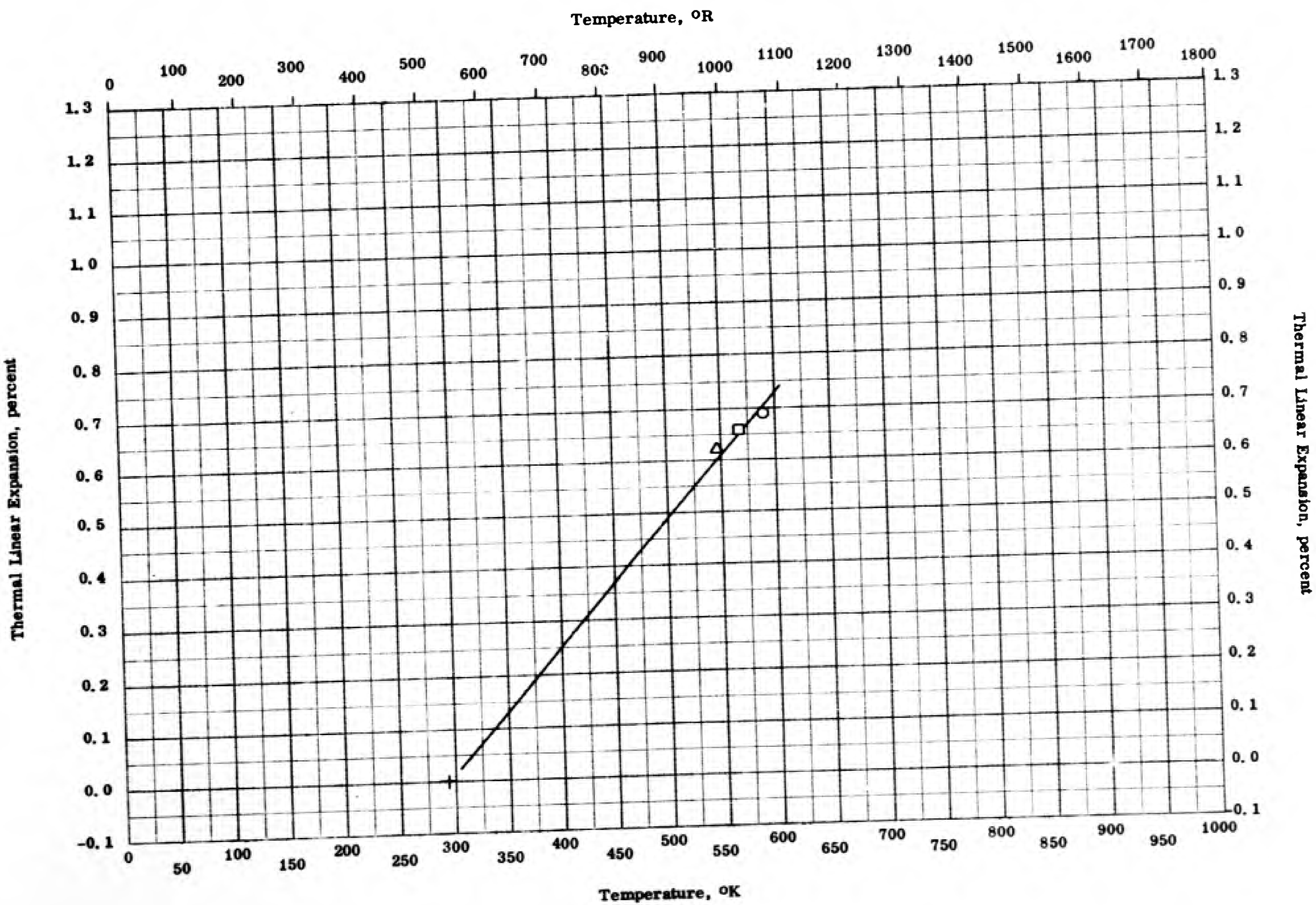


THERMAL LINEAR EXPANSION -- IRON + NICKEL + ΣX_i GROUP I
($40 < Ni < 50$)

THERMAL LINEAR EXPANSION -- IRON + NICKEL + ΣX_i GROUP I
(40< Ni < 50)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-19	293-823		55.4 Fe, 43.9 Ni, and 0.01 C, prepared from Swedish Armco iron, electrolytic nickel, and electrolytic cobalt.	Induction melted, cast, and forged.
□	50-5	293-523		42 Ni.	
△	56-20	323-873		52.4 Fe, 47.5 Ni, 0.06 Cu, 0.02 Mn, 0.005 C, and 0.004 S.	Compacted Swedish Sponge Iron and Carbonyl Nickel powders; sintered, annealed 15 min at 850 C, and cooled slowly.
▽	56-20	323-873		54.5 Fe, 45.4 Ni, 0.03 Cu, 0.02 Mn, 0.005 C, and 0.004 S.	Same as above.
◇	56-20	323-873		56.5 Fe, 43.4 Ni, 0.06 Cu, 0.02 Mn, 0.005 C, and 0.005 S.	Same as above.
◁	56-19	293-813		56.4 Fe, 43.8 Ni, 0.35 Mn, and 0.03 C; prepared from Swedish Armco iron, electrolytic Ni, and electrolytic Mn.	Same as above.

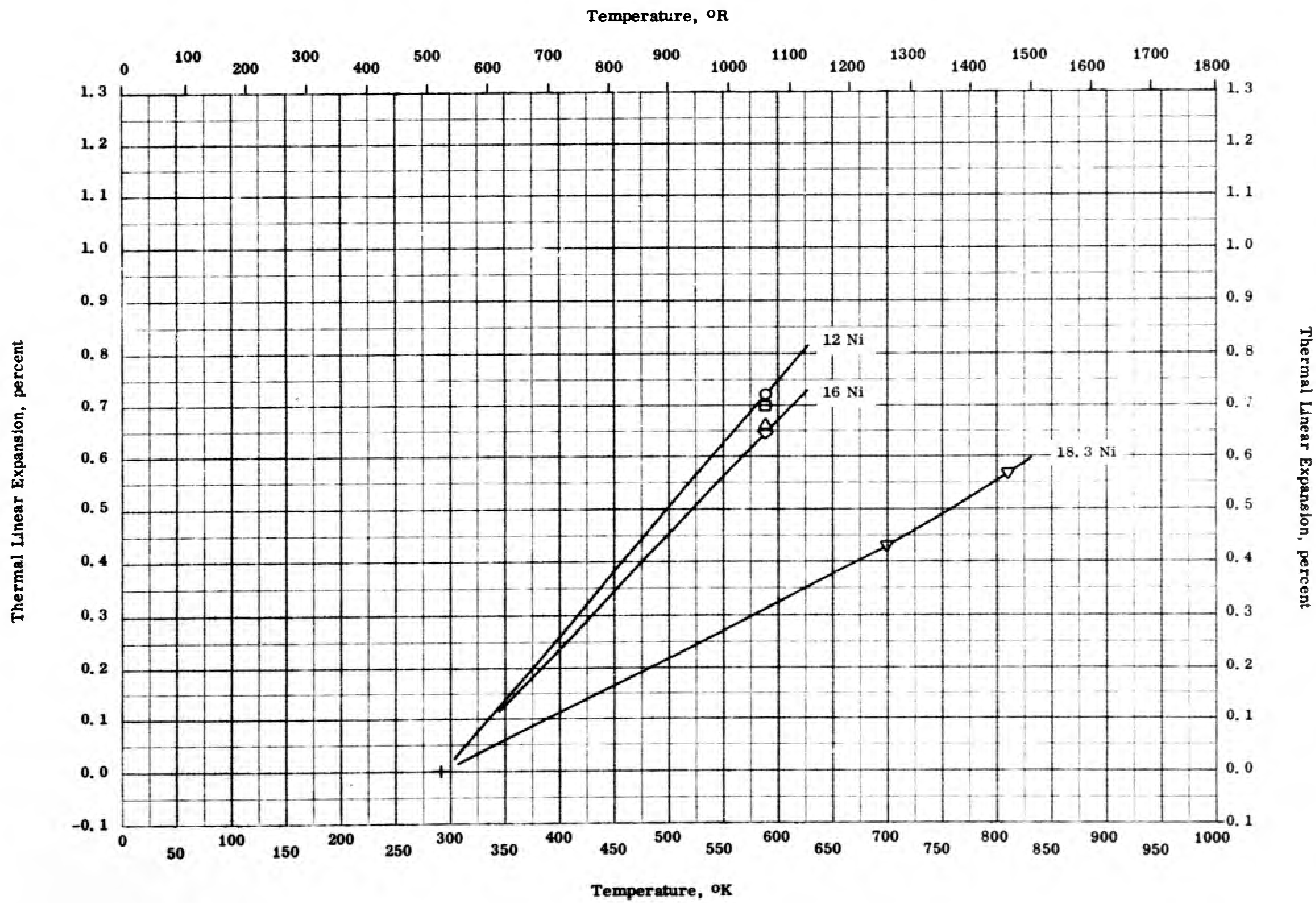


THERMAL LINEAR EXPANSION -- IRON + NICKEL + ΣX_i GROUP II
(Ni < 10)

THERMAL LINEAR EXPANSION -- IRON + NICKEL + ΣX_i GROUP II
(Ni < 10)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-15	295-589		Austenitic Steel; 6. 1 Ni, 5. 2 Mn, 0. 55 C, and 0. 11 Si.	Air cooled from 2100 F.
□	56-15	295-589		Austenitic Steel; 8. 9 Ni, 5. 3 Mn, 0. 59 C, 0. 31 Si, and 0. 05 Cr.	Same as above.
△	56-15	295-589		Austenitic Steel; 8. 8 Ni, 8. 8 Mn, 0. 57 C, 0. 33 Si, and 0. 07 Cr.	Same as above.

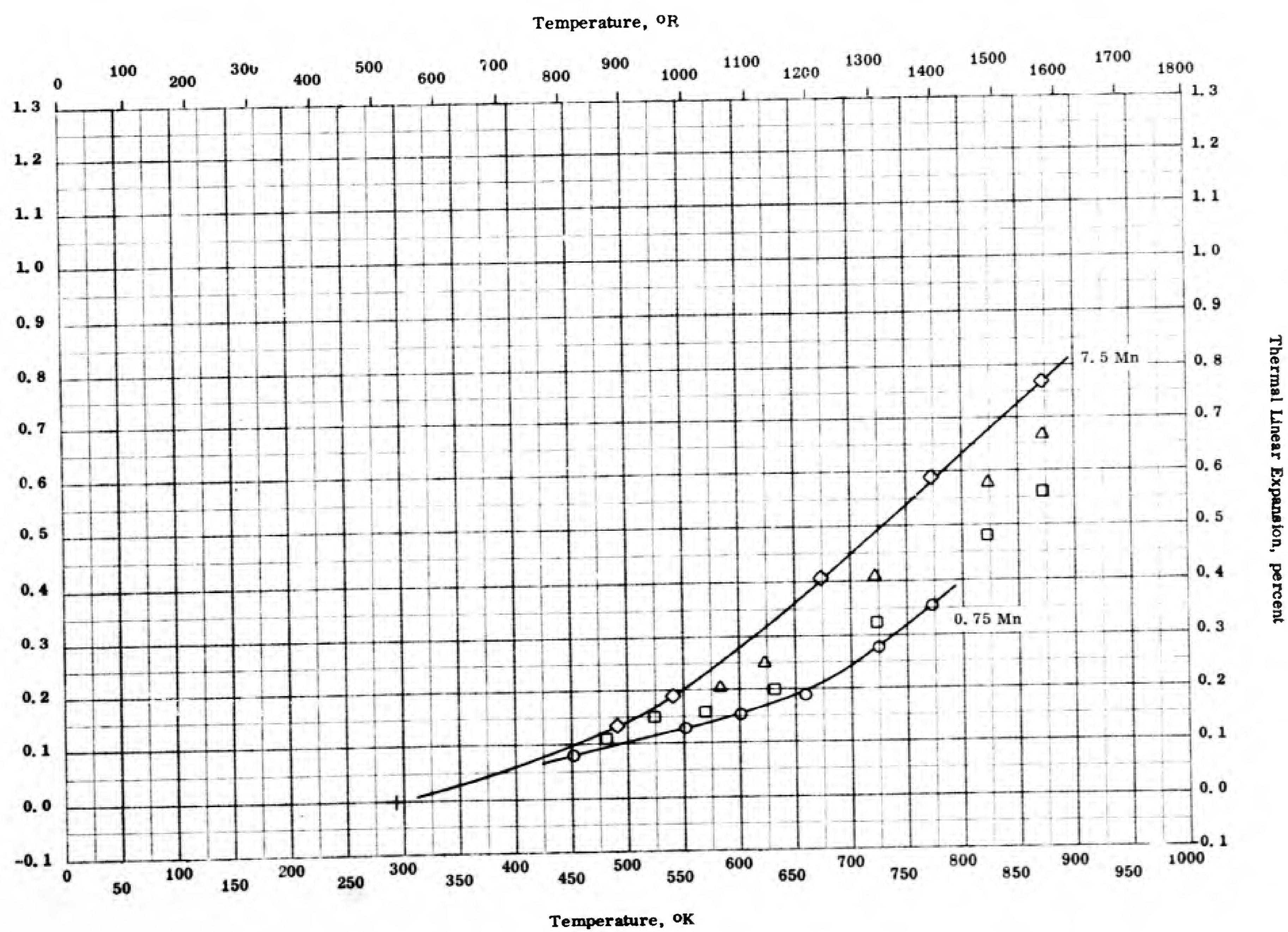


THERMAL LINEAR EXPANSION -- IRON + NICKEL + ΣX_i GROUP II
($10 < Ni < 20$)

THERMAL LINEAR EXPANSION -- IRON + NICKEL + ΣX_i GROUP II
($10 < Ni < 20$)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-15	295-589		Three Austenitic Steel samples: a) 13.0 Ni, 9.2 Mn, 0.69 C, 0.13 Si, and 0.01 Cr. b) 12.1 Ni, 4.8 Mn, 0.71 Si, 0.61 C, and 0.2 Cr. c) 11.9 Ni, 4.9 Mn, 0.50 C, 0.05 Si, and 0.03 Cr.	Air cooled from 2100 F; author reports identical data for these samples.
□	56-15	295-589		15.8 Ni, 5.1 Mn, 0.61 Si, 0.58 C, and 0.1 Cr.	Air cooled from 2100 F.
△	56-15	295-589		13.8 Ni, 5.0 Mn, 4.9 Cr, 0.58 C, and 0.53 Si.	Same as above.
◇	56-15	295-589		16.1 Ni, 4.9 Mn, 3.4 Cr, 0.62 C, and 0.59 Si.	Same as above.
▽	64-2	299-811		18.30 Ni, 8.09 Co, 2.60 Mo, 0.18 Al, 0.15 Ti, 0.032 Mn, 0.022 Si, 0.014 C, 0.012 S, 0.007 N, 0.005 P, 0.0031 B, and 0.002 O; sample 1/8 in. in diameter and 2 in. in length. [Author's design.: Heat No. X53014]	Fully solution-treated at 1700 F for at least 1 hr, aged, air-cooled, and then machined.

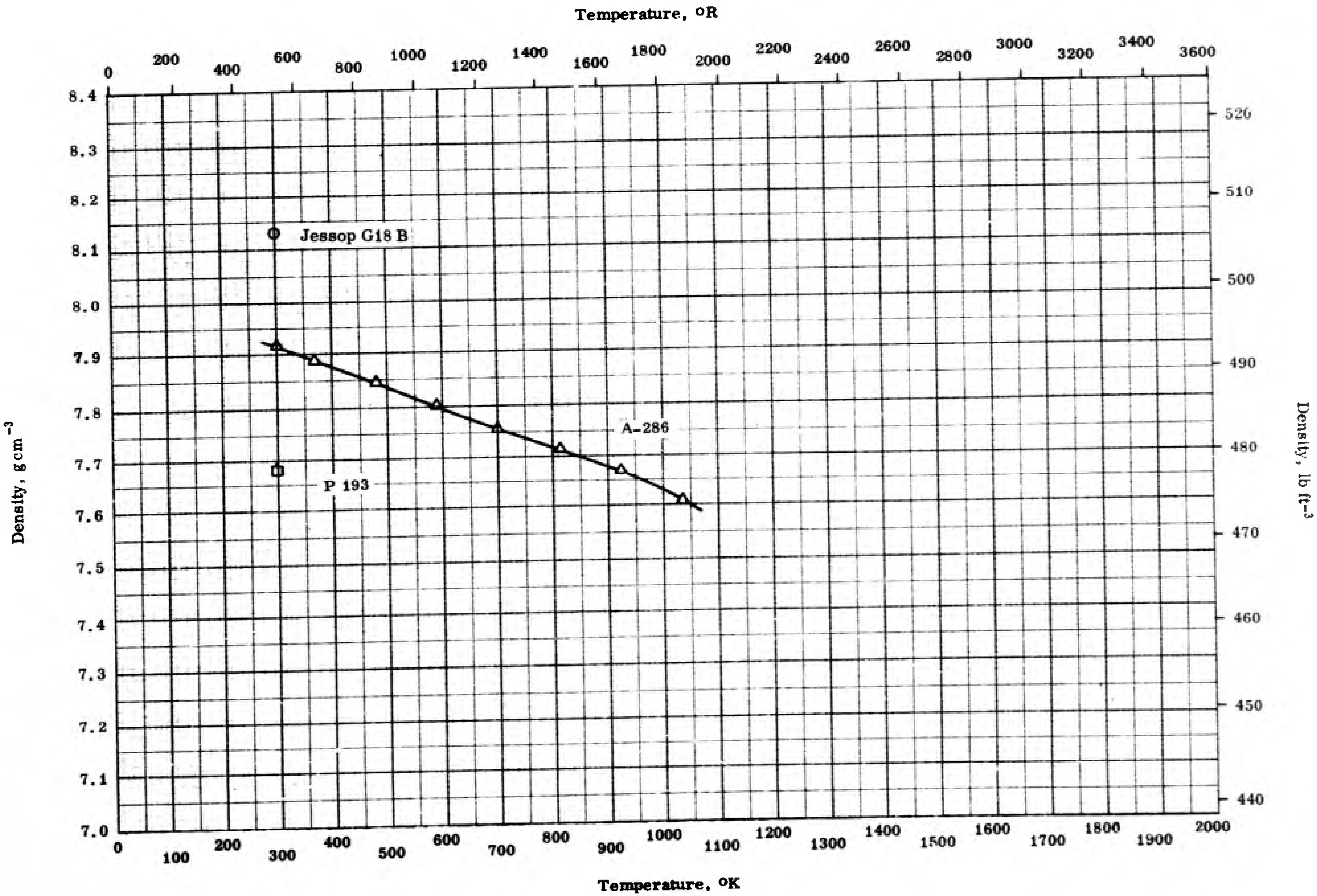


THERMAL LINEAR EXPANSION -- IRON + NICKEL + ΣX_i GROUP II
(Ni >40)

THERMAL LINEAR EXPANSION -- IRON + NICKEL + ΣX_i (Ni > 40) GROUP II

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-19	293-773		56.0 Fe, 43.8 Ni, 0.75 Mn, and 0.02 C.	Prepared from Swedish Armco Iron, electrolytic Ni and electrolytic Mn; induction melted, cast, and forged.
□	56-19	293-873		55.7 Fe, 43.4 Ni, 1.98 Mn, and 0.05 C.	Same as above.
△	56-19	293-873		50.8 Fe, 43.0 Ni, 4.52 Mn, and 0.03 C.	Same as above.
◇	56-19	293-873		49 Fe, 43 Ni, 7.50 Mn, and 0.04 C.	Same as above.

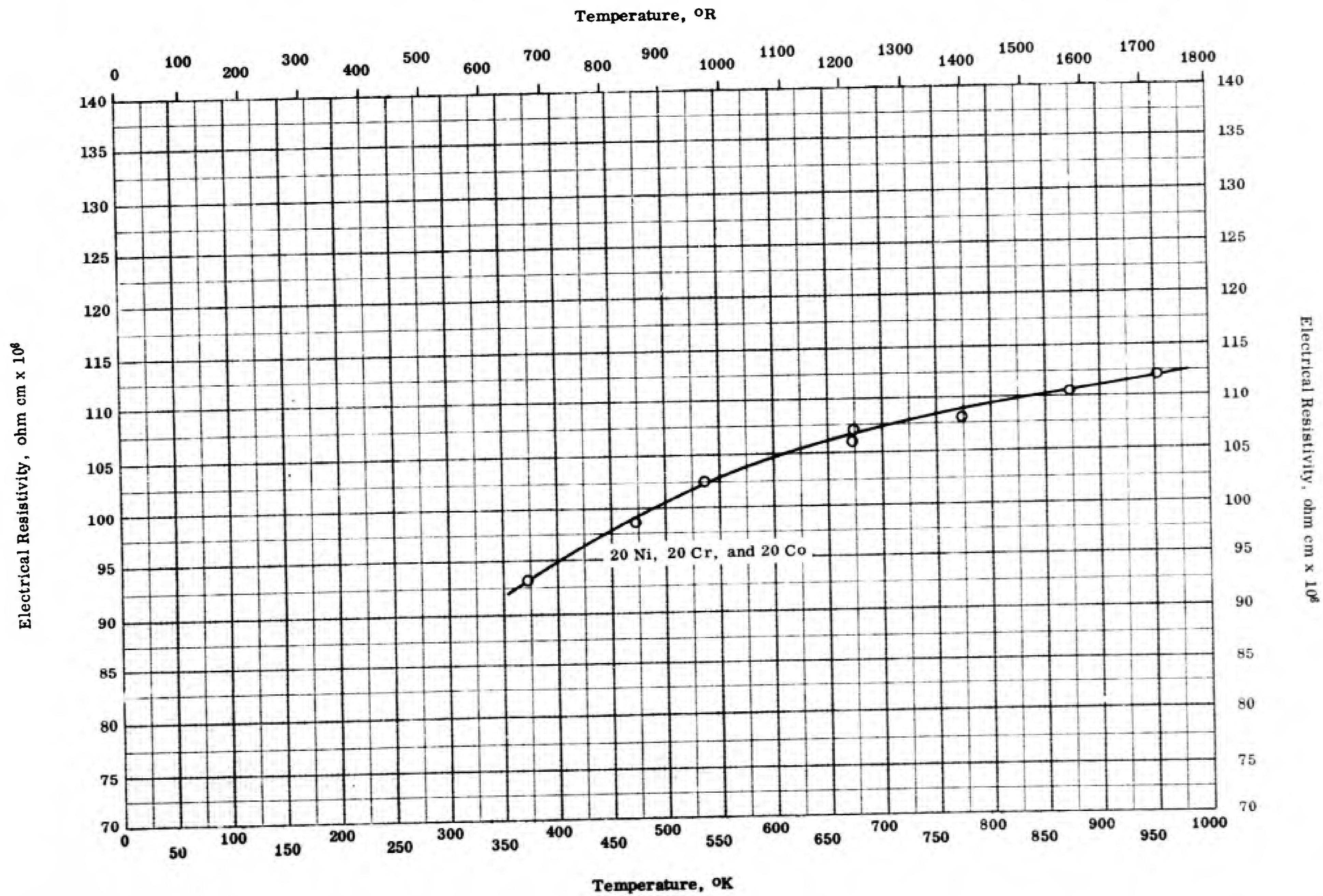


DENSITY -- IRON + NICKEL + CHROMIUM + ΣX_i GROUP II

DENSITY -- IRON + NICKEL + CHROMIUM + ΣX_i GROUP II

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	47-3	298		Jessop G18 B steel (British design.); 13.09 Ni, 13.0 Cr, 10.0 Co, 3.0 Nb, 2.5 W, 1.0 Si, 0.8 Mn, and 0.4 C.	
□	47-3	298		P 193 (German design.); 38.5-42.1 Fe, 28.7-30.1 Ni, 25.4-27.4 Cr, 1.88-1.97 Ti, 0.71-0.93 Si, 0.69-0.75 Mn, and 0.45 C.	
△	63-2	300-1033		A-286; 26 Ni, 15 Cr, 2.0 Ti, 1.35 Mn, 1.25 Mo, 0.5 Si, 0.3 V, 0.25 Al, and 0.08 C.	

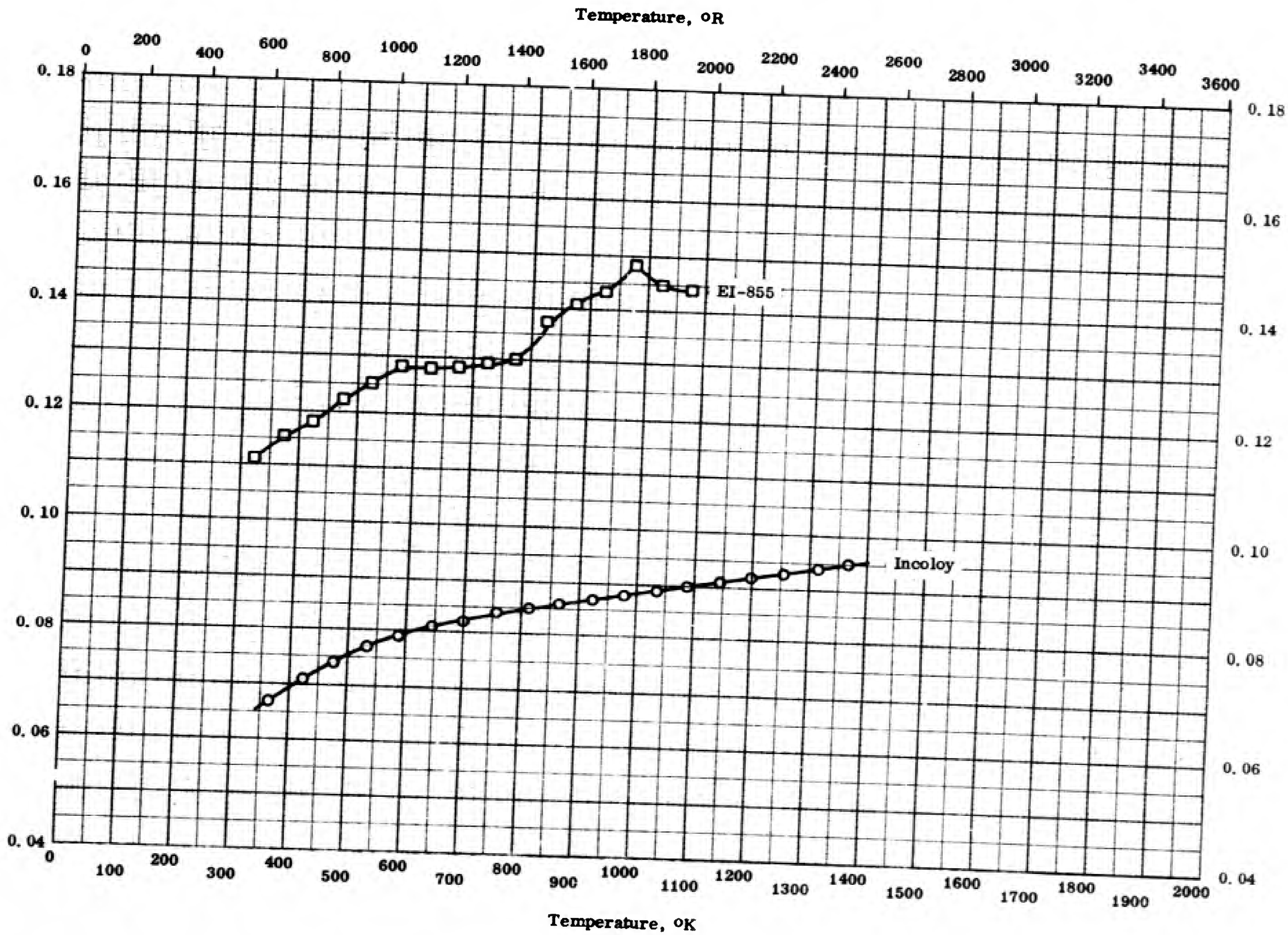


ELECTRICAL RESISTIVITY -- IRON + NICKEL + CHROMIUM + ΣX_i GROUP II

ELECTRICAL RESISTIVITY -- IRON + NICKEL + CHROMIUM + ΣX_i GROUP II

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	57-3	373-955	± 1	20 Ni, 20 Cr, and 20 Co.	Forged, quenched in oil from 1200 C, aged 70 hrs at 760 C.

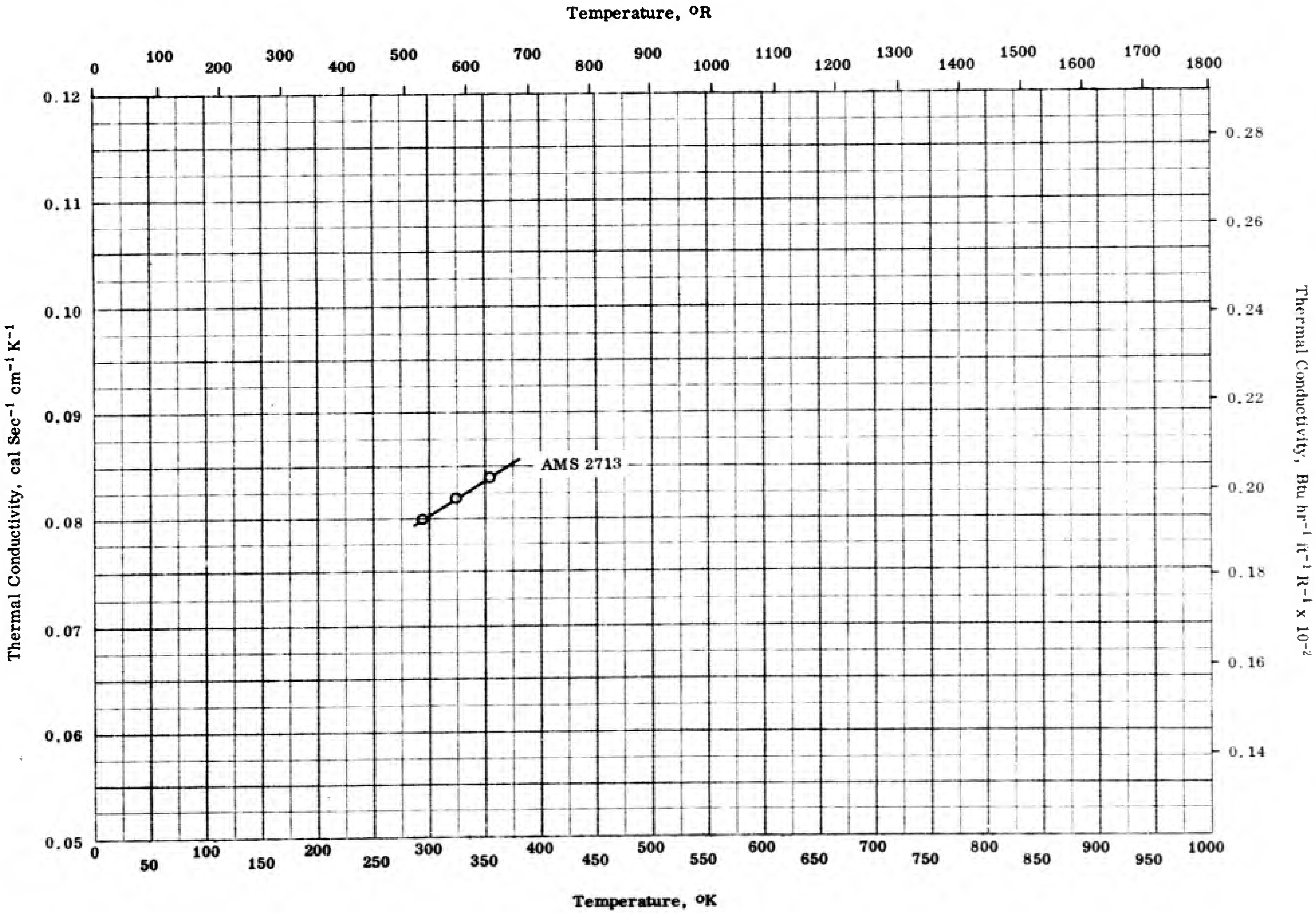


SPECIFIC HEAT -- IRON + NICKEL + CHROMIUM + ΣX_i GROUP II

SPECIFIC HEAT -- IRON + NICKEL + CHROMIUM + ΣX_i GROUP II

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	59-1	366-1366	5-10	Incoloy; nominal composition: 45.0 Fe 34.0 Ni, 21.0 Cr, 0.50 Cu, and 0.05 C.	Heated to 1975 F for 0.5 hr and air cooled.
□	63-1	293-1173	± 1.0	OKh 16N 36V3T (EI-855); bal. Fe, 36.55 Ni, 15.5 Cr, 2.88 W, 0.55 Si, 0.46 Mn, 0.31 Ti, 0.08 C, 0.047 S, and 0.0125 P.	Quenched in air from 1100 C.

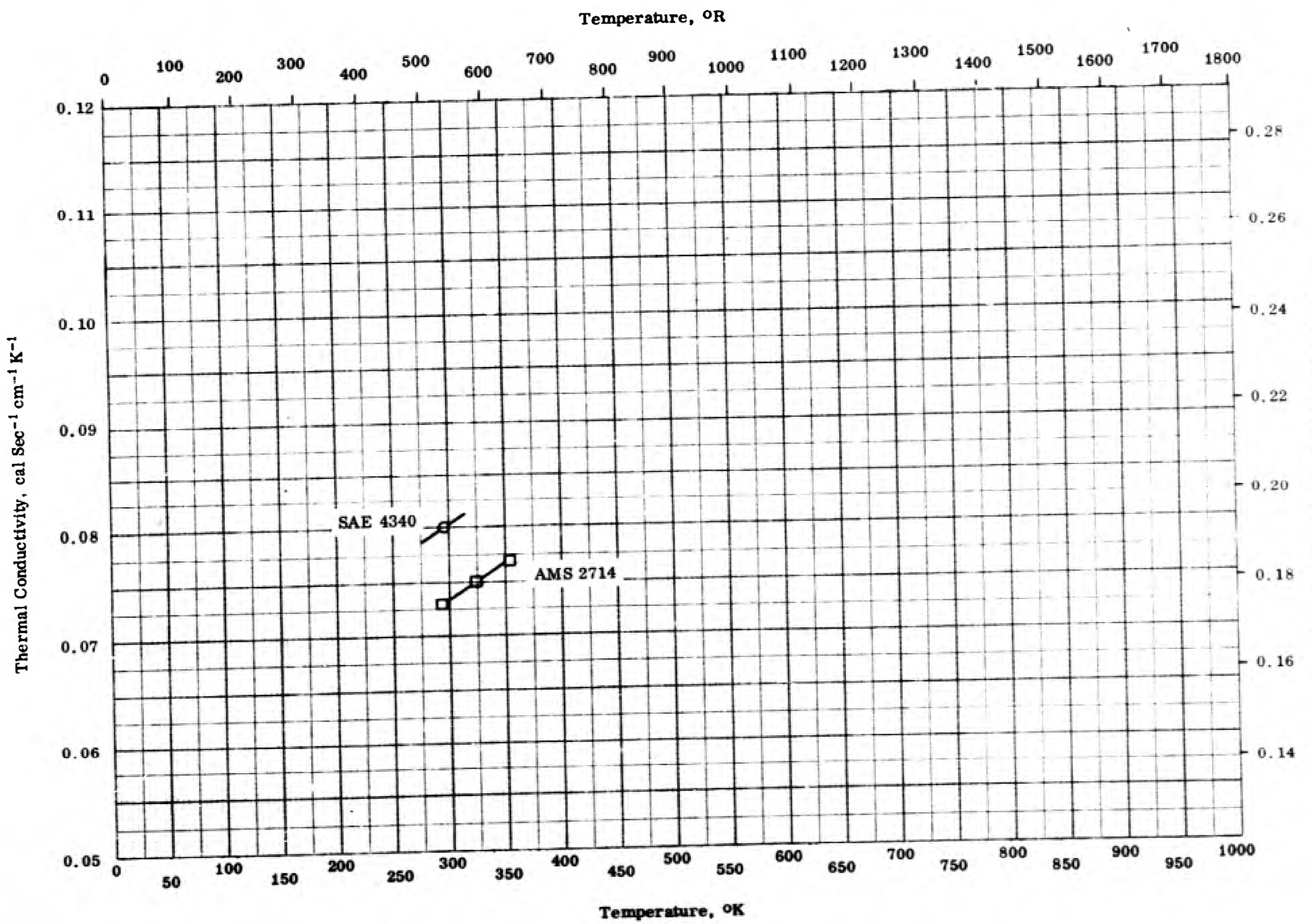


THERMAL CONDUCTIVITY -- IRON + NICKEL + CHROMIUM + ΣX_i GROUP I

THERMAL CONDUCTIVITY -- IRON + NICKEL + CHROMIUM + ΣX_i GROUP I

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	58-3	293-353	1	AMS 2713; 1.7 Ni, 0.7 Cr, 0.6 Mn, 0.55 C, 0.3 Si, 0.2 Mo, and 0.1 V.	

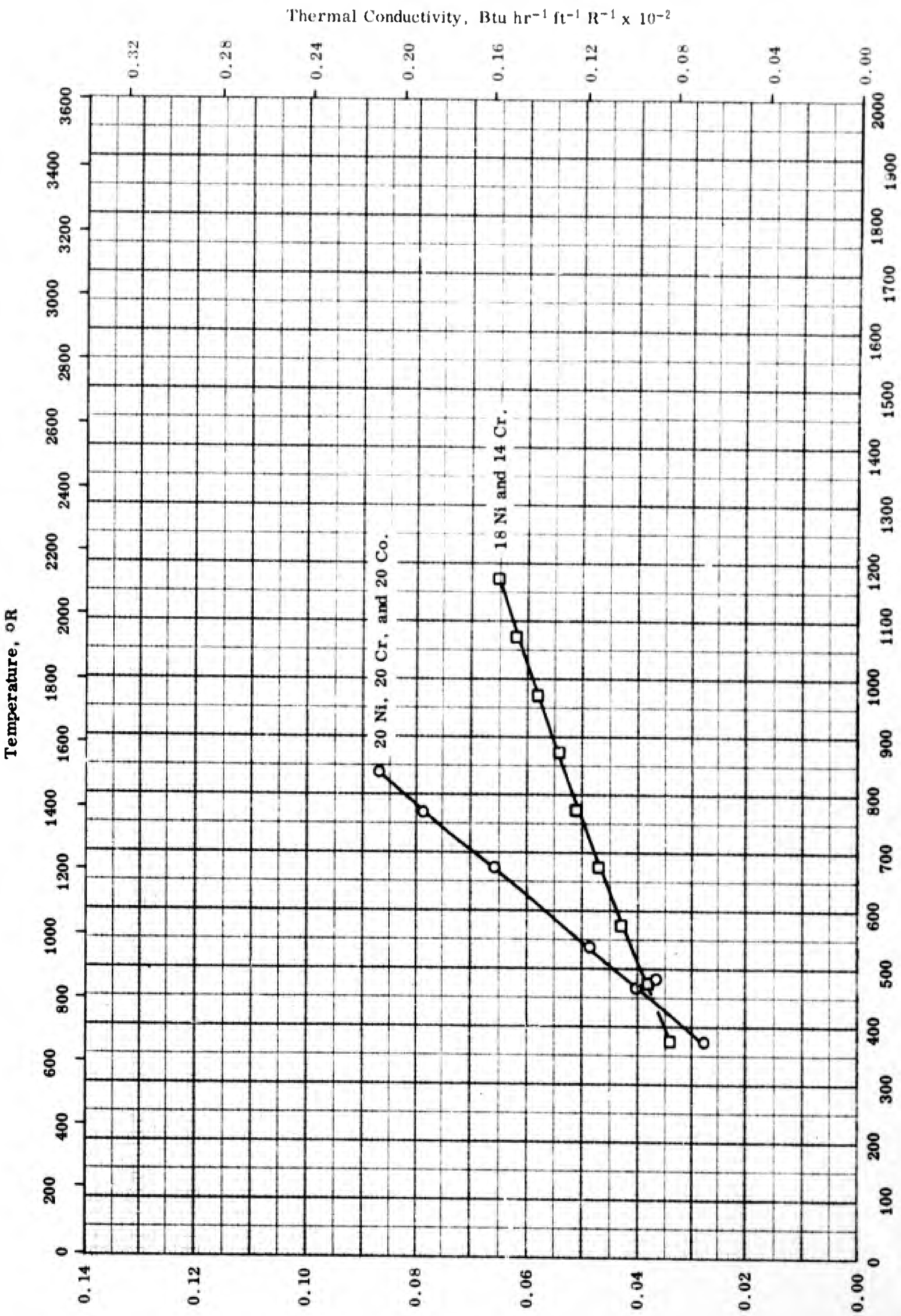


THERMAL CONDUCTIVITY -- IRON + NICKEL + CHROMIUM + ΣX_i GROUP II
(1.5 - 2.0 Ni and 0.7 - 1.0 Cr)

THERMAL CONDUCTIVITY -- IRON + NICKEL + CHROMIUM + ΣX_i GROUP II
(1.5 - 2.0 Ni and 0.7 - 1.0 Cr)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	61-5	295	± 5	SAE 4340; 1.65 - 2.0 Ni, 0.7 - 0.9 Cr, 0.6 - 0.8 Mn, 0.38 - 0.43 C, 0.2 - 0.35 Si, 0.2 - 0.3 Mo, 0.04 P, and 0.04 S; nominal composition.	
□	58-3	293-353		AMS 2714; 1.7 Ni, 1.0 Cr, 0.7 Mn, 0.55 C, 0.5 Mo, 0.3 Si, and 0.1 V.	Annealed and quenched.

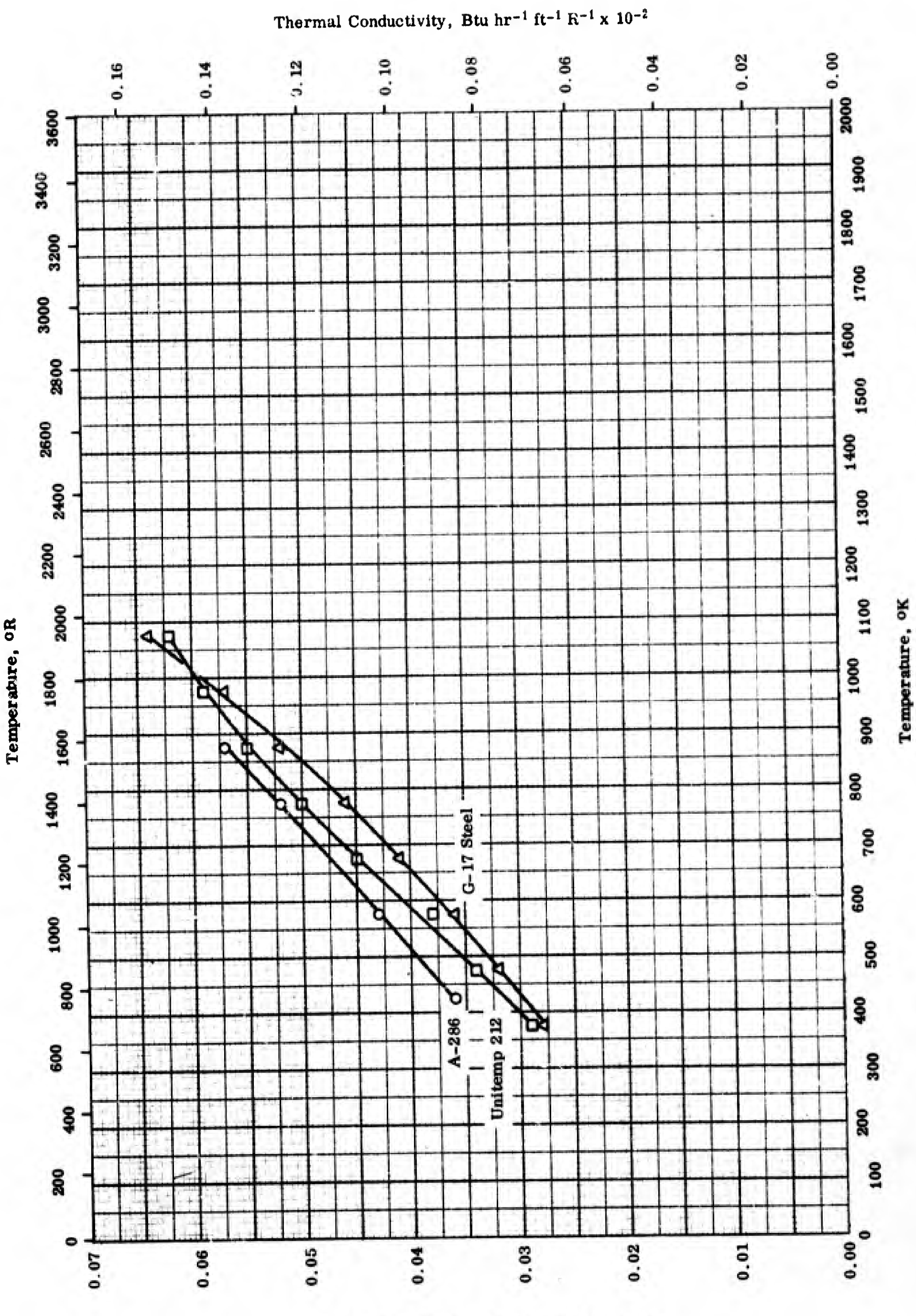


THERMAL CONDUCTIVITY -- IRON + NICKEL + CHROMIUM + ΣX_i GROUP II
(18-20 Ni and 14-20 Cr)

THERMAL CONDUCTIVITY -- IRON + NICKEL + CHROMIUM + ΣX_i GROUP II
(18–20 Ni and 14–20 Cr)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	57-3	373–839	±4	20 Ni, 20 Cr, and 20 Co.	Forged beginning at 1180 C and ending at 950 C, oil-quenched from 1200 C and then aged 70 hrs at 760 F C; data probably high.
□	53-1	373–1173		Rex 78; 18 Ni, 14 Cr, 3.5 Cu, 3.5 Mo, 0.75 Ti, 0.5 Mn, 0.5 Si, and 0.1 C.	

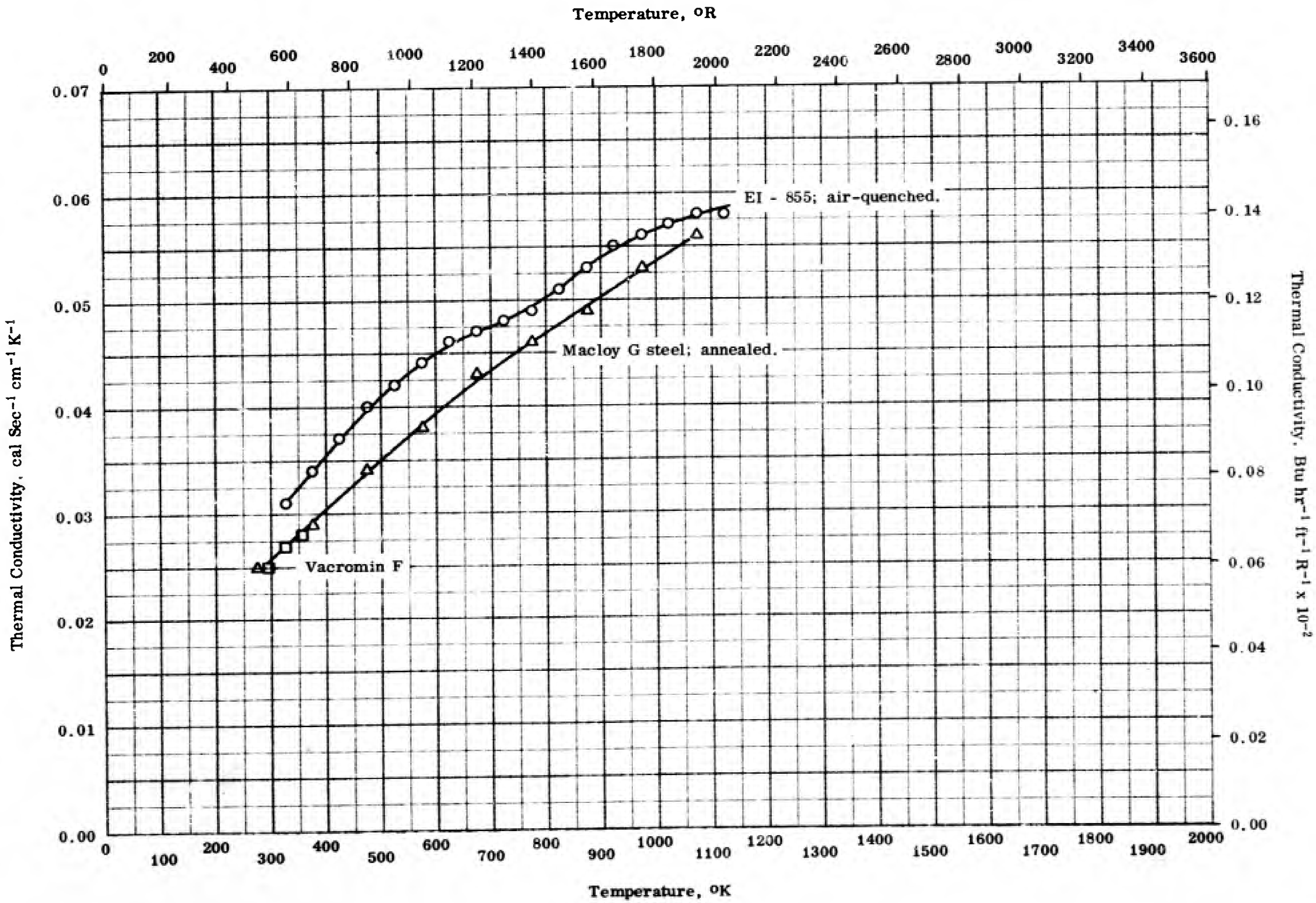


THERMAL CONDUCTIVITY -- IRON + NICKEL + CHROMIUM + ΣX_i GROUP II
(25 - 26 Ni and 13 - 16 Cr)

THERMAL CONDUCTIVITY -- IRON + NICKEL + CHROMIUM $+\Sigma X_i$ GROUP II
(25 - 26 Ni and 13 - 16 Cr)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	63-2	422-875		A - 286; 26 Ni, 15 Cr, 2.0 Ti, 1.35 Mn, 1.25 Mo, 0.5 Si, 0.3 V, 0.25 Al, and 0.08 C.	
□	58-8	373-1073		Unitemp 212; 25 Ni, 16 Cr, 4 Ti, 0.5 Nb, 0.08 C, 0.06 B, and 0.05 Zr; density 0.286 lb in^{-3}.	
△	53-1	373-1073		G 17; 25 Ni, 13 Cr, 2.5 W, 2.0 Mo, 1.5 Si, 0.8 Mn, and 0.4 C.	

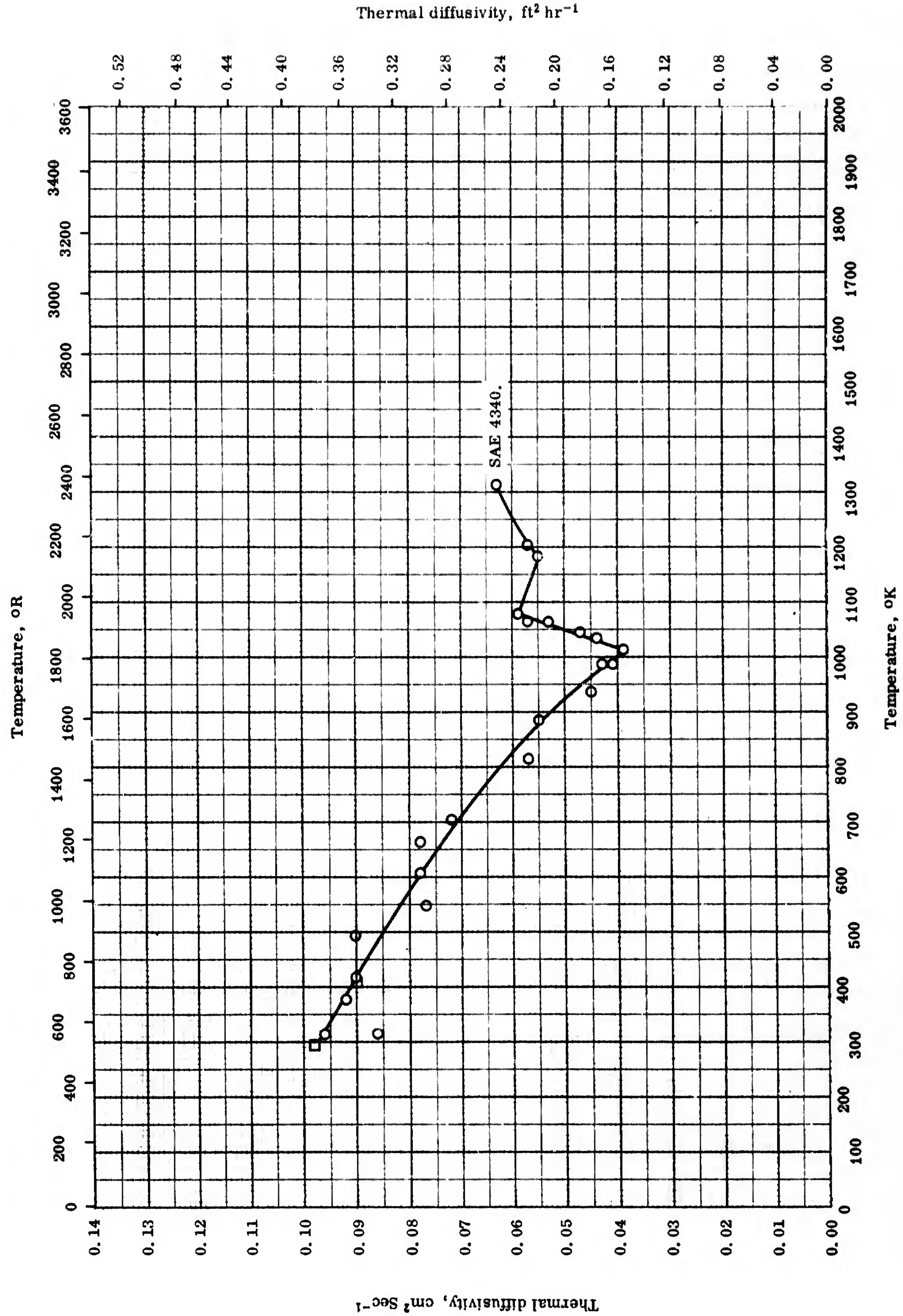


THERMAL CONDUCTIVITY -- IRON + NICKEL + CHROMIUM + ΣX_i GROUP II
(30-37 Ni and 15-21 Cr)

THERMAL CONDUCTIVITY --IRON + NICKEL + CHROMIUM + ΣX_i GROUP II
(30–37 Ni and 15–21 Cr)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	63-1	323-1123	2	EI-855 (USSR Design.); 36.55 Ni, 15.5 Cr, 2.88 W, 0.55 Si, 0.46 Mn, 0.31 Ti, 0.08 C, 0.047 S, and 0.0125 P.	Air-quenched from 1100 C.
□	58-3	293-353	1	Vacromin F; 32.31 Ni, 20.03 Cr, 0.10 Mo, and trace Si and Al.	
△	60-3	273-1073	2	Macloy G steel; 36.5 Ni, 16.75 Cr, 1.9 Si, 0.58 Mn, 0.49 C, 0.016 S, and 0.012 P.	Heated to 1050 C and cooled in air.

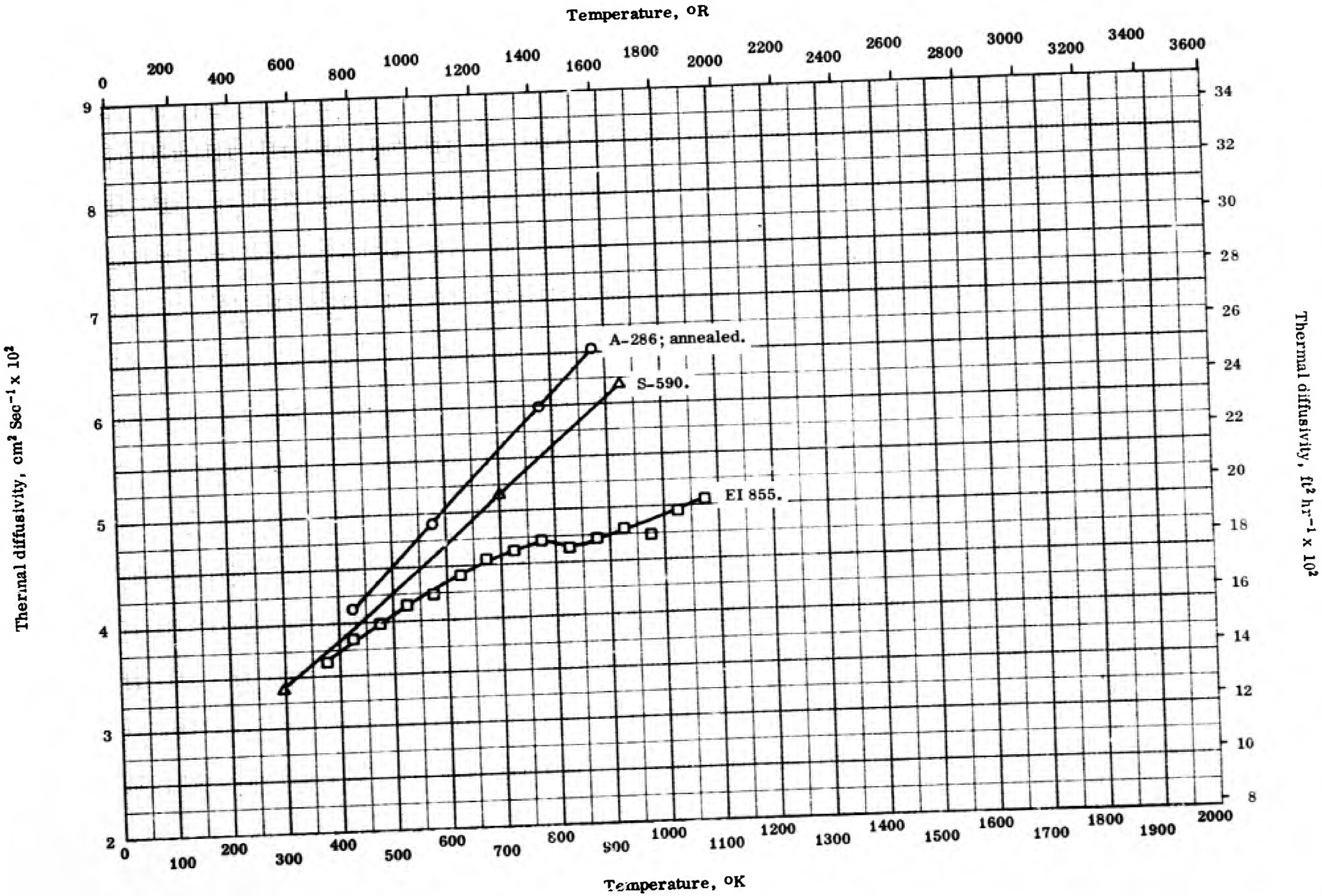


THERMAL DIFFUSIVITY -- IRON + NICKEL + CHROMIUM + ΣX_i GROUP II
(1.6–2.0 Ni and 0.7–0.9 Cr)

THERMAL DIFFUSIVITY -- IRON + NICKEL + CHROMIUM + ΣX_i GROUP II
(1.6-2.0 Ni and 0.7-0.9 Cr)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	57-1	313-1313		SAE 4340; 1.65-2.00 Ni, 0.70-0.9 Cr, 0.6-0.8 Mn, 0.38-0.43 C, 0.2-0.35 Si, 0.2-0.3 Mo, 0.04 max P, and 0.04 max S; composition from Metal's Handbook.	
□	61-3	295-408		Same as above; sample 1.9 cm square cross-section and 0.107 cm long.	

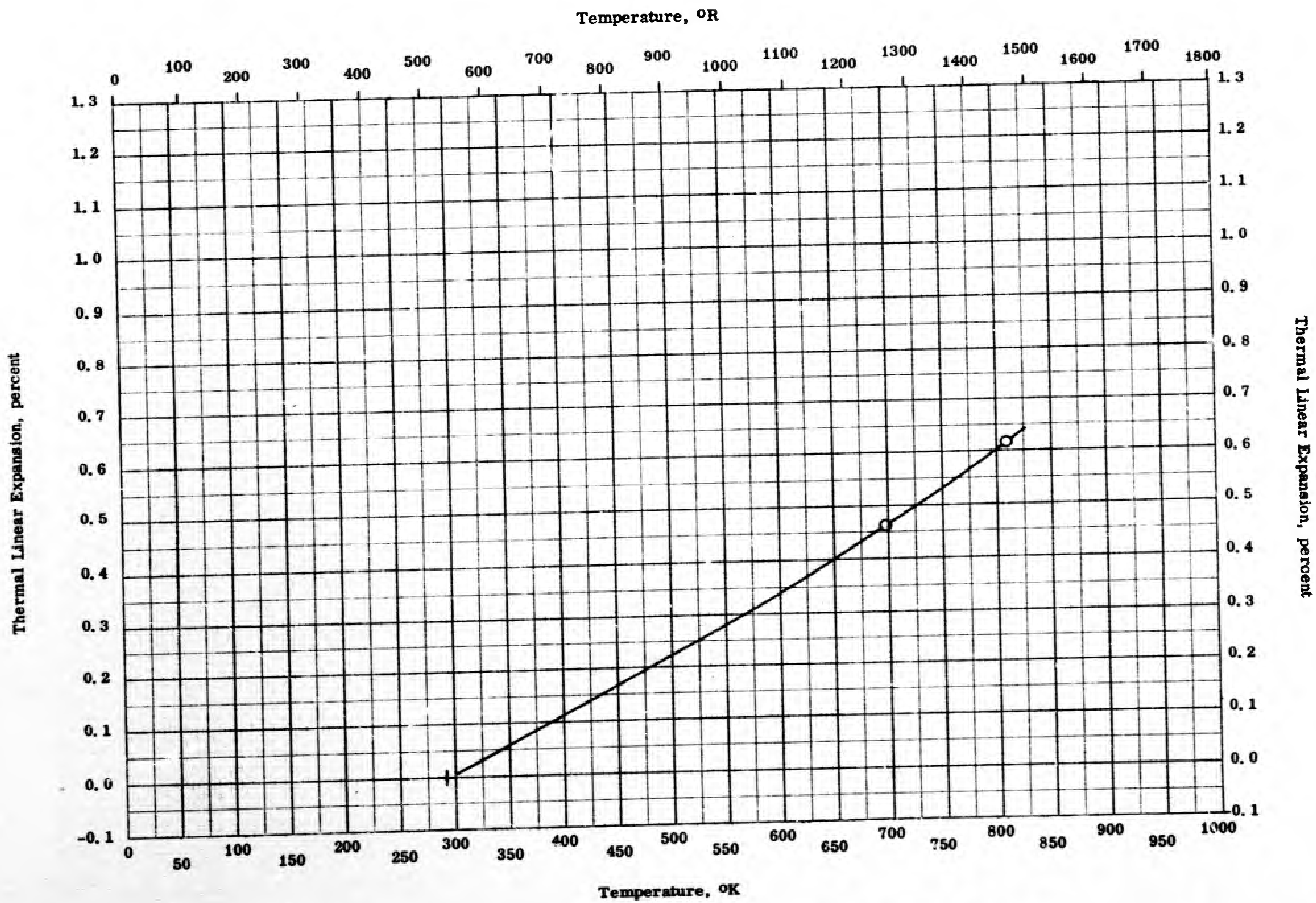


THERMAL DIFFUSIVITY -- IRON + NICKEL + CHROMIUM + ΣXi GROUP II
(20-37 Ni and 15-20 Cr)

THERMAL DIFFUSIVITY -- IRON + NICKEL + CHROMIUM + ΣX_i GROUP II
(20-37 Ni and 15-20 Cr)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-2	423-873		A-286; 26.0 Ni, 15 Cr, 2.0 Ti, 1.35 Mn, 1.25 Mo, 0.5 Si, 0.3 V, 0.25 Al, and 0.08 C.	Air cooled from 1100 C.
□	63-1	373-1073	±1	OKh 16 N 36 V 3 T (EI-855) (USSR design.); 36.55 Ni, 15.5 Cr, 2.88 W, 0.55 Si, 0.46 Mn, 0.31 Ti, 0.08 C, 0.047 S, and 0.0125 P.	
△	56-2	294-922		S-590; 20 Ni, 20 Cr, 20 Co, 4 Mo, 4 Nb, 4 W, 1.2 Mn, 0.4 C, and 0.4 Si.	

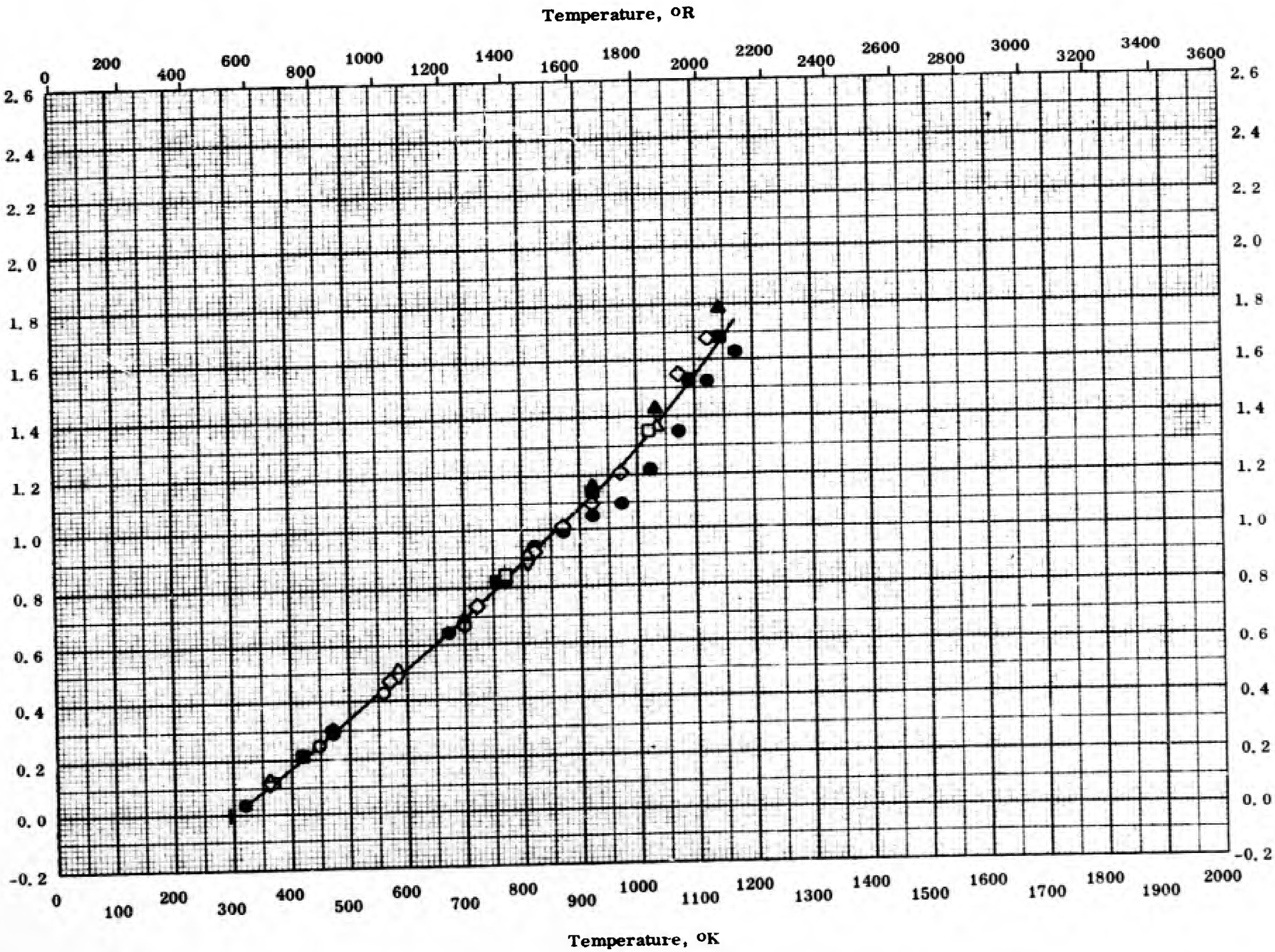


THERMAL LINEAR EXPANSION -- IRON + NICKEL + CHROMIUM + ΣX_i GROUP II
(12 Ni and 5 Cr)

THERMAL LINEAR EXPANSION -- IRON + NICKEL + CHROMIUM + ΣX_i GROUP II
(12 Ni and 5 Cr)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	64-2	300-811		12 Ni, 5 Cr, and 3 Mo; sample 1/8 in. in diameter and 2 in. in length.	Fully solution-annealed at 1500 F for at leat 1 hr, aged, air-cooled, and then machined.

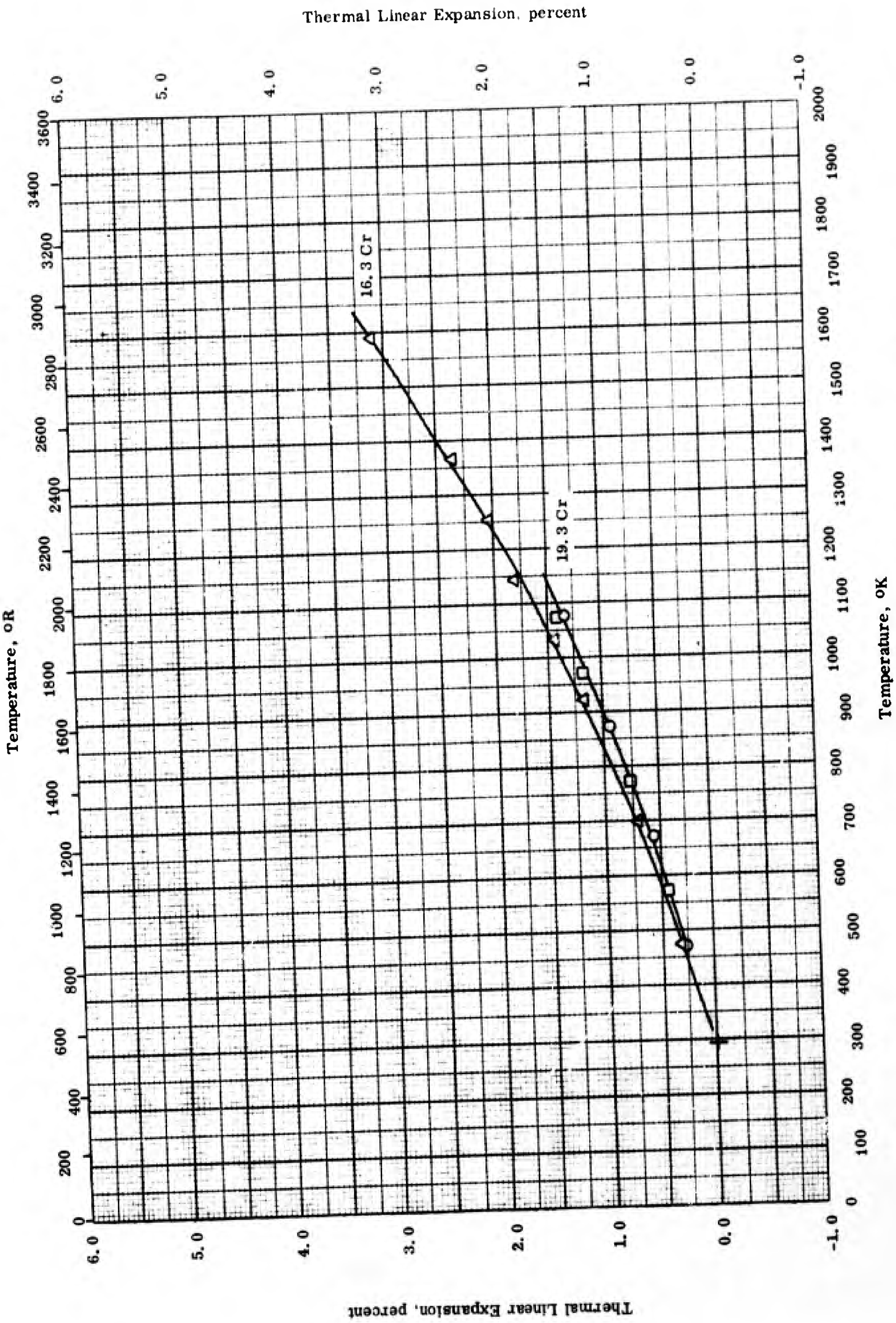


THERMAL LINEAR EXPANSION -- IRON + NICKEL + CHROMIUM + ΣX_i GROUP II
(24-28 Ni and 13-16 Cr)

THERMAL LINEAR EXPANSION -- IRON + NICKEL + CHROMIUM + ΣX_i GROUP II
(24-28 Ni and 13-16 Cr)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	63-13	300-703	5	A-286 Steel.	
□	63-12	294-1173		AISI 660 (other's A-286);25.20 Ni, 14.75 Cr, 2.15 Ti, 1.45 Mn, 1.30 Mo, 0.6 Si, 0.28 V, 0.22 Al, 0.05 C, and 0.004 B; density 7.94 g cm^{-3} and melting range 2500-2600 F.	
△	59-10	300-1033		A-286; 24-28.0 Ni, 13.5-16.0 Cr, 1.0-2.0 Mn, 1.0-1.5 Ti, 0.4-1.0 Si, 0.35 max Al, 0.10-0.50 V, and 0.08 max C.	Aged.
▽	63-12	294-922		AISI 662; 26 Ni, 13.5 Cr, 2.75 Mo, 1.75 Ti, 0.9 Mn, 0.8 Si, 0.07 Al, 0.04 C, and 0.005 B; density 7.989 g cm^{-3} and melting range 2515-2665 F.	
●	63-12	294-1173		AISI 663;27.25 Ni, 14.75 Cr, 3.0 Ti, 1.3 Mo, 0.35 Si, 0.3 V, 0.2 Al, 0.2 Mn, 0.05 C, and 0.01 B; density 0.286 lb in.$^{-3}$	Heat-treated at 1800 F for 2 hrs and oil-quenched.
◇	63-12	294-1123		Same as above.	Same as above except heat-treated again at 1350 F for 16 hrs and then air cooled.
■	63-12	300-1144		AISI 665; 26 Ni, 13.5 Cr, 3.0 Ti, 1.75 Mo, 1.65 Mn, 0.8 Si, 0.15 Al, 0.03 C, and 0.02 B; density 7.888 g cm^{-3} and melting range 2455-2529 F.	
▲	63-12	294-1144		AISI 650; 25 Ni, 16 Cr, 6 Mo, 1.75 Mn, 0.15 N, and 0.05 C; density 8.07 g cm^{-3} and melting point ~2400 F.	

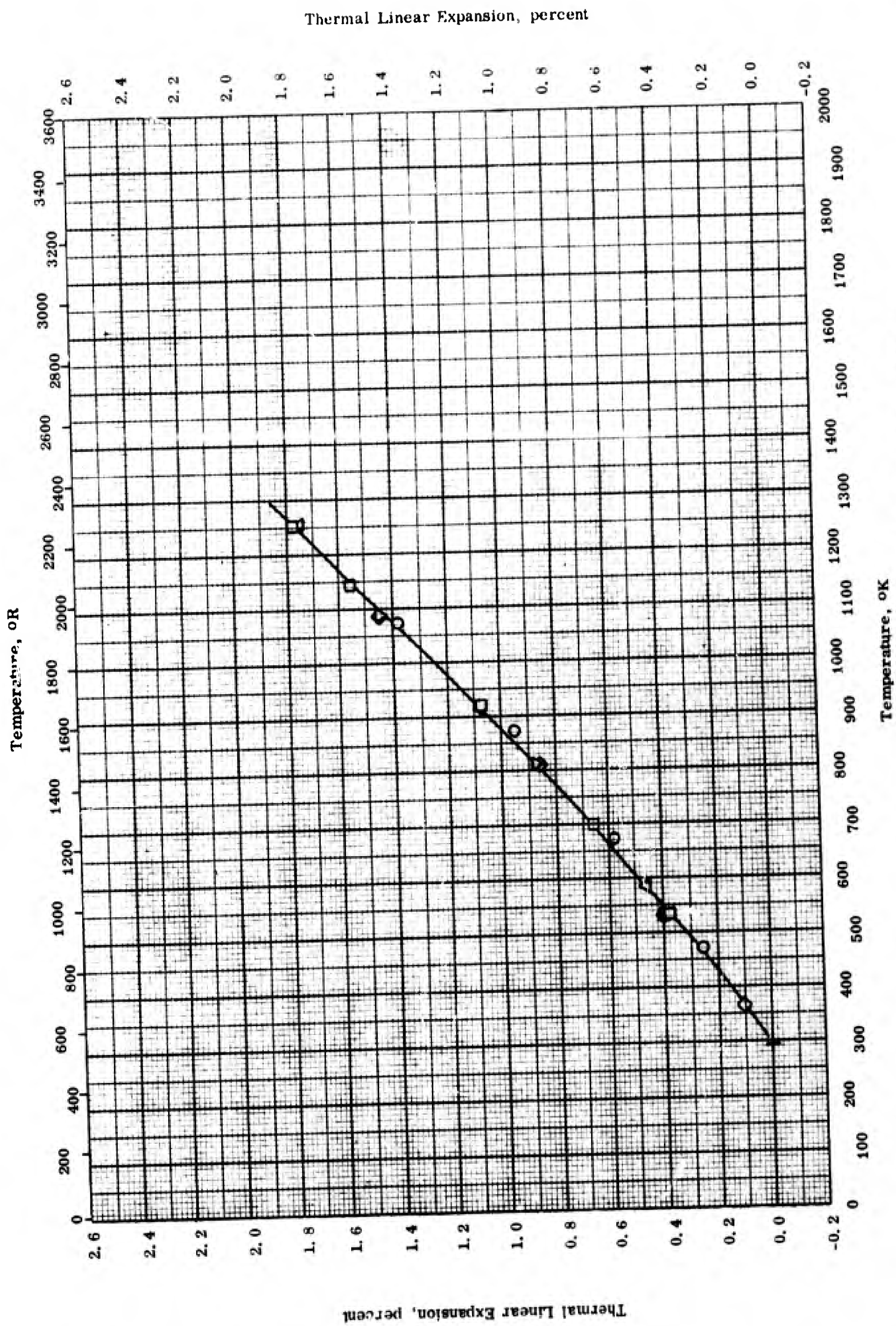


THERMAL LINEAR EXPANSION -- IRON + NICKEL + CHROMIUM + ΣX_i GROUP II
(24 - 28 Ni and 16 - 20 Cr)

THERMAL LINEAR EXPANSION -- IRON + NICKEL + CHROMIUM + ΣX_i GROUP II
(24 - 28 Ni and 16 - 20 Cr)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	47-3	473-1073		DVL 31 (German design.); 27.1 Ni, 19.3 Cr, 11.2 W, 2.12 Si, 1.35 Mn, and 0.17 C; density 522.9 lb ft^{-3}.	Forged.
□	47-3	473-1073		DVL 4/V 869 (German design.); 24.9 Ni, 19.2 Cr, 6.6 W, 1.77 Ta, 1.77 Nb, 1.73 Mn, 0.39 Si, and 0.25 C; density 519.3 lb ft^{-3}.	Fored, annealed at 1050 F, and air-cooled.
△	51-4	295-1589		25.2 Ni, 16.3 Cr, 6.25 Mo, 1.68 Mn, 0.50 Si, 0.110 N, and 0.10 C.	Heating rate at 200 F sec^{-1}.

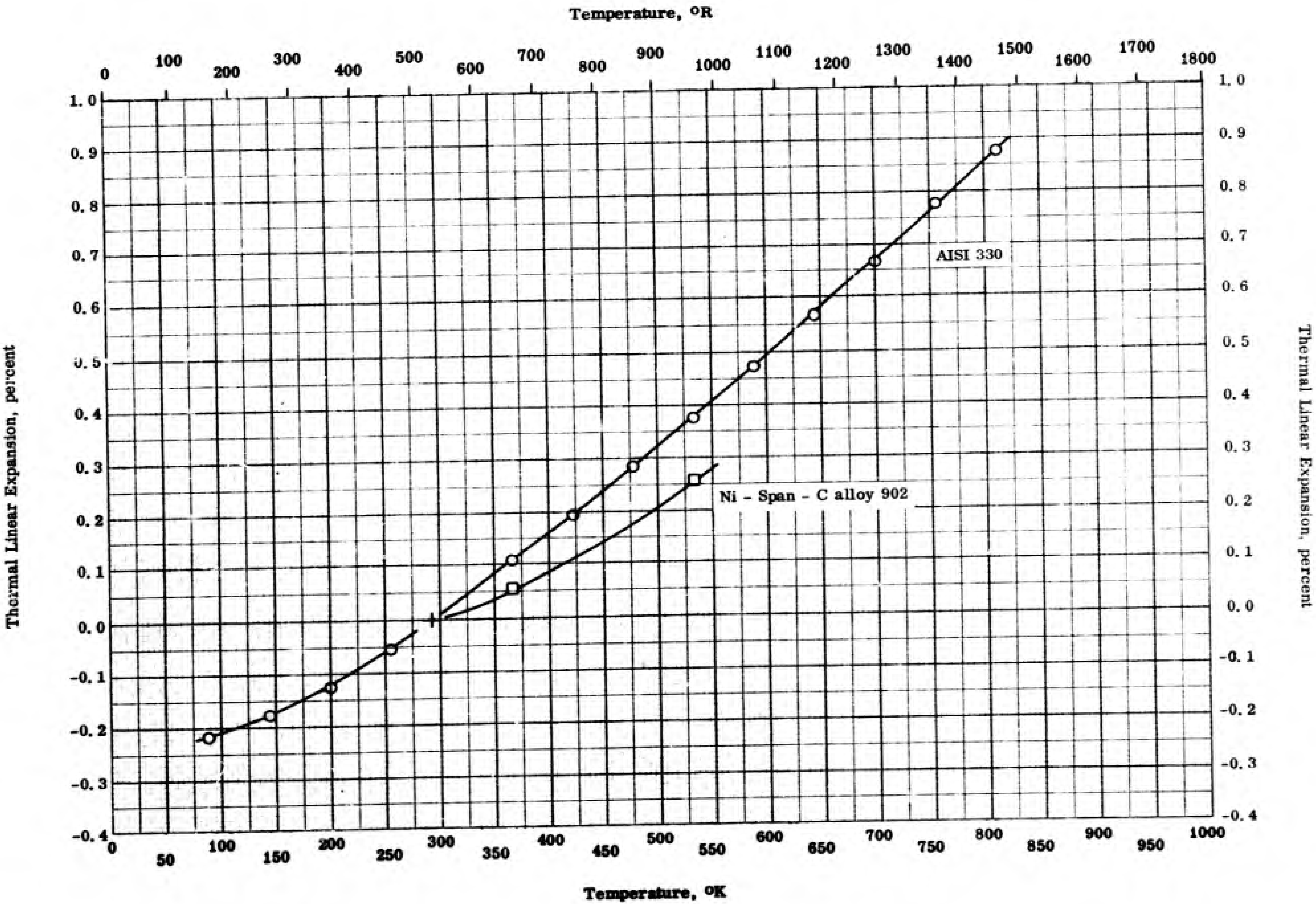


THERMAL LINEAR EXPANSION -- IRON + NICKEL + CHROMIUM + ΣX_i GROUP II
(28 - 34 Ni and 20 - 28 Cr)

THERMAL LINEAR EXPANSION -- IRON + NICKEL + CHROMIUM + ΣX_i GROUP II
(28 - 34 Ni and 20 - 28 Cr)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	47-3	473-1073		P193 (German design.); 38.5 - 42.1 Fe, 28.7 - 30.1 Ni, 25.4 - 27.4 Cr, 1.88 - 1.97 Ti, 0.71 - 0.93 Si, 0.69 - 0.75 Mn, and 0.45 C; density 479.6 lb ft^{-3}.	
□	53-12	293-1256		75 AISI 310 and 25 GE-62 Braze; nominal composition: 38.40 Fe, 32.63 Ni, 23.75 Cr, 3.87 Si, 1.5> Mn, and 0.19> C.	Arc-melted, cast, heated at 2260 R for 24 hrs in vacuum; data average of two heating and cooling cycles.
▽	65-1	294-1089		Incoloy 800; 46.0 Fe, 32.0 Ni, 20.5 Cr, 0.75 Mn, 0.35 Si, 0.30 Al, 0.30 Cu, 0.30 Ti, 0.04 C, and 0.007 S; nominal composition; density 0.290 lb in.$^{-3}$ and melting range 2475 - 2525 F.	
◇	65-1	294-1089		Incoloy 801 (formerly Incoloy T); 44.5 Fe, 32 Ni, 20.5 Cr, 1.0 Ti, 0.75 Mn, 0.35 Si, 0.15 Cu, 0.04 C, and 0.007 S; nominal composition; density 0.287 lb in.$^{-3}$	
△	56-22	294-1258		Incoloy T; 44 Fe, 34 Ni, 20 Cr, 1 Ti, and 0.1 C; nominal composition; density 0.295 lb in.$^{-3}$	Annealed at 1825 F for 30 min and air-cooled.

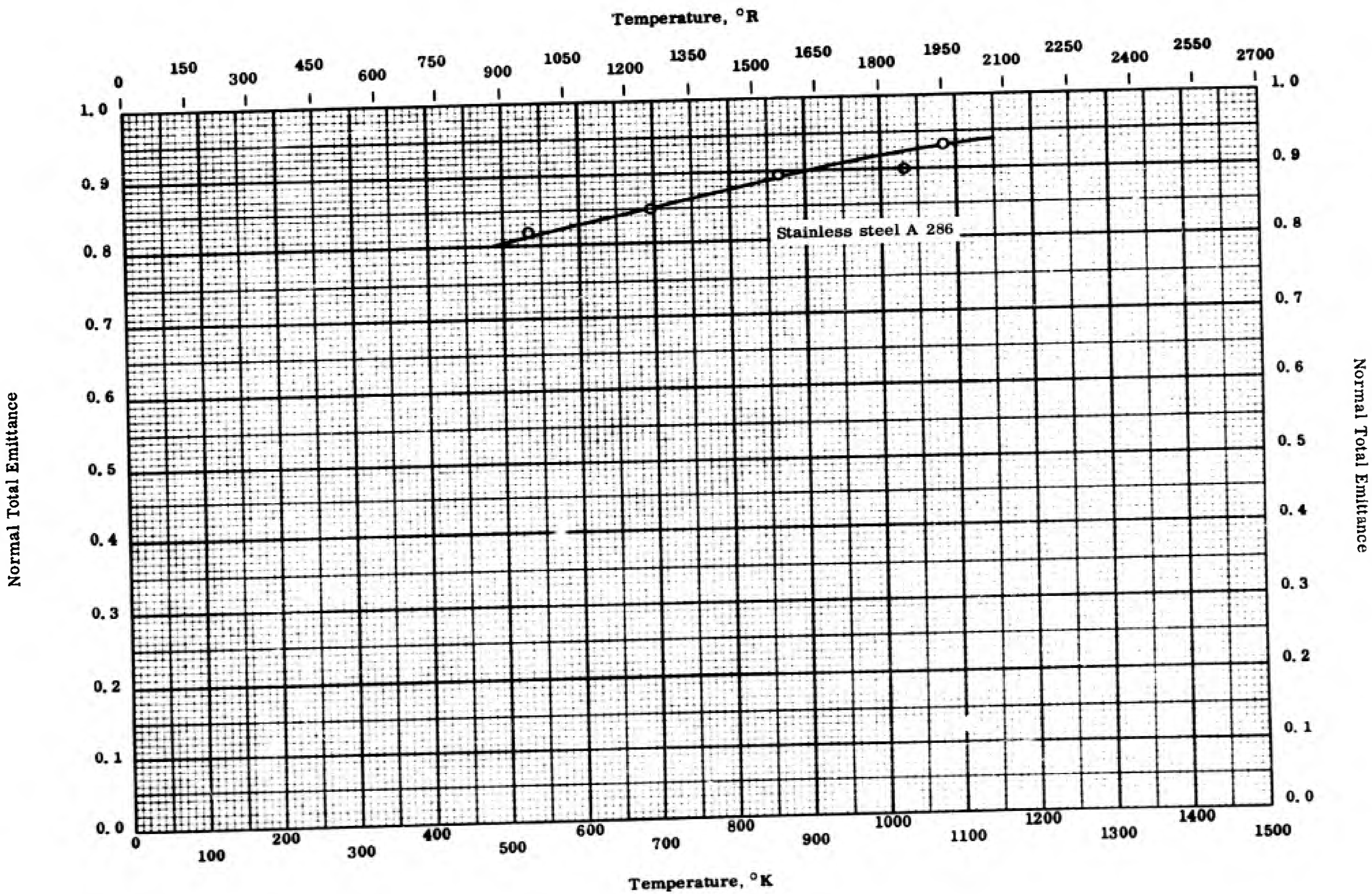


THERMAL LINEAR EXPANSION -- IRON + NICKEL + CHROMIUM + ΣX_i GROUP II
(35 - 42 Ni and 5 - 16 Cr)

THERMAL LINEAR EXPANSION -- IRON + NICKEL + CHROMIUM + ΣX_i GROUP II
(35 - 42 Ni and 5 - 16 Cr)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	50-6	88-811		AISI 330; 35.19 Ni, 15.30 Cr, 1.81 Mn, 0.62 Si, 0.52 C, 0.006 P, and 0.006 S; sample 0.25 in. in diameter and 4 in. in length.	Annealed at 1950 F for 30 min and water-quenched; heating rate 450 F hr^{-1}.
□	65-1	294-533		Ni-Span-C alloy 902; 48.5 Fe, 42.0 Ni, 5.4 Cr, 2.4 Ti, 0.65 Al, 0.50 Si, 0.40 Mn, 0.05 Cu, 0.02 C, and 0.008 S; density 0.293 lb $in.^{-3}$ and melting range 2650 - 2700 F.	

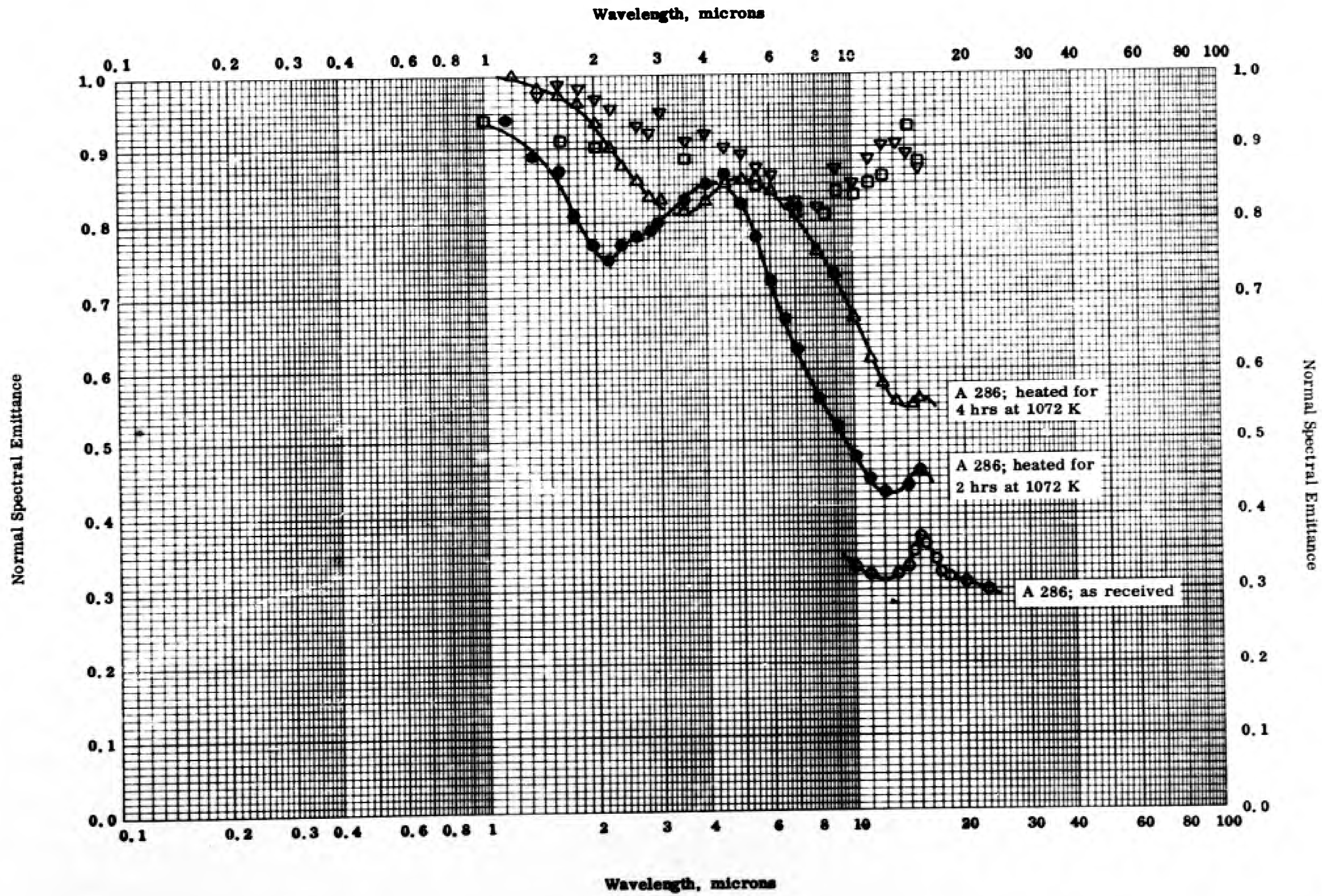


NORMAL TOTAL EMITTANCE -- IRON + NICKEL + CHROMIUM + ΣX_i GROUP II

NORMAL TOTAL EMITTANCE — IRON + NICKEL + CHROMIUM + ΣX_i GROUP II

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	60-9	533-1088		Stainless steel A 286; nominal: 24 - 27 Ni, 13 - 16 Cr, 1.75 - 2.25 Ti, 1 - 2 Mn, 1 - 1.75 Mo, 0.4 - 1.0 Si, 0.10 - 0.50 V, 0.35 max. Al, and 0.08 max. C.	Precipitation hardened; plate shape; measured in decreasing temperatures.

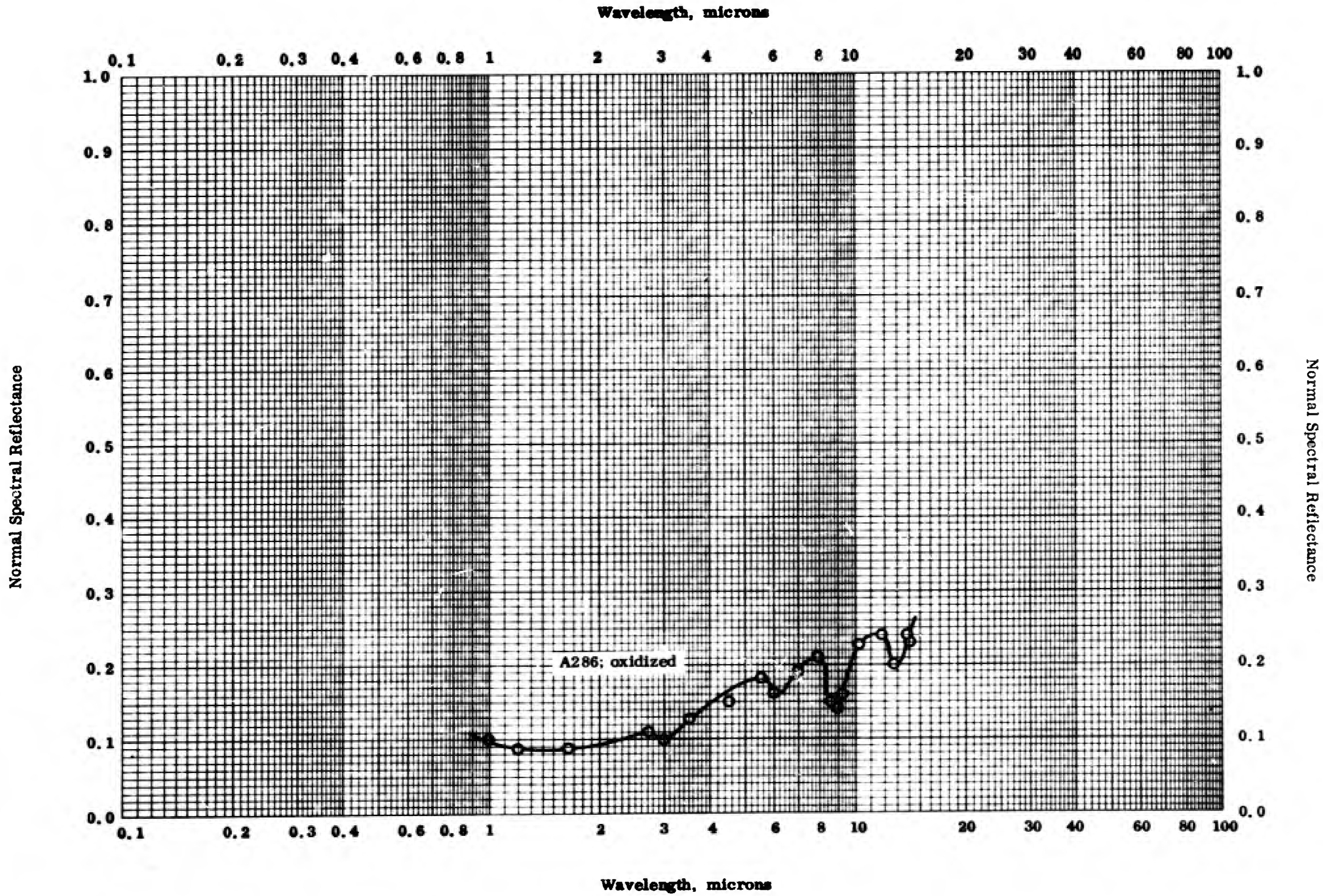


NORMAL SPECTRAL EMITTANCE -- IRON + NICKEL + CHROMIUM + ΣX_i GROUP II

NORMAL SPECTRAL EMITTANCE -- IRON + NICKEL + CHROMIUM + ΣX_1 GROUP II

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
○	62-6	1072	10.0-23.0		Stainless steel A 286; nominal: 24 - 27 Ni, 13 - 16 Cr, 1.75 - 2.25 Ti, 1 - 2 Mn, 1 - 1.75 Mo, 0.4 - 1.0 Si, 0.10 - 0.50 V, 0.35 max. Al, and 0.08 max. C.	Unoxidized clean sample.
●	62-6	1072	1.15-15.00		Same as above.	The above specimen heated at 1072 K for 2 hrs.
△	62-6	1099.8	1.20-15.00		Same as above.	The unoxidized clean sample heated at 1072 K for 4 hrs.
▽	62-6	1122	1.40-15.00		Same as above.	The unoxidized clean sample heated at 1072 K for 6 hrs.
□	62-6	1122	1.00-15.00		Same as above.	Well oxidized.

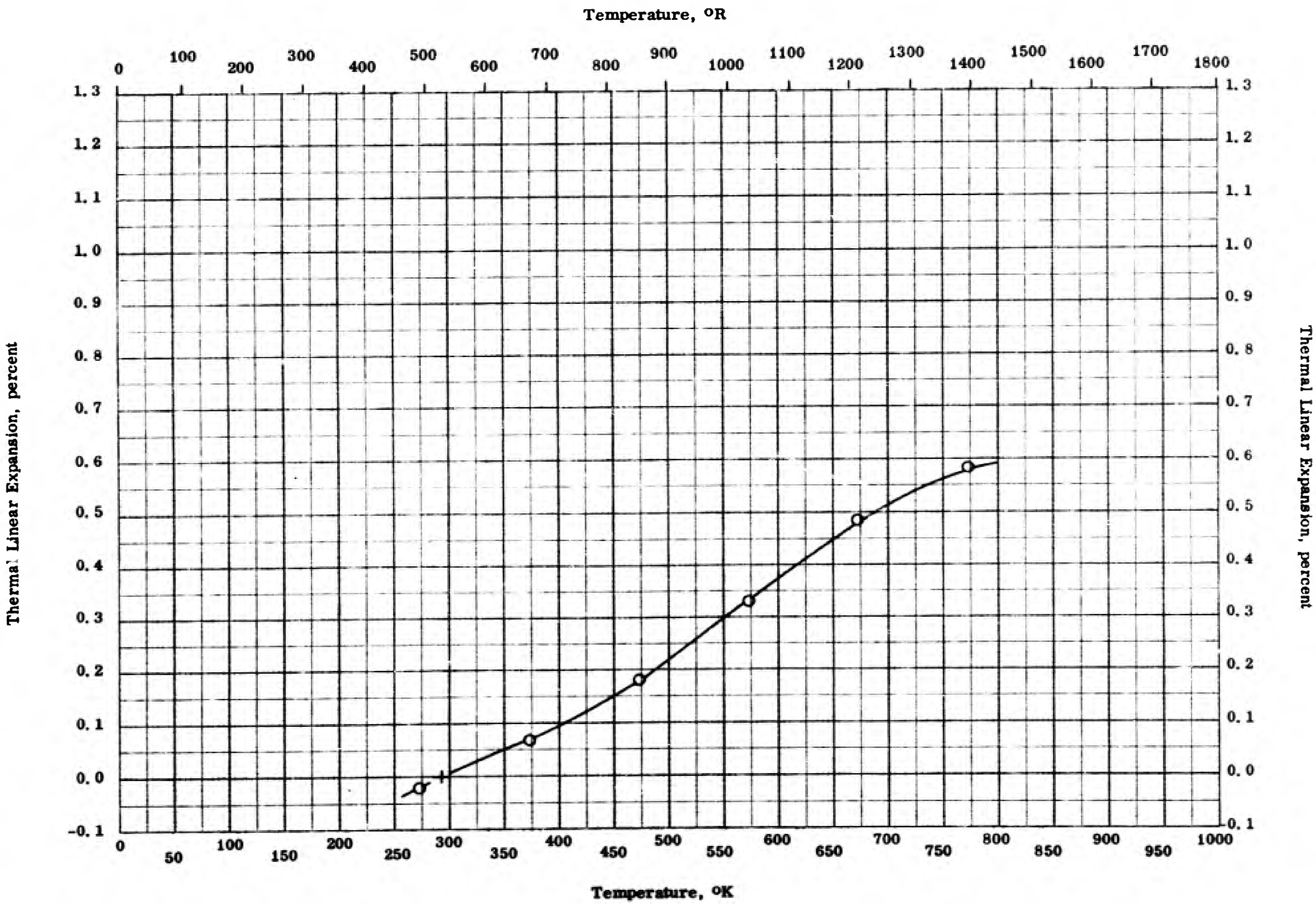


NORMAL SPECTRAL REFLECTANCE -- IRON + NICKEL + CHROMIUM + ΣX_j GROUP II

NORMAL SPECTRAL REFLECTANCE -- IRON + NICKEL + CHROMIUM + ΣX_i GROUP II

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
O	62-6	294.3	1.00-14.00		Stainless steel A286; nominal: 24 - 27 Ni, 13 - 16 Cr, 1.75 - 2.25 Ti, 1 - 2 Mn, 1 - 1.75 Mo, 0.4 - 1.0 Si, 0.10 - 0.50 V, 0.35 max. Al, and 0.08 max. C.	Well oxidized; hemispherical illumination and 7° viewing (measured from normal).

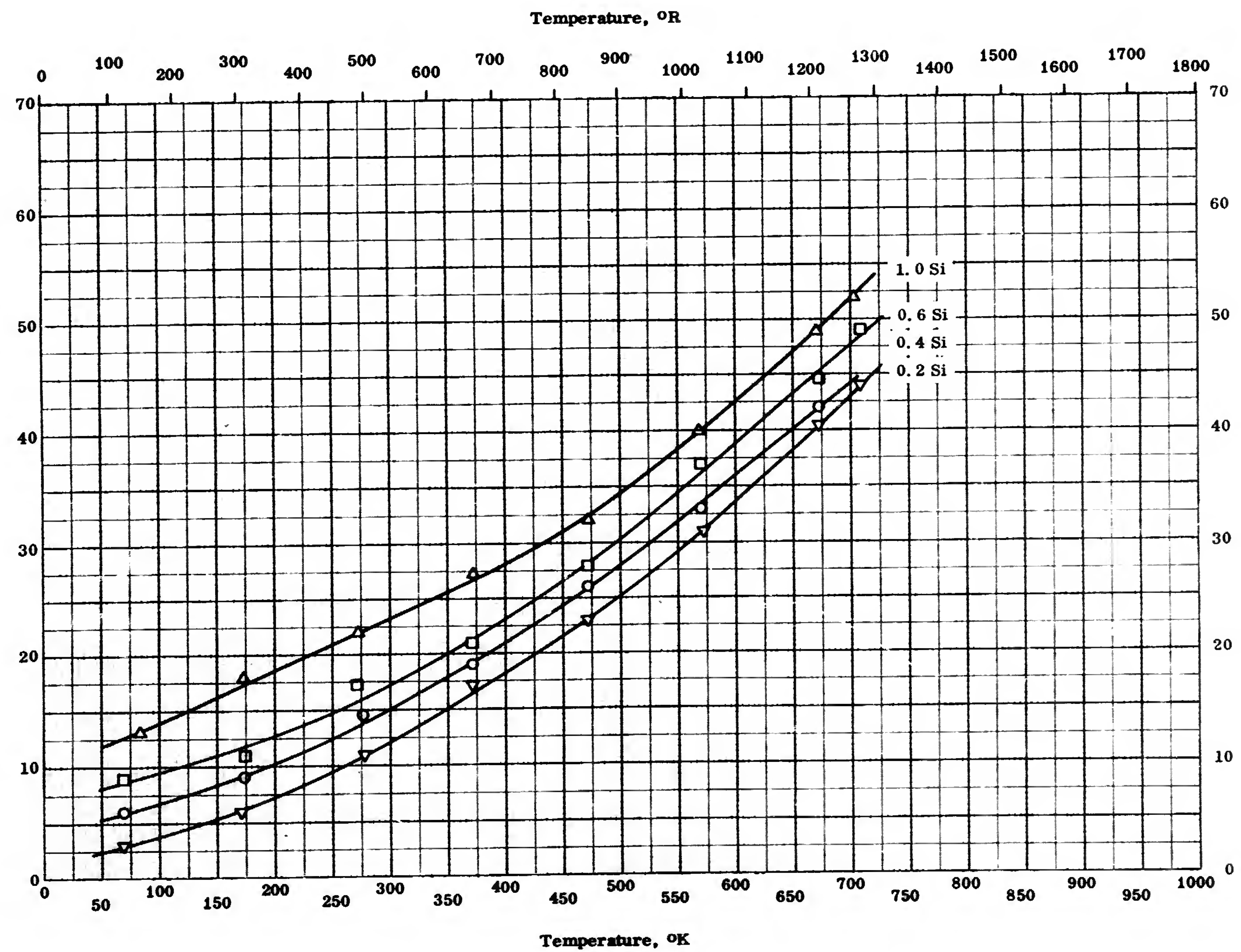


THERMAL LINEAR EXPANSION -- IRON + PLATINUM + ΣX_i GROUP I

THERMAL LINEAR EXPANSION -- IRON + PLATINUM + ΣX_i GROUP I

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	50-4	273-773		55 Fe and 45 Pt.	From Armco Iron and technically pure platinum induction melted in MgO crucible; tempered.

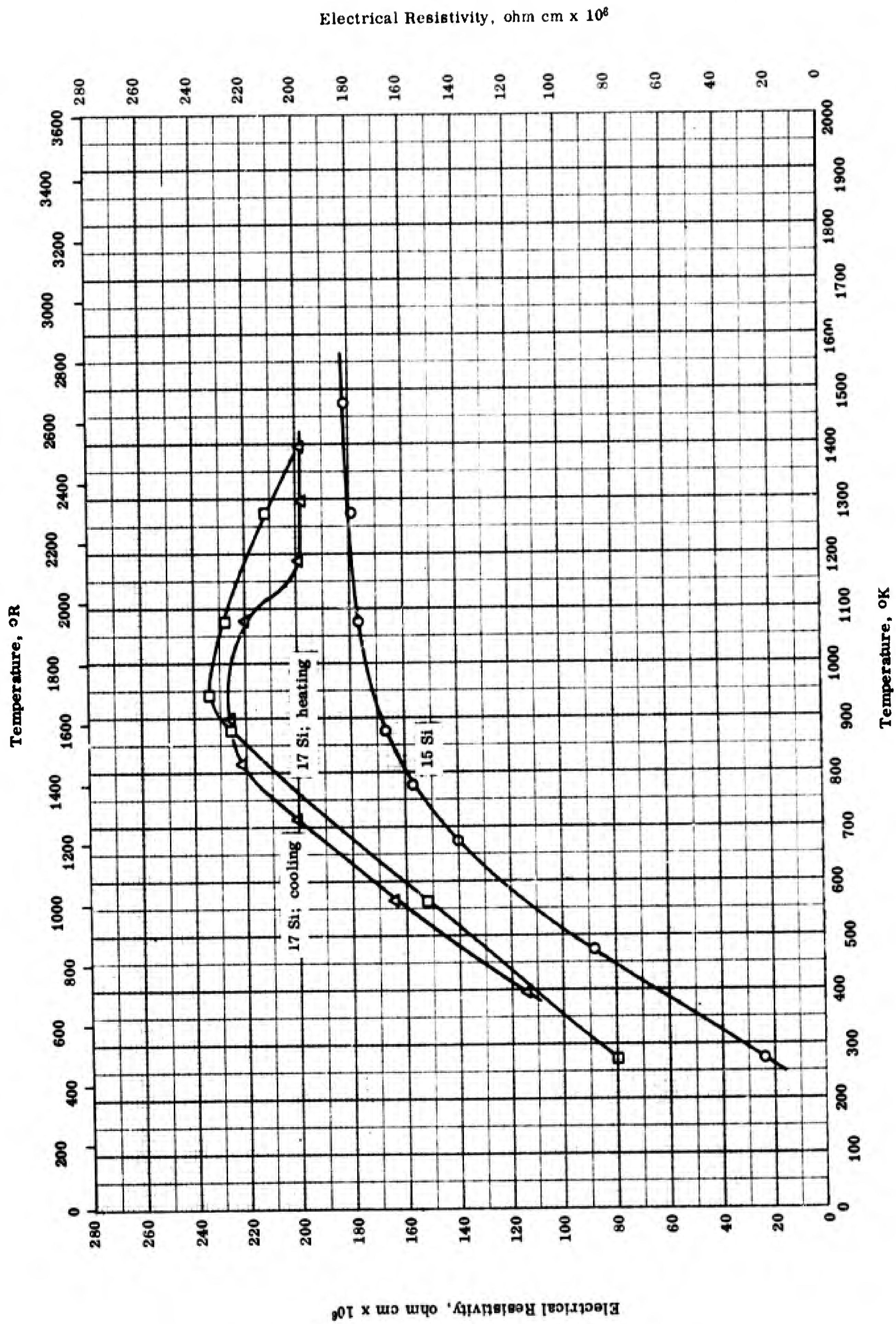


ELECTRICAL RESISTIVITY -- IRON + SILICON + ΣX_i GROUP I
($0.2 \le Si \le 1.0$)

ELECTRICAL RESISTIVITY -- IRON + SILICON + ΣX_i GROUP I
($0.2 \leq Si \leq 1.0$)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
▽	55-6	73-703		0.20 Si; prepared from 99.95 pure Fe and 99.95 pure Si.	Homogenized for 6-10 hrs just below M. P.
○	55-6	73-703		0.40 Si; same as above.	Same as above.
□	55-6	73-703		0.60 Si; same as above.	Same as above.
△	55-6	73-703		1.00 Si; same as above.	Same as above.

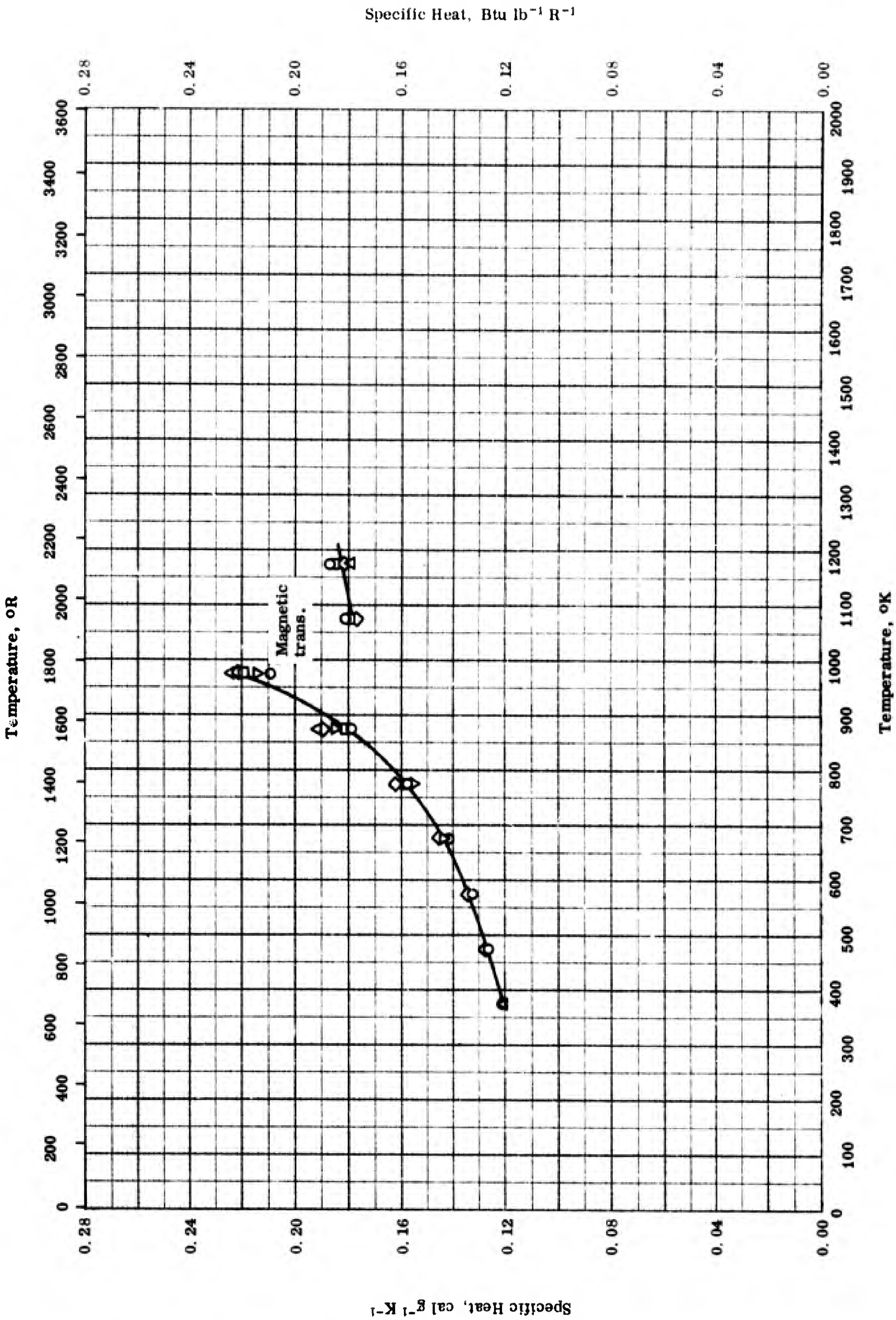


ELECTRICAL RESISTIVITY -- IRON + SILICON + ΣX_i GROUP I
($15 \le Si < 17$)

ELECTRICAL RESISTIVITY -- IRON + SILICON + ΣX_i GROUP I
($15 \leq Si < 17$)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-10	273-1473		85 Fe and 15 Si.	
□	56-10	273-1393		83. 1 Fe and 16. 9 Si.	Measured heating.
△	56-10	273-1393		Same as above.	Measured cooling.

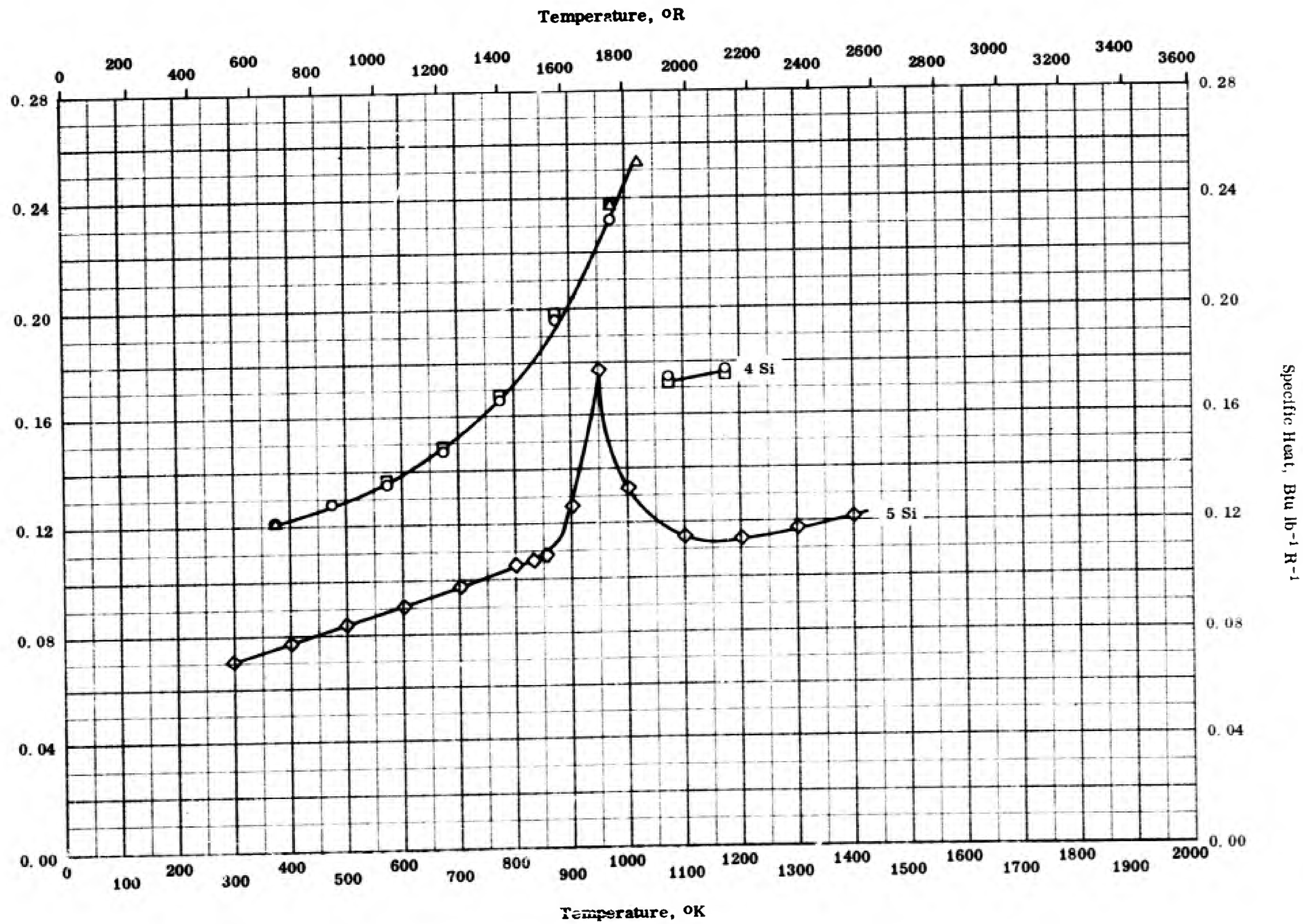


SPECIFIC HEAT -- IRON + SILICON + ΣX_i GROUP I
($1.0 \le Si < 3.0$)

SPECIFIC HEAT -- IRON + SILICON + ΣX_i GROUP I
($1.0 \leq Si < 3.0$)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-6	373-1173	0.5	1.00 Si, 0.25 Mn, 0.07 C, 0.026 S, and 0.024 P.	Soaked isothermally in furnace 1 hr prior to drop.
□	56-6	373-1173	0.5	1.23 Si, 0.29 Mn, 0.09 C, 0.047 P, 0.029 S, and 0.01 Al.	Same as above.
▽	56-6	373-1173	0.5	1.80 Si, 0.32 Mn, 0.09 C, 0.038 P, 0.023 S, and 0.01 Al.	Same as above.
◇	56-6	373-1173	0.5	2.20 Si.	Same as above.
△	56-6	373-1173	0.5	2.78 Si, 0.35 Mn, 0.09 C, 0.06 Al, 0.034 P, and 0.023 S.	

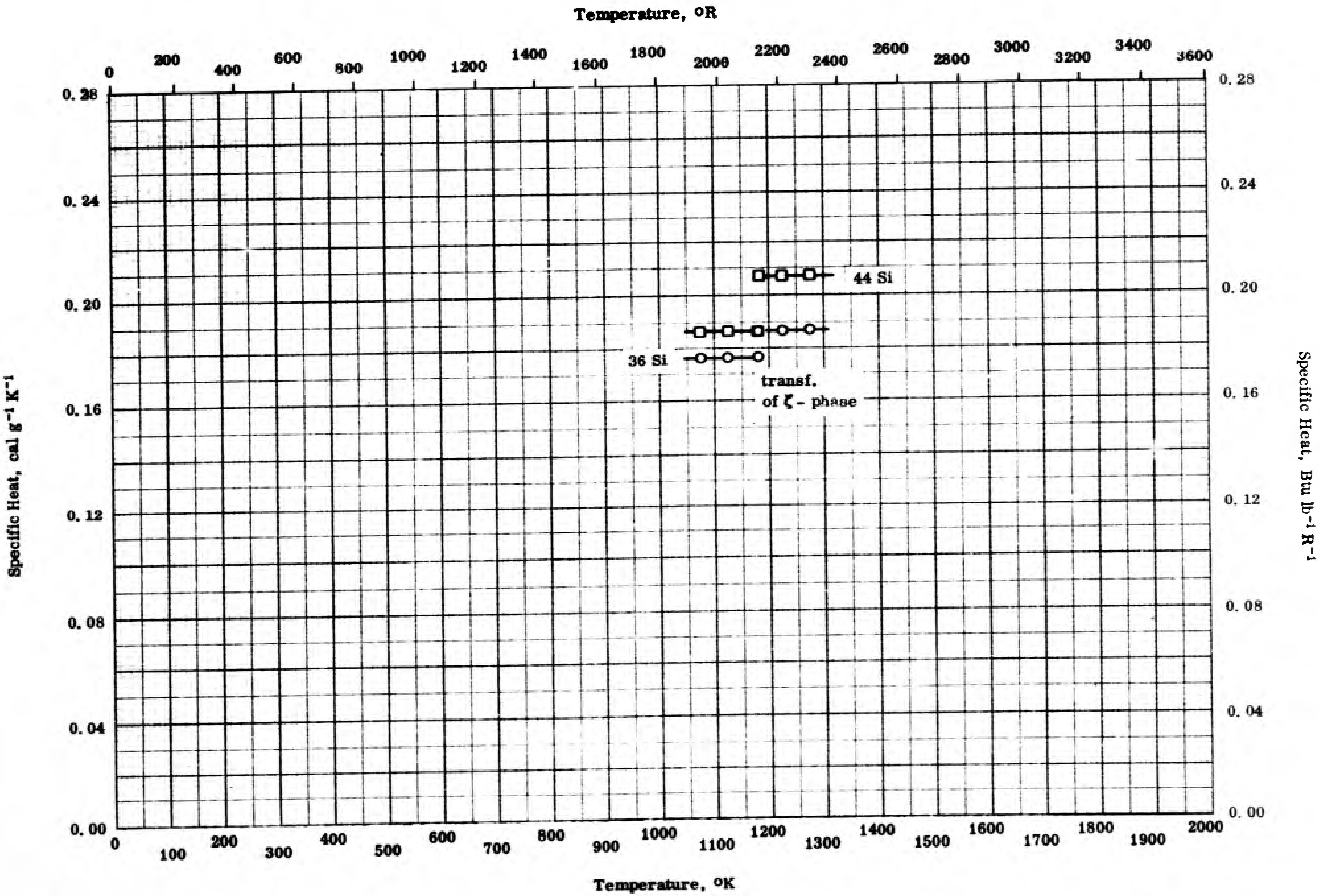


SPECIFIC HEAT -- IRON + SILICON + ΣX_i GROUP I
(3.0 < Si < 7.0)

SPECIFIC HEAT -- IRON + SILICON + ΣX_i GROUP I
($3.0 < Si < 7.0$)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-6	373-1173	0.5	3.94 Si, 0.27 Mn, 0.09 Al, 0.08 C, 0.027 P, and 0.008 S.	Soaked isothermally in furnace 1 hr prior to drop.
□	56-6	373-1173	0.5	4.28 Si, 0.08 Mn, 0.06 C, 0.05 Al, 0.012 P, and 0.006 S.	Same as above.
△	56-6	373-1173	0.5	4.38 Si, 0.20 Mn, 0.07 C, 0.05 Al, 0.015 P, and 0.008 S.	Same as above.
◇	59-2	298-1400	0.5	93.6 Fe and 6.4 Si.	Homogenized 4 days at 1350 C under helium atm.; air cooled to room temperature.

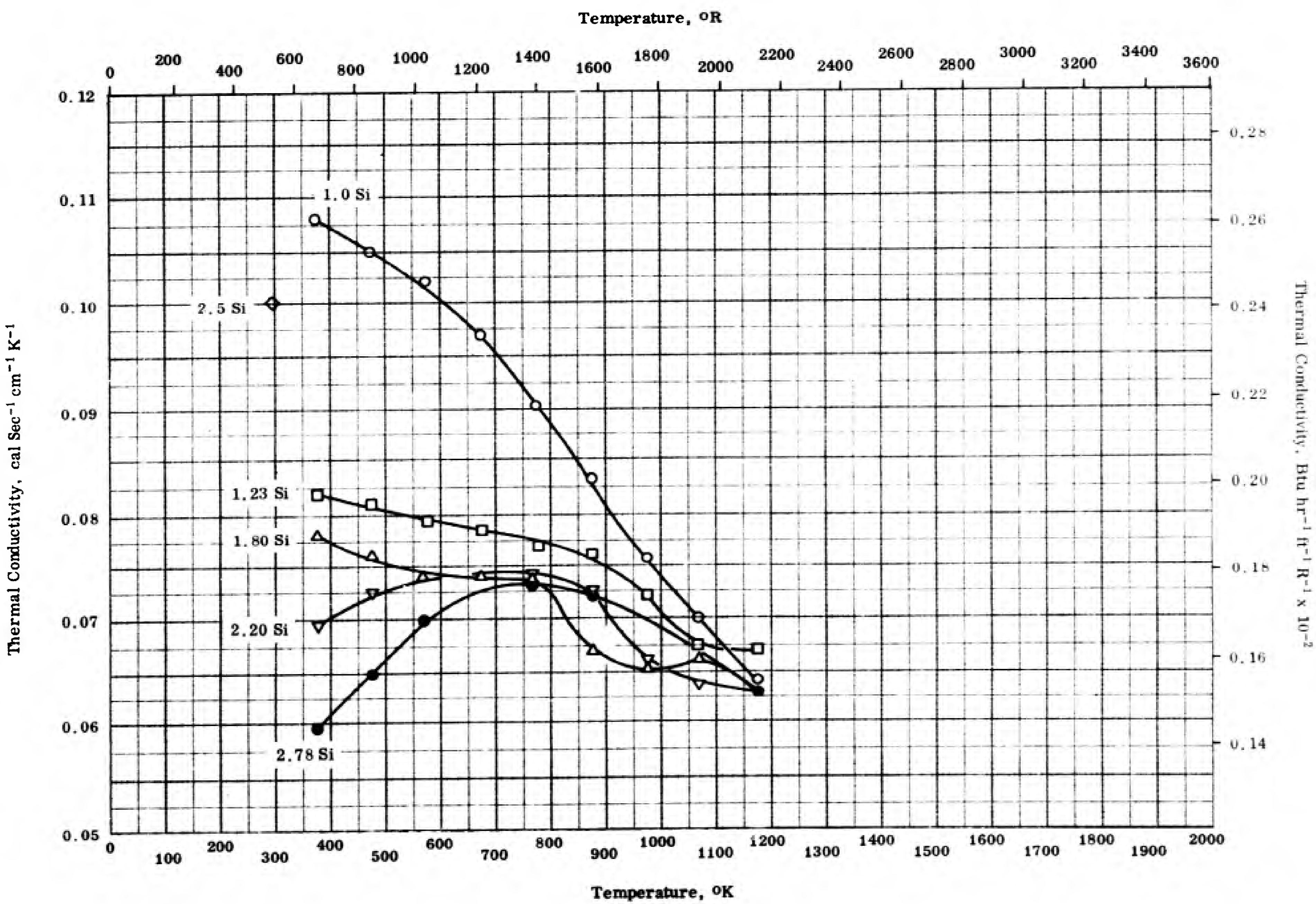


SPECIFIC HEAT -- IRON + SILICON + ΣX_i GROUP I
(30< Si < 50)

SPECIFIC HEAT -- IRON + SILICON + ΣX_i GROUP I
($30 < Si < 50$)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-7	1073-1273		36.42 Si; prepared from Armco iron and 99.2 Si.	Annealed 3 hrs at 700 C.
□	54-7	1073-1273		44.46 Si; same raw material as above.	Same as above.

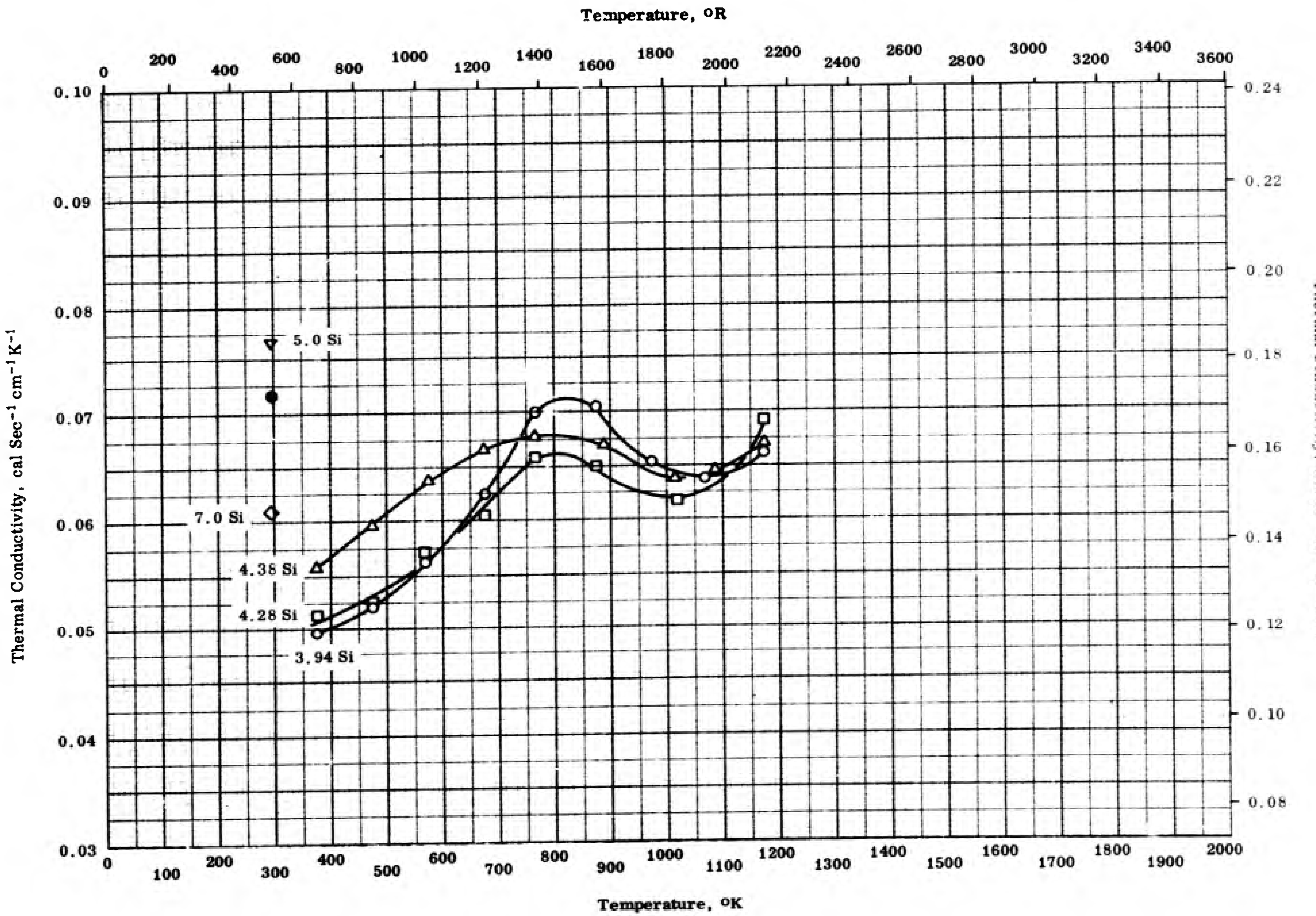


THERMAL CONDUCTIVITY -- IRON + SILICON + ΣX_i GROUP I
(1-3 Si)

THERMAL CONDUCTIVITY -- IRON + SILICON + ΣX_i GROUP I
(1-3 Si)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-6	373-1173		1.0 Si, 0.25 Mn, 0.07 C, 0.026 S, and 0.024 P.	Soaked at each temperature level at least 2 hrs.
□	56-6	373-1173		1.23 Si, 0.29 Mn, 0.09 C, 0.047 P, 0.029 S, and 0.01 Al.	Same as above.
△	56-6	373-1173		1.80 Si, 0.32 Mn, 0.09 C, 0.038 P, 0.023 S, and 0.01 Al.	Same as above.
▽	56-6	373-1173		2.20 Si.	Same as above.
●	56-6	373-1173		2.78 Si, 0.35 Mn, 0.09 C, 0.06 Al, 0.034 P, and 0.023 S.	Same as above.
◇	56-10	293		2.5 Si.	Powders; pressed and homogenized 6-12 hrs at 1150 C; identical results for both ordered and disordered alloys.

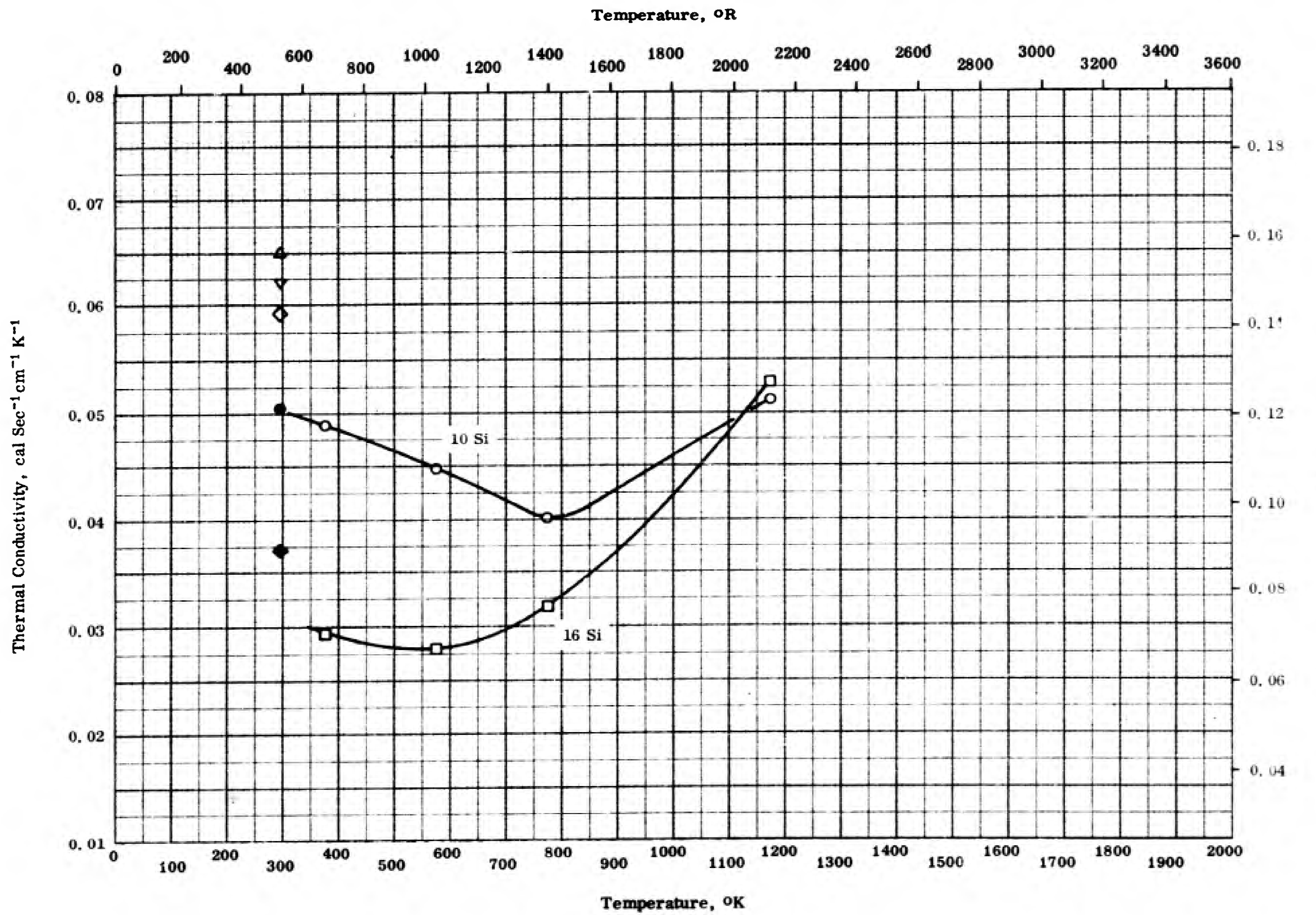


THERMAL CONDUCTIVITY -- IRON + SILICON + ΣX_i GROUP I
(3-8 Si)

THERMAL CONDUCTIVITY -- IRON + SILICON + ΣX_i GROUP I
(3-8 Si)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-6	373-1173		3.94 Si, 0.27 Mn, 0.09 Al, 0.08 C, 0.027 P, and 0.008 S.	Soaked at each temperature level at least 2 hrs.
□	56-6	373-1173		4.28 Si, 0.08 Mn, 0.06 C, 0.05 Al, 0.012 P, and 0.006 S.	Same as above.
△	56-6	373-1173		4.38 Si, 0.20 Mn, 0.07 C, 0.05 Al, 0.015 P, and 0.008 S.	Same as above.
▽	56-10	293		5.0 Si.	Powder; pressed and homogenized 6-12 hrs at 1150 C; identical results for both ordered and disordered alloys.
●	56-10	293		7.5 Si; ordered alloys.	Powder; pressed and homogenized 6-12 hrs at 1150 C.
◇	56-10	293		Same as above except disordered alloys.	Same as above.

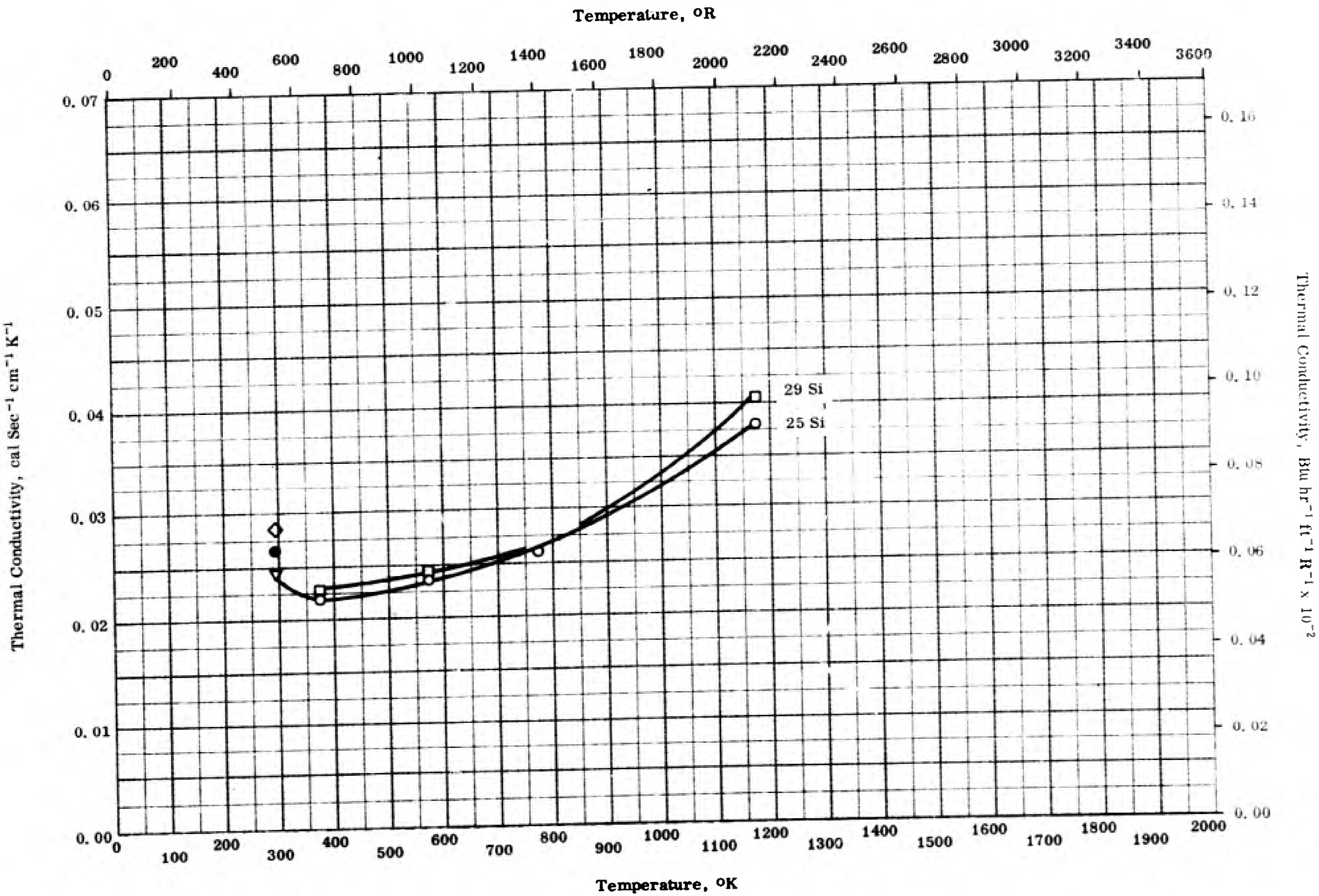


THERMAL CONDUCTIVITY -- IRON + SILICON + ΣX_i GROUP I
(10-18 Si)

THERMAL CONDUCTIVITY -- IRON + SILICON + ΣX_i GROUP I
(10-18 Si)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-8	373-1173	±7	90 Fe and 10 Si.	
□	56-8	373-1173	±7	84 Fe and 16 Si.	
△	56-10	293		90 Fe and 10 Si; ordered alloy.	Powder; pressed and homogenized 6-12 hr at 2562 R.
▽	56-10	293		85 Fe and 15 Si; ordered alloy.	Same as above.
◇	56-10	293		82.5 Fe and 17.5 Si; ordered alloy.	Same as above.
●	56-10	293		90 Fe and 10 Si; disordered alloy.	Same as above.
◆	56-10	293		85 Fe and 15 Si; disordered alloy.	Same as above.

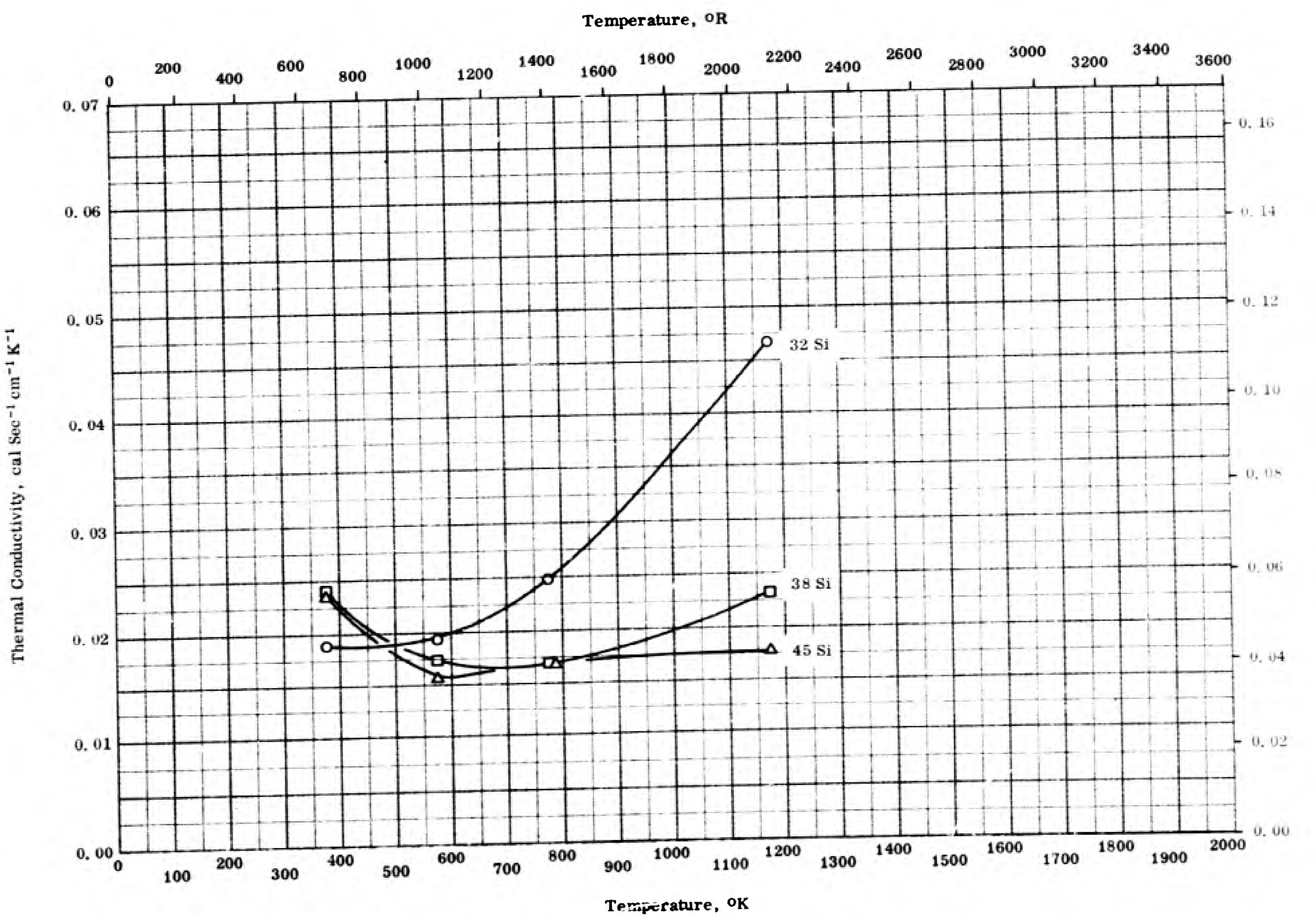


THERMAL CONDUCTIVITY -- IRON + SILICON + ΣX_i GROUP I
(20-30 Si)

THERMAL CONDUCTIVITY -- IRON + SILICON + ΣX_i GROUP I
(20–30 Si)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-8	373–1173	±7	75 Fe and 25 Si.	
□	56-8	373–1173	±3	71 Fe and 29 Si.	
△	56-10	293		80 Fe and 20 Si; ordered alloy.	Powder; pressed and homogenized 6-12 hrs at 2562 R.
▽	56-10	293		75 Fe and 25 Si; ordered alloy.	Same as above.
◇	56-10	293		80 Fe and 20 Si; disordered alloy.	Same as above.
●	56-10	293		75 Fe and 25 Si; disordered alloy.	Same as above.

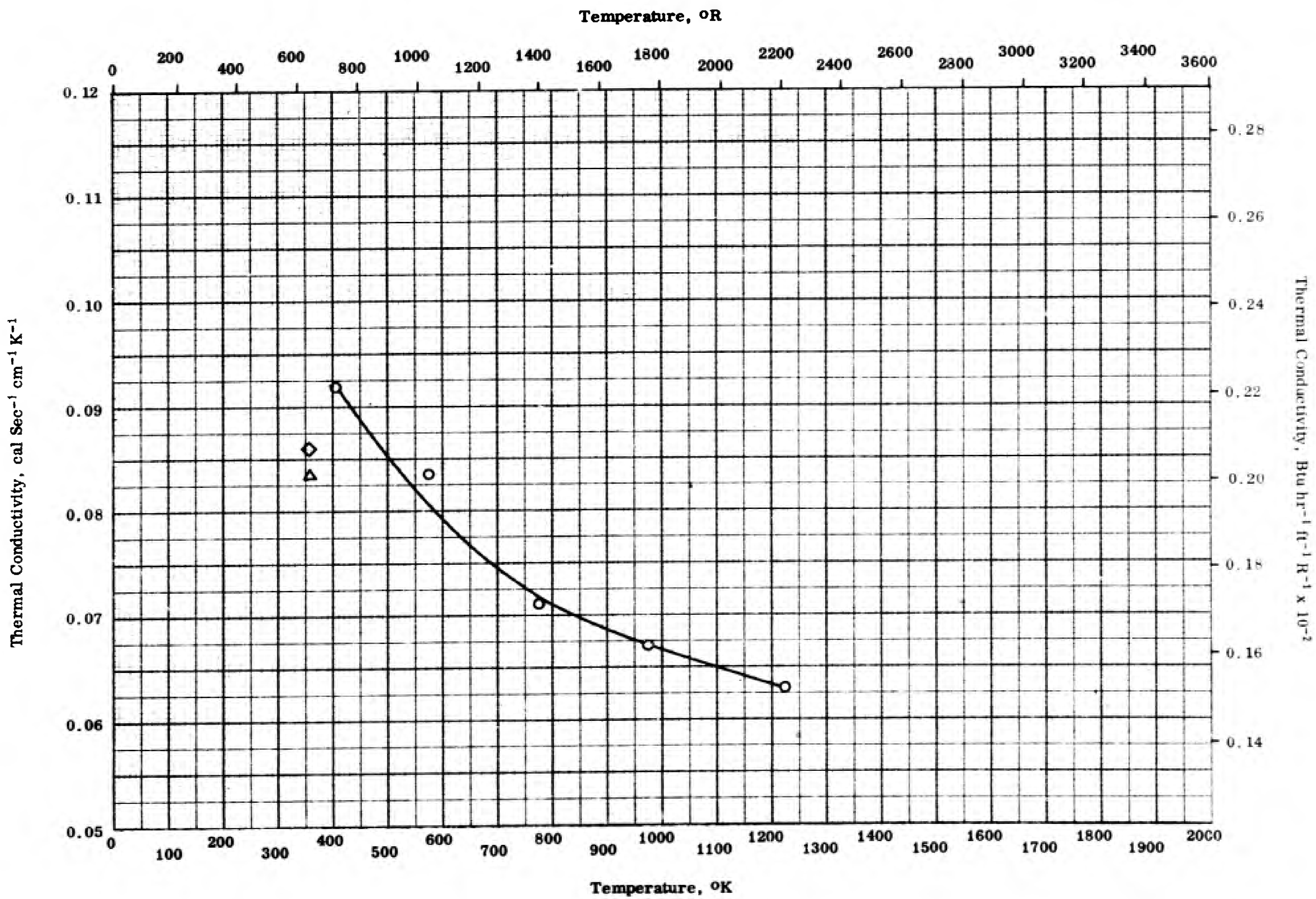


THERMAL CONDUCTIVITY -- IRON + SILICON + ΣX_i GROUP I
(30-45 Si)

THERMAL CONDUCTIVITY -- IRON + SILICON + ΣX_i GROUP I
(30-45 Si)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-8	373-1173	±7	68 Fe and 32 Si.	
□	56-8	373-1173	±7	62 Fe and 38 Si.	
△	56-8	373-1173	±7	55 Fe and 45 Si.	

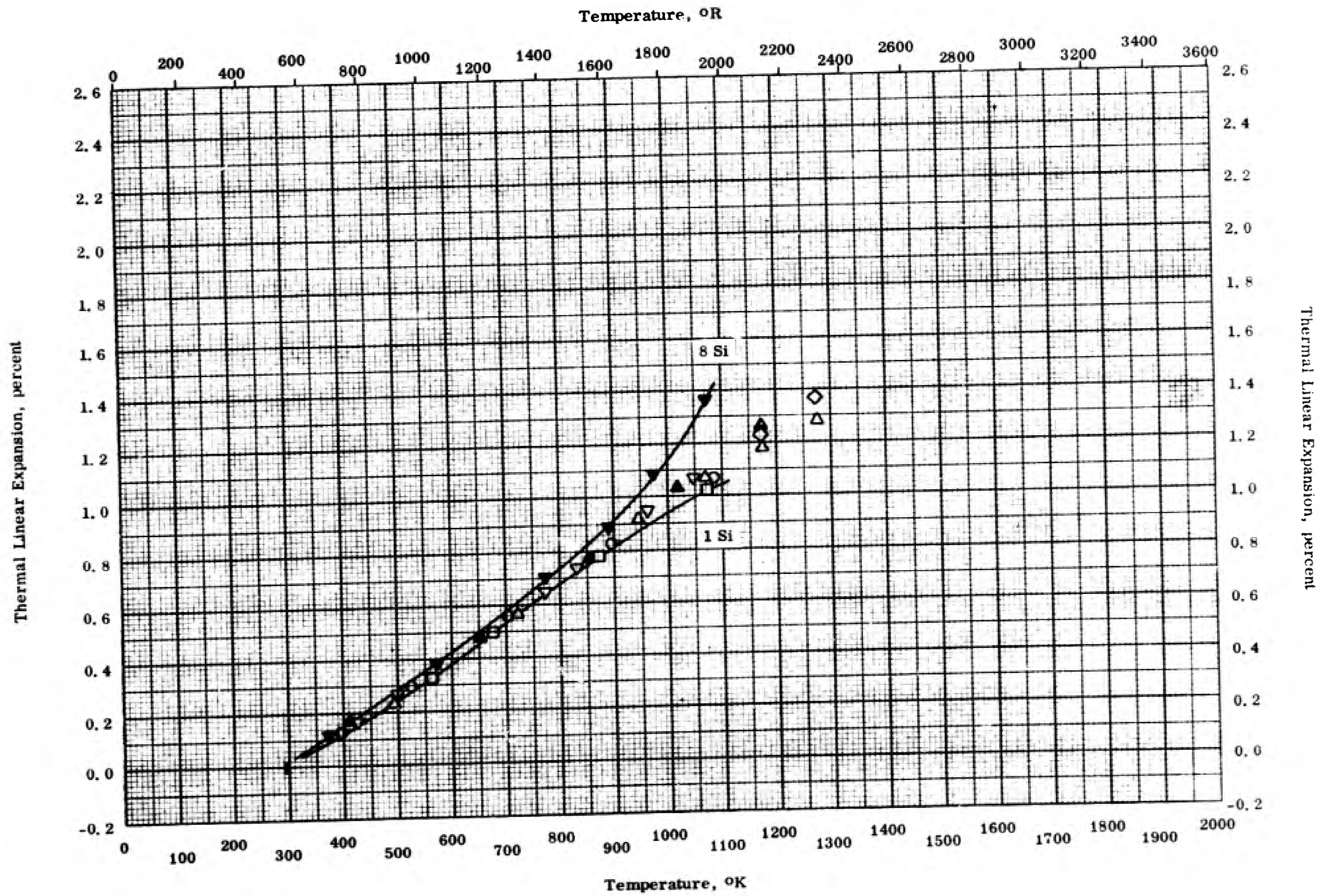


THERMAL CONDUCTIVITY -- IRON + SILICON + ΣX_i GROUP II
(Nodular cast iron)

THERMAL CONDUCTIVITY -- IRON + SILICON + ΣX_i GROUP II
(Nodular cast iron)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-5	403-1223	±5	Nodular cast iron; 2.55 Si, 2.52 C, 0.59 Mn, 0.18 Cr, 0.035 P, 0.016 Mg, and 0.003 S.	Graphitized at high temp. to ferrite-graphite structure and Mg modified; ferritic base; containing spheroidal form of graphite.
△	53-3	345-372		Nodular cast iron; 4.34 Si, 3.36 C, 1.23 Ni, 0.040 Mn, 0.06 Mg, 0.030 P, and 0.010 S; 85% ferrite, 5% pearlite, and 10% graphite.	As cast; ferritic base and graphite size 0.00081 in.
◇	53-3	345-372		Nodular cast iron; 3.53 Si, 3.47 C, 1.30 Ni (approx.), 0.20 Mn, 0.06 Mg, 0.030 P, and 0.012 S; 55% ferrite, 35% pearlite, and 9% graphite.	As cast; ferritic base and graphite size 0.00096 in.



THERMAL LINEAR EXPANSION -- IRON + SILICON + ΣX_i GROUP I
($1.0 \le Si < 10.0$)

THERMAL LINEAR EXPANSION -- IRON + SILICON + ΣX_i GROUP I
($1.0 \leq Si < 10.0$)

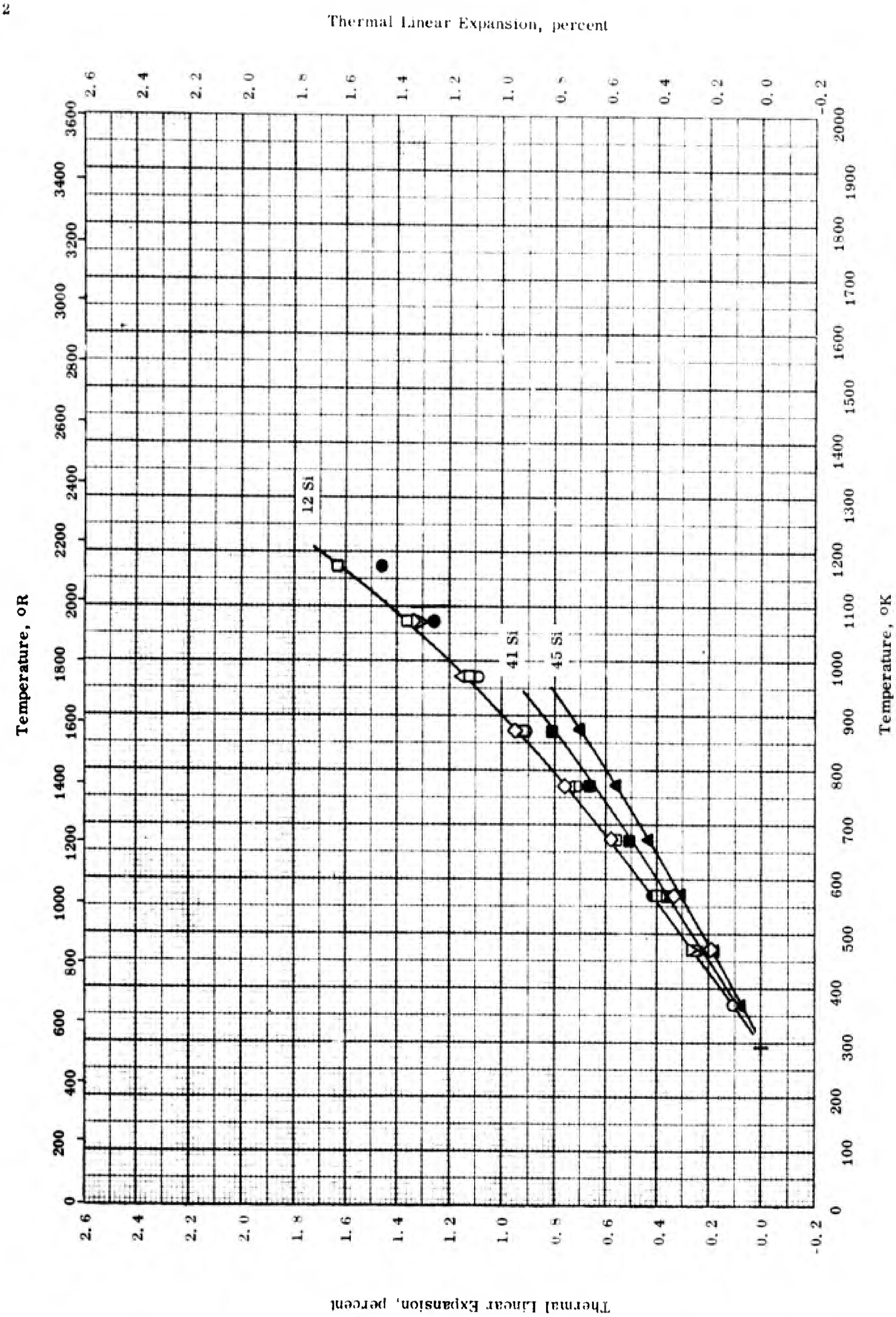
REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
□	56-6 also 56-14	373-1073		1.00 Si, 0.25 Mn, 0.11 Cu, 0.07 C, 0.03 Al, 0.026 S, and 0.024 P.	Annealed.
△	56-6 also 56-14	373-1273		2.20 Si, 0.17 Mn, 0.13 Cu, 0.07 each C, Al, 0.023 P, and 0.011 S.	Same as above.
◇	56-6 also 56-14	373-1273		2.78 Si, 0.12 Mn, 0.12 Cu, 0.08 Al, 0.07 C, 0.020 P, and 0.010 S.	Same as above.
▽	56-6 also 56-14	473-1073		Three samples: (a) 3.98 Si, 0.23 Mn, 0.19 Cu, 0.09 Al, 0.06 C, 0.019 P, and 0.011 S. (b) 4.07 Si. (c) 4.38 Si, 0.20 Mn, 0.07 C, 0.015 P, and 0.008 S.	Same as above; average for 3 samples within 4%.
○	56-6 also 56-14	373-1073		5.11 Si.	Annealed.
▲	56-6 also 56-14	373-1173		6.01 Si.	Same as above.
				(continued onto next page)	

THERMAL LINEAR EXPANSION -- IRON + SILICON + ΣX_i GROUP I (Continued)
($1.0 \leq Si < 10.0$)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
▼	56-6 also 56-14	373-1073		8.13 Si.	Same as above.

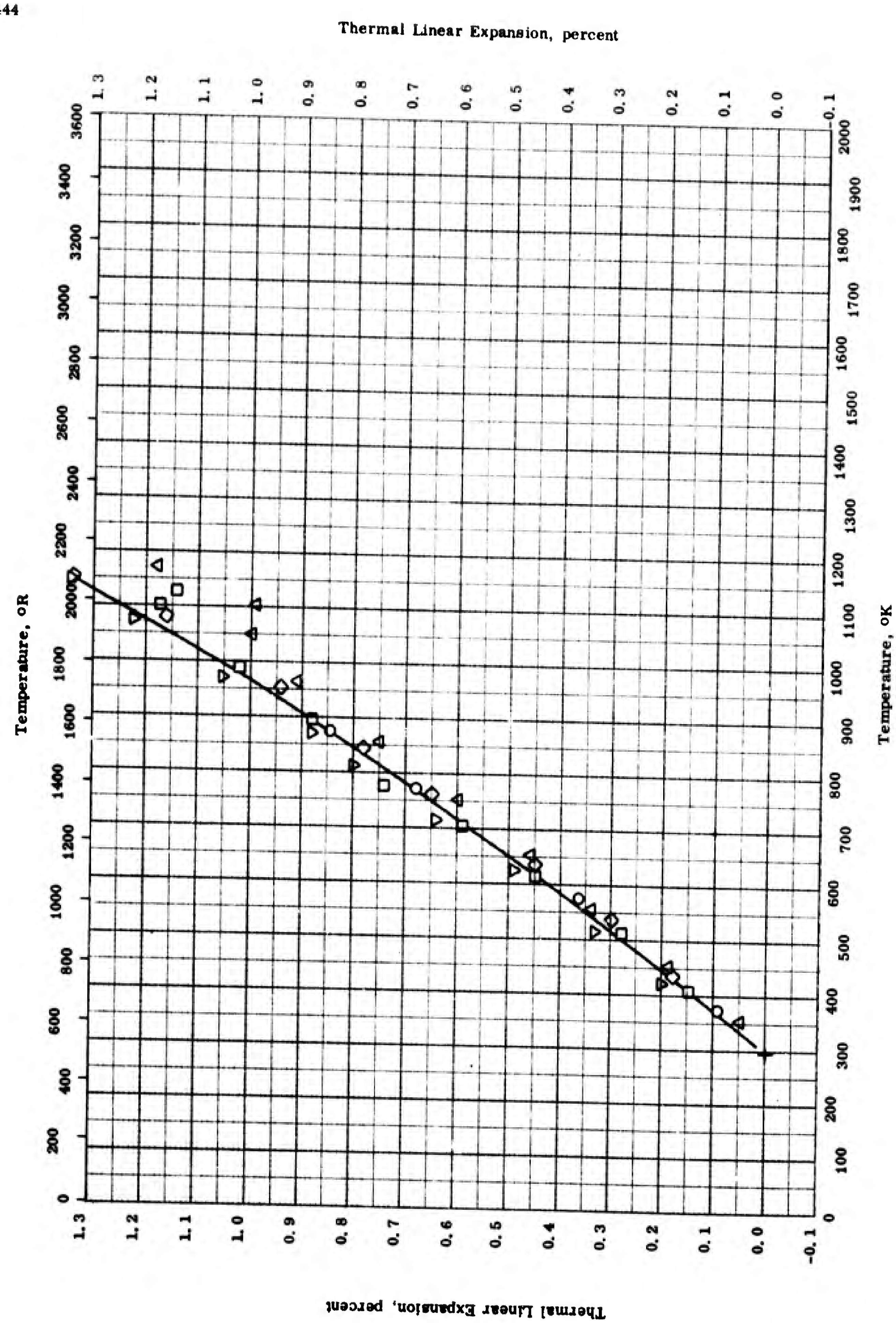


THERMAL LINEAR EXPANSION -- IRON + SILICON + ΣX_i GROUP I
($10 < Si < 50$)

THERMAL LINEAR EXPANSION -- IRON + SILICON + ΣX_i GROUP I
($10 < Si < 50$)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-14	373-1073		10. 37 Si.	Annealed.
□	56-14	373-1173		12. 43 Si.	Same as above.
△	56-14	373-973		12. 61 Si.	Same as above.
◇	56-14	373-1073		20. 01 Si.	Same as above.
▽	56-14	373-1073		23. 05 Si.	Same as above.
●	56-14	373-1173		31. 76 Si.	Same as above.
■	56-14	373-873		41. 00 Si.	Same as above.
▲	56-14	373-873		45. 20 Si.	Same as above.

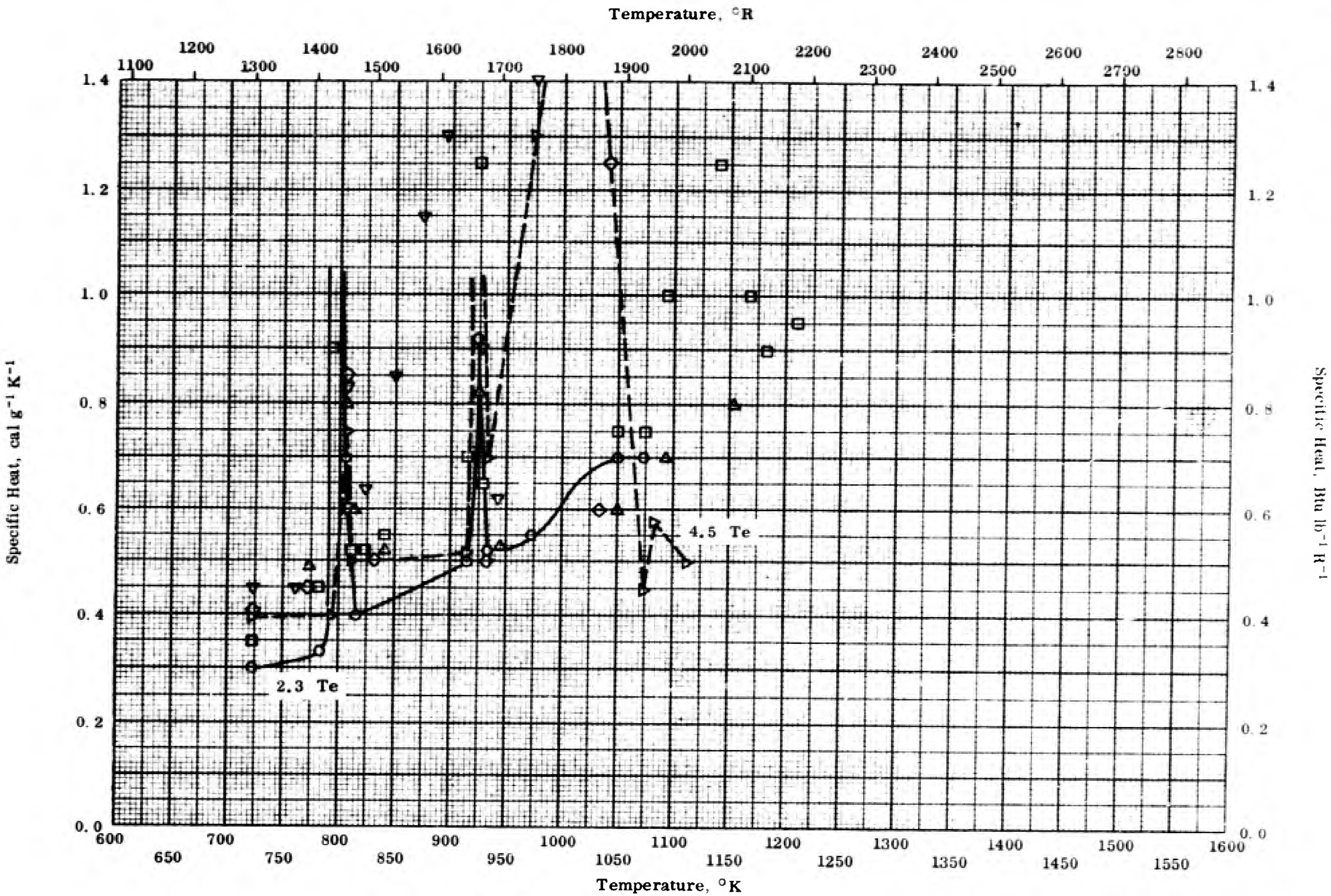


THERMAL LINEAR EXPANSION -- IRON + SILICON + ΣX_i GROUP II

THERMAL LINEAR EXPANSION -- IRON + SILICON + ΣX_i GROUP II

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	53-13	293-873		N-A-X AC 9115; 0.60 - 0.90 Si, 0.50 - 0.80 Mn, 0.50 - 0.75 Cr, 0.1 - 0.17 C, 0.15 max Mn, 0.05 - 0.15 Zr, and 0.04 max P and S each; density 0.284 lb in^{-3}	
□	56-16	298-1173		Nodular cast iron; 92.06 Fe, 4.25 Si, 3.00 C, 0.56 Mn, 0.110 P, and 0.018 S.	Heating curve.
△	56-16	298-1173		Same as above.	Cooling curve; permanent contraction 0.03 %.
▽	56-16	298-1173		Nodular cast iron; 91.49 Fe, 5.04 Si, 2.63 C, 0.72 Mn, 0.105 P, and 0.020 S.	Permanent contraction 0.018%.
◇	56-16	298-1173		Nodular cast iron; 91.26 Fe, 5.65 Si, 2.34 C, 0.62 Mn, 0.110 P, and 0.022 S.	Permanent contraction 0.010%.

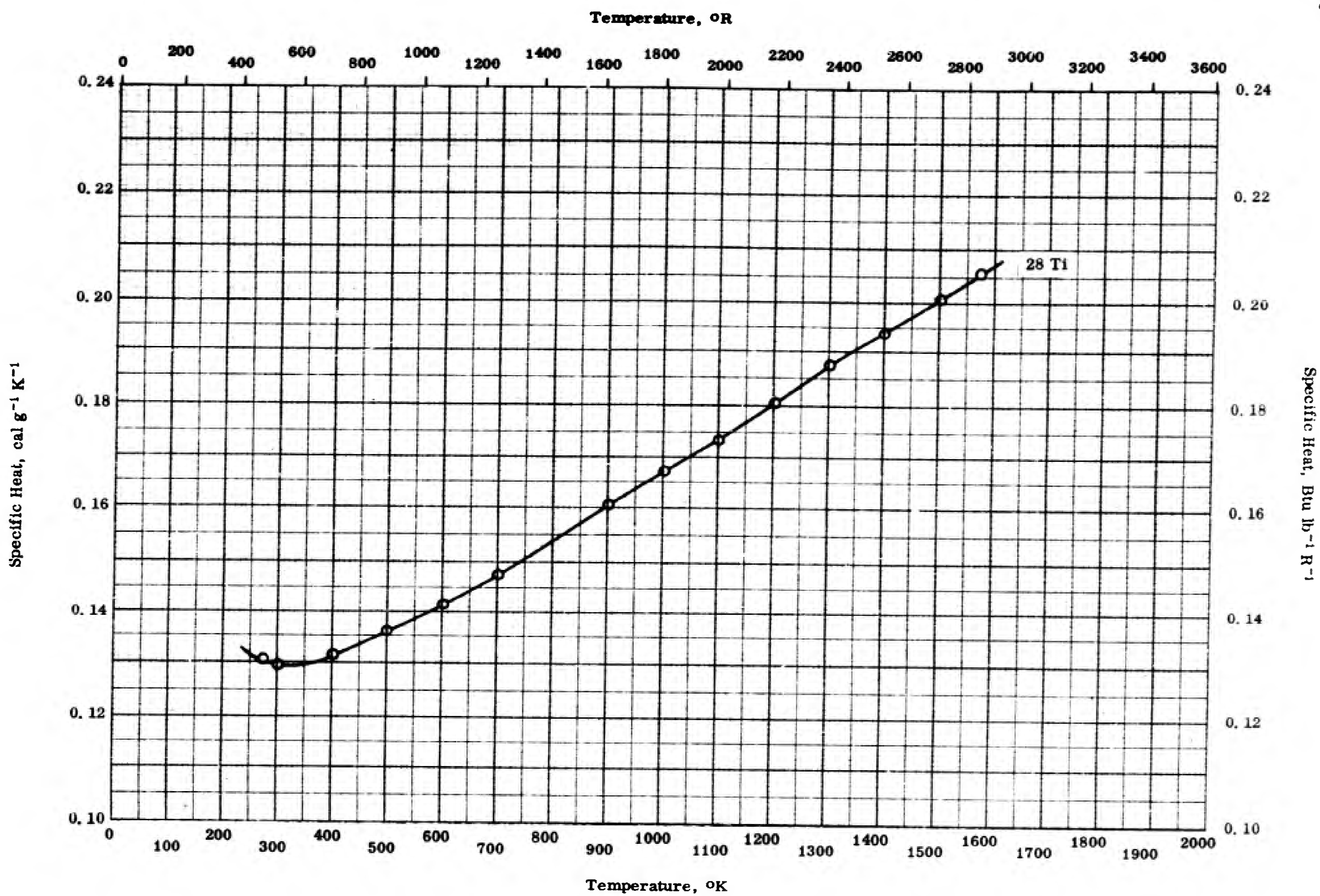


SPECIFIC HEAT -- IRON + TELLURIUM + ΣX_i GROUP I

SPECIFIC HEAT -- IRON + TELLURIUM + ΣX_i GROUP I

REFERENCE INFORMATION

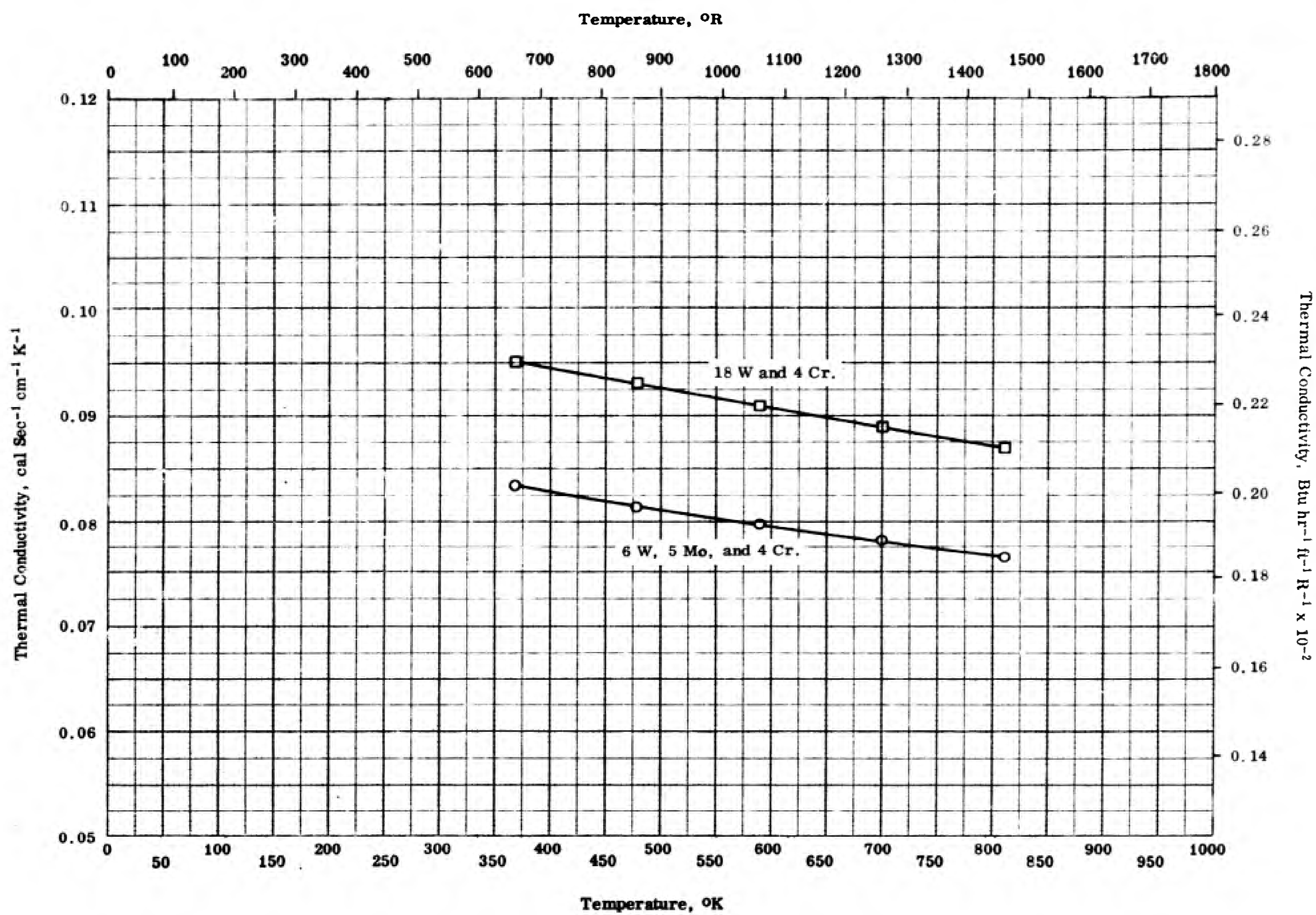
Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	55-5	723-1073		2.26 Te; prepared from double distilled Te and 99.98 electrolytic Fe.	
□	55-5	723-1213		2.43 Te; same raw materials as above.	
△	55-5	723-1153		2.99 Te; same raw materials as above.	
◇	55-5	723-1038		3.45 Te; same raw materials as above.	
▽	55-5	723-973		4.02 Te; same raw materials as above.	
▷	55-5	723-1113		4.46 Te; same raw materials as above.	



SPECIFIC HEAT -- IRON + TITANIUM + ΣX_i GROUP II

REFERENCE INFORMATION

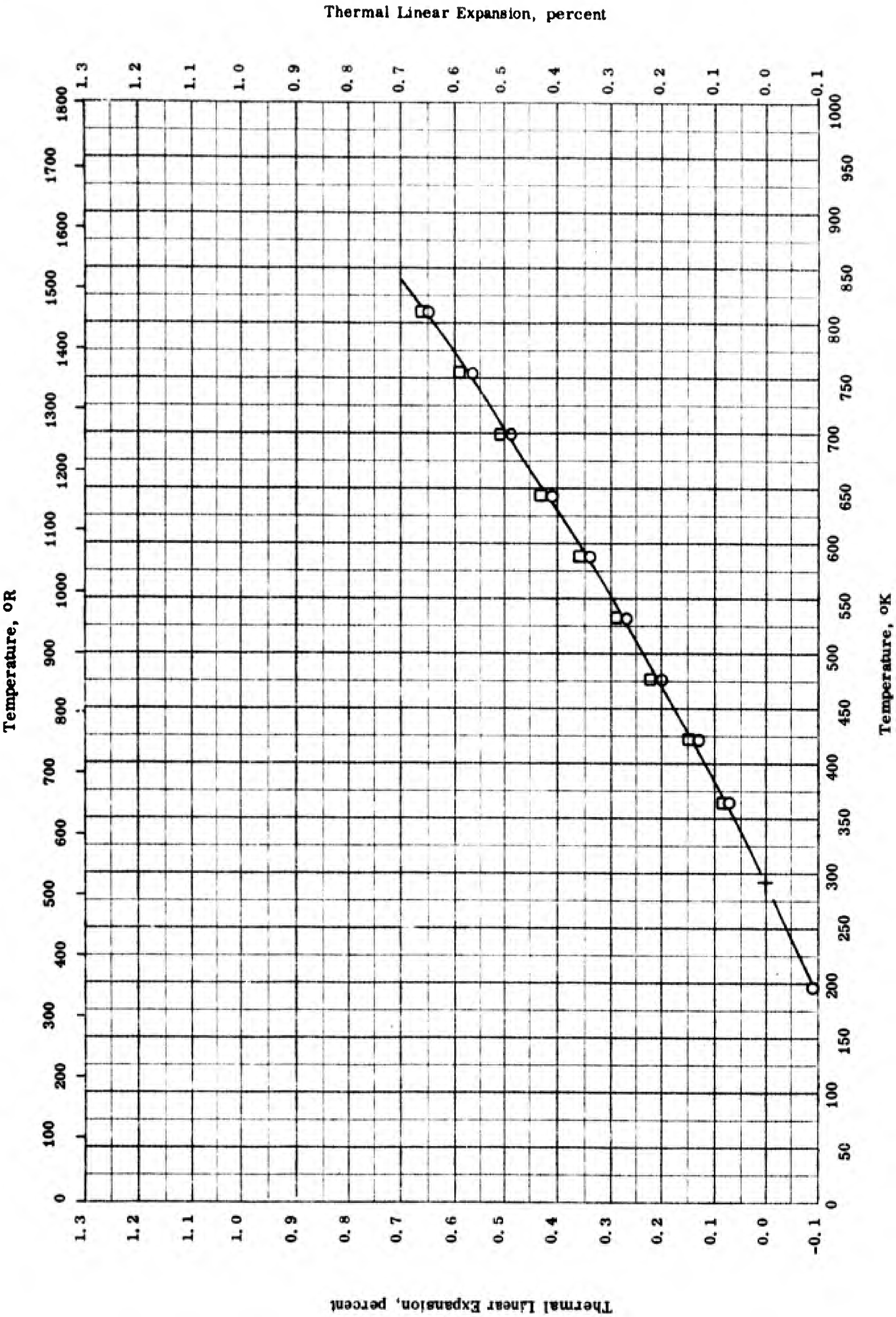
Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	61-7	273-1573		60.0 Fe, 27.5 Ti, 6.74 Al, 4.30 Si, 0.051 C, 0.025 P, and 0.020 S.	



THERMAL CONDUCTIVITY -- IRON + TUNGSTEN + ΣX_i GROUP II

REFERENCE INFORMATION

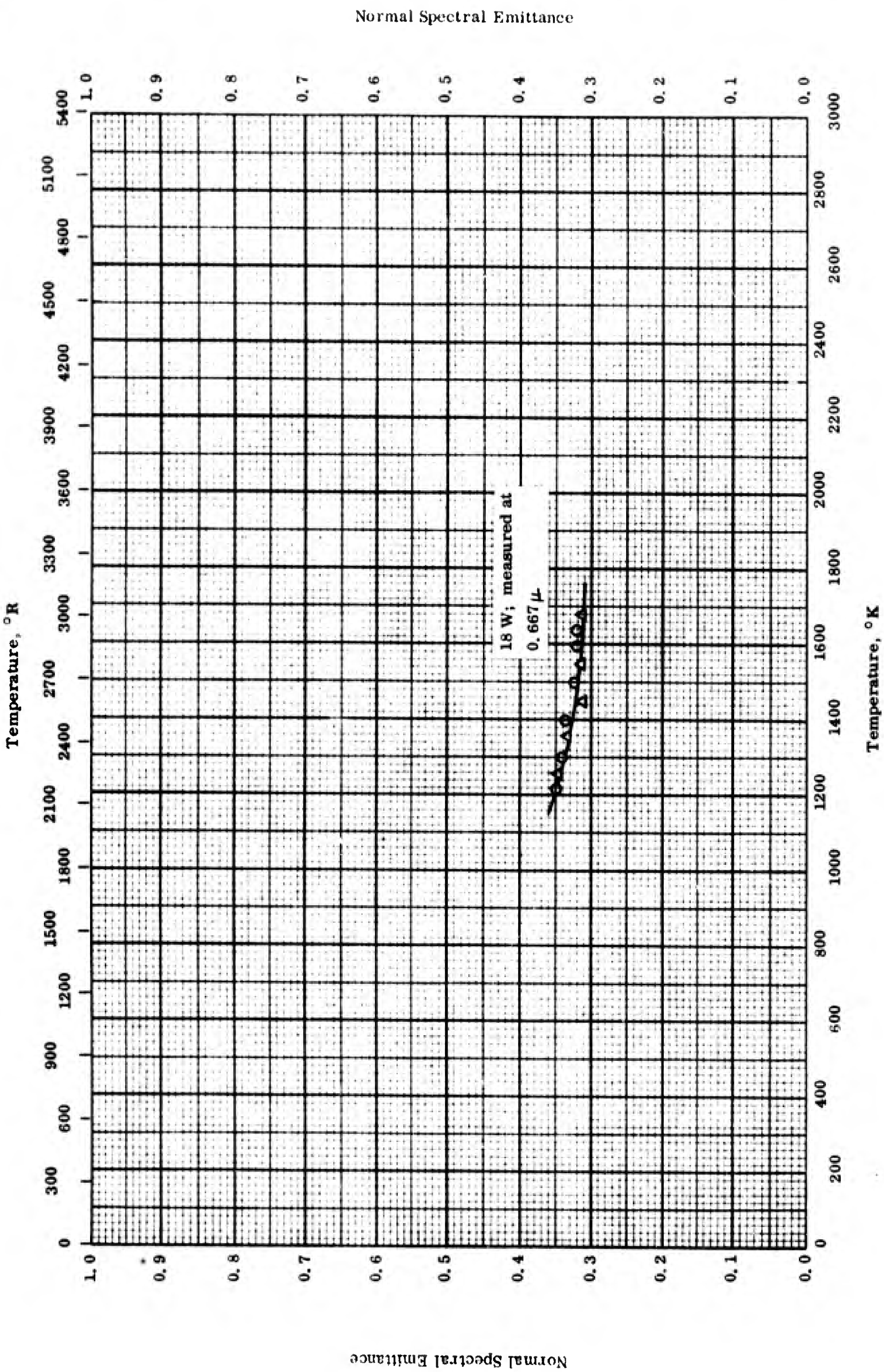
Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-4	367-811		High speed steel (M - 2); 83 Fe, 6 W, 5 Mo, 4 Cr, and 2 V.	Annealed.
□	56-4	367-811	±7 - ±10	High speed steel (Ti); 77 Fe, 18 W, 4 Cr, and 1 V.	Annealed.



THERMAL LINEAR EXPANSION -- IRON + TUNGSTEN + ΣX_i GROUP II

REFERENCE INFORMATION

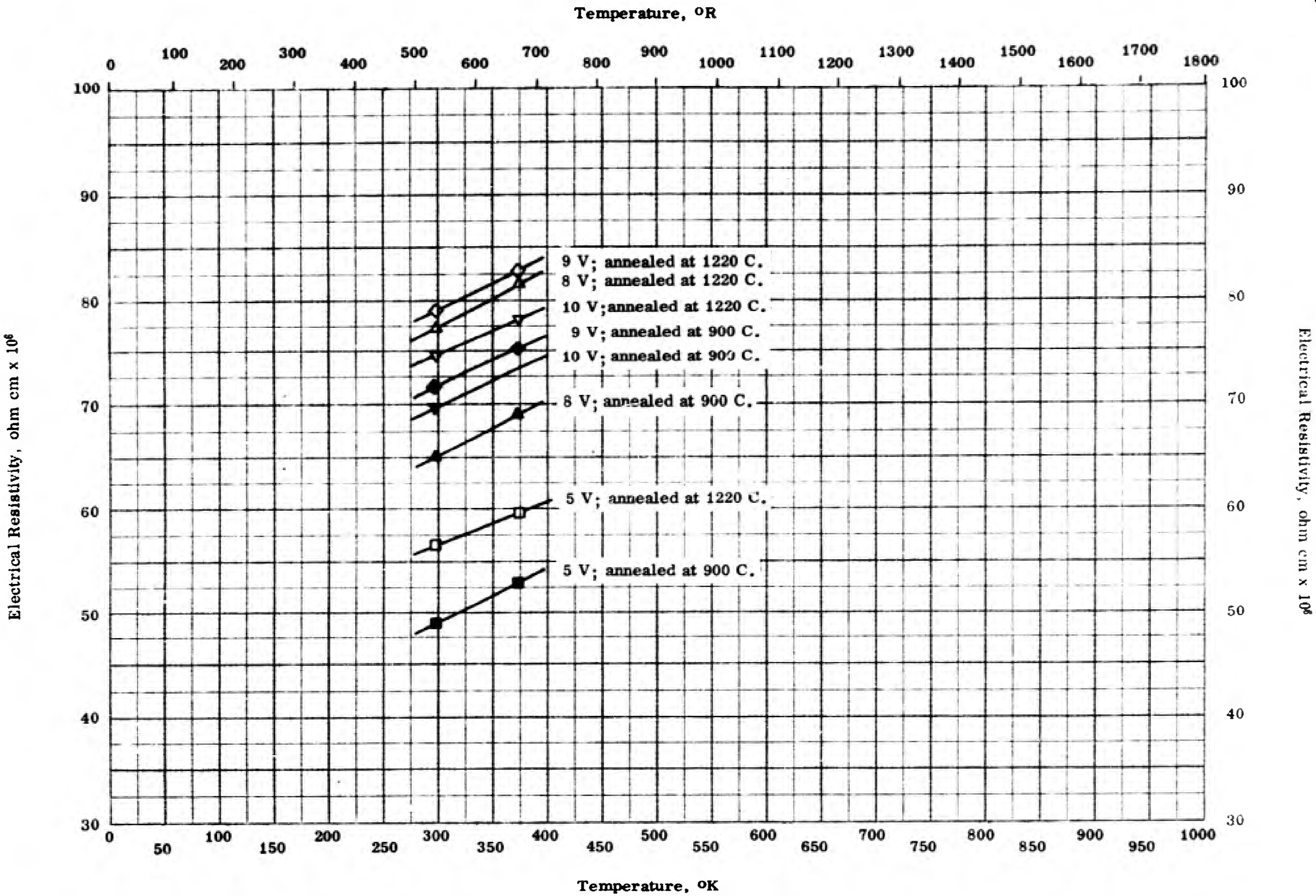
Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
□	63-12	200-811		AISI 611; 6.35 W, 5.0 Mo, 4.20 Cr, 1.90 V, 0.84 C, 0.30 Si, and 0.25 Mn; density 8.12 g cm^{-3} and melting range 2500 - 2600 F.	Heat treated.
○	63-12	294-811		Same as above.	Annealed.



NORMAL SPECTRAL EMITTANCE -- IRON + TUNGSTEN + ΣX_i GROUP I

REFERENCE INFORMATION

Symbol	Ref.	Wavelength μ	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	48-1	0.667	1220-1640		82 Fe and 18 W.	Heated at 1375 K for 1 week; $\alpha + \epsilon$ phases; at initial condition;heating; hydrogen surrounding.
△	48-1	0.667	1260-1685		82 Fe and 18 W.	Heated at 1680 K; α-solid solution at initial condition; cooling; hydrogen surrounding.

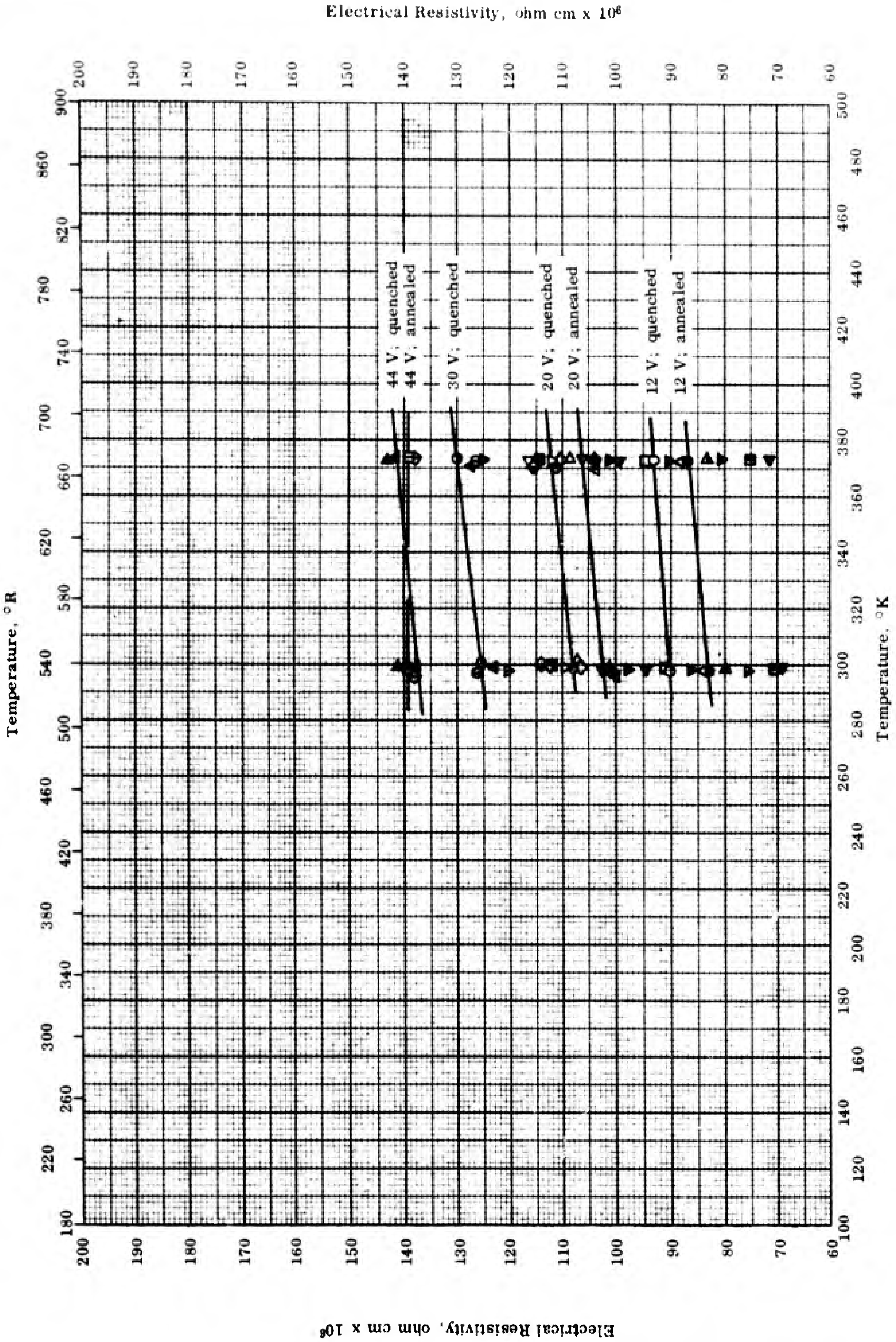


ELECTRICAL RESISTIVITY -- IRON + VANADIUM + ΣX_i GROUP I
($4 < V < 10$)

ELECTRICAL RESISTIVITY -- IRON + VANADIUM + ΣX_i GROUP I
($4 < V < 10$)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
□	55-8	298-373		4.8 V; prepared from Fe + 0.02 C and 97 V + 1.5 Fe + 1 Al.	Annealed 20 hrs at 1220 C, soaked 2 hrs at 1300-1320 C, and quenched in ice water.
△	55-8	298-373		8.1 V; same as above.	Same as above.
◇	55-8	298-373		9.2 V; same as above	Same as above.
▽	55-8	298-373		9.9 V; same as above.	Same as above.
■	55-8	298-373		4.8 V; same as above.	Annealed 70 hrs at 900 C and air cooled.
▲	55-8	298-373		8.1 V; same as above.	Same as above.
◆	55-8	298-373		9.2 V; same as above.	Same as above.
▼	55-8	298		9 8 V; same as above.	Same as above.



ELECTRICAL RESISTIVITY -- IRON + VANADIUM + ΣX_i GROUP I
$(10 < V < 50)$

ELECTRICAL RESISTIVITY -- IRON + VANADIUM + ΣX_i GROUP I
($10 < V < 50$)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	55-8	298-373		12.2 V.	Annealed 20 hrs at 1220 C, soaked 2 hrs at 1300-1320 C, and quenched in ice water.
□	55-8	298-373		13.1 V.	Same as above.
△	55-8	298-373		14.3 V.	Same as above.
◇	55-8	298-373		16.9 V.	Same as above.
▽	55-8	298-373		18.6 V.	Same as above.
▷	55-8	298-373		19.0 V.	Same as above.
◐	55-8	298-373		20.4 V.	Same as above.
◁	55-8	298-373		21.14 V.	Same as above.
■	55-8	298-373		21.8 V.	Same as above.
◧	55-8	298-373		23.3 V.	Same as above.
▶	55-8	298-373		27.2 V.	Same as above.
◒	55-8	298-373		30.4 V.	Same as above.
▲	55-8	298-373		38.80 V.	Same as above.
▲	55-8	298-373		43.64 V.	Same as above.
●	55-8	298-373		12.2 V.	Annealed 70 hrs at 900 C and air cooled.
▼	55-8	298-373		13.1 V.	Same as above.
◆	55-8	298-373		16.9 V.	Same as above.
				(Continued onto next page)	

ELECTRICAL RESISTIVITY -- IRON + VANADIUM + ΣX_i GROUP I (continued)
$(10 < V < 50)$

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
◆	55-8	298-373		18.6 V.	Same as above.
▼	55-8	298-373		19.0 V.	Same as above.
►	55-8	298-373		19.8 V.	Same as above.
◄	55-8	298-373		20.5 V.	Same as above.
▼	55-8	298-373		21.1 V.	Same as above.
◄	55-8	298-373		21.8 V.	Same as above.
◄	55-8	298-373		23.3 V.	Same as above.
▼	55-8	298-373		27.2 V.	Same as above.
▲	55-8	298-373		30.4 V.	Same as above.
⊖	55-8	298-373		35.2 V.	Same as above.
⊟	55-8	298-373		38.80 V.	Same as above.
◈	55-8	298-373		43.64 V.	Same as above.

PROPERTIES OF IRON + ΣX_i

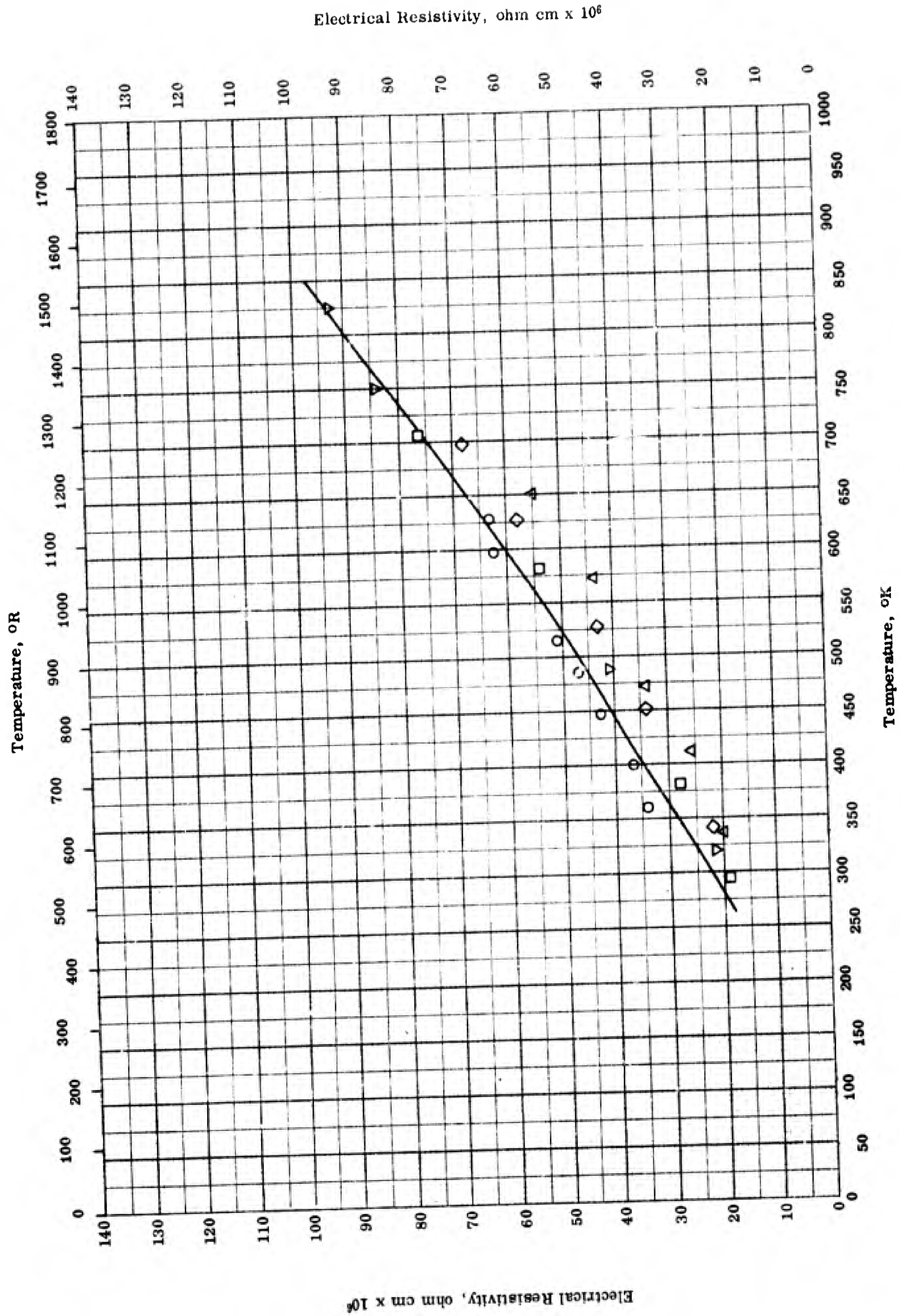
REPORTED VALUES

Density	g cm^{-3}	lb ft^{-3}
○ 1.5 Fe_2O_3 and 0.65 FeO	7.23	451
□ 1.9 Fe_2O_3 and 0.70 Si	6.53	408
△ 1.9 Fe_2O_3 and 0.6 FeO	6.32	395

PROPERTIES OF IRON + ΣX_i

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	53-4	298		96.84 Fe, 1.5 Fe_2O_3, 0.65 FeO, 0.60 Si, 0.35 Mn, and 0.06 C; porous steel with theoretical density as 7.62 g cm^{-3}.	Prepared from powder by pressing in 110 ton press; heated in H_2 atm. in steps to 600, 800, 1000, and 1150 C and first furnace cooled to 800 C and then to room temperature in H_2 stream.
□	53-4	298		96.553 Fe, 1.9 Fe_2O_3, 0.70 Si, 0.4 FeO, 0.35 Mn, and 0.097 C.	Same as above.
△	53-4	298		96.473 Fe, 1.9 Fe_2O_3, 0.6 FeO, 0.59 Si, 0.35 Mn, and 0.087 C.	Same as above.

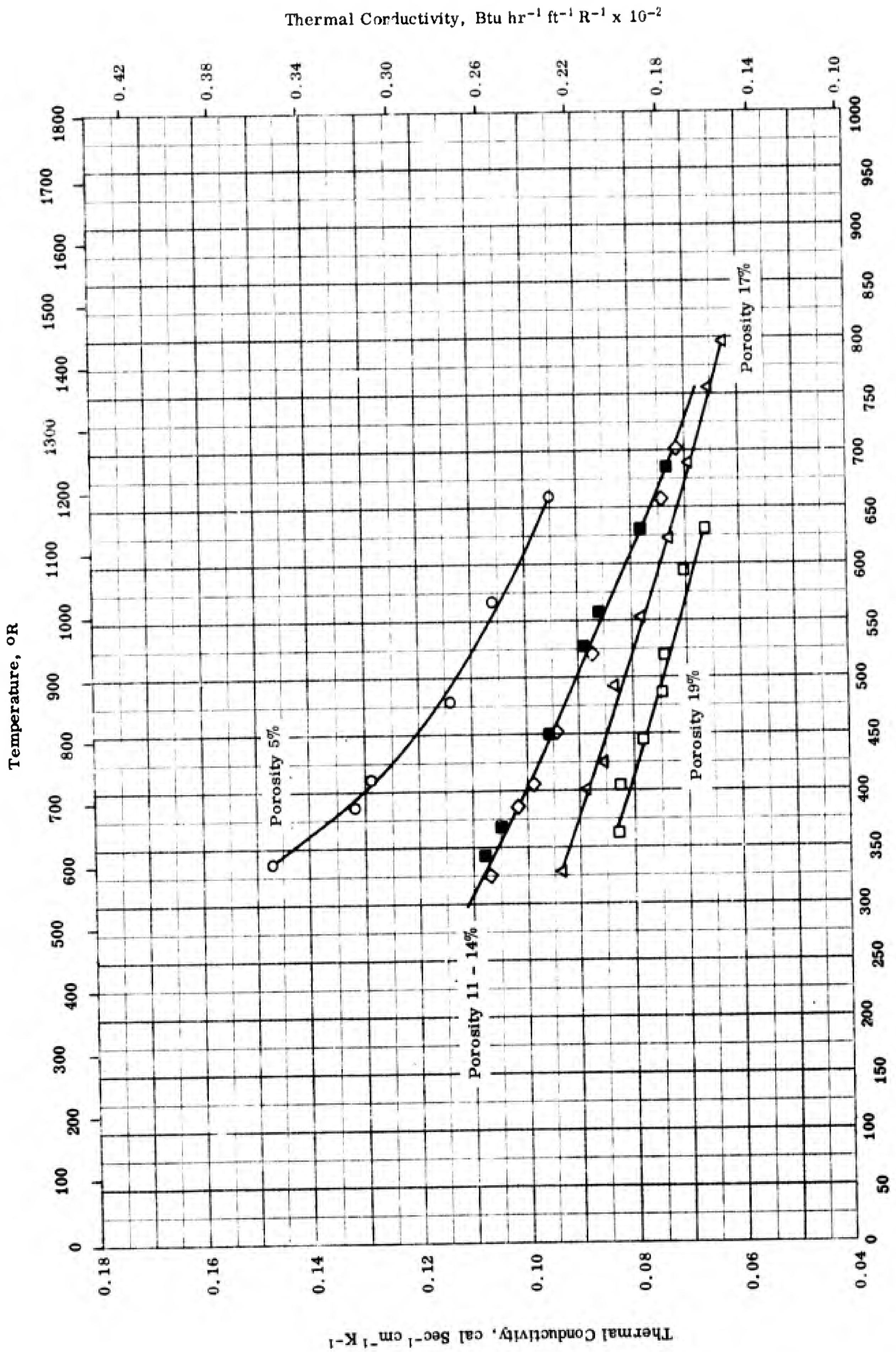


ELECTRICAL RESISTIVITY -- IRON + ΣX_i

ELECTRICAL RESISTIVITY -- IRON + ΣX_i

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-2	365-632		95.76 Fe, 1.43 FeO, 1.13 C, 0.8 Fe_2O_3, 0.43 Mn, and 0.4 Si; porosity 17%.	Sintered 1-1/2 hrs at 1150 C in H_2 atm.
△	53-4	336-660	± 1	96.84 Fe_{met}, 1.5 Fe_2O_2, 0.65 FeO, 0.60 Si, 0.35 Mn, and 0.06 C; porosity by wt. 5.1%.	Pressed, heated in H_2 atm to 1150 C in steps and furnace cooled to 800 C then H_2 stream cooled to room temp.
◇	53-4	342-693		96.553 Fe_{met}, 1.9 Fe_2O_3, 0.70 Si, 0.4 FeO, 0.35 Mn, and 0.09 C; porosity by wt. 14.3%.	Same as above.
▽	53-4	328-796		96.47 Fe_{met}, 1.9 Fe_2O_3, 0.6 FeO, 0.59 Si, 0.35 Mn, and 0.087 C; porosity by wt. 17.0%.	Same as above.
□	53-4	325-703		96.45 Fe_{met}, 1.8 Fe_2O_3, 0.7 FeO, 0.60 Si, 0.35 Mn, and 0.18 C; porosity by wt. 11.4%.	Same as above.



THERMAL CONDUCTIVITY -- IRON + ΣX_i
(Porous iron - base material)

THERMAL CONDUCTIVITY -- IRON + ΣX_i
(Porous iron - base material)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
□	54-2	363-633		95.76 Fe, 1.43 Fe O, 1.13 C, 0.8 Fe_2O_3, 0.43 Mn, and 0.4 Si; porosity 19%.	Sintered 1 1/2 hrs at 1150 C in H_2 atm.
○	53-4	336-661	± 3	96.84 Fe, 1.5 Fe_2O_3, 0.65 FeO, 0.60 Si, 0.35 Mn, and 0.06 C; porosity 5.1% and theoretical density 7.62 g cm^{-3}.	Powder pressed; heated in H_2 to 2560 R, cooled in H_2 to room temperature after furnace cooled to 1932 R.
■	53-4	342-693	± 3	96.553 Fe, 1.9 Fe_2O_3, 0.70 Si, 0.4O, 0.35Mn, and 0.097 C; porosity 14.3%.	Same as above.
△	53-4	328-796	± 3	96.473 Fe, 1.9 Fe_2O_3, 0.6 FeO, 0.59 Si, 0.35 Mn, and 0.087 C; porosity 17%.	Same as above.
◇	53-4	325-703	±3	96.45 Fe, 1.8 Fe_2O_3, 0.7 FeO, 0.60 Si, 0.35 Mn, and 0.18 C; porosity 11.4%.	Same as above.

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MATERIAL INDEX

MATERIAL INDEX

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
A																
Acrylics	6-II	1020	1020	-	-	-	-	1022	1024	-	1026	-	-	-	-	-
Actinium (Ac)	1	3	3	3	3	-	-	-	-	-	-	-	-	-	-	5
Aggregates	5	-	-	-	-	-	-	1023	1025	-	-	-	-	-	-	-
AISI 201	3	-	-	-	-	-	-	-	-	-	114	-	-	-	-	-
AISI 202	3	-	-	-	-	-	-	-	-	92	-	-	-	-	-	-
AISI 301	3	145	140	-	-	-	-	159	172	182	203	-	243	274	-	-
AISI 302	3	-	140	-	-	-	-	-	166	186	227	-	236	-	-	-
AISI 302B	3	140	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AISI 303	3	-	140	-	-	-	151	-	176	-	-	-	236, 245	-	-	-
AISI 304	3	145	140	-	-	-	151	161	-	189	211	-	257, 262	286	-	-
AISI 304L	3	145	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AISI 305	3	-	140	-	-	-	-	-	-	-	-	-	-	-	-	-
AISI 308	3	-	140	-	-	-	-	-	-	-	-	-	-	-	-	-
AISI 309	3	-	140	-	-	-	-	-	-	193	-	-	-	286	-	-
AISI 310	3	140	141	-	-	-	153	164	180	-	213	-	233	286	-	-
AISI 310 coated with Hastelloy C	6-II	-	-	-	-	-	-	-	-	-	-	-	1337	-	-	-
AISI 310 coated with Hastelloy X	6-II	-	-	-	-	-	-	-	-	-	-	-	1339	-	-	-
AISI 310 coated with Kennametal K-151A	6-II	-	-	-	-	-	-	-	-	-	-	-	1491	-	-	-
AISI 310 coated with Kennametal K-162B	6-II	-	-	-	-	-	-	-	-	-	-	-	1493	-	-	-
AISI 310 coated with spinal enamel	6-II	-	-	-	-	-	-	-	-	-	-	-	1515	-	-	-
AISI 310 coated with strontium titanate	6-II	-	-	-	-	-	-	-	-	-	-	-	1393	-	-	-
AISI 314	3	-	-	-	-	-	-	-	-	-	223	-	-	-	-	-
AISI 316	3	140, 145	141	-	-	-	149	161	174	184	209	229	236, 247, 259, 264	276	-	-
AISI 317	3	-	141	-	-	-	-	-	-	-	-	-	-	-	-	-
AISI 321	3	140, 145	-	-	-	-	-	-	-	186	205	227	236, 249, 259, 266	278	-	-
AISI 321 coated with rinsed-Mason black enamel	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1513	-	-
AISI 321 plated with silver	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1321	-	-
AISI 330	3	-	-	-	-	-	-	-	-	-	213, 407	-	-	-	-	-
AISI 347	3	-	141	-	-	-	149	161	176	186	208	-	251	-	-	-
AISI 403	3	-	53	-	-	-	-	-	79	87	110	-	-	-	-	-
AISI 405	3	-	53	-	-	-	-	-	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
AISI 410	3	55	53	-	-	-	-	-	-	87	110	120	122	138	-	-
AISI 414	3	-	-	-	-	-	-	-	-	-	197	-	-	-	-	-
AISI 416	3	-	53	-	-	-	-	-	169	87	110	-	-	-	-	-
AISI 420	3	-	-	-	-	-	-	73	166	87	110, 195	-	-	138	-	-
AISI 422	3	-	-	-	-	-	-	-	-	-	104	-	-	-	-	-
AISI 430	3	-	53	-	-	-	-	73	79	90	-	-	-	138	-	-
AISI 430F	3	-	53	-	-	-	-	-	-	-	-	-	-	-	-	-
AISI 431	3	-	-	-	-	-	-	-	-	-	197	-	-	286	-	-
AISI 440A	3	-	53	-	-	-	-	-	-	-	112	-	-	-	-	-
AISI 440B	3	-	53	-	-	-	-	-	-	-	112	-	-	-	-	-
AISI 440C	3	-	53	-	-	-	-	-	81	-	112	-	-	-	-	-
AISI 446	3	55	53	-	-	-	59	67, 73	79	94	98	120	124, 131	138	-	-
AISI 446 coated with aluminum oxide coating	6-II	-	-	-	-	-	-	-	-	-	-	-	1349	-	-	-
AISI 446 coated with Rokide A coating	6-II	-	-	-	-	-	-	-	-	-	-	-	1351	-	-	-
AISI 611	3	-	-	-	-	-	-	-	-	-	452	-	-	-	-	-
AISI 612	3	-	-	-	-	-	-	-	-	-	353	-	-	-	-	-
AISI 613	3	-	-	-	-	-	-	-	-	-	353	-	-	-	-	-
AISI 650	3	-	-	-	-	-	-	-	-	-	401	-	-	-	-	-
AISI 660	3	-	-	-	-	-	-	-	-	-	401	-	-	-	-	-
AISI 661	3	-	-	-	-	-	-	-	-	-	219	-	-	-	-	-
AISI 662	3	-	-	-	-	-	-	-	-	-	401	-	-	-	-	-
AISI 663	3	-	-	-	-	-	-	-	-	-	401	-	-	-	-	-
AISI 664	2-II	-	-	-	-	-	-	-	-	-	1265	-	-	-	-	-
AISI 665	3	-	-	-	-	-	-	-	-	-	401	-	-	-	-	-
AISI 681	2-II	-	-	-	-	-	-	-	-	-	1267	-	-	-	-	-
AISI 682	2-II	-	-	-	-	-	-	-	-	-	1267	-	-	-	-	-
AISI 690	2-II	-	-	-	-	-	-	-	-	-	1227	-	-	-	-	-
AISI C1006	3	-	-	-	-	-	-	-	-	329	-	-	-	-	-	-
AISI C1010	3	-	310	-	-	-	312	316	325	329	335	-	-	-	-	-
AISI C1018	3	-	-	-	-	-	-	-	-	333	-	-	-	-	-	-
AISI C1020	3	-	-	-	-	-	-	-	-	329	-	345-347	-	-	-	-
AISI C1045	3	-	-	-	-	-	-	-	-	333	-	-	-	-	-	-
AISI 3140	3	-	-	-	-	-	-	-	-	365	-	-	-	-	-	-
AISI 4130	3	-	-	-	-	-	-	-	-	85	-	-	-	-	-	-
AISI 4340	3	-	-	-	-	-	-	-	387	395	-	-	-	-	-	-
AISI 8630	3	-	-	-	-	-	-	-	-	-	337	-	-	-	-	-
Akermanite	4-II	-	-	-	-	-	-	1239	-	-	-	-	-	-	-	-
Alathon-10	6-II	1030	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Alberit 1005	6-II	-	-	-	-	-	1082	-	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Alberit 8391-SO	6-II	-	-	-	-	-	1082	..	-	-	-	-	-	-	-	-
Alcoa	1	-	-	-	-	-	-	-	-	-	-	-	19	-	-	-
Alkali and alkaline earth aluminum borosilicate glass	4-II	-	-	-	-	-	-	-	-	-	1715	-	-	-	-	-
Alkyd-isocyanate foam	6-II	952	-	-	-	-	-	954	956	-	958	-	-	-	-	-
Alumina	4-I	3	3	-	-	3	5	8	11-18	20	22-26	-	28-32	34	37	39
Alumina + Mullite	4-II	-	-	-	-	-	-	-	1534	-	-	-	-	-	-	-
Aluminide coating on niobium . .	6-II	-	-	-	-	-	-	-	-	-	-	-	1435-1437	1439	-	-
Aluminide coating on tantalum .	6-II	-	-	-	-	-	-	-	-	-	-	-	1441-1443	1445	-	-
Aluminide coating on titanium. .	6-II	-	-	-	-	-	-	-	-	-	-	-	1447-1449	1451	-	-
Aluminized-silicone paint on titanium	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1497	-	-
Aluminum (Al)	1	7	7	7	7	7	9	11	13	15	17	-	19-23	25	28	30
Aluminum clad boron carbide . .	5	979	-	-	-	-	-	981	-	-	-	-	-	-	-	-
Aluminum coated with silicon (di-) oxide	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1391	-	-
Aluminum coated with silicon (mon-) oxide	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1389	-	-
Aluminum coating on mylar . .	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1287	-	-
Aluminum, Kaiser	1	-	-	-	-	-	-	-	-	-	-	-	19	-	-	-
Aluminum + ΣX_i	2-II	-	-	-	-	-	-	-	829	831	-	-	-	-	-	-
Aluminum + Beryllium	2-I	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-
Aluminum + Beryllium + ΣX_i . .	2-II	-	-	-	-	-	-	-	-	-	729	-	-	-	-	-
Aluminum + Copper	2-I	-	-	-	-	-	5	7	9	-	11	-	-	-	-	-
Aluminum + Copper + ΣX_i . . .	2-II	731	731	731	-	-	733	735	737-739	741	743-752	-	754-757	759	-	-
Aluminum + Iron	2-I	-	-	-	-	-	-	-	13	-	-	-	-	-	-	-
Aluminum + Magnesium	2-I	-	-	-	-	-	15	-	17	-	-	-	-	-	-	-
Aluminum + Magnesium + ΣX_i .	2-II	763	763	-	-	-	765	-	767	-	769	-	771	773	-	-
Aluminum + Manganese	2-I	-	-	-	-	-	-	-	-	-	-	-	19-21	-	-	-
Aluminum + Nickel + ΣX_i . . .	2-II	-	-	-	-	-	775	-	778	-	781	-	-	-	-	-
Aluminum + Silicon	2-I	-	-	-	-	-	-	-	-	-	23	-	-	-	-	-
Aluminum + Silicon + ΣX_i . . .	2-II	-	-	-	-	-	783-785	-	788-794	-	796-804	-	-	-	-	-
Aluminum + Silver	2-I	25, 431	-	-	-	25	27	29	-	-	-	-	-	-	-	-
Aluminum + Uranium	2-I	-	-	-	-	-	-	-	31	-	34	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Aluminum + Zinc + ΣX_i	2-II	806	806	806	-	-	808	810	812	814	816	-	818-823	825	-	-
Aluminum alloys (Special designations)																
2S	2-II	-	-	-	-	-	-	-	829	831	-	-	-	-	-	-
14S	2-II	-	-	-	-	-	-	-	739	-	-	-	-	-	-	-
17S	2-II	-	-	-	-	-	-	-	-	-	743	-	-	-	-	-
24S	2-II	731	-	-	-	-	-	735	737	741	745	-	754-757	759	-	-
75S	2-II	806	-	-	-	-	-	810	812	814	816	-	818-823	825	-	-
1075	1	-	-	-	-	-	-	-	-	-	-	-	-	25	-	-
1100	2-II	-	-	-	-	-	-	-	-	831	-	-	-	-	-	-
2024	2-II	731	-	-	-	-	-	735	737	741	745	-	754-757	759	-	-
2219	2-II	-	-	-	-	-	-	-	-	-	-	-	-	759	-	-
3003	2-I	-	-	-	-	-	-	-	-	-	-	-	19-21	-	-	-
6061	2-II	-	-	-	-	-	-	-	-	-	-	-	771	773	-	-
7075	2-II	806	-	-	-	-	-	810	812	814	816	-	818-823	825	-	-
Alpax Gamma	2-II	-	-	-	-	-	785	-	794	-	802	-	-	-	-	-
C-46	2-II	731	731	731	-	-	-	-	-	-	747	-	-	-	-	-
Duralite	2-II	731	731	731	-	-	-	-	739	-	743	-	-	-	-	-
Gamma, γ	2-II	-	-	-	-	-	-	-	-	-	747	-	-	-	-	-
Hydronalium 5	2-I	-	-	-	-	-	15	-	17	-	-	-	-	-	-	-
Hydronalium 7	2-II	-	-	-	-	-	765	-	767	-	-	-	-	-	-	-
Hydronalium 51	2-II	-	-	-	-	-	765	-	767	-	-	-	-	-	-	-
L' A-Z5G	2-II	806	806	806	-	-	808	810	812	-	816	-	-	-	-	-
Lo-Ex	2-II	-	-	-	-	-	785	-	794	-	798	-	-	-	-	-
RAE 40C	2-II	-	-	-	-	-	775	-	778	-	781	-	-	-	-	-
RAE 47B	2-II	-	-	-	-	-	775	-	778	-	781	-	-	-	-	-
RAE 47D	2-II	-	-	-	-	-	775	-	778	-	-	-	-	-	-	-
RAE 55	2-II	-	-	-	-	-	775	-	778	-	781	-	-	-	-	-
RAE 470	2-II	-	-	-	-	-	-	-	-	-	781	-	-	-	-	-
RAE SA1	2-II	-	-	-	-	-	785	-	792	-	798	-	-	-	-	-
RAE SA44	2-II	-	-	-	-	-	785	-	792	-	798	-	-	-	-	-
RR50	2-II	-	-	-	-	-	783	-	-	-	796	-	-	-	-	-
RR50C	2-II	-	-	-	-	-	-	-	788	-	-	-	-	-	-	-
RR53C	2-II	-	-	-	-	-	783	-	788	-	796	-	-	-	-	-
RR59	2-II	-	-	-	-	-	733	-	739	-	745	-	-	-	-	-
RR77	2-II	-	-	-	-	-	808	-	812	-	816	-	-	-	-	-
RR131D	2-II	-	-	-	-	-	765	-	767	-	769	-	-	-	-	-
Thermafond C3-INA	2-II	731	731	731	-	-	-	-	739	-	743	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Aluminum alloys (Special designations) (cont.)																
Y	2-II	-	-	-	-	-	733	-	739	-	-	-	-	-	-	-
Aluminum antimonide (AlSb) . .	6-I	-	-	-	-	-	45	47	-	-	49	-	-	-	-	-
Aluminum borate ($2Al_2O_3 \cdot B_2O_3$)	4-II	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1035
Aluminum borides																
AlB_{10}	6-I	-	160	-	-	-	-	-	-	-	-	-	-	-	-	-
AlB_{12}	6-I	-	160	-	-	-	162	-	-	-	-	-	-	-	-	-
Aluminum bubbles - graphite fibers composite system . . .	6-II	-	-	-	-	-	-	-	1279	-	-	-	-	-	-	-
Aluminum carbide (Al_4C_3) . . .	5	-	294	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum carbide + Aluminum oxide	5	-	-	-	-	-	-	803	-	-	-	-	-	-	-	-
Aluminum-chromium-molybdenum cermets	6-II	930	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum fluoride (AlF_3) . . .	5	407	407	-	-	407	-	-	-	-	-	-	-	-	-	-
Aluminum-nickel-titanium cermets	6-II	925	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum niobate ($Al_2O_3 \cdot Nb_2O_5$)	4-II	-	1121	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum nitride (AlN)	5	481	481	-	-	-	-	483	485	-	487	-	489-491	493	-	-
Aluminum oxides																
Aluminum oxide (Al_2O_3) . . .	4-I	3	3	-	-	3	5	8	11-18	20	22-26	-	28-32	34	37	39
38-900	4-I	-	-	-	-	-	-	-	11	-	-	-	-	-	-	-
AD-85	4-I	-	-	-	-	-	-	-	-	-	-	-	637	-	639	-
AD-94	4-I	-	-	-	-	-	-	-	-	-	-	-	637	-	639	-
AD-96	4-I	-	-	-	-	-	-	-	-	-	-	-	32	-	37	-
AD-99	4-I	-	-	-	-	-	-	-	-	-	-	-	32	-	37	-
AD-995	4-I	-	-	-	-	-	-	-	-	20	-	-	32	-	-	-
AP-30	4-I	-	-	-	-	-	-	-	11	-	-	-	-	-	-	-
AP-35	4-I	-	-	-	-	-	-	-	-	20	-	-	32	-	37	-
AV-30	4-I	-	-	-	-	-	-	-	-	-	-	-	32	-	37	-
FS-54	4-I	-	-	-	-	-	-	-	-	20	-	-	-	-	-	-
GD-10	4-I	-	-	-	-	-	-	-	-	20	-	-	-	-	-	-
Gulton HSB	4-I	-	-	-	-	-	-	-	11	-	-	-	-	-	-	-
LA-603	4-I	-	-	-	-	-	-	-	-	-	-	-	28-30	-	-	-
RA-4213	4-I	-	-	-	-	-	-	-	-	-	-	-	28-30	-	-	-
TWA 2, A402	4-I	-	-	-	-	-	-	-	-	-	-	-	32	-	-	-
Wesgo Al-300	4-I	-	-	-	-	-	-	-	14	-	-	-	-	-	-	-
Aluminum oxide foam	4-I	-	-	-	-	-	-	-	18	-	26	-	-	-	-	-
Aluminum oxide reinforced by molybdenum fibers	6-II	-	-	-	-	-	-	-	1261	-	1263	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Aluminum oxide coating on AISI 446	6-II	-	-	-	-	-	-	-	-	-	-	-	1349	-	-	-
Aluminum oxide + ΣX_i	4-I	-	-	-	-	-	-	-	-	-	635	-	637	-	639	-
Aluminum oxide + Aluminum cermet	6-II	-	-	-	-	-	-	-	-	-	729	-	-	-	-	-
Aluminum oxide + Aluminum silicate	4-II	-	-	-	-	-	-	-	1534	-	-	-	-	-	-	-
Aluminum oxide + Beryllium oxide + Magnesium oxide . . .	4-I	-	-	-	-	-	-	-	-	-	599	-	-	-	-	-
Aluminum oxide + Chromium cermet	6-II	731	-	-	-	-	-	-	911	-	733	-	735	-	-	-
Aluminum oxide + Chromium (sesqui-)oxide	4-I	-	-	-	-	-	601	-	-	-	603	-	605	-	-	-
Aluminum oxide + Chromium + + Molybdenum cermet	6-II	737	-	-	-	-	-	-	-	-	739	-	-	-	-	-
Aluminum oxide + Iron cermet .	6-II	-	-	-	-	-	-	-	-	-	741	-	-	-	-	-
Aluminum oxide + Magnesium oxide + Beryllium oxide . . .	4-I	-	-	-	-	-	-	-	-	-	607	-	-	-	-	-
Aluminum oxide + Nickel aluminide	5	-	-	-	-	-	-	-	-	-	-	-	747-749	751	-	-
Aluminum oxide + Nickel (mon-)oxide	4-I	-	-	-	-	-	-	-	-	-	-	-	609	-	-	-
Aluminum oxide + Niobium (pent-)oxide	4-I	-	611	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum oxide + Silicon (di-)oxide	4-I	-	-	-	-	-	613	-	615	-	617	-	619	-	-	-
Aluminum oxide + Silicon (di-)oxide + Titanium (di-)oxide	4-I	-	-	-	-	-	-	-	621	-	-	-	-	-	-	-
Aluminum oxide + Thorium (di-)oxide	4-I	-	623	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum oxide + Thorium (di-)oxide + Beryllium oxide .	4-I	-	625	-	-	-	-	-	-	-	627	-	-	-	-	-
Aluminum oxide + Titanium aluminide	5	-	-	-	-	-	-	-	-	-	-	-	753-755	757	-	-
Aluminum oxide + Titanium (di-)oxide + Chromium + + Molybdenum cermet	6-II	-	-	-	-	-	-	-	-	-	-	-	747	-	-	-
Aluminum oxide + Tungsten + + Chromium cermet	6-II	-	-	-	-	-	-	-	-	-	743	-	745	-	-	-
Aluminum oxide + Uranium (di-)oxide	4-I	629	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum oxide + Zirconium (di-)oxide	4-I	-	-	-	-	-	-	-	631	-	-	-	-	-	-	-
Aluminum oxide + Zirconium (di-)oxide + Beryllium oxide .	4-I	-	633	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum phosphate coating on nickel	6-II	-	-	-	-	-	-	-	-	-	-	-	1429	-	-	-
Aluminum phosphide (AlP) . . .	5	-	-	-	-	-	-	627	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Aluminum silicates	4-II	-	-	-	-	-	1187	1189	1191	1193	1195-1197	-	1199-1201	-	1203	-
$Al_2O_3 \cdot SiO_2$	4-II	-	-	-	-	-	-	1189	1191	-	1195	-	-	-	-	-
$3\ Al_2O_3 \cdot 2\ SiO_2$	4-II	-	-	-	-	-	-	1189	1191	1193	1197	-	1501	-	1203	-
Aluminum silicate + Aluminum oxide	4-II	-	-	-	-	-	-	-	1562	-	-	-	-	-	-	-
Aluminum silicate + Magnesium oxide	4-II	-	1564	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum silicate glass	4-II	-	-	-	-	-	-	1675	-	1677	-	-	1679	1681	1683-1685	-
Aluminum titanate ($Al_2O_3 \cdot TiO_2$) .	4-II	1368	1368	-	-	-	-	1370	1372	-	1374	-	-	-	-	-
Aluminum titanate, vitreous bonded	5	-	-	-	-	-	949-953	-	-	-	955 977	-	-	-	-	-
Aluminum titanate body	4-II	-	-	-	-	-	-	-	-	-	1374	-	-	-	-	-
Aluminum-vanadium intermetallics (Al_3V)	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-
Alundun	4-I	-	-	-	-	-	-	-	11	-	-	-	-	-	-	-
Americium (Am)	1	32	-	-	-	32	-	-	-	-	-	-	-	-	-	34
Americium fluoride (AmF_3) . .	5	343	-	-	343	343	-	-	-	-	-	-	-	-	-	345
Analcite	4-II	-	-	-	-	-	-	1324	-	-	-	-	-	-	-	-
Anatase	4-I	445	-	-	-	-	-	454	-	-	-	-	-	-	-	-
Andalusite	4-II	-	-	-	-	-	-	1189	-	-	1195	-	-	-	-	-
Anilin resin	6-II	-	-	-	-	-	-	1078	-	-	-	-	-	-	-	-
Anorthite	4-II	-	-	-	-	-	-	1233	-	-	-	-	-	-	-	-
Antimony (Sb)	1	38	36	36	-	-	40	42	44	-	-	-	-	46	-	-
Antimony bismuth telluride ($Sb_{2-x}Bi_xTe_3$)	6-I	-	-	-	-	-	549	-	551	-	-	-	-	645	-	-
Antimony sulfide (Sb_2S_3)	5	-	-	-	-	-	-	643	-	-	-	-	-	-	-	-
Antimony telluride (Sb_2Te_3) . .	6-I	543	543	-	-	-	545	-	547	-	-	-	-	-	-	-
Antimony telluride + Bismuth telluride	6-I	-	-	-	-	-	705	-	-	-	-	-	-	-	-	-
Antimony telluride + Indium telluride	6-I	-	-	-	-	-	-	-	707	-	709	-	-	-	-	-
Antimony-zirconium intermetallics ($SbZr_1$)	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-
Araldite casting resin 501 . . .	6-II	-	-	-	-	-	-	-	-	-	1012	-	-	-	-	-
Armalon 410L	6-II	-	-	-	-	-	-	-	1218	-	-	-	-	-	-	-
Armco iron	1	578	-	-	-	-	581	583	585	587	589	592	594, 598	602	-	-
Armofoam	6-II	962	-	-	-	-	-	-	-	-	966	-	-	-	-	-
Arsenic aluminides																
AsAl	6-I	-	43	-	-	-	-	-	-	-	-	-	-	-	-	-
As_2Al_3	6-I	-	43	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic sulfide (As_2S_3).	5	-	-	-	-	-	-	647	-	-	-	-	-	-	-	-
Arsenic telluride (As_2Te_3) . . .	6-I	-	-	-	-	-	-	-	640	-	-	-	-	-	-	-

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B																
Baddeleyite	4-I	-	-	-	-	-	-	-	-	-	585	-	-	-	-	-
Bakelites																
BM-261	6-II	-	-	-	-	-	-	-	-	-	988	-	-	-	-	-
BM-704	6-II	-	-	-	-	-	-	-	-	-	998	-	-	-	-	-
BM-3510	6-II	-	-	-	-	-	-	-	-	-	996	-	-	-	-	-
BM-13014	6-II	-	-	-	-	-	-	-	-	-	992	-	-	-	-	-
BM-13080	6-II	-	-	-	-	-	-	-	-	-	994	-	-	-	-	-
BM-13335	6-II	-	-	-	-	-	-	-	-	-	988	-	-	-	-	-
BM-14316	6-II	-	-	-	-	-	-	-	-	-	998	-	-	-	-	-
BM-14726	6-II	-	-	-	-	-	-	-	-	-	994	-	-	-	-	-
BM-15140	6-II	-	-	-	-	-	-	-	-	-	992	-	-	-	-	-
BM-16468	6-II	-	-	-	-	-	-	-	-	-	992	-	-	-	-	-
BM-17711	6-II	-	-	-	-	-	-	-	-	-	994	-	-	-	-	-
BM-17849	6-II	-	-	-	-	-	-	-	-	-	1000	-	-	-	-	-
DYNH	6-II	-	-	-	-	-	-	-	-	-	1045	-	-	-	-	-
Barium + Strontium	2-I	-	36	36	-	-	-	-	-	-	-	-	-	-	-	-
Barium aluminates																
$BaO \cdot Al_2O_3$	4-II	-	-	-	-	-	-	-	-	-	977	-	-	-	-	-
$3\ BaO \cdot Al_2O_3$	4-II	-	-	-	-	-	-	-	-	-	977	-	-	-	-	-
Barium aluminum silicate ($BaO \cdot Al_2O_3 \cdot 2\ SiO_2$)	4-II	-	-	-	-	-	-	1205	-	-	1207	-	-	-	-	-
Barium beryllium titanate ($BaO \cdot BeO \cdot TiO_2$)	4-II	-	-	-	-	-	-	-	-	-	1390	-	-	-	-	-
Barium borate glass	4-II	-	-	-	-	-	-	-	-	-	1609	-	-	-	-	-
Barium (hexa-)boride (BaB_6). .	6-I	-	296	-	-	-	300	-	-	-	302	-	-	-	-	-
Barium calcium silicate	4-II	-	-	-	-	-	-	-	-	-	1211	-	-	-	-	-
Barium calcium titanate [$(Ca_xBa_{1-x})O \cdot TiO_2$].	4-II	-	-	-	-	-	-	-	1392	1394	-	-	-	-	-	-
Barium carbide (BaC_2).	5	-	294	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium cerium lead titanate [$(Ba_{1-x-y}Pb_xCe_y)O \cdot TiO_2$] . .	4-II	-	-	-	-	-	1398	-	-	-	-	-	-	-	-	-
Barium cerium titanate [$(Ba_{1-x}Ce_x)O \cdot TiO_2$].	4-II	-	-	-	-	-	1396	-	-	-	-	-	-	-	-	-
Barium cerium titanate silicate [$(Ba_{1-x}Ce_x)O \cdot (Ti_{1-x}Si_x)O_2$] .	4-II	-	-	-	-	-	1209	-	-	-	-	-	-	-	-	-
Barium cerium titanate stannate [$(Ba_{1-x}Ce_x)O \cdot (Ti_{1-y}Sn_y)O_2$] .	4-II	-	-	-	-	-	1354	-	-	-	-	-	-	-	-	-
Barium cerium titanate zirconate [$(Ba_{1-x}Ce_x)O \cdot (Ti_{1-y}Zr_y)O_2$].	4-II	-	-	-	-	-	1500	-	-	-	-	-	-	-	-	-
Barium copper silicate ($BaO \cdot CuO \cdot 4\ SiO_2$).	4-II	-	-	-	-	-	-	-	-	-	1213	-	-	-	-	-
Barium crown glass	4-II	-	-	-	-	-	-	1827	-	-	-	-	-	-	-	-
Barium fluoborate glass	4-II	-	-	-	-	-	-	-	-	-	1611	-	-	-	-	-

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Barium fluoride (BaF_2)	5	-	-	-	-	-	-	-	347	-	-	-	-	349	-	-
Barium lanthanum titanate [$(La_xBa_{1-x})O \cdot TiO_2$]	4-II	-	-	-	-	-	1400	-	1402	-	-	-	-	-	-	-
Barium-lead intermetallics (Ba_2Pb)	6-I	-	-	-	-	-	-	-	642	-	-	-	-	-	-	-
Barium lead silicate glass . . .	4-II	-	-	-	-	-	1689	-	-	-	-	-	-	-	-	-
Barium lead titanates	4-II	-	-	-	-	-	-	-	-	-	1404	-	-	-	-	-
Barium magnesium silicates																
$BaO \cdot 3\,MgO \cdot SiO_2$	4-II	-	-	-	-	-	-	-	-	-	1215	-	-	-	-	-
$BaO \cdot 4\,MgO \cdot 3.5\,SiO_2$	4-II	-	-	-	-	-	-	-	-	-	1215	-	-	-	-	-
Barium magnesium aluminum silicate ($3\,BaO \cdot 2\,MgO \cdot 8\,Al_2O_3 \cdot 26\,SiO_2$)	4-II	-	-	-	-	-	-	-	-	-	1217-1221	-	-	-	-	-
Barium nitride (Ba_3N_2).	5	-	621	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium oxide (BaO)	4-I	-	-	-	-	-	49	51	53	-	-	-	-	-	-	-
Barium oxide + Strontium oxide.	4-I	-	-	-	-	-	-	-	641	-	-	-	-	-	-	-
Barium oxide + Strontium oxide + + Zirconium cermet	6-II	-	-	-	-	-	-	-	911	-	-	-	-	-	-	-
Barium oxide + Strontium oxide + + Zirconium (di-)oxide. . . .	4-I	-	-	-	-	-	-	-	643	-	-	-	-	-	-	-
Barium phosphide (Ba_3P_2) . . .	5	-	635	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium selenide (BaSe)	6-I	-	365	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium silicate glass	4-II	-	-	-	-	-	-	-	-	1687	-	-	-	-	-	-
Barium silicide ($BaSi_2$)	6-I	-	371	-	-	-	-	-	-	-	373	-	-	-	-	-
Barium stannide (Ba_2Sn)	6-I	-	-	-	-	-	-	-	531	-	-	-	-	-	-	-
Barium strontium ferrites [$(Ba_xSr_{1-x})O \cdot 6\,Fe_2O_3$] . . .	4-II	1067	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium strontium titanates. . .	4-II	-	-	-	-	-	-	-	-	-	1406	-	-	-	-	-
Barium sulfide (BaS)	5	649	649	-	-	-	-	651	-	-	-	-	-	-	-	-
Barium telluride (BaTe)	6-I	-	636	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium titanates																
$BaO \cdot TiO_2$	4-II	-	1376	-	-	-	1378-1380	1382	1384	1386	1388	-	-	-	-	-
$BaO \cdot 3\,TiO_2$	4-II	-	-	-	-	-	-	-	-	-	1388	-	-	-	-	-
$BaO \cdot 4\,TiO_2$	4-II	-	-	-	-	-	-	-	-	-	1388	-	-	-	-	-
$BaO \cdot 5\,TiO_2$	4-II	-	-	-	-	-	-	-	-	-	1388	-	-	-	-	-
$BaO \cdot 6\,TiO_2$	4-II	-	-	-	-	-	-	-	-	-	1388	-	-	-	-	-
$BaO \cdot 18\,TiO_2$	4-II	-	-	-	-	-	-	-	-	-	1388	-	-	-	-	-
$2\,BaO \cdot TiO_2$	4-II	-	1376	-	-	-	-	1382	-	-	-	-	-	-	-	-
Barium titanate coating on niobium-zirconium alloy . . .	6-II	-	-	-	-	-	-	-	-	-	-	-	1369	-	-	-
Barium titanate + Calcium titanate	4-II	-	1579	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium titanate + Lead titanate .	4-II	-	-	-	-	-	-	1581	-	-	-	-	-	-	-	-
Barium titanate + Manganese niobate	4-II	-	-	-	-	-	-	-	1583	-	-	-	-	-	-	-

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Barium titanate + Strontium titanate	4-II	-	-	-	-	-	-	1585	-	-	-	-	-	-	-	-
Barium titanium germanium oxide ($BaO \cdot TiO_2 \cdot 3\ GeO_2$). . .	4-II	-	-	-	-	-	-	-	-	-	1127	-	-	-	-	-
Barium titanium silicate glass .	4-II	-	-	-	-	-	-	-	-	-	1691	-	-	-	-	-
Barium uranate ($BaO \cdot UO_3$). . .	4-II	-	1482	-	-	-	-	1484	-	-	-	-	-	-	-	-
Barium zirconate ($BaO \cdot ZrO_2$) .	4-II	-	-	-	-	-	-	1496	-	-	1498	-	-	-	-	-
Beetle	6-II	-	-	-	-	-	-	-	-	-	1002	-	-	-	-	-
Beryl	4-II	-	-	-	-	-	-	-	1225	-	1227	-	-	-	-	-
Beryllia	4-I	55	55	55	55	-	57	59	61	65	67	71	73-77	79-81	83	85
Beryllium (Be)	1	48	48	48	48	48	50	53	55	57	59	-	61	63	-	65
Beryllium QM-V	1	-	-	-	-	-	51	-	-	-	-	-	-	-	-	-
Beryllium + ΣX_i	2-II	841	-	-	-	-	-	843	845	-	847	-	-	-	-	-
Beryllium + Aluminum.	2-I	38	-	-	-	-	-	-	40	42	-	-	44	-	-	-
Beryllium + Aluminum + ΣX_i . .	2-II	-	-	-	-	-	-	-	-	-	833	-	-	-	-	-
Beryllium + Beryllium oxide cermet	6-II	751	-	-	-	751	-	753	757	-	762	-	-	-	-	764-766
Beryllium + Magnesium + ΣX_i .	2-II	835	-	-	-	-	837	-	839	-	-	-	-	-	-	-
Beryllium aluminate ($BeO \cdot Al_2O_2$)	4-II	-	-	-	-	-	-	979	-	-	981	-	-	-	-	-
Beryllium aluminosilicate ($3\ BeO \cdot Al_2O_3 \cdot 6\ SiO_2$)	4-II	-	-	-	-	-	-	-	1225	-	1227	-	-	-	-	-
Beryllium borides																
BeB	6-I	295	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BeB_2	6-I	-	296	-	-	-	-	-	-	-	-	-	-	-	-	-
BeB_4	6-I	-	296	-	-	-	-	-	-	-	-	-	-	-	-	-
BeB_6	6-I	295	296	-	-	-	-	-	-	-	-	-	-	-	-	-
BeB_9	6-I	-	296	-	-	-	-	-	-	-	-	-	-	-	-	-
Be_2B	6-I	295	296	-	-	-	-	-	-	-	-	-	-	-	-	-
Be_5B	6-I	-	296	-	-	-	-	-	-	-	-	-	-	-	-	-
Beryllium indium selenide ($InBeSe_3$)	6-I	-	-	-	-	-	-	-	329	-	-	-	-	-	-	-
Beryllium carbide (Be_2C) . . .	5	15	15	15	15	-	-	17	-	-	19	-	-	-	-	21
Beryllium carbide + ΣX_i	5	-	-	-	-	-	-	303	305	-	-	-	-	-	-	-
Beryllium cermet BM15	6-II	-	-	-	-	-	-	-	757	-	-	-	-	-	-	-
Beryllium cermet LYB 1102 . .	6-II	-	-	-	-	-	-		757	-	-	-	-	-	-	-
Beryllium cermet Y6825	6-II	-	-	-	-	-	-	-	757	-	-	-	-	-	-	-
Beryllium cermet Y6826	6-II	-	-	-	-	-	-	-	757	-	-	-	-	-	-	-
Beryllium cermet Y9384	6-II	-	-	-	-	-	-	-	757	-	-	-	-	-	-	-
Beryllium cermet YB1000 . . .	6-II	-	-	-	-	-	-	-	31	-	-	-	-	-	-	-
Beryllium cermet YB9052 . . .	6-II	-	-	-	-	-	-	753	757	-	762	-	-	-	-	-
Beryllium cermet YB9053 . . .	6-II	-	-	-	-	-	-	-	-	-	762	-	-	-	-	-
Beryllium cermet YB9054 . . .	6-II	-	-	-	-	-	-	75[illegible]	-	-	762	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Beryllium chromite ($BeO \cdot Cr_2O_3$)	4-II	-	-	-	-	-	-	-	-	-	1049	-	-	-	-	-
Beryllium fluoride (BeF_2) . . .	5	351	351	351	351	351	-	-	-	-	-	-	-	-	-	353
Beryllium nitrides																
Be_3N_2	5	-	495	495	495	-	-	-	497	-	-	-	-	-	-	-
Be_3N_4	5	-	495	-	-	-	-	-	-	-	-	-	-	-	-	-
Beryllium oxides																
Beryllium oxide (BeO) . . .	4-I	55	55	55	55	-	57	59	61	65	67	71	73-77	79-81	83	85
BD-98	4-I	-	-	-	-	-	-	-	61	65	-	-	77	-	-	-
UOX grade	4-I	-	-	-	-	-	-	-	61	-	-	-	-	-	-	-
Beryllium oxide + Aluminum oxide + Magnesium oxide . . .	4-I	-	-	-	-	-	-	-	-	-	645	-	-	-	-	-
Beryllium oxide + Aluminum oxide + Thorium (di-)oxide . .	4-I	-	-	-	-	-	-	-	647	-	649	-	-	-	-	-
Beryllium oxide + Aluminum oxide + Thorium (di-)oxide + + Magnesium oxide.	4-I	-	-	-	-	-	-	-	651	-	-	-	-	-	-	-
Beryllium oxide + Aluminum oxide + Zirconium (di-)oxide .	4-I	-	-	-	-	-	-	-	653	-	-	-	-	-	-	-
Beryllium oxide + Aluminum oxide + Zirconium (di-)oxide + + Magnesium oxide.	4-I	-	-	-	-	-	-	-	655	-	-	-	-	-	-	-
Beryllium oxide + Beryllium cermet	6-II	-	-	-	-	751	-	755	760	-	762	-	-	-	-	-
Beryllium oxide + Beryllium + +Molybdenum cermet.	6-II	-	-	-	-	-	-	768	770	-	772	-	-	-	-	-
Beryllium oxide + Beryllium + + Silicon cermet	6-II	-	-	-	-	-	-	-	774	-	776	-	-	-	-	-
Beryllium oxide + Magnesium oxide + Aluminum oxide . . .	4-I	-	-	-	-	-	-	-	657	-	-	-	-	-	-	-
Beryllium oxide + Magnesium oxide + Aluminum oxide + + Thorium (di-)oxide	4-I	-	-	-	-	-	-	-	659	-	-	-	-	-	-	-
Beryllium oxide + Magnesium oxide + Aluminum oxide + + Zirconium (di-)oxide. . . .	4-I	-	-	-	-	-	-	-	661	-	-	-	-	-	-	-
Beryllium oxide + Magnesium oxide + Zirconium (di-)oxide + + Aluminum oxide	4-I	-	-	-	-	-	-	-	663	-	-	-	-	-	-	-
Beryllium oxide + Molybdenum cermet	6-II	-	-	-	-	-	-	778	-	-	-	-	-	-	-	-
Beryllium oxide + Molybdenum beryllide	5	-	-	-	-	-	-	759	-	-	-	-	-	-	-	-
Beryllium oxide + Niobium cermet	6-II	780	-	-	-	-	-	-	-	-	782	-	-	-	-	-
Beryllium oxide + Niobium beryllide	5	-	-	-	-	-	-	761	-	-	-	-	-	-	-	-
Beryllium oxide + Tanatlum beryllide	5	-	-	-	-	-	-	763	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Beryllium oxide + Thorium (di-)oxide + Aluminum oxide	4-I	-	-	-	-	-	-	-	-	-	665	-	-	-	-	-
Beryllium oxide + Titanium beryllide	5	-	-	-	-	-	-	765	-	-	-	-	-	-	-	-
Beryllium oxide + Uranium (di-)oxide	4-I	-	-	-	-	-	-	-	667	-	-	-	-	-	-	-
Beryllium oxide + Zirconium beryllide	5	-	-	-	-	-	-	767	-	-	-	-	-	-	-	-
Beryllium oxide + Zirconium (di-)oxide + Magnesium oxide + + Aluminum oxide	4-I	-	-	-	-	-	-	-	669	-	-	-	-	-	-	-
Beryllium oxide porcelain type 4811	5	1003	-	-	-	-	-	-	1017	-	-	-	-	-	-	-
Beryllium silicate ($2\ BeO \cdot SiO_2$).	4-II										1223					
Beryllium sulfide (BeS)	5	653	653	-	-	-	-	-	-	-	-	-	-	-	-	655
Beryllium titanates																
$BeO \cdot TiO_2$	4-II	-	-	-	-	-	-	-	-	-	1408	-	-	-	-	-
$2\ BeO \cdot TiO_2$	4-II	-	-	-	-	-	-	-	-	-	1408	-	-	-	-	-
$4\ BeO \cdot TiO_2$	4-II	-	-	-	-	-	-	-	-	-	1408	-	-	-	-	-
$6\ BeO \cdot TiO_2$	4-II	-	-	-	-	-	-	-	-	-	1408	-	-	-	-	-
Bismuth-cerium intermetallics																
BiCe	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-
$BiCe_3$	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-
Bi_3Ce_4	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-
Bismuth selenide tellurides ($Bi_2Te_{3-x}Se_x$)	6-I	-	-	-	-	-	564	-	566	-	-	-	-	-	-	-
Bismuth stannate ($Bi_2O_3 \cdot 3\ SnO_2$)	4-II								1357							
Bismuth telluride (Bi_2Te_3) . . .	6-I	553	553	-	-	-	555	557	559	561	-	-	-	-	-	-
Bismuth telluride + Bismuth selenide	6-I	-	-	-	-	-	711	-	713	-	-	-	-	-	-	-
Bismuth tellurium sulfide (Bi_2Te_2S)	5	-	-	-	-	-	657	-	659	-	-	-	-	-	-	-
Boral clad with boron carbide. .	5	979	-	-	-	-	-	981	-	-	-	-	-	-	-	-
Borate glasses	4-II	1605	-	-	-	-	1607	-	-	-	1609-1633	-	-	-	-	-
Borolites																
Borolite	6-II	842	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Borolite I, grade F	6-II	-	-	-	-	-	-	846	-	-	-	-	-	-	-	-
Borolite I, grade G	6-II	-	-	-	-	-	844	-	-	-	850	-	-	-	-	-
Borolite I, grade S	6-II	-	-	-	-	-	844	846	-	-	-	-	-	-	-	-
Borolite IV	6-II	913	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron (B)	1	67	67	-	67	67	69	71	-	-	-	-	-	-	-	73
Boron coating on molybdenum .	6-II	-	-	-	-	-	-	-	-	-	-	-	1289	-	-	-
Boron coating on niobium-zirconium alloys	6-II	-	-	-	-	-	-	-	-	-	-	-	1291	-	-	-
Boron + ΣX_i	2-II	849	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Boron + Iron	2-I	-	-	-	-	46	-	-	-	-	-	-	-	-	-	48
Boron + Silicon	2-I	-	-	-	-	-	50	-	-	-	-	-	-	-	-	-
Boron aluminate (2 $B_2O_3 \cdot 9\ Al_2O_3$)	4-II	-	-	-	-	-	-	-	-	-	983	-	-	-	-	-
Boron carbide (B_4C)	5	25	23	-	-	-	-	27	29	31	33	-	35	-	-	37
Boron carbide clad with aluminum	5	979	-	-	-	-	-	981	-	-	-	-	-	-	-	-
Boron carbide coating on Inconel X	6-II	-	-	-	-	-	-	-	-	-	-	-	1403	1405	-	-
Boron carbide + Iron cermet . .	6-II	928	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron oxide (B_2O_3)	4-I	-	-	-	-	-	-	87	-	-	-	-	-	-	-	89
Boron oxide glass	4-II	-	-	-	-	-	-	1635	-	-	-	-	-	-	-	-
Boron nitride (BN)	5	499	499	-	499	-	501	503	505	-	507	-	509-513	515	-	-
Boron nitride + Boron oxide . .	5	-	-	-	-	-	832	834	836	-	838	-	-	-	-	-
Boron nitride + Graphite	5	-	-	-	-	-	-	828	830	-	-	-	-	-	-	-
Boron phosphide (BP)	5	-	635	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron silicides																
B_4Si	6-I	-	-	-	-	-	-	-	-	-	-	-	375-377	379	-	-
B_6Si	6-I	-	-	-	-	-	-	-	-	-	-	-	375-377	379	-	-
Borosilicate glass	4-II	1693	1693	-	-	-	1695	1697	1699	1701	1703	-	1705-1707	1709	1711-1713	-
Brass	2-I	-	-	-	-	-	170	172	-	174	-	-	178-180	182	-	-
	2-II								1000							
Brass, aluminum	2-II	-	-	-	-	-	-	-	-	-	1004	-	-	-	-	-
Brass, free cutting leaded . . .	2-I	168	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brass, red	2-II	-	-	-	-	-	-	-	-	-	1002	-	-	-	-	-
Brass, yellow	2-I	-	-	-	-	-	-	-	-	174	-	-	176	-	-	-
	2-II								1000							
Brazing alloy																
GE-62	2-II	-	-	-	-	-	-	-	-	-	1168	-	-	-	-	-
GEH62-V	2-II	-	-	-	-	-	-	1130	-	-	-	-	-	-	-	-
GE-76	2-II	-	-	-	-	-	-	-	-	-	1378	-	-	-	-	-
Bricks																
Bricks	5	-	-	-	-	-	1029	-	1031-1033	-	1035-1037	-	1039-1043	-	-	-
Chrome-magnesite	5	-	-	-	-	-	1029	-	-	-	-	-	1039	-	-	-
Chromomagnesite	4-I	-	-	-	-	-	-	-	741	-	-	-	-	-	-	-
Forsterite	5	-	-	-	-	-	1029	-	1033	-	-	-	-	-	-	-
K-30 insulating	5	-	-	-	-	-	-	-	-	-	1035	-	-	-	-	-
Magnesia	5	-	-	-	-	-	1029	-	-	-	-	-	-	-	-	-
Magnesite	4-I	-	-	-	-	-	-	-	743	733, 737	-	-	-	-	-	-

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Bricks (cont.)																
Magnesite-chrome	5	-	-	-	-	-	1029	-	-	-	-	-	-	-	-	-
Magnesite "hu"	5	-	-	-	-	-	-	-	1033	-	-	-	-	-	-	-
Mica	5	-	-	-	-	-	-	-	989	-	-	-	-	-	-	-
Mica, white	5	-	-	-	-	-	-	-	989	-	-	-	-	-	-	-
Silica	4-I	-	-	-	-	-	-	-	816	363, 796, 818	-	-	-	-	-	-
. . . .	5	-	-	-	-	-	-	-	-	-	1037	-	1041	-	-	-
Silicon carbide	5	-	-	-	-	-	-	-	125	-	-	-	-	-	-	-
Sillimanite	4-I	-	-	-	-	-	-	-	615	-	-	-	-	-	-	-
Vermiculite insulating. . . .	5	-	-	-	-	-	-	-	989	-	-	-	-	-	-	-
Bromyrite	5	-	-	-	-	-	-	-	-	9	-	-	-	-	-	-
Bronze	2-I	154	-	-	-	-	156	-	-	-	-	-	162	-	-	-
. . . .	2-II	-	-	-	-	-	-	-	-	-	998	-	-	-	-	-
Bronze, aluminum	2-II	-	-	-	-	-	-	-	-	-	950	952	954-958	960	-	-
Bronze, lead	2-II	-	-	-	-	-	-	-	-	-	976	-	-	-	-	-
Bronze, phosnic	2-II	-	-	-	-	-	-	-	-	-	988	-	-	-	-	-
Bronze, silicon	2-II	-	-	-	-	-	-	-	-	-	994	-	-	-	-	-
Bronze, tellurium-aluminum . .	2-II	-	-	-	-	-	-	-	-	-	950	-	-	-	-	-
Bronze, Tin-Zinc	2-II	-	-	-	-	-	-	-	-	-	998	-	-	-	-	-
Buna S	6-II	-	-	-	-	-	-	-	-	1066	-	-	-	-	-	-
Butadiene-acrylonitrile copolymer	6-II	-	-	-	-	-	-	1054	-	1060	-	-	-	-	-	-
Butyl GR-1	6-II	-	-	-	-	-	-	-	-	1062	-	-	-	-	-	-
C																
CA-2, carbide tool steel	6-II	-	-	-	-	-	-	-	889	-	-	-	-	-	-	-
CA-4, carbide tool steel	6-II	-	-	-	-	-	-	-	889	-	-	-	-	-	-	-
Cadmium (Cd)	1	-	-	-	-	-	-	-	-	-	-	-	75	-	-	-
Cadmium + Silver	2-I	-	52	52	-	-	-	-	-	-	-	-	-	54	-	-
Cadmium lead silicate glass . .	4-II	-	-	-	-	-	1731	-	-	-	-	-	-	-	-	-
Cadmium oxides																
CdO	4-I	91	91	-	-	91	-	93	-	-	-	-	-	-	-	97
Cd_2O_3	4-I	-	-	-	-	-	-	-	-	-	95	-	-	-	-	-
Cadmium sulfide (CdS)	5	-	-	-	-	-	661	663	-	-	-	-	665	-	-	-
Cadmium telluride (CdTe) . . .	6-I	-	-	-	-	-	568	570	-	-	-	-	-	-	-	-
Calcia	4-I	99	99	-	-	-	101	103	105	-	107	-	-	-	-	109
Calcium (Ca)	1	-	77	77	-	-	79	-	-	-	-	-	-	-	-	81
Calcium + Magnesium	2-I	-	56	-	-	-	58	-	-	-	-	-	-	-	-	-

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Calcium aluminates																
$CaO \cdot Al_2O_3$	4-II	-	-	-	-	-	-	987	-	-	-	-	-	-	-	-
$CaO \cdot 2\ Al_2O_3$	4-II	985	985	-	-	-	-	987	-	-	-	-	-	-	-	-
$CaO \cdot 6\ Al_2O_3$	4-II	-	-	-	-	-	-	-	-	-	991	-	-	-	-	-
$3\ CaO \cdot Al_2O_3$	4-II	-	-	-	-	-	-	987	-	-	-	-	-	-	-	-
$3\ CaO \cdot 5\ Al_2O_3$	4-II	-	-	-	-	-	-	-	-	-	989	-	-	-	-	-
$12\ CaO \cdot 7\ Al_2O_3$	4-II	-	-	-	-	-	-	987	-	-	-	-	-	-	-	-
Calcium aluminate + Molybdenum disilicide cermet	6-II	-	-	-	-	-	-	-	-	-	784	-	-	-	-	-
Calcium aluminum silicates																
$CaO \cdot Al_2O_3 \cdot 2\ SiO_2$	4-II	-	-	-	-	-	-	1233	-	-	1235	-	-	-	-	-
$2\ CaO \cdot Al_2O_3 \cdot SiO_2$	4-II	-	-	-	-	-	-	1233	-	-	1235	-	-	-	-	-
$2\ CaO \cdot 2\ Al_2O_3 \cdot 8\ SiO_2 \cdot 7\ H_2O$	4-II	-	-	-	-	-	-	1233	-	-	-	-	-	-	-	-
Calcium barium cerium titanate $[(Ba_{1-x-y}Ca_xCe_y)O \cdot TiO_2]$ . .	4-II	-	-	-	-	-	1420	-	-	-	-	-	-	-	-	-
Calcium borates																
$CaO \cdot B_2O_3$	4-II	-	1037	1037	-	-	-	1039	-	-	-	-	-	-	-	-
$CaO \cdot 2\ B_2O_3$	4-II	-	1037	1037	-	-	-	1039	-	-	-	-	-	-	-	-
$2\ CaO \cdot B_2O_3$	4-II	-	1037	1037	-	-	-	1039	-	-	-	-	-	-	-	-
$3\ CaO \cdot B_2O_3$	4-II	-	1037	1037	-	-	-	1039	-	-	-	-	-	-	-	-
Calcium borate glass	4-II	-	-	-	-	-	-	-	-	-	1613	-	-	-	-	-
Calcium (hexa-)boride (CaB_6) .	6-I	-	296	-	-	-	300	-	-	-	302	-	-	-	-	-
Calcium carbide + Calcium oxide	5	-	-	-	-	-	-	805	-	-	-	-	-	-	-	-
Calcium carbonate ($CaCO_3$). . .	4-II	-	-	-	-	-	-	-	-	-	-	-	-	1045	-	-
Calcium copper silicate ($CaO \cdot CuO \cdot 4\ SiO_2$).	4-II	-	-	-	-	-	-	-	-	-	1238	-	-	-	-	-
Calcium ferrites																
$CaO \cdot Fe_2O_3$	4-II	-	-	-	-	-	-	1069	-	-	-	-	-	-	-	-
$2\ CaO \cdot Fe_2O_3$	4-II	-	-	-	-	-	-	1069	-	-	-	-	-	-	-	-
Calcium fluoride (CaF_2)	5	355	355	-	-	-	-	-	357	-	359	-	-	361	-	-
Calcium hafnate ($CaO \cdot HfO_2$) . .	4-II	1107	1107	-	-	-	-	-	-	-	1109	-	-	-	-	-
Calcium lanthanum manganese oxide ($La_xCa_{1-x}MnO_3$)	4-II	-	-	-	-	-	1129	-	1131	-	-	-	-	-	-	-
Calcium-lead intermetallics (Ca_2Pb)	6-I	-	-	-	-	-	-	-	646	-	-	-	-	-	-	-
Calcium lead silicate glass. . .	4-II	-	-	-	-	-	1733	-	-	-	-	-	-	-	-	-
Calcium magnesium silicates																
$CaO \cdot MgO \cdot 2\ SiO_2$.	4-II	-	-	-	-	-	-	1239	-	-	-	-	-	-	-	-
$2\ CaO \cdot MgO \cdot 2\ SiO_2$.	4-II	-	-	-	-	-	-	1239	-	-	-	-	-	-	-	-
$3\ CaO \cdot MgO \cdot 2\ SiO_2$.	4-II	-	-	-	-	-	-	1239	-	-	-	-	-	-	-	-
$2\ CaO \cdot 5\ MgO \cdot 8\ SiO_2 \cdot 2\ H_2O$.	4-II	-	-	-	-	-	-	1239	-	-	-	-	-	-	-	-
Calcium molybdate ($CaO \cdot MoO_3$)	4-II	-	-	-	-	-	-	1111	-	-	-	-	-	-	-	-
Calcium nitrides																
CaN	5	-	621	-	-	-	-	-	-	-	-	-	-	-	-	-
Ca_3N_2	5	-	621	-	-	-	-	-	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Calcium oxide (CaO)	4-I	99	99	-	-	-	101	103	105	-	107	-	-	-	-	109
Calcium oxide + Titanium (di-) oxide	4-I	-	-	-	-	-	-	-	-	-	671	-	-	-	-	-
Calcium selenides (CaSe)	6-I	-	365	-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium silicates																
$CaO \cdot SiO_2$	4-II	-		-	-	-	-	1229	-	-	1231	-	-	-	-	-
$2\ CaO \cdot SiO_2$	4-II	-	-	-	-	-	-	1229	-	-	1231	-	-	-	-	-
$3\ CaO \cdot SiO_2$	4-II	-	-	-	-	-	-	1229	-	-	-	-	-	-	-	-
Calcium silicate glass	4-II	-	-	-	-	-	-	-	-	-	-	-	-	-	1729	-
Calcium silicides																
CaSi	6-I	-	523	-	-	-	-	-	-	-	-	-	-	-	-	-
$CaSi_2$	6-I	-	523	-	-	-	-	-	-	-	-	-	-	-	-	-
Ca_2Si	6-I	-	523	-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium stannate ($CaO \cdot SnO_2$)	4-II	-	-	-	-	-	-	-	1359	-	-	-	-	-	-	-
Calcium strontium barium cerium titanate $[(Ba_{1-x-y-z}Ca_xSr_yCe_z)O \cdot TiO_2]$	4-II	-	-	-	-	-	1422	-	-	-	-	-	-	-	-	-
Calcium titanates																
$CaO \cdot TiO_2$	4-II	1410	1410	-	-	-	1412	1414	1416	-	1418	-	-	-	-	-
$3\ CaO \cdot 2\ TiO_2$	4-II	-	-	-	-	-	-	1414	-	-	1418	-	-	-	-	-
Calcium titanate coating on niobium-zirconium alloy	6-II	-	-	-	-	-	-	-	-	-	-	-	1371	-	-	-
Calcium tungstate ($CaO \cdot WO_3$)	4-II	-	-	-	-	-	-	1472	-	-	-	-	-	-	-	-
Calcium uranate ($CaO \cdot UO_3$)	4-II	-	1482	-	-	-	-	1486	-	-	-	-	-	-	-	-
Calcium vanadates																
$CaO \cdot V_2O_5$	4-II	-	-	-	-	-	-	1488	-	-	-	-	-	-	-	-
$2\ CaO \cdot V_2O_5$	4-II	-	-	-	-	-	-	1488	-	-	-	-	-	-	-	-
$3\ CaO \cdot V_2O_5$	4-II	-	-	-	-	-	-	1488	-	-	-	-	-	-	-	-
Calcium zirconate ($CaO \cdot ZrO_2$)	4-II	1502	1502	-	-	-	-	1504	-	-	1506	-	-	-	-	-
Carbide tool steels	6-II	-	-	-	-	-	-	-	889	-	-	-	-	-	-	-
Carbofrax	5	-	-	-	-	-	-	-	307	-	-	-	309-311	-	-	-
Carboloy 44A	6-II	887	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carboloy 55A	6-II	887	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbons																
Carbon (C)	1	83	-	-	-	83	85	-	87	-	-	-	91-93	95	-	-
Amorphous	1	-	-	-	-	-	83	-	87	-	-	-	-	-	-	-
GA grade	1	-	-	-	-	-	-	-	-	-	-	-	91	95	-	-
Pyrolytic	1	83	-	-	-	-	-	-	89	-	-	-	-	-	-	-
Carbon coating on molybdenum	6-II	-	-	-	-	-	-	-	-	-	-	1293	1295	-	-	-
Carbon electrode	1	-	-	-	-	-	85	-	87	-	-	-	-	-	-	-
Carbon impregnated graphite	1	-	-	-	-	-	-	-	358	-	-	-	-	-	-	-
Carbon-phenolic laminate MX-4926	6-II	-	-	-	-	-	-	1134	-	-	-	-	-	-	-	-

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Carbon steels	3	-	-	-	-	3	5, 312	7-10	-	12-14	16-20	-	-	-	-	22
Carbonyl nickel	1	-	694	-	-	-	-	-	-	-	-	-	-	-	-	-
Cast iron	3	27	-	-	-	-	-	-	29-37, 437	-	39-41, 444	-	-	-	-	-
Cast iron, gray (see grey cast iron)																
Cast iron, nodular (see Nodular cast iron)																
Castolite	6-II	974	-	-	-	-	-	-	976	1082	978	-	-	-	-	-
Catalin	6-II	-	-	-	-	-	-	-	-	-	986	-	-	-	-	-
Cellulose acetates	6-II	-	-	-	-	-	-	-	-	-	941	-	-	-	-	-
Cellulose acetate, expanded . .	6-II	-	-	-	-	-	-	-	939	-	-	-	-	-	-	-
Cellulose acetate butyrate . . .	6-II	-	-	-	-	-	-	-	-	-	946	-	-	-	-	-
Cellulose propionate	6-II	-	-	-	-	-	-	-	-	-	944	-	-	-	-	-
Cement-barytes aggregate . . .	5	-	-	-	-	-	-	1023	1025	-	-	-	-	-	-	-
Ceramic laminate	6-II	-	-	-	-	-	-	-	-	-	1225	-	-	-	-	-
Cercor	4-II	-	-	-	-	-	-	-	-	1591	-	-	-	-	-	-
Ceria	4-I	111	111	-	-	-	113	115	119	-	121	-	124-128	-	-	-
Cerium (Ce)	1	402	402	402	402	402	404	406	-	-	-	-	-	-	-	408
Cerium + ΣX_i	2-II	-	853	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium + Neodymium	2-I	-	-	-	-	-	-	-	-	-	60	-	-	-	-	-
Cerium + Silicon + ΣX_i	2-II	-	851	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium aluminate ($2CeO \cdot 3Al_2O_3$)	4-II	-	-	-	-	-	-	-	-	-	993	-	-	-	-	-
Cerium aluminides																
$CeAl$	6-I	-	43	-	-	-	-	-	-	-	-	-	-	-	-	-
$CeAl_2$	6-I	-	43	-	-	-	-	-	-	-	-	-	-	-	-	-
$CeAl_4$	6-I	-	43	-	-	-	-	-	-	-	-	-	-	-	-	-
Ce_3Al_2	6-I	-	43	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium aluminum silicides ($Ce_2Al_3Si_2$)	6-I	523	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium-bismuth intermetallics ($CeBi$)	6-I	662	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium borides																
CeB_4	6-I	296	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CeB_6	6-I	295, 296	296	-	-	-	300	-	-	-	302	-	-	-	-	-
Cerium (tri-)bromide ($CeB4_3$) .	5	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium-cadmium intermetallics																
$CeCd$	6-I	662	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$CeCd_2$	6-I	662	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$CeCd_3$	6-I	662	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$CeCd_{11}$	6-I	662	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Cerium carbides																
CeC_2	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ce_2C_3	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium (tri-)chloride ($CeCl_3$) .	5	339	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium-cobalt intermetallics																
$CeCo_2$	6-I	662	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$CeCo_5$	6-I	662	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium-copper intermetallics																
CeCu	6-I	-	663	-	-	-	-	-	-	-	-	-	-	-	-	-
$CeCu_2$	6-I	-	663	-	-	-	-	-	-	-	-	-	-	-	-	-
$CeCu_4$	6-I	-	663	-	-	-	-	-	-	-	-	-	-	-	-	-
$CeCu_6$	6-I	-	663	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium (tri-)fluoride (CeF_3). .	5	363	363	-	-	-	-	365	-	-	-	-	-	-	-	-
Cerium-gallium intermetallics ($CeGa_2$)	6-I	662	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium-gold intermetallics																
CeAu	6-I	-	662	-	-	-	-	-	-	-	-	-	-	-	-	-
$CeAu_2$	6-I	-	662	-	-	-	-	-	-	-	-	-	-	-	-	-
$CeAu_3$	6-I	-	662	-	-	-	-	-	-	-	-	-	-	-	-	-
Ce_2Au	6-I	-	662	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium hydride (CeH_2).	5	467	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium-indium intermetallics ($CeIn_3$)	6-I	662	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium (tri-)iodide (CeI_3) . . .	5	-	477	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium-lead intermetallics																
$CePb_3$	6-I	662	663	-	-	-	-	-	-	-	-	-	-	-	-	-
Ce_2Pb	6-I	-	663	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium-magnesium intermetallics																
CeMg	6-I	662	663	-	-	-	-	-	-	-	-	-	-	-	-	-
$CeMg_3$	6-I	-	663	-	-	-	-	-	-	-	-	-	-	-	-	-
$CeMg_9$	6-I	-	663	-	-	-	-	-	-	-	-	-	-	-	-	-
Ce_4Mg	6-I	-	663	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium-mercury intermetallics (CeHg)	6-I	662	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium-nickel intermetallics																
$CeNi_2$	6-I	662	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$CeNi_3$	6-I	662	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$CeNi_5$	6-I	662	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ce_2Ni_7	6-I	662	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium nitride (CeN)	5	621	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium-osmium intermetallics ($CeOs_2$)	6-I	662	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Cerium oxides																
CeO	4-I	111	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CeO_2	4-I	111	111	-	-	-	113	115	119	-	121	-	124-128	-	-	-
Ce_2O_3	4-I	111	-	-	-	-	-	117	-	-	-	-	-	-	-	-
Cerium (di-)oxide + Magnesium oxide	4-I	-	-	-	-	-	-	-	673	-	-	-	-	-	-	-
Cerium (di-)oxide + Uranium oxides	4-I	675	-	-	-	-	-	-	677	-	-	-	-	-	-	-
Cerium phosphide (CeP)	5	635	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium-platinum intermetallics ($CePt_2$)	6-I	662		-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium selenides																
CeSe	6-I	365	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ce_3Se_4	6-I	365	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium silicide ($CeSi_2$)	6-I	523	523-524	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium-silver intermetallics																
CeAg	6-I	662	662	-	-	-	-	-	-	-	-	-	-	-	-	-
$CeAg_2$	6-I	-	662	-	-	-	-	-	-	-	-	-	-	-	-	-
$CeAg_3$	6-I	-	662	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium stannides																
$CeSn_3$	6-I	-	541	-	-	-	-	-	-	-	-	-	-	-	-	-
Ce_2Sn	6-I	-	541	-	-	-	-	-	-	-	-	-	-	-	-	-
Ce_2Sn_3	6-I	-	541	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium sulfides																
CeS	5	667	667	-	-	-	670	672	674	-	676	-	-	-	-	678
CeS_2	5	667	667	-	-	-	-	-	-	-	-	-	-	-	-	-
Ce_2S_3	5	667	667	-	-	-	-	672	674	-	676	-	-	-	-	-
Ce_3S_4	5	667	667	-	-	-	-	-	-	-	-	-	-	-	-	678
Cerium tellurides																
$CeTe_2$	6-I	636	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ce_3Te_4	6-I	636	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium-thallium intermetallics																
CeTl	6-I	-	663	-	-	-	-	-	-	-	-	-	-	-	-	-
$CeTl_3$	6-I	-	663	-	-	-	-	-	-	-	-	-	-	-	-	-
Ce_2Tl	6-I	-	663	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium vanadate ($Ce_2O_3 \cdot V_2O_5$) .	4-II	-	-	-	-	-	-	-	-	-	1490	-	-	-	-	-
Cermets (also see individual cermets)																
Aluminum-chromium-molybdenum cermets	6-II	930	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum-nickel-titanium cermets	6-II	925	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Cermets (also see individual cermets) (cont.)																
Aluminum oxide + Aluminum cermet	6-II	-	-	-	-	-	-	-	-	-	729	-	-	-	-	-
Aluminum oxide + Chromium cermet	6-II	731	-	-	-	-	-	-	911	-	733	-	735	-	-	-
Aluminum oxide + Chromium + + Molybdenum cermet . .	6-II	737	-	-	-	-	-	-	-	-	739	-	-	-	-	-
Aluminum oxide + Iron cermet	6-II	-	-	-	-	-	-	-	-	-	741	-	-	-	-	-
Aluminum oxide + Titanium (di-)oxide + Chromium + + Molybdenum cermet . . .	6-II	-	-	-	-	-	-	-	-	-	-	-	747	-	-	-
Aluminum oxide + Tungsten + + Chromium cermet	6-II	-	-	-	-	-	-	-	-	-	743	-	745	-	-	-
Barium oxide + Strontium oxide + Zirconium cermet. .	6-II	-	-	-	-	-	-	-	911	-	-	-	-	-	-	-
Beryllium + Beryllium oxide cermet	6-II	751	-	-	-	751	-	753	757	-	762	-	-	-	-	764-766
Beryllium oxide + Beryllium cermet	6-II	-	-	-	-	751	-	755	760	-	762	-	-	-	-	-
Beryllium oxide + Beryllium + + Molybdenum cermet . . .	6-II	-	-	-	-	-	-	768	770	-	772	-	-	-	-	-
Beryllium oxide + Beryllium + + Silicon cermet	6-II	-	-	-	-	-	-	-	774	-	776	-	-	-	-	-
Beryllium oxide + Molybdenum cermet	6-II	-	-	-	-	-	-	778	-	-	-	-	-	-	-	-
Beryllium oxide + Niobium cermet	6-II	780	-	-	-	-	-	-	-	-	782	-	-	-	-	-
Boron carbide + Iron cermet.	6-II	928	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium aluminate + Molybdenum (di-) silicide cermet	6-II	-	-	-	-	-	-	-	-	-	784	-	-	-	-	-
Chromium-molybdenum-silicon cermets	6-II	925	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium-silicon-titanium cermets	6-II	925	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium boride + Chromium-molybdenum intermetallic cermet	6-II	913	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium silicide cermets .	6-II	-	-	-	-	-	-	-	-	-	915	-	-	-	-	-
Chromium-titanium intermetallics + Copper cermets .	6-II	917	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium-titanium intermetallics + Molybdenum cermets	6-II	919	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt-chromium alloys + + Titanium (di-)boride cermet	6-II	930	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Cermets (also see individual cermets) (cont.)																
Europium oxide + Iron-chromium alloy cermet . . .	6-II	-	-	-	-	-	-	-	-	-	786	-	-	-	-	-
Hafnium carbide + Zirconium cermet	6-II	-	-	-	-	-	-	-	-	-	852	-	-	-	-	-
Magnesium oxide + Tungsten cermet	6-II	-	-	-	-	-	-	-	-	-	788	-	-	-	-	-
Molybdenum (di-) silicide + + Copper cermets	6-II	923	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum-silicon-titanium cermet	6-II	930	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silicon carbide + Magnesium oxide + Nickel aluminide cermet	6-II	-	-	-	-	-	-	-	-	-	854	-	-	-	-	-
Silicon carbide + Silicon cermet	6-II	-	-	-	-	-	-	-	856	-	-	-	-	-	-	-
Silicon (di-) oxide + Aluminum cermet	6-II	-	-	-	-	-	-	-	-	-	790	-	-	-	-	-
Sodium fluoride + Beryllium ferride cermet	6-II	-	-	-	-	-	-	-	911	-	-	-	-	-	-	-
Strontium titanate + Cobalt cermet	6-II	-	-	-	-	-	-	-	792	-	-	-	-	-	-	-
Tantalum carbide + Iron cermet	6-II	858	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tantalum carbide + Tungsten cermet	6-II	-	-	-	-	-	-	-	-	-	860	-	-	-	-	-
Thorium (di-) oxide + Tungsten cermet.	6-II	-	-	-	-	-	-	-	-	-	-	-	-	-	-	794
Titanium carbide + Cobalt cermet	6-II	862	-	-	-	-	-	-	911	-	864	-	-	-	-	-
Titanium carbide + Molybdenum + Tungsten cermet. .	6-II	-	-	-	-	-	-	-	-	-	866	-	-	-	-	-
Titanium carbide + Nickel cermet	6-II	868	-	-	-	-	-	871	873	-	875-877	-	-	-	-	-
Titanium carbide + Niobium carbide + Nickel cermet . .	6-II	-	-	-	-	-	-	-	911	-	-	-	-	-	-	-
Titanium carbide + Tungsten cermet	6-II	-	-	-	-	-	-	-	-	-	879	-	-	-	-	-
Titanium nitride + Chromium + + Titanium cermet	6-II	-	-	-	-	-	-	-	-	-	909	-	-	-	-	-
Titanium (mon-) oxide + + Chromium-titanium alloys cermet	6-II	-	-	-	-	-	-	-	-	-	796	-	-	-	-	-
Titanium tungsten (di-)carbide + Cobalt cermet . . .	6-II	-	-	-	-	-	-	-	-	-	881	-	-	-	-	-
Titanium tungsten (di-) carbide + Tantalum cermet . .	6-II	-	-	-	-	-	-	-	-	-	883	-	-	-	-	-
Tungsten carbide + Chromium-cobalt alloys cermet	6-II	-	-	-	-	-	-	-	-	-	895	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Cermets (also see individual cermets) (cont.)																
Tungsten carbide + Cobalt cermet	6-II	-	-	-	-	-	-	-	889	-	897-905	-	-	-	-	-
Tungsten carbide + Nickel cermet	6-II	-	-	-	-	-	-	-	-	-	907	-	-	-	-	-
Uranium (mono-) carbide + + Molybdenum cermet . . .	6-II	-	-	-	-	-	-	-	-	-	891	-	-	-	-	-
Uranium (mono-) carbide + + Uranium cermet	6-II	-	-	-	-	-	-	-	-	-	893	-	-	-	-	-
Uranium (di-) oxide + + Chromium cermet	6-II	-	-	-	-	-	798	-	800	-	802	-	-	-	-	-
Uranium (di-) oxide + + Molybdenum cermet . . .	6-II	-	-	-	-	-	804	-	806	-	808	-	-	-	-	-
Uranium (di-) oxide + + Niobium cermet	6-II	-	-	-	-	-	810	-	812	-	-	-	-	-	-	-
Uranium (di-) oxide + Stainless steel cermet	6-II	-	-	-	-	-	814	-	816	-	818	-	-	-	-	-
Uranium (di-) oxide + + Zirconium cermets	6-II	820	-	-	-	-	-	-	822	-	824	-	-	-	-	-
Zirconium (di-) boride cermet	6-II	842	-	-	-	-	844	846	848	-	850	-	-	-	-	-
Zirconium (di-) oxide + + Titanium cermet	6-II	-	-	-	-	-	-	826	828	830	832	-	-	-	-	-
Zirconium (di-) oxide + + Yttrium oxide + Zirconium cermet	6-II	-	-	-	-	-	-	-	834	-	-	-	-	-	-	-
Zirconium (di-) oxide + + Zirconium cermet	6-II	-	-	-	-	-	-	-	-	836	838	-	-	-	-	840
Cesium chloride (CsCl)	5	-	-	-	-	-	-	315	-	-	-	-	-	-	-	-
Chemaco 342	6-II	-	-	-	-	-	-	-	-	-	948	-	-	-	-	-
Chemaco 343	6-II	-	-	-	-	-	-	-	-	-	948	-	-	-	-	-
Chemaco 344	6-II	-	-	-	-	-	-	-	-	-	948	-	-	-	-	-
Chemaco 345	6-II	-	-	-	-	-	-	-	-	-	948	-	-	-	-	-
Chemaco 346	6-II	-	-	-	-	-	-	-	-	-	948	-	-	-	-	-
Chemaco SPZ 325	6-II	-	-	-	-	-	-	-	-	-	941	-	-	-	-	-
Chemaco SPZ 326	6-II	-	-	-	-	-	-	-	-	-	941	-	-	-	-	-
Chemaco SPZ 327	6-II	-	-	-	-	-	-	-	-	-	941	-	-	-	-	-
Chemaco SPZ 327-MS	6-II	-	-	-	-		-	-	-	-	941	-	-	-	-	-
Chemaco SPZ 329	6-II	-	-	-	-	-	-	-	-	-	941	-	-	-	-	-
Chemaco SPZ 330	6-II	-	-	-	-	-	-	-	-	-	941	-	-	-	-	-
Chemaco SPZ 331	6-II	-	-	-	-	-	-	-	-	-	941	-	-	-	-	-
Chemaco SPZ 332	6-II	-	-	-	-	-	-	-	-	-	941	-	-	-	-	-
Chloromethyoxetane, 3, 3 bis- .	6-II	-	1076	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromalloy W-2 coating on molybdenum-titanium alloys .	6-II	-	-	-	-	-	-	-	-	-	-	-	1505-1509	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Chromium (Cr)	1	410	410	-	-	410	412	414	416	418	420	-	422-426	428-432	-	434
Chromium, electrolytic	1	-	-	-	-	-	412	-	416	-	420	-	-	-	-	-
Chromium + ΣX_i	2-II	873	-	-	-	873	875	-	877	-	-	-	-	-	-	-
Chromium + Aluminum + ΣX_i . .	2-II	-	-	-	-	-	-	855	-	-	-	-	-	-	-	-
Chromium + Iron	2-I	-	62	-	-	-	64	66	-	-	-	-	-	-	-	-
Chromium + Iron + ΣX_i	2-II	857	-	-	-	-	-	859	-	-	861	-	-	-	-	-
Chromium + Molybdenum . . .	2-I	-	-	-	-	-	-	-	-	-	68	-	-	-	-	-
Chromium + Molybdenum + ΣX_i .	2-II	863	-	-	-	-	-	-	-	-	865	-	-	-	-	-
Chromium + Nickel	2-I	-	-	-	-	-	-	-	-	-	70	-	-	-	-	-
Chromium + Nickel + ΣX_i . . .	2-II	-	867	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium + Silicon	2-I	72	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium + Silicon + ΣX_i . . .	2-II	869	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium + Tungsten	2-I	74	-	-	-	-	-	-	-	-	76	-	-	-	-	-
Chromium + Tungsten + ΣX_i . .	2-II	871	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium alloys (special designations)																
Ferrochromium	2-II	-	-	-	-	-	-	859	-	-	-	-	-	-	-	-
Aluminothermic chromium .	2-II	-	-	-	-	-	-	859	-	-	-	-	-	-	-	-
Chromium aluminides																
CrAl	6-I	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-
$CrAl_3$	6-I	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-
Cr_3Al	6-I	-	3	-	-	-	-	-	-	-	5	-	-	-	-	-
Chromium beryllide ($CrBe_2$) . .	6-I	-	158	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium borides																
CrB	6-I	164	164	-	-	-	-	166	-	-	-	-	-	-	-	-
CrB_2	6-I	164	164	-	-	-	-	166	-	-	168	-	-	-	-	-
Cr_2B	6-I	-	164	-	-	-	-	-	-	-	-	-	-	-	-	-
Cr_3B_4	6-I	-	164	-	-	-	-	-	-	-	-	-	-	-	-	-
Cr_4B	6-I	-	164	-	-	-	-	-	-	-	-	-	-	-	-	-
Cr_5B_3	6-I	-	164	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium (di-)boride + + Chromium-molybdenum intermetallic cermet	6-II	913	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium (di-)boride + + Titanium (di-)boride	6-I	723	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium (di-)boride + + Vanadium (di-)boride . . .	6-I	723	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium carbides																
CrC	5	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-
Cr_3C_2	5	39	39	-	-	-	-	41	-	-	45	-	-	-	-	-
Cr_4C	5	-	-	-	-	-	-	43	-	-	-	-	-	-	-	-
Cr_6C_2	5	-	-	-	-	-	-	43	-	-	-	-	-	-	-	-
Cr_7C_3	5	-	39	-	-	-	-	43	-	-	-	-	47	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Chromium carbides (cont.)																
$Cr_{23}C_6$	5	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium carbide-cobalt blend on iron	6-II	-	-	-	-	-	-	-	-	-	-	1407	1409	-	-	-
Chromium-molybdenum silicides																
$(Cr, Mo)Si_2$	6-I	523	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$(Cr, Mo)_3Si$	6-I	523	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium-molybdenum-silicon cermets	6-II	925	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium-niobium intermetallics (Cr_2Nb)	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium nitrides																
CrN	5	-	621	-	-	-	-	-	-	-	-	-	-	-	-	-
Cr_2N	5		621													
Chromium (sesqui-)oxide (Cr_2O_3)	4-I	-	-	-	-	-	130	132	-	-	134	-	136-138	140	-	-
Chromium (sesqui-)oxide + + Aluminum oxide	4-I	-	-	-	-	-	679	-	-	-	681	-	683	-	-	-
Chromium (sesqui-)oxide + + Molybdenum (di-)silicide . .	5	-	-	-	-	-	-	-	-	-	-	-	769	-	-	-
Chromium (sesqui-)oxide + + Nickel (mon-)oxide	4-I	-	-	-	-	-	685	-	-	-	-	-	-	-	-	-
Chromium (sesqui-)oxide + + Niobium (pent-)oxide	4-I	-	-	-	-	-	687	-	-	-	-	-	-	-	-	-
Chromium (sesqui-)oxide + + Titanium-chromium intermetallics	5	-	-	-	-	-	-	-	-	-	-	-	771-773	775	-	-
Chromium (sesqui-)oxide + + Yttrium oxide	4-I	-	-	-	-	-	-	-	-	-	-	-	689	-	-	-
Chromium phosphides (CrP) . .	5	635	635	-	-	-	639	-	-	-	-	-	-	-	-	-
Chromium silicides																
CrSi	6-I	-	381	-	-	-	383	385	-	-	389	-	-	-	-	-
$CrSi_2$	6-I	-	381	-	-	-	383	385	387	-	389	-	-	-	-	-
Cr_3Si	6-I	-	381	-	-	-	-	385	-	-	389	-	391-393	395	-	-
Cr_3Si_2	6-I	-	-	-	-	-	-	-	-	-	389	-	-	-	-	-
Cr_5Si	6-I	-	381	-	-	-	-	-	-	-	-	-	-	-	-	-
Cr_5Si_3	6-I	-	-	-	-	-	-	385	-	-	-	-	-	-	-	-
Chromium silicide cermets . .	6-II	-	-	-	-	-	-	-	-	-	915	-	-	-	-	-
Chromium (di-)silicide + + Molybdenum (di-)silicide . .	6-I	723	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium-silicon-titanium cermets	6-II	925	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium-tantalum intermetallics (Cr_3Ta_2)	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Chromium-titanium intermetallics + Chromium (sesqui-)-oxide	5	-	-	-	-	-	-	-	-	-	926	-	928-930	932	-	-
Chromium-titanium intermetallics + Copper cermets	5	917	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium-titanium intermetallics + Molybdenum cermets . .	6-II	919	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium zirconate ($Cr_2O_3 \cdot ZrO_2$)	4-II	-	-	-	-	-	-	-	-	-	1508	-	-	-	-	-
Chromium-zirconium intermetallics (Cr_2Zr)	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-
Chronin	2-I	-	-	-	-	-	-	-	-	-	70	-	-	-	-	-
Chrycote coating on copper . . .	6-II	-	-	-	-	-	-	-	-	-	-	-	1499	-	-	-
Clad steel	6-II	-	-	-	-	-	-	-	-	-	1267	-	-	-	-	-
Clinoenstatite	4-II	-	-	-	-	-	-	-	-	-	1295	-	-	-	-	-
Coatings																
Aluminide on niobium	6-II	-	-	-	-	-	-	-	-	-	-	-	1435-1437	1439	-	-
Aluminide on titanium	6-II	-	-	-	-	-	-	-	-	-	-	-	1447-1449	1451	-	-
Aluminized-silicone paint on titanium	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1497	-	-
Aluminum on mylar	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1287	-	-
Aluminum oxide on AISI 446 .	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1349	-	-
Aluminum phosphate on nickel	6-II	-	-	-	-	-	-	-	-	-	-	-	1431	-	-	-
Barium titanate on niobium-zirconium alloys	6-II	-	-	-	-	-	-	-	-	-	-	-	1371	-	-	-
Boron on molybdenum	6-II	-	-	-	-	-	-	-	-	-	-	-	1289	-	-	-
Boron on niobium-zirconium alloys	6-II	-	-	-	-	-	-	-	-	-	-	-	1291	-	-	-
Boron carbide on Inconel X .	6-II	-	-	-	-	-	-	-	-	-	-	-	1403	1405	-	-
Calcium titanate on niobium-zirconium alloys	6-II	-	-	-	-	-	-	-	-	-	-	-	1371	-	-	-
Carbon on molybdenum . . .	6-II	-	-	-	-	-	-	-	-	-	-	1293	1295	-	-	-
Chromalloy W-2 on molybdenum-titanium alloys . . .	6-II	-	-	-	-	-	-	-	-	-	-	-	1505-1509	-	-	-
Chromium carbide-cobalt blend on iron	6-II	-	-	-	-	-	-	-	-	-	-	1407	1409	-	-	-
Chrycote on copper	6-II	-	-	-	-	-	-	-	-	-	-	-	1499	-	-	-
Cobalt oxide on tantalum . .	6-II	-	-	-	-	-	-	-	-	-	-	-	1373-1375	-	-	-
Copper on mylar	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1301	-	-
Dow-Corning XP-310 on Ti-75A (AMS 4901)	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1497	-	-

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Coatings (cont.)																
Durak MG on molybdenum-titanium alloy	6-II	-	-	-	-	-	-	-	-	-	-	-	1501-1503	-	-	-
Enamel on AISI 310	6-II	-	-	-	-	-	-	-	-	-	-	-	1515	-	-	-
Enamel on AISI 321	6-II	-	-	-	-	-	-	-	-	-	-	-	1513	-	-	-
Enamel on Inconel	6-II	-	-	-	-	-	1511	-	-	-	-	-	-	-	-	-
Gold on mylar	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1307	-	-
Gold on titanium	6-II	-	-	-	-	-	-	-	-	-	-	-	1303	1305	-	-
Graphite, pyrolytic, on tantalum	6-II	-	-	-	-	-	-	-	-	-	-	-	1297-1299	-	-	-
Hafnium (di-)oxide on tungsten	6-II	-	-	-	-	-	-	-	-	-	-	-	1377-1379	-	-	-
Hastelloy C on AISI 310 . . .	6-II	-	-	-	-	-	-	-	-	-	-	-	1337	-	-	-
Hastelloy X on AISI 310 . . .	6-II	-	-	-	-	-	-	-	-	-	-	-	1339	-	-	-
Iron(ic) oxide on stellite no. 25 (L-605)	6-II	-	-	-	-	-	-	-	-	-	-	-	1381-1383	-	-	-
Iron titanate on niobium-zirconium alloys	6-II	-	-	-	-	-	-	-	-	-	-	-	1385	-	-	-
Kennametal K-151A on AISI 310	6-II	-	-	-	-	-	-	-	-	-	-	-	1491	-	-	-
Kennametal K-162B on AISI 310	6-II	-	-	-	-	-	-	-	-	-	-	-	1493	-	-	-
Magnesium fluoride on quartz	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1425	1427	-
Molybdenum on iron	6-II	-	-	-	-	-	-	-	-	-	-	1309	1311	-	-	-
NBS coating A-418 on Inconel	6-II	-	-	-	-	-	-	-	-	-	-	-	1361-1363	-	-	-
NBS coating A-418 on stainless steel	6-II	-	-	-	-	-	-	-	-	-	-	-	1365-1367	-	-	-
NBS coating N-143 on Inconel	6-II	-	-	-	-	-	-	-	-	-	-	-	1353-1355	-	-	-
NBS coating N-143 on stainless steel	6-II	-	-	-	-	-	-	-	-	-	-	-	1357-1359	-	-	-
Nickel aluminide on Inconel .	6-II	-	-	-	-	-	-	-	-	-	-	-	1453-1455	1457	-	-
Nickel chromite on niobium-zirconium alloys	6-II	-	-	-	-	-	-	-	-	-	-	-	1387	-	-	-
Nickel-chromium alloys on Inconel X	6-II	-	-	-	-	-	-	-	-	-	-	-	1333	1335	-	-
Niobium aluminide on niobium	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1459	-	-
Platinum on copper	6-II	-	-	-	-	-	-	-	-	-	-	-	1313	-	-	-
Platinum on quartz	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1317	1319	-
Platinum on stainless steel .	6-II	-	-	-	-	-	-	-	-	-	-	-	1315	-	-	-

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Coatings (cont.)																
Rokide A on AISI 446	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1351	-	-
Rokide C on titanium alloy Ti-6 Al-4 V	6-II	-	-	-	-	-	-	-	-	-	-	-	1345-1347	-	-	-
Silicide on molybdenum . . .	6-II	-	-	-	-	-	-	-	-	-	-	-	1467-1469	1471	-	-
Silicide on tantalum.	6-II	-	-	-	-	-	-	-	-	-	-	-	1473-1475	1477	-	-
Silicide on titanium	6-II	-	-	-	-	-	-	-	-	-	-	-	1479-1481	1483	-	-
Silicide on tungsten	6-II	-	-	-	-	-	-	-	-	-	-	-	1485-1487	1489	-	-
Silicon carbide on niobium-zirconium alloys.	6-II	-	-	-	-	-	-	-	-	-	-	-	1415	-	-	-
Silicon carbide on tantalum .	6-II	-	-	-	-	-	-	-	-	-	-	-	1411-1413	-	-	-
Silicon (mon-)oxide on aluminum	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1389	-	-
Silicon (di-)oxide on aluminum	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1391	-	-
Silicone on Inconel	6-II	-	-	-	-	-	1495	-	-	-	-	-	-	-	-	-
Silver on AISI 321.	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1321	-	-
Silver on mylar	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1323	-	-
Silver sulfide on silver . . .	6-II	-	-	-	-	-	-	-	-	-	-	1431	1433	-	-	-
Strontium titanate on AISI 310	6-II	-	-	-	-	-	-	-	-	-	-	-	1393	-	-	-
Tantalum aluminide on tantalum	6-II	-	-	-	-	-	-	-	-	-	-	-	1461-1463	1465	-	-
Tantalum carbide on Inconel X	6-II	-	-	-	-	-	-	-	-	-	-	-	1417	1419	-	-
Titanium (di-)oxide and aluminum on molybdenum. .	6-II	-	-	-	-	-	-	-	-	-	-	-	1395	-	-	-
Tungsten on Inconel X. . . .	6-II	-	-	-	-	-	-	-	-	-	-	-	1329	1331	-	-
Tungsten on iron	6-II	-	-	-	-	-	-	-	-	-	-	1325	1327	-	-	-
Tungsten-cobalt alloys on Inconel X	6-II	-	-	-	-	-	-	-	-	-	-	-	1341	1343	-	-
Tungsten carbide on iron . .	6-II	-	-	-	-	-	-	-	-	-	-	1421	1423	-	-	-
Zirconium (di-)oxide on Inconel	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1397	-	-
Zirconium (di-)oxide on Inconel X	6-II	-	-	-	-	-	-	-	-	-	-	-	1399	1401	-	-
Cobalt (Co)	1	436	436	-	-	-	438	440	442	-	444	446	448-450	-	-	-
Cobalt + Chromium + ΣX_i . . .	2-II	879, 882	879	-	-	-	-	884	886-888	890	892-906	-	908-914	916	-	-
Cobalt + Copper + ΣX_i	2-II	-	918	-	-	-	920	-	-	-	-	-	-	-	-	-
Cobalt + Gold	2-I	-	-	-	-	-	78	-	-	-	-	-	-	-	-	-
Cobalt + Gold + ΣX_i	2-II	-	922	-	-	-	924	-	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Cobalt + Iron	2-I	-	-	-	-	80	82	84	-	-	-	-	86	-	-	88
Cobalt + Iron + ΣX_i	2-II	-	-	-	-	-	-	-	-	-	926-930	-	-	-	-	-
Cobalt + Manganese + ΣX_i	2-II	-	-	-	-	-	-	-	-	-	952	-	-	-	-	-
Cobalt + Nickel	2-I	92	-	-	-	90	-	-	-	-	-	-	94	-	-	96
Cobalt + Nickel + ΣX_i	2-II	-	-	-	-	-	-	-	934	936	938	-	-	-	-	-
Cobalt + Palladium + ΣX_i	2-II	-	940	-	-	-	942-944	-	-	-	-	-	-	-	-	-
Cobalt + Vanadium	2-I	-	-	-	-	-	-	-	-	-	98	-	-	-	-	-
Cobalt alloys (special designations)																
Hastelloy 25	2-II	-	-	-	-	-	-	-	-	-	898	-	-	-	-	-
Haynes 152	2-II	-	-	-	-	-	-	-	-	-	898	-	-	-	-	-
HE 1049	2-II	-	-	-	-	-	-	884	888	-	900	-	-	-	-	-
J-1570	2-II	-	-	-	-	-	-	-	934	-	938	-	-	-	-	-
Jessop G32	2-II	879	-	-	-	-	-	-	888	-	892	-	-	-	-	-
Lohm	2-I	-	-	-	-	-	-	-	138	-	-	-	-	-	-	-
MAR-M302	2-II	-	-	-	-	-	-	-	-	-	898	-	-	-	-	-
PWA-653-A	2-II	-	-	-	-	-	-	-	-	-	898	-	-	-	-	-
Rexalloy 33	2-II	-	-	-	-	-	-	-	-	-	906	-	-	-	-	-
S-816	2-II	-	-	-	-	-	-	-	888, 934	890, 936	896, 938	-	-	-	-	-
SM-302	2-II	-	-	-	-	-	-	-	-	-	898	-	-	-	-	-
Stellites (see Stellite)																
V-36	2-II	-	-	-	-	-	-	-	-	-	896	-	-	-	-	-
Vitallium	2-II	-	879	-	-	-	-	-	-	-	894	-	-	-	-	-
WI-52	2-II	-	-	-	-	-	-	-	888	-	-	-	-	-	-	-
X-40	2-II	-	-	-	-	-	-	-	888	-	-	-	-	-	-	-
X-63	2-II	-	-	-	-	-	-	-	888	-	-	-	-	-	-	-
Cobalt aluminates																
$CoO \cdot Al_2O_3$	4-II	-	-	-	-	-	-	-	-	-	995	-	-	-	-	-
$Co_2O_3 \cdot Al_2O_3$	4-II	-	-	-	-	-	-	-	-	-	995	-	-	-	-	-
Cobalt aluminide (CoAl)	6-I	-	-	-	-	-	-	-	-	-	7	-	-	-	-	-
Cobalt beryllide (CoBe)	6-I	-	158	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt blue glass	4-II	-	-	-	-	-	-	-	-	-	-	-	1847	1849	1851	-
Cobalt (mono-)boride (CrB)	6-I	-	296	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt carbide (Co_2C)	5	-	294	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt-chromium alloys + Titanium (di-)boride cermet	6-II	-	930	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt-chromium intermetallics (CoCr)	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt ferrite ($CoO \cdot Fe_2O_3$)	4-II	-	-	-	-	-	1071	1073	-	-	-	-	-	-	-	-
Cobalt-lead silicate glass	4-II	-	-	-	-	-	1735	-	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Cobalt-molybdenum intermetallics (CoMo)	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt-niobium intermetallics (Co_5Nb_2)	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt oxides																
CoO	4-I	-	-	-	-	-	-	142	-	-	146	-	-	-	-	-
Co_3O_4	4-I	-	-	-	-	-	-	144	-	-	-	-	-	-	-	-
Cobalt oxide coated tantalum . .	6-II	-	-	-	-	-	-	-	-	-	-	-	1373-1375	-	-	-
Cobalt(ous) oxide + Copper(ic) oxide	4-I	-	-	-	-	-	-	691	-	-	-	-	-	-	-	-
Cobalt(ous) oxide + Nickel (mon-)oxide	4-I	-	-	-	-	-	-	693	-	-	-	-	-	-	-	-
Cobalt (ortho-)phosphate ($3 CoO \cdot P_2O_5$)	4-II	-	-	-	-	-	-	-	-	-	1169	-	-	-	-	-
Cobalt phosphide (Co_2P)	5	-	635	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt silicides																
CoSi	6-I	-	397	-	-	-	399	401	529	-	403	-	-	-	-	-
$CoSi_2$	6-I	-	397	-	-	-	-	-	-	-	-	-	-	-	-	-
$CoSi_3$	6-I	-	397	-	-	-	-	-	-	-	-	-	-	-	-	-
Co_2Si	6-I	-	397	-	-	-	-	-	-	-	-	-	-	-	-	-
Co_3Si	6-I	-	397	-	-	-	-	-	-	-	403	-	-	-	-	-
Cobalt-titanium intermetallics																
CoTi	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-
$CoTi_2$	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt-tungsten intermetallics (CoW)	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt-zirconium intermetallics (Co_4Zr)	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-
Coke	1	-	-	-	-	-	85	-	87	-	-	-	-	-	-	-
Coke, graphitized	1	105	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Composite systems																
Alumina bubbles - graphite fibers system	6-II	-	-	-	-	-	-	-	1279	-	-	-	-	-	-	-
Dexiglas paper - aluminum foil - graphite fiber system .	6-II	-	-	-	-	-	-	-	1283	-	-	-	-	-	-	-
Fiberfrax paper - tantalum shield - graphite fibers system	6-II	-	-	-	-	-	-	-	1285	-	-	-	-	-	-	-
Graphite fibers - tantalum shield system	6-II	-	-	-	-	-	-	-	1281	-	-	-	-	-	-	-
Concrete	5	-	-	-	-	-	-	-	1027	-	-	-	-	-	-	-
Conolon N-1 laminate	6-II	-	-	-	-	-	-	-	-	-	1174	-	-	-	-	-
Container glasses	4-II	-	-	-	-	-	-	-	-	-	-	-	1833	1835	1837	-
Contracid	2-II	-	-	-	-	-	-	-	1261	-	-	-	-	-	-	-
Copolyvinyl chloride + Acetate .	6-II	-	-	-	-	-	-	-	-	-	950	-	-	-	-	-

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Copper (Cu)	1	452	452	452	452	452	454	456	458	460	462	464	466-470	472-477	-	479
Copper, commercial coalesced .	1	452	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper DS (British aircraft material spec.)	1	-	-	-	-	-	-	-	-	-	-	-	-	472	-	-
Copper, electrolytic	1	452	452	-	-	-	-	456	-	-	462	-	466	472	-	-
Copper, electrolytic tough pitch (Fed. Spec. QQC-502)	1	452	-	-	-	-	-	456	458	-	462	464	468	474	-	-
Copper, electrolytic tough pitch (Fed. Spec. QQC-576)	1	-	-	-	-	-	-	456	458	-	462	464	468	474	-	-
Copper, OFHC	1	-	-	-	-	-	-	-	458	460	-	-	-	-	-	-
Copper, tellurium	2-I	-	-	-	-	-	-	-	-	-	152	-	-	-	-	-
Copper coated with chrycote . .	6-II	-	-	-	-	-	-	-	-	-	-	-	1499	-	-	-
Copper coated with platinum coating	6-II	-	-	-	-	-	-	-	-		-	-	1313	-	-	-
Copper coating on mylar	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1301	-	-
Copper + Aluminum	2-I	100	-	-	-	-	102-104	106	108	-	110	-	-	-	-	-
Copper + Aluminum + ΣX_i . . .	2-II	-	-	-	-	-	946	-	948	-	950	952	954-958	960	-	-
Copper + Beryllium	2-I	-	-	-	-	-	-	112	-	-	-	-	-	-	-	-
Copper + Chromium	2-I	-	-	-	-	-	114	-	116	-	-	-	-	-	-	-
Copper + Chromium + ΣX_i . . .	2-II	-	-	-	-	-	962	-	964	-	-	-	-	-	-	-
Copper + Cobalt	2-I	-	-	-	-	-	-	-	118	-	-	-	-	-	-	-
Copper + Cobalt + ΣX_i	2-II	-	966	-	-	-	968	-	970-972	-	-	-	-	-	-	-
Copper + Gold																
$CuAu_3$	2-I	-	-	-	-	-	-	204	-	-	206	-	-	-	-	-
Cu_3Au	2-I	-	-	-	-	-	-	204	-	-	206	-	-	-	-	-
Copper + Iron	2-I	-	-	-	-	-	120	122	124	-	-	-	-	-	-	-
Copper + Iron + ΣX_i	2-II	-	-	-	-	-	-	-	-	-	-	-	974	-	-	-
Copper + Lead	2-I	126	-	-	-	-	-	-	-	-	128	-	-	-	-	-
Copper + Lead + ΣX_i	2-II	-	-	-	-	-	-	-	-	-	976	-	-	-	-	-
Copper + Manganese	2-I	-	-	-	-	-	130	132	-	-	-	-	-	-	-	-
Copper + Manganese + ΣX_i . . .	2-II	-	-	-	-	-	978	-	980	-	-	-	-	-	-	-
Copper + Nickel	2-I	-	-	-	-	-	134	136	138	-	-	-	-	-	-	-
Copper + Nickel + ΣX_i	2-II	-	-	-	-	-	982	-	984-986	-	988	-	-	-	-	-
Copper + Palladium	2-I	-	-	-	-	-	140	-	142	-	-	-	-	-	-	-
Copper + Palladium + ΣX_i . . .	2-II	-	990	-	-	-	992	-	-	-	-	-	-	-	-	-
Copper + Platinum	2-I	-	-	-	-	-	144	-	-	-	-	-	-	-	-	-
Copper + Silicon	2-I	-	-	-	-	-	146	-	-	-	-	-	-	-	-	-
Copper + Silicon + ΣX_i	2-II	-	-	-	-	-	-	-	-	-	994	-	-	-	-	-
Copper + Silver	2-I	-		-	-	-	-	-	-	-	148	-	-	-	-	-
Copper + Tellurium	2-I	150	-	-	-	-	-	-	-	-	152	-	-	-	-	-

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Copper + Tin	2-I	154	-	-	-	-	156	-	158	-	160	-	162	-	-	-
Copper + Tin + ΣX_i	2-II	-	-	-	-	-	-	-	996	-	998	-	-	-	-	-
Copper + Titanium	2-I	164	164	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper + Uranium	2-I	166	166	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper + Zinc	2-I	168	-	-	-	-	170	172	-	174	-	-	176-180	182	-	-
Copper + Zinc + ΣX_i	2-II	-	-	-	-	-	-	-	1000	-	1002-1004	-	-	-	-	-
Copper + Zirconium	2-I	184	-	-	-	-	186	-	188	-	-	-	-	-	-	-
Copper + Zirconium + ΣX_i ...	2-II	-	-	-	-	-	1006	-	1008	-	-	-	-	-	-	-
Copper alloys (special designations)																
Admiralty nickel	2-II	-	-	-	-	-	-	-	-	-	988	-	-	-	-	-
Aterite	2-II	-	-	-	-	-	-	-	-	-	1004	-	-	-	-	-
Manganin	2-II	-	-	-	-	-	978	-	-	-	-	-	-	-	-	-
Monels (see Monel)																
Ms-58	2-II	-	-	-	-	-	-	-	1000	-	-	-	-	-	-	-
Ms-77-22-2	2-II	-	-	-	-	-	-	-	1000	-	-	-	-	-	-	-
Navy "M"	2-II	-	-	-	-	-	-	-	996	-	-	-	-	-	-	-
Porosint	2-I	-	-	-	-	-	-	-	158	-	-	-	-	-	-	-
Tempaloy 836	2-II	-	-	-	-	-	-	-	-	-	988	-	-	-	-	-
Tempaloy 841	2-II	-	-	-	-	-	-	-	-	-	950	-	-	-	-	-
Copper ferrites																
$CuO \cdot Fe_2O_3$	4-II	-	-	-	-	-	1075	1077	-	-	-	-	-	-	-	-
$Cu_xFe_{3-x}O_4$	4-II	-	-	-	-	-	-	1077	-	-	-	-	-	-	-	-
Copper indium telluride ($CuInTe_2$)	6-I	-	-	-	-	-	-	-	572	-	-	-	-	-	-	-
Copper oxide (CuO)	4-I	-	-	-	-	-	148	150	-	-	-	-	-	-	-	152
Copper silver indium tellurides ($Ag_xCu_{1-x}InTe_2$)	6-I	-	-	-	-	-	-	-	640	-	-	-	-	-	-	-
Cordierite	4-II	-	-	-	-	-	1298	1300	1302	-	1304-1308	-	-	-	-	-
Cordierite 202	4-II	-	-	-	-	-	-	-	1302	-	-	-	-	-	-	-
Cordierite, barium-	4-II	-	-	-	-	-	-	-	-	-	1217-1221	-	-	-	-	-
Cordierite, lead-	4-II	-	-	-	-	-	-	-	-	-	1252-1254	-	-	-	-	-
Cordierite, lead-barium	4-II	-	-	-	-	-	-	-	-	-	1256-1258	-	-	-	-	-
Cordierite bodies	4-II	-	-	-	-	-	-	-	-	-	1310	-	-	-	-	
Corning 0080 glass	4-II	-	-	-	-	-	-	-	1795	1793	-	-	-	-	-	
Corning 1723 glass	4-II	-	-	-	-	-	-	1675	-	1677	-	-	1679	1681	1683-1685	-
Corning 7740 glass	4-II	-	-	-	-	-	-	1697	-	1701	-	-	1705	1709	1711-1713	-
Corning 7900 glass	4-II	-	-	-	-	-	-	1655	-	1661	-	-	1665	1669	1671-1673	-

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Corning 7940 glass	4-II	-	-	-	-	-	-	1655	-	-	-	-	1665	1669	1671-1673	-
Corning 8325 glass	4-II	-	-	-	-	-	-	-	-	1687	-	-	-	-	-	-
Corning 8362 glass	4-II	-	-	-	-	-	-	-	-	1749	-	-	-	-	-	-
Corning 9752 glass	4-II	-	-	-	-	-	-	-	-	-	-	-	1847	1849	1851	-
Corundum	4-I	-	-	-	-	-	-	8	-	-	22	-	-	-	-	-
Cresol resin	6-II	-	-	-	-	-	-	1004	-	-	-	-	-	-	-	-
Cristobalite	4-I	-	-	-	-	-	-	-	-	-	367	-	-	-	-	-
Crown glass	4-II	1693	1693	-	-	-	-	1697	-	-	1723	-	-	-	-	-
Crystolon-R	5	-	-	-	-	-	-	-	-	-	-	-	131, 135	-	-	-
Curium (Cm)	1	481	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D																
Dexiglas paper - aluminum foil - graphite fibers composite system	6-II	-	-	-	-	-	-	-	1283	-	-	-	-	-	-	-
Diall 50-01 resin	6-II	-	-	-	-	-	1111	-	-	-	-	-	-	-	-	-
Diall 50-51 resin	6-II	-	-	-	-	-	1111	-	-	-	-	-	-	-	-	-
Diall 50-52 resin	6-II	-	-	-	-	-	1111	-	-	-	-	-	-	-	-	-
Diall 52-01 resin	6-II	-	-	-	-	-	1111	-	-	-	-	-	-	-	-	-
Diall 52-20-30 resin	6-II	-	-	-	-	-	1111	-	-	-	-	-	-	-	-	-
Diallylphthalate, reinforced	6-II	-	-	-	-	-	1111	-	-	-	-	-	-	-	-	-
Diamond	1	392	392	-	-	392	-	394	396	-	398	-	-	400	-	-
Dihydroperfluorobutyl acrylate, 1,1-	6-II	1051	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dow-Corning XP-310 on Ti-75A (AMS 4901)	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1497	-	-
Durak MG coating on molybdenum-titanium alloys	6-II	-	-	-	-	-	-	-	-	-	-	-	1501-1503	-	-	-
Duranickel 301	2-II	-	-	-	-	-	-	-	-	-	1117	-	-	-	-	-
Durchy	5	-	-	-	-	-	-	-	-	-	-	-	821	-	-	-
Dures 16274	6-II	-	-	-	-	-	982	-	-	-	-	-	-	-	-	-
Dures 16694	6-II	-	-	-	-	-	1111	-	-	-	-	-	-	-	-	-
Duroid 5600	6-II	1097	-	-	-	-	-	-	1099	-	-	-	-	-	-	-
Dynakon rod F	6-II	-	-	-	-	-	-	-	-	-	1109	-	-	-	-	-
Dynakon sheet A3A	6-II	-	-	-	-	-	-	-	-	-	1109	-	-	-	-	-
Dysprosia	4-I	154	154	-	-	-	-	156	-	-	158	-	-	-	-	-
Dysprosium (Dy)	1	483	483	483	483	483	485	-	-	-	-	-	-	-	-	487
Dysprosium + Tantalum + ΣX_i	2-II	-	-	-	-	-	-	-	-	-	1010	-	-	-	-	-
Dysprosium aluminate ($Dy_2O_3 \cdot 2\ Al_2O_3$)	4-II	-	-	-	-	-	-	-	-	-	997	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Dysprosium borides																
DyB_4	6-I	295	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DyB_6	6-I	295	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dysprosium carbide (DyC_2) . .	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dysprosium-cobalt intermetallics		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$CyCo_2$	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$DyCo_5$	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dysprosium hydride (DyH_3) . .	5	467	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dysprosium niobate ($Dy_2O_3 \cdot Nb_2O_5$)	4-II	-	-	-	-	-	-	-	-	-	1123	-	-	-	-	-
Dysprosium oxide (Dy_2O_3) . . .	4-I	154	154	-	-	-	-	156	-	-	158	-	-	-	-	-
Dysprosium oxide + Cerium (di-) oxide	4-I	-	-	-	-	-	-	-	-	-	695	-	-	-	-	-
Dysprosium oxide + Uranium (di-) oxide	4-I	-	-	-	-	-	-	-	-	-	697	-	-	-	-	-
Dysprosium oxide + Zirconium (di-) oxide	4-I	-	-	-	-	-	-	-	-	-	699	-	-	-	-	-
Dysprosium silicide ($DySi_2$) . .	6-I	523	524	-	-	-	527	-	-	-	-	-	-	-	-	-
Dysprosium sulfides																
DyS_2	5	732	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dy_2S_3	5	732	732	-	-	-	-	-	-	-	-	-	-	-	-	-
Dy_6S_7	5	732	732	-	-	-	-	-	-	-	-	-	-	-	-	-
E																
Eastman Intran glasses	4-II	-	-	-	-	-	-	1853	-	-	-	-	-	-	-	-
Eccofoam	6-II	1084	-	-	-	-	-	-	1080	-	-	-	-	-	-	-
Elastomer, isocyanate polyester	6-II	960	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electroconducting glass	4-II	-	-	-	-	-	-	-	-	-	-	-	1839	1841	1843-1845	-
Electroconducting glass 547-26 .	4-II	-	-	-	-	-	-	-	-	-	-	-	1839	1841	1843-1845	-
Electroconducting glass LOF-81E-19778	4-II	-	-	-	-	-	-	-	-	-	-	-	1839	1841	1843-1845	-
Electroconducting glass LOF-PB-19195	4-II	-	-	-	-	-	-	-	-	-	-	-	1839	1841	1843-1845	-
Enamel on Inconel	6-II	-	-	-	-	-	1511	-	-	-	-	-	-	-	-	-
Enamel, rinsed-Mason black, on AISI 321	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1513	-	-
Enamel, spinel, coating on AISI 310	6-II	-	-	-	-	-	-	-	-	-	-	-	1515	-	-	-
Enstatite	4-II	-	-	-	-	-	-	-	-	-	1295	-	-	-	-	-
Epoxide	6-II	1006	-	-	-	-	-	-	1010	-	1012	-	-	-	-	-
Epoxide, Hysol 6000-OP	6-II	1006	-	-	-	-	-	-	1010	1082	1012	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Epoxide, reinforced	6-II	-	-	-	-	-	-	1117	1120	1220	1122-1124	-	-	-	-	-
Epoxy, DER332	6-II	-	-	-	-	-	-	1008	-	-	-	-	-	-	-	-
Epoxy and plyophen copolymer resin, reinforced	6-II	-	-	-	-	-	-	-	1218	-	-	-	-	-	-	-
Epoxy resin	6-II	-	-	-	-	-	-	1008	-	-	-	-	-	-	-	-
Epoxy resin, reinforced	6-II	-	-	-	-	-	-	1115-1117	1120	1220	1122-1124	-	-	-	-	-
Erbia	4-I	160	-	-	-	-	-	162	-	-	164	-	166	-	-	-
Erbium (Er)	1	489	489	489	489	489	491	493	-	-	495	-	497	-	-	499
Erbium borides																
ErB_4	6-I	295	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ErB_6	6-I	295	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Erbium carbide (ErC_2)	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Erbium-cobalt intermetallics ($ErCo_5$)	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Erbium-gallium intermetallics ($ErGa_2$)	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Erbium hydride (ErH_3)	5	467	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Erbium-manganese intermetallics ($ErMn_2$)	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Erbium-nickel intermetallics ($ErNi_5$)	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Erbium oxide (Er_2O_3)	4-I	160	-	-	-	-	-	162	-	-	164	-	166	-	-	-
Erbium selenides																
ErSe	6-I	-	-	-	-	-	367	-	-	-	-	-	-	-	-	-
Er_2Se_3	6-I	-	-	-	-	-	367	-	-	-	-	-	-	-	-	-
Erbium-silver intermetallics (ErAg)	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Erbium sulfides																
ErS	5	732	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Er_2S_3	5	732	732	-	-	-	-	-	-	-	-	-	-	-	-	-
Er_5S_7	5	732	732	-	-	-	-	-	-	-	-	-	-	-	-	-
Erbium tellurides (Er_2Te_3) . . .	6-I	-	-	-	-	-	638	-	-	-	-	-	-	-	-	-
Ethyl cellulose	6-II	-	-	-	-	-	-	-	-	-	948	-	-	-	-	-
Etruria Marl	4-I	-	-	-	-	-	-	-	-	-	802-812	-	-	-	-	-
Eucryptite	4-II	-	-	-	-	-	-	-	-	-	1270	-	-	-	-	-
Europium (Eu)	1	501	501	501	501	501	503	505	-	-	-	-	-	-	-	507
Europium (hexa-)boride (EuB_6) .	6-I	296	-	-	-	-	300	-	-	-	-	-	-	-	-	-
Europium oxide (Eu_2O_3)	4-I	168	168	-	-	-	-	170	-	-	172	-	-	-	-	-
Europium oxide + Iron-chromium alloy cermet	6-II	-	-	-	-	-	-	-	-	-	786	-	-	-	-	-
Europium silicide ($EuSi_2$) . . .	6-I	523	524	-	-	-	-	-	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Europium sulfides																
EuS	5	732	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EuS_2	5	732	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eu_3S_4	5	732	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Evanohm	2-II	1119	-	-	-	-	1124	-	-	-	-	-	-	-	-	-
F																
Fabrics																
Fiber glass	6-II	-	-	-	-	-	-	-	-	1269	-	-	-	-	-	-
Graphite	6-II	-	-	-	-	-	-	-	-	1271	-	-	-	-	-	-
Nylon	6-II	-	-	-	-	-	-	-	-	1273	-	-	-	-	-	-
Organic fiber	6-II	-	-	-	-	-	-	-	-	1275	-	-	-	-	-	-
Silica	6-II	-	-	-	-	-	-	-	-	1277	-	-	-	-	-	-
Feldspars																
Barium	4-II	-	-	-	-	-	-	1205	-	-	1207	-	-	-	-	-
Calcium	4-II	-	-	-	-	-	-	-	-	-	1235	-	-	-	-	-
Lithium	4-II	-	-	-	-	-	-	-	1266	-	1270	-	-	-	-	-
Lithium-potassium	4-II	-	-	-	-	-	-	-	-	-	1283	-	-	-	-	-
Sodium	4-II	-	-	-	-	-	-	-	-	-	1326	-	-	-	-	-
Sodium-potassium	4-II	-	-	-	-	-	-	-	-	-	1330	-	-	-	-	-
Strontium	4-II	-	-	-	-	-	-	-	-	-	1334	-	-	-	-	-
Ferramic E	4-II	-	-	-	-	-	-	1093	-	-	-	-	-	-	-	-
Ferroferric oxide + Iron(ic) oxide	4-I	-	-	-	-	-	-	-	-	-	-	-	715	-	-	-
Fiber cermets	6-II	928	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fiber glass fabrics	6-II	-	-	-	-	-	-	-	-	1269	-	-	-	-	-	-
Fiberfrax paper - tantalum shield - graphite fibers composite system	6-II	-	-	-	-	-	-	-	1285	-	-	-	-	-	-	-
Fiberite 4030-190	6-II	-	-	-	-	-	1103	-	-	-	-	-	-	-	-	-
Firebricks																
Alumina	4-I	-	-	-	-	-	613	-	621	-	-	-	-	-	-	-
ASTM group no. 16 insulating	5	-	-	-	-	-	-	-	1031	-	-	-	-	-	-	-
ASTM group no. 20 insulating	5	-	-	-	-	-	-	-	1031	-	-	-	-	-	-	-
ASTM group no. 23 insulating	5	-	-	-	-	-	-	-	1031	-	-	-	-	-	-	-
ASTM group no. 26 insulating	5	-	-	-	-	-	-	-	1031	-	-	-	-	-	-	-
ASTM group no. 28 insulating	5	-	-	-	-	-	-	-	1031	-	-	-	-	-	-	-
ASTM group no. 30 insulating	5	-	-	-	-	-	-	-	1031	-	-	-	-	-	-	-
Egyptian	4-I	-	-	-	-	-	-	-	798	800	-	-	-	-	-	-
Firebricks	4-I	-	-	-	-	-	-	-	798	789, 800	-	-	-	-	-	-
K-28 insulating	5	-	-	-	-	-	-	-	1031	-	-	-	-	-	-	-
Siliceous	5	-	-	-	-	-	-	-	-	-	-	-	1043	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Flint container glass.	4-II	-	-	-	-	-	-	-	-	-	-	-	1799	1801	1729	-
Flint glass	4-II	-	-	-	-	-	-	1829	-	-	-	-	-	-	-	-
Fluorothene	6-II	1030	-	-	-	-	-	-	-	-	1045	-	-	-	-	-
FM-5064 graphite-phenolic laminates	6-II	-	-	-	-	-	-	1140	-	-	-	-	-	-	-	-
Forsterite	4-II	1285	1285	-	-	-	1287	-	1291	-	-	-	-	-	-	-
Forsterite 243	4-II	1285	1285	-	-	-	-	-	-	-	-	-	-	-	-	-
Forsterite-stainless steel laminates	6-II	-	-	-	-	-	-	-	1221	-	-	-	-	-	-	-
Fortical 28227	6-II	-	-	-	-	-	-	-	-	-	944	-	-	-	-	-
Fortical 28238	6-II	-	-	-	-	-	-	-	-	-	944	-	-	-	-	-
Fresco FR0020	6-II	-	-	-	-	-	-	1214	-	-	-	-	-	-	-	-
FRLG 2502-1	6-II	-	-	-	-	-	-	-	-	1277	-	-	-	-	-	-
Furfural formaldehyde, wood flour filled	6-II	-	-	-	-	-	-	-	-	-	1000	-	-	-	-	-
G																
Gadolinia	4-I	174	174	-	-	-	-	176	178	-	180	-	182	-	-	-
Gadolinum (Gd)	1	509	509	509	509	509	511	-	-	-	513	-	-	-	-	-
Gadolinium + Tantalum	2-I	-	-	-	-	-	-	-	-	-	190	-	-	-	-	-
Gadolinium borides																
GdB_4	6-I	295	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GdB_6	6-I	295	296	-	-	-	300	-	-	-	-	-	-	-	-	-
Gadolinium carbides																
GdC_2	5	294	294	-	-	-	-	-	-	-	-	-	-	-	-	-
Gd_2C_3	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gadolinium-cobalt intermetallics																
GdCo	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$GdCo_2$	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$GdCo_3$	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$GdCo_4$	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$GdCo_5$	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gd_2Co_3	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gd_3Co	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gadolinium-copper intermetallics																
GdCu	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$GdCu_4$	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$GdCu_5$	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gadolinium ferrides																
$GdFe_3$	6-I	306	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$GdFe_4$	6-I	306	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$GeFe_5$	6-I	306	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gd_2Fe_3	6-I	306	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Gadolinium ferrides (cont.)																
Gd_2Fe_7	6-II	306	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gadolinium (tri-) fluoride (GdF_3)	5	-	407	-	-	-	-	-	-	-	-	-	-	-	-	-
Gadolinium-gallium intermetallics ($GdGa_2$)	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gadolinium hydrides																
GdH_2	5	467	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GdH_3	5	467	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gadolinium-nickel intermetallics																
GdNi	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$GdNi_2$	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$GdNi_3$	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$GdNi_4$	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$GdNi_5$	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gd_2Ni_7	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gd_2Ni_{17}	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gd_3Ni	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gd_3Ni_2	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gadolinium-osmium intermetallics (Gd_2Os_3)	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gadolinium oxide (Gd_2O_3) . . .	4-I	174	174	-	-	-	-	176	178	-	180	-	182	-	-	-
Gadolinium selenides																
GdSe	6-I	365	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gd_2Se_3	6-I	365	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gd_3Se_4	6-I	365	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gadolinium silicides ($GdSi_2$) . .	6-I	523	-	-	-	-	527	-	-	-	-	-	-	-	-	-
Gadolinium-silver intermetallics (GdAg)	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gadolinium sulfides																
GdS_2	5	732	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gd_2S_3	5	732	732	-	-	-	-	-	-	-	-	-	-	-	-	-
Gadolinium tellurides																
Gd_2Te	6-I	-	-	-	-	-	638	-	-	-	-	-	-	-	-	-
Gd_2Te_3	6-I	-	-	-	-	-	638	-	-	-	-	-	-	-	-	-
Gadolinium-yttrium-cobalt intermetallics ($Gd_{1-x}Y_xCo_5$) .	6-I	665	-	-	-	-	-	-	-	-	-	-	-	688	-	-
Galena	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gallium antimonide (GaSb) . . .	6-I	-	-	-	-	-	51	53	-	-	-	-	-	-	-	-
Gallium arsenide (GaAs)	6-I	-	-	-	-	-	-	83	-	85	-	-	-	-	-	-
Gallium (sesqui-) oxide (Ga_2O_3) .	4-I	-	-	-	-	-	-	184	-	-	-	-	-	-	-	-
Gallium phosphide (GaP)	5	-	-	-	-	-	-	629	-	-	-	-	-	-	-	-
Gallium telluride (Ga_2Te_3) . . .	6-I	-	-	-	-	-	-	574	-	-	-	-	-	-	-	-
Gehlenite	4-II	-	-	-	-	-	-	1233	-	-	1235	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
German Flake	1	-	-	-	-	-	50	-	-	-	-	-	-	-	-	-
. . . .	2-II	841	-	-	-	-	-	-	845	-	-	-	-	-	-	-
Germanium (Ge)	1	515	515	515	515	515	517	519	521	524	526	-	528-530	-	-	532
Germanium + Silicon	2-I	192	-	-	-	-	194	-	-	-	-	-	-	-	-	-
Germanium bismuth telluride ($Ge_{1-x}Bi_xTe$)	6-I	-	-	-	-	-	582	-	584	-	-	-	-	-	-	-
Germanium (di-)oxide (GeO_2) .	4-I	-	-	-	-	-	-	186	-	-	188	-	-	-	-	190
Germanium oxide glass	4-II	1637	-	-	-	-	-	1639	-	-	-	-	-	-	-	-
Germanium silicide (GeSi) . . .	6-I	-	-	-	-	-	-	405	-	-	-	-	-	-	-	-
Germanium telluride (GeTe) . .	6-I	-	-	-	-	-	576	-	578	-	-	-			-	580
Germanium telluride + Silver antimony telluride	6-I	-	-	-	-	-	715	-	-	-	-	-	-	-	-	-
Glasses (see individual glasses)																
Glass ceramics (see also pyroceram)	4-II	-	-	-	-	-	-	1587	1589	1591	-	-	1593-1599	1601	1603	-
Glucina	4-I	-	-	-	-	-	57	-	-	-	-	-	-	-	-	-
GMGA 5003 silicone	6-II	-	-	-	-	-	1070	-	-	-	-	-	-	-	-	-
Gold (Au)	1	534	534	-	-	534	536	538	540	-	542	544-546	548	550-552	-	554
Gold coating on titanium	6-II	-	-	-	-	-	-	-	-	-	-	-	1303	1305	-	-
Gold coating on mylar	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1307	-	-
Gold + Cadmium	2-I	196	196	196	-	-	198	-	-	-	-	-	-	-	-	200
Gold + Cobalt	2-I	-	-	-	-	-	202	-	-	-	-	-	-	-	-	-
Gold + Cobalt + ΣX_i	2-II	-	1012	-	-	-	1014	-	-	-	-	-	-	-	-	-
Gold + Copper	2-I	-	-	-	-	-	-	204	-	-	206	-	-	-	-	-
Gold + Copper + ΣX_i	2-II	-	-	-	-	-	1016	-	-	-	-	-	-	-	-	-
Gold + Iron	2-I	208	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gold + Manganese	2-I	210	-	-	-	-	212	-	-	-	-	-	-	-	-	-
Gold + Nickel	2-I	214	-	-	-	-	-	216	-	-	-	-	-	-	-	-
Gold + Palladium	2-I	-	-	-	-	-	218	-	-	-	220	-	-	-	-	-
Gold + Palladium + ΣX_i	2-II	-	1018	-	-	-	1020	-	-	-	-	-	-	-	-	-
Gold + Platinum	2-I	-	-	-	-	-	222	-	-	-	-	-	-	-	-	-
Gold + Silver	2-I	-	-	-	-	-	-	-	-	-	224	-	226	-	-	228
Gold + Uranium	2-I	230	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gold + Zinc	2-I	-	232	232	-	-	-	-	-	-	-	-	-	234	-	-
Gold alloy (special designations)																
Palau	2-I	-	-	-	-	-	-	-	-	-	220	-	-	-	-	-
Gold-manganese intermetallics (Au_2Mn)	6-I	-	-	-	-	-	648	-	-	-	-	-	-	-	-	-
Gold-titanium intermetallics (Au_2Ti)	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-
Gold-zirconium intermetallics (Au_3Zr)	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Goodyear foam-inplace.	6-II	962	-	-	-	-	-	-	-	-	966	-	-	-	-	-
Graphites (Special designations)																
Grade 580	1	-	-	-	-	-	-	-	-	-	-	-	110-112	-	-	-
Grade 896G	1	-	-	-	-	-	371	-	-	-	114	-	-	-	-	-
Grade 942S	1	-	-	-	-	-	371	-	-	-	1.6	-	-	-	-	-
Grade 3474D	1	-	-	-	-	-	371	118	120	-	22	124	126-128	130	-	-
Grade 3499	1	-	-	-	-	-	371	-	-	-	132	-	-	-	-	-
Grade 7087	1	105	-	-	-	-	-	134	136	138	140	142	144-146	148	-	-
Grade 7100	1	-	-	-	-	-	-	-	-	-	-	-	150-152	-	-	
Grade AGHT	1	-	-	-	-	-	-	-	154	-	-	-	-	-	-	-
Grade AGKSP	1	-	-	-	-	-	-	-	-	-	-	-	156	158	-	-
Grade AGKT	1	-	-	-	-	-	371	-	-	-	-	-	-	-	-	-
Grade AGOT	1	-	-	-	-	-	160	-	162	-	165	-	-	-	-	-
Grade AGOT-CSF.	1	-	-	-	-	-	160	-	-	-	-	-	-	-	-	-
Grade AGOT-KC	1	-	-	-	-	-	160	-	-	-	-	-	-	-	-	-
Grade AGR	1	-	-	-	-	-	371	-	-	-	167	-	-	-	-	-
Grade AGX	1	-	-	-	-	-	-	-	-	-	169	-	171	-	-	-
Grade ATJ	1	103	-	-	-	-	371	175	177	-	179	-	182-188	190	-	-
Grade ATL-82	1	-	-	-	-	-	-	-	192	-	194	-	-	-	-	-
Grade AUC	1	-	-	-	-	-	-	-	-	-	-	-	196-198	200	-	-
Grade AWG	1	-	-	-	-	-	202	-	204	-	-	-	-	-	-	-
Grade CEP	1	-	-	-	-	-	-	-	-	-	206	-	-	-	-	-
Grade CFW	1	-	-	-	-	-	208	-	-	-	210	-	-	-	-	-
Grade CFZ	1	-	-	-	-	-	-	-	-	-	212	-	-	-	-	-
Grade CS	1	-	-	-	-	-	371	214	216	218	-	-	-	-	-	-
Grade CSF	1	-	-	-	-	-	-	-	220	-	222	-	-	-	-	-
Grade EH	1	-	-	-	-	-	371	-	-	-	224	-	-	-	-	-
Grade GBE	1	-	-	-	-	-	-	-	226	-	228	230	232-234	236	-	-
Grade GBH	1	105	-	-	-	-	-	238	240	-	242	244	246-248	250	-	-
Grade H1LM	1	-	-	-	-	-	-	-	-	-	-	-	252-254	-	-	-
Grade H3LM	1	-	-	-	-	-	371	-	-	-	256	-	258-260	-	-	-
Grade H4LM	1	-	-	-	-	-	-	-	262	-	264	-	-	-	-	-
Grade MH4LM	1	-	-	-	-	-	-	-	266	-	-	-	-	-	-	-
Grade NT-0005	1	-	-	-	-	-	371	-	-	-	349	-	-	-	-	-
Grade R-0008	1	-	-	-	-	-	268	-	270	-	-	-	-	-	-	-
Grade R-0025	1	-	-	-	-	-	-	-	272	-	-	-	-	-	-	-

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Graphites (special design.) (cont)																
Grade RT-0003	1	-	-	-	-	-	-	-	274	-	-	-	-	-	-	-
Grade RVA	1	-	-	-	-	-	-	-	-	-	276	-	-	-	-	-
Grade RVC	1	-	-	-	-	-	-	-	-	-	278	-	-	-	-	-
Grade RVD	1	-	-	-	-	-	-	-	-	-	280	-	-	-	-	-
Grade SA-25	1	-	-	-	-	-	-	-	282	-	-	-	-	-	-	-
Grade SPK	1	-	-	-	-	-	-	-	-	-	-	-	284	286	-	-
Grade TS	1	-	-	-	-	-	-	-	-	-	288	-	-	-	-	-
Nuclear grade TSP	1	-	-	-	-	-	-	-	290	-	-	-	-	-	-	-
Grade TSX	1	-	-	-	-	-	-	-	-	-	292	-	-	-	-	-
Grade W	1	-	-	-	-	-	-	-	294	-	296	-	-	-	-	-
Grade WSF	1	-	-	-	-	-	-	-	-	-	298	-	-	-	-	-
Grade ZT	1	-	-	-	-	-	300	-	302	-	-	-	-	-	-	-
Grade ZT-5001	1	-	-	-	-	-	-	-	302	-	-	-	-	-	-	-
Grade ZTA	1	-	-	-	-	-	-	-	-	-	305	-	-	-	-	-
Grade ZTB	1	-	-	-	-	-	-	-	-	-	307	-	-	-	-	-
Grade ZTC	1	-	-	-	-	-	-	-	-	-	309	-	-	-	-	-
Grade ZTD	1	-	-	-	-	-	-	-	-	-	311	-	-	-	-	-
Grade ZTE	1	-	-	-	-	-	-	-	-	-	313	-	-	-	-	-
Grade ZTF	1	-	-	-	-	-	-	-	-	-	315	-	-	-	-	-
Graphites, others																
Artificial grades	1	-	-	-	-	-	-	-	360	-	363	-	-	-	-	-
Carbon impregnated	1	-	-	-	-	-	-	-	358	-	-	-	-	-	-	-
Ceylon graphite	1	-	-	-	-	-	352	-	354	-	356	-	-	-	-	-
Coated with grade W graphite .	1	-	-	-	-	-	-	-	294	-	296	-	-	-	-	-
Coated with silicon carbide .	1	-	-	-	-	-	-	-	-	-	-	-	386	-	-	-
Cumberland graphite	1	-	-	-	-	-	352	-	354	-	-	-	-	-	-	-
Electrode	1	-	-	-	-	-	-	-	360	-	-	-	365	-	-	-
Experimental grades	1	-	-	-	-	-	337	-	339	343	349	-	-	-	-	-
Flake	1	-	-	-	-	-	-	-	-	-	369	-	-	-	-	-
Great Lakes base stock grades	1	-	-	-	-	-	-	-	-	-	381	-	-	-	-	-
Great Lakes end-cap grades	1	-	-	-	-	-	-	-	-	-	381	-	-	-	-	-
Great Lakes impervious grades	1	-	-	-	-	-	-	-	-	-	381	-	-	-	-	-
Hilger H. S. grade	1	-	-	-	-	-	352	-	354	-	-	-	-	-	-	-
Karbate	1	-	-	-	-	-	-	-	358	-	-	-	-	-	-	-
Lampblack-base	1	-	-	-	-	-	-	-	367	-	-	-	-	-	-	-
Natural graphite-base	1	-	-	-	-	-	352	-	354	-	-	-	-	-	-	-
Pyrolytic	1	-	-	-	-	-	-	-	317	-	319	-	325-331	333-335	-	-
Pyrolytic coating on tantalum .	6-II	-	-	-	-	-	-	-	-	-	-	-	573-575	-	-	-
Pyrolytic, nucleated and regenerative	1	-	-	-	-	-	-	-	-	-	319	-	-	-	-	-
Silicon carbide bonded . . .	1	-	-	-	-	-	-	-	-	-	-	-	386	-	-	-

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Graphites, others (cont.)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unspecified grades	1	105	105	-	-	105	371	375	377	379	383	-	386-388	-	-	390
Graphite + Silicon carbide . . .	5	-	-	-	-	-	-	737	-	-	-	-	-	-	-	-
Graphite + Thorium (di-)oxide .	5	-	-	-	-	-	-	-	739	-	-	-	-	-	-	-
Graphite + Uranium (di-)carbide	5	-	-	-	-	-	-	-	743	-	-	-	-	-	-	-
Graphite + Uranium (di-)oxide .	5	-	-	-	-	-	-	-	741	-	-	-	-	-	-	-
Graphite + Zirconium (pyro-)-carbide	5	-	-	-	-	-	-	-	-	-	745	-	-	-	-	-
Graphite fabric	6-II	-	-	-	-	-	-	-	-	1271	-	-	-	-	-	-
Graphite cloth laminates																
PT-0110	6-II	-	-	-	-	-	-	-	-	-	1227	-	-	-	-	-
PT-0111	6-II	-	-	-	-	-	-	-	-	-	1227	-	-	-	-	-
PT-0113	6-II	-	-	-	-	-	-	-	-	-	1227	-	-	-	-	-
PT-0114	6-II	-	-	-	-	-	-	-	-	-	1227	-	-	-	-	-
PT-0154	6-II	-	-	-	-	-	-	-	-	-	1227	-	-	-	-	-
PT-0156	6-II	-	-	-	-	-	-	-	-	-	1227	-	-	-	-	-
Graphite fibers-tantalum shield composite system	6-II	-	-	-	-	-	-	-	1281	-	-	-	-	-	-	-
Graphite-phenolic laminate FM-5064	6-II	-	-	-	-	-	-	1140	-	-	-	-	-	-	-	-
Gray cast iron	3	-	-	-	-	-	-	-	29-33	-	39	-	-	-	-	-
Gray cast iron, ferritic base . .	3	-	-	-	-	-	-	-	33	-	-	-	-	-	-	-
Gray cast iron, pearlitic base .	3	-	-	-	-	-	-	-	31	-	-	-	-	-	-	-
H																
Hafnia	4-I	192	192	-	-	-	194	196	198	-	200	-	202	-	-	204
Hafnium (Hf)	1	556	556	-	-	-	558	560	-	-	562	-	-	-	-	-
Hafnium + Zirconium	2-I	236	236	-	-	-	238	240	242	-	244	-	-	-	-	246
Hafnium antimonide (HfSb) . . .	6-I	-	-	-	-	-	55	-	-	-	-	-	-	-	-	-
Hafnium beryllide (Hf_2Be_{21}) . .	6-I	-	-	-	-	-	-	98	-	-	100	-	-	-	-	-
Hafnium (di-)boride (HfB_2) . .	6-I	170	170	-	-	-	172	174	176	-	178	-	180	-	-	-
Hafnium carbide (HfC)	5	49	49	-	-	-	51	53	55	57	59	-	61	-	-	-
Hafnium carbide + Zirconium cermet	6-II	-	-	-	-	-	-	-	-	-	852	-	-	-	-	-
Hafnium-chromium intermetallics ($HfCr_2$)	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-
Hafnium-cobalt intermetallics ($HfCo_2$)	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-
Hafnium ferrides ($HfFe_2$)	6-I	-	306	-	-	-	-	-	-	-	-	-	-	-	-	-
Hafnium fluoride (HfF_4)	5	-	-	-	-	-	-	367	-	-	-	-	-	-	-	-
Hafnium germanide (HfGe) . . .	6-I	-	-	-	-	-	325	-	-	-	-	-	-	-	-	-
Hafnium-manganese intermetallics ($HfMn_2$)	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-

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Hafnium-molybdenum intermetallics ($HfMo_2$)	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Hafnium-nickel intermetallics ($HfNi_2$)	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Hafnium nitride (HfN)	5	517	517	-	-	-	519	521	523	-	525	-	527-529	-	-	531
Hafnium (di-)oxide (HfO_2) . . .	4-I	192	192	-	-	-	194	196	198	-	200	-	202	-	-	204
Hafnium (di-)oxide coating on tungsten	6-II	-	-	-	-	-	-	-	-	-	-	-	1377-1379	-	-	-
Hafnium (di-)oxide + ΣX_i . . .	4-I	-	-	-	-	-	-	-	-	-	711	-	-	-	-	-
Hafnium (di-)oxide + Calcium oxide	4-I	-	-	-	-	-	-	-	-	-	701	-	-	-	-	-
Hafnium (di-)oxide + Magnesium oxide	4-I	-	-	-	-	-	-	-	-	-	703	-	-	-	-	-
Hafnium (di-)oxide + Tantalum (pent-)oxide	4-I	-	-	-	-	-	-	-	-	-	705	-	-	-	-	-
Hafnium (di-)oxide + Titanium (di-)oxide	4-I	-	-	-	-	-	-	-	-	-	707	-	-	-	-	-
Hafnium (di-)oxide + Titanium (di-)oxide + Zirconium (di-)oxide	4-I	-	-	-	-	-	-	-	-	-	709	-	-	-	-	-
Hafnium selenide (HfSe)	6-I	-	-	-	-	-	331	-	-	-	-	-	-	-	-	-
Hafnium silicate ($HfO_2 \cdot SiO_2$) . .	4-II	-	-	-	-	-	-	-	-	-	1241	-	-	-	-	-
Hafnium silicides																
HfSi	6-I	-	524	-	-	-	-	-	-	-	-	-	-	-	-	-
$HfSi_2$	6-I	523	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hafnium tellurides (HfTe) . . .	6-I	-	-	-	-	-	638	-	-	-	-	-	-	-	-	-
Hafnium-vanadium intermetallics (HfV_2)	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Hafnon	4-II	-	-	-	-	-	-	-	-	-	1241	-	-	-	-	-
Hamilton standard foam-inplace.	6-II	962	-	-	-	-	-	-	-	-	966	-	-	-	-	-
Hastelloy 25	2-II	-	-	-	-	-	-	-	-	-	898	-	-	-	-	-
Hastelloy 500	2-II	-	-	-	-	-	-	-	-	-	1154	-	-	-	-	-
Hastelloy A	2-II	-	-	-	-	-	-	-	1261	-	-	-	-	-	-	-
Hastelloy B	2-II	1277	1275	-	-	-	-	1279	1281	-	1287	1289	1293-1295	1297	-	-
Hastelloy C	2-II	1119	-	-	-	-	-	1130	1136	-	1166	-	-	-	-	-
Hastelloy C (AMS-5530)	2-II	1277	-	-	-	-	-	-	1281	-	1283	1289	1291-1295	1297	-	-
Hastelloy C (AMS-5530C) . . .	2-II	-	-	-	-	-	-	-	-	-	-	1289	1293	1297	-	-
Hastelloy C coating on AISI 310 .	6-II	-	-	-	-	-	-	-	-	-	-	-	1337	-	-	-
Hastelloy D	2-II	-	-	-	-	-	-	-	-	-	1301	-	-	-	-	-
Hastelloy F	2-II	-	-	-	-	-	-	-	-	-	1164	-	-	-	-	-
Hastelloy N	2-II	1277	-	-	-	-	-	-	1281	-	1283	-	-	-	-	-
Hastelloy R-235	2-II	1122	-	-	-	-	-	1128	1136-1138	-	1161	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Hastelloy X	2-II	1119, 1257	-	-	-	-	-	-	1134, 1261		1164	-	1172, 1189	1203	-	-
Hastelloy X coating on AISI 310 .	6-II	-	-	-	-	-	-	-	-	-	-	-	1339	-	-	-
Hematite	4-I	-	-	-	-	-	214	218	-	-	222	-	-	224	-	-
Hidurel 6	2-II	-	-	-	-	-	962	-	964	-	-	-	-	-	-	-
Holmia	4-I	-	-	-	-	-	-	206	-	-	208	-	-	-	-	-
Holmium (Ho)	1	564	564	564	564	564	566	-	-	-	-	-	-	-	-	-
Holmium borides																
HoB_4	6-I	295	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HoB_6	6-I	295	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Holmium carbides																
HoC_2	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ho_2C_3	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Holmium-cobalt intermetallics																
$HoCo_2$	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$HoCo_5$	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Holmium ferrides																
$HoFe_2$	6-I	306	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$HoFe_5$	6-I	306	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Holmium-gallium intermetallics ($HoGa_2$)	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Holmium-manganese intermetallics																
$HoMn_2$	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$HoMn_5$	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Holmium-nickel intermetallics																
$HoNi_2$	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$HoNi_5$	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Holmium oxide (Ho_2O_3)	4-I	-	-	-	-	-	-	206	-	-	208	-	-	-	-	-
Honeycombs																
17-7PH stainless steel skin and core	6-II	-	-	-	-	-	-	1236	1230	-	1234	-	-	-	-	-
2024 T-3 aluminum alloy skin and core	6-II	-	-	-	-	-	-	1236	1230	-	1232	-	-	-	-	-
2024 T-3 aluminum alloy skin and alkyd isocyanate foam core	6-II	-	-	-	-	-	-	1236	1239	-	1243	-	-	-	-	-
2024 T-3 aluminum alloy skin and phenolic core	6-II	-	-	-	-	-	-	1236	1239	-	1241	-	-	-	-	-
Metal skin and metal core . .	6-II	-	-	-	-	-	-	1236	1230	-	1232-1234	-	-	-	-	-
Plastic and metal composites	6-II	-	-	-	-	-	-	1236	1239	-	1241-1245	-	-	-	-	-
Plastic skin and plastic core .	6-II	-	-	-	-	-	-	-	1247-1253	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Honeycombs (cont.)																
Polyester P-43 resin skin and 2024 T-3 aluminum alloy core	6-II	-	-	-	-	-	-	1236	1239	-	1245	-	-	-	-	-
Polyester resin no. P-43 skin and polyester honeycomb core	6-II	-	-	-	-	-	-	1236	-	-	-	-	-	-	-	-
Polyester resin skin and epoxy resin core	6-II	-	-	-	-	-	-	-	1247	-	-	-	-	-	-	-
Polyester resin skin and phenolic resin core	6-II	-	-	-	-	-	-	-	1247	-	-	-	-	-	-	-
Polyester Vibrin 135 and 181 fabric faces and phenolic core	6-II	-	-	-	-	-	-	1236	-	-	-	-	-	-	-	-
TAC polyester Vibrin 135 and 181 fabric skin and alkyd isocyanate foam core	6-II	-	-	-	-	-	-	-	-	-	1249	-	-	-	-	-
Reinforced polyester skin and polyester core	6-II	-	-	-	-	-	-	-	-	-	1253	-	-	-	-	-
Hysol 6000-CP epoxide	6-II	1006	-	-	-	-	-	-	1010	1082	1012	-	-	-	-	-
I																
Igelit-PCU	6-II	-	-	-	-	-	-	1078	1086	1082	-	-	-	-	-	-
Ilmenite	4-II	-	-	-	-	-	1427	1429	-	-	1431	-	-	-	-	-
Incoloy	3	-	-	-	-	-	-	383	-	-	-	-	-	-	-	-
Incoloy 713C	2-II	-	-	-	-	-	-	1126	1140	-	1152	-	-	-	-	-
Incoloy 800	3	-	-	-	-	-	-	-	-	-	405	-	-	-	-	-
Incoloy 801	3	-	-	-	-	-	-	-	-	-	405	-	-	-	-	-
Incoloy 804	2-II	-	-	-	-	-	-	-	-	-	1164	-	-	-	-	-
Incoloy 825	2-II	-	-	-	-	-	-	-	-	-	1267	-	-	-	-	-
Incoloy 901	2-II	-	-	-	-	-	-	1259	1261	-	-	-	-	-	-	-
Incoloy T	3	-	-	-	-	-	-	-	-	-	405	-	-	-	-	-
Inconel	2-II	1119	1119	-	-	-	1124	1128	1140, 1144, 1145	1148	1158, 1161	-	1172, 1177, 1191	-	-	-
Inconel coated with enamel . . .	6-II	-	-	-	-	-	1151	-	-	-	-	-	-	-	-	-
Inconel coated with NBS coating A-418	6-II	-	-	-	-	-	-	-	-	-	-	-	1361-1363	-	-	-
Inconel coated with NBS coating N-143	6-II	-	-	-	-	-	-	-	-	-	-	-	1353-1355	-	-	-
Inconel coated with nickel aluminides	6-II	-	-	-	-	-	-	-	-	-	-	-	1453-1455	1457	-	-
Inconel coated with silicone . .	6-II	-	-	-	-	-	1495	-	-	-	-	-	-	-	-	-
Inconel coated with zirconium (di-)oxide	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1397	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Inconel 600	2-II	1219, 1307	-	-	-	-	-	-	1223, 1313	-	1158	-	-	-	-	-
Inconel 604	2-II	-	-	-	-	-	-	-	-	-	1158	-	-	-	-	-
Inconel 625	2-II	-	-	-	-	-	-	-	-	-	1166	-	-	-	-	-
Inconel 700	2-II	-	-	-	-	-	-	-	1223	-	1227	-	-	-	-	-
Inconel 702	2-II	-	1119	-	-	-	-	1128	1144	-	1152	-	1193	1205	-	-
Inconel 718	2-II	-	-	-	-	-	-	-	-	-	1164	-	-	-	-	-
Inconel 721	2-II	-	-	-	-	-	-	-	-	-	1158	-	-	-	-	-
Inconel 722	2-II	-	-	-	-	-	-	-	-	-	1158	-	-	-	-	-
Inconel B	2-II	-	-	-	-	-	-	-	-	-	-	-	1174	-	-	-
Inconel M	2-II		-	-	-	-	-	-	-	-	1158	-	-	-	-	-
Inconel W	2-II	-	-	-	-	-	-	-	-	-	1158	-	-	-	-	-
Inconel X	2-II	1119	1119	-	-	-	1124	1128	1140	1148	1158	-	1172, 1177, 1186, 1195	1207	-	-
Inconel X coated with boron carbide	6-II	-	-	-	-	-	-	-	-	-	-	-	1403	1405	-	-
Inconel X coated with nickel-chromium alloy	6-II	-	-	-	-	-	-	-	-	-	-	-	1333	1335	-	-
Inconel X coated with tantalum carbide	6-II	-	-	-	-	-	-	-	-	-	-	-	1417	1419	-	-
Inconel X coated with tungsten .	6-II	-	-	-	-	-	-	-	-	-	-	-	1329	1331	-	-
Inconel X coated with tungsten-cobalt alloy	6-II	-	-	-	-	-	-	-	-	-	-	-	1341	1343	-	-
Inconel X coated with zirconium (di-)oxide	6-II	-	-	-	-	-	-	-	-	-	-	-	1399	1401	-	-
Inconel X 750	2-II	1122	-	-	-	-	-	-	1140	-	1158	-	-	-	-	-
Index rod (gas baked coke) . . .	1	-	-	-	-	-	85	-	87	-	-	-	-	-	-	-
Indium antimonide (InSb). . . .	6-I	-	-	-	-	-	57	59	61	63	65	-	-	-	-	-
Indium arsenide (InAs)	6-I	-	-	-	-	-	87	89	91	-	-	-	-	-	-	-
Indium bismuth selenide ($InBiSe_3$)	6-I	-	-	-	-	-	333	-	-	-	-	-	-	-	-	-
Indium (sesqui-)oxide (In_2O_3). .	4-I	-	-	-	-	-	-	-	-	-	210	-	-	-	-	-
Indium phosphide (InP)	5	-	-	-	-	-	631	633	-	-	-	-	-	-	-	-
Indium telluride (In_2Te_3)	6-I	-	-	-	-	-	586	-	588	-	-	-	-	-	-	-
Inquartation silver	1	-	-	-	-	-	-	904	-	-	-	-	-	-	-	-
Insulating bricks (see bricks)																
Insulating firebricks (see firebricks)																
Insurok C-T-601	6-II	1128	-	-	-	-	-	1142	-	-	-	-	-	-	-	-
Insurok XXX-T-640	6-II	1128	-	-	-	-	-	1142	-	-	-	-	-	-	-	-
Intermetallics (see each individual intermetallics)																
Inverse spinel	4-I	-	-	-	-	-	-	691-693	-	-	-	-	-	-	-	-
Iodide titanium	1	-	993	-	-	-	996	999	1001	-	1005	-	-	-	-	1017

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Iodide zirconium	1	-	1099	-	-	-	1102	1104	1106	-	1111	-	-	-	-	-
Iridium (Ir)	1	568	568	-	-	568	570	572	574	-	-	-	576	-	-	-
Iridium + Rhodium	2-I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	248
Iridium (tri-) silicide ($IrSi_3$) . .	6-I	-	-	-	-	-	407	-	-	-	-	-	-	-	-	-
Iron (Fe)	1	578	578	578	-	578	581	583	585	587	589	592	594-600	602	-	604
Iron, Armco	1	578	-	-	-	-	581	583	585	587	589	592	594, 598	602	-	-
Iron, electrolytic	1	-	578	-	-	578	581	583	-	-	589	-	-	-	-	604
Iron, Svea	1	-	-	-	-	-	-	-	585	-	-	-	-	-	-	-
Iron coated with chromium carbide - cobalt blend.	6-II	-	-	-	-	-	-	-	-	-	-	1407	1409	-	-	-
Iron coated with molybdenum . .	6-II	-	-	-	-	-	-	-	-	-	-	1309	1311	-	-	-
Iron coated with tungsten. . . .	6-II	-	-	-	-	-	-	-	-	-	-	1325	1327	-	-	-
Iron coated with tungsten carbide	6-II	-	-	-	-	-	-	-	-	-	-	1421	1423	-	-	-
Iron + ΣX_i	3	461	-	-	-	-	463	-	465	-	-	-	-	-	-	-
Iron + Aluminum + ΣX_i	3	45	-	-	-	-	47-51	-	-	-	-	-	-	-	-	-
Iron + Carbon + ΣX_i ($C \leq 2.00$) .	3	-	-	-	-	3	5	7-10	-	12-14	16-20	-	-	-	-	22
Iron + Carbon + ΣX_i ($C > 2.00$) .	3	27	-	-	-	-	-	-	29-37	-	39-41	-	-	-	-	-
Iron + Chromium + ΣX_i	3	55	53	-	-	-	57-63	65-77	79-83	85-94	96-118	120	122-134	136-138	-	-
Iron + Chromium + Nickel + + ΣX_i	3	140, 145	140-141	-	-	-	147-153	155-164	166-180	182-193	195-227	229-231	233-272	274-286	-	-
Iron + Cobalt + ΣX_i	3	-	-	-	-	-	288-290	292-294	296	298	300	-	-	302	-	-
Iron + Copper + ΣX_i	3	-	-	-	-	-	304	306	308	-	-	-	-	-	-	-
Iron + Manganese + ΣX_i	3	310	-	-	-	-	312-314	316-323	325-327	329-333	335-343	-	345-347	349	-	-
Iron + Molybdenum + ΣX_i . . .	3	-	-	-	-	-	-	-	351	-	353	-	-	-	-	-
Iron + Nickel + ΣX_i	3	-	-	-	-	-	355	357-359	361-363	365	367-377	-	-	-	-	-
Iron + Nickel + Chromium + + ΣX_i	3	379	-	-	-	-	381	383	385-393	395-397	399-407	-	409-411	413	-	-
Iron + Platinum + ΣX_i	3	-	-	-	-	-	-	-	-	-	415	-	-	-	-	-
Iron + Silicon + ΣX_i	3	-	-	-	-	-	417-419	421-425	427-437	-	439-442	-	-	-	-	-
Iron + Tellurium + ΣX_i	3	-	-	-	-	-	-	446	-	-	-	-	-	-	-	-
Iron + Titanium + ΣX_i	3	-	-	-	-	-	-	448	-	-	-	-	-	-	-	-
Iron + Tungsten + ΣX_i	3	-	-	-	-	-	-	-	450	-	452	-	454	-	-	-
Iron + Vanadium + ΣX_i.	3	-	-	-	-	-	456-458	-	-	-	-	-	-	-	-	-
Iron alloys (see cast irons and steels for special design.)																

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Iron aluminates																
$FeO \cdot Al_2O_3$	4-II	-	-	-	-	-	-	999	-	-	-	-	-	-	-	-
$Fe_2O_3 \cdot 2\ Al_2O_3$	4-II	-	-	-	-	-	-	-	-	-	1001	-	-	-	-	-
Iron beryllide ($FeBe_2$)	6-I	-	158	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron borides																
FeB	6-I	-	296	-	-	-	-	-	-	-	-	-	-	-	-	-
Fe_2B	6-I	-	296	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron carbide (Fe_3C)	5	63	63	-	-	-	-	65	-	-	-	-	-	-	-	-
Iron chromites																
$FeO \cdot Cr_2O_3$	4-II	-	-	-	-	-	-	1051	-	-	1053	-	-	-	-	-
$Fe_2O_3 \cdot 2\ Cr_2O_3$	4-II	-	-	-	-	-	-	-	-	-	1053	-	-	-	-	-
Iron cobaltite ($FeO \cdot Co_2O_3$). . .	4-II	-	-	-	-	-	-	1065	-	-	-	-	-	-	-	-
Iron lead silicate glass	4-II	-	-	-	-	-	1737	-	-	-	-	-	-	-	-	-
Iron-niobium intermetallics (Fe_5Nb_3)	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron nitride (Fe_4N)	5	-	621	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron oxides																
FeO	4-I	-	-	-	-	-	-	216	-	-	222	-	-	-	-	-
Fe_2O_3	4-I	-	-	-	-	-	214	218	-	-	222	-	-	224	-	-
Fe_3O_4	4-I	212	212	-	-	-	-	220	-	-	-	-	-	-	-	-
Iron(ic) oxide coating on Haynes alloy no. 25 (L-605)	6-II	-	-	-	-	-	-	-	-	-	-	-	1381-1383	-	-	-
Iron(ic) oxide + Aluminum oxide	4-I	-	-	-	-	-	-	-	-	-	713	-	-	-	-	-
Iron(ic) oxide + Magnesium oxide	4-I	-	-	-	-	-	-	-	-	-	717	-	-	-	-	-
Iron(ic) oxide + Silicon (di-)oxide	4-I	-	-	-	-	-	-	719	-	-	-	-	-	-	-	-
Iron(ous) oxide + ΣX_i	4-I	-	-	-	-	-	-	-	-	-	721	-	-	-	-	-
Iron(ous, ic) oxide + Iron(ic) oxide	4-I	-	-	-	-	-	-	-	-	-	-	-	715	-	-	-
Iron phosphites																
Fe_2P	5	-	635	-	-	-	-	-	-	-	-	-	-	-	-	-
Fe_3P	5	-	635	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron selenides																
FeSe	6-I	-	-	-	-	-	-	335	-	-	-	-	-	-	-	-
$FeSe_2$	6-I	-	-	-	-	-	-	335	-	-	-	-	-	-	-	-
Fe_3Se_4	6-I	-	-	-	-	-	-	335	-	-	-	-	-	-	-	-
Fe_7Se_8	6-I	-	-	-	-	-	-	335	-	-	-	-	-	-	-	-
Iron (ortho-) silicate ($2\ FeO \cdot SiO_2$)	4-II	-	-	-	-	-	-	1243	-	-	1245	-	-	-	-	-
Iron silicides																
FeSi	6-I	-	409	-	-	-	411	-	-	-	413	-	-	-	-	-
$FeSi_2$	6-I	-	409	-	-	-	-	-	-	-	413	-	-	-	-	-

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Iron silicides (cont.)																
Fe_3Si	6-I	-	409	-	-	-	-	-	-	-	413	-	-	-	-	-
Fe_5Si_3	6-I	-	409	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron sulfides																
FeS	5	-	-	-	-	-	-	680	-	-	-	-	-	-	-	-
FeS_2	5	-	-	-	-	-	-	680	-	-	-	-	-	682	-	-
Iron tellurides																
FeTe	6-I	-	-	-	-	-	-	590	-	-	-	-	-	-	-	-
$FeTe_2$	6-I	-	-	-	-	-	-	590	-	-	592	-	-	-	-	-
Iron titanate ($FeO \cdot TiO_2$)	4-II	-	1425	1425	-	-	1427	1429	-	-	1431	-	-	-	-	-
Iron titanate coating on niobium-zirconium alloys	6-II	-	-	-	-	-	-	-	-	-	-	-	1385	-	-	-
Iron-zirconium intermetallics																
Fe_2Zr	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Fe_3Zr	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Isobutylene and isoprene copolymer	6-II	-	-	-	-	-	-	-	-	1062	-	-	-	-	-	-
Isocyanate polyester elastomer .	6-II	960	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Isofoam	6-II	962	-	-	-	-	-	-	-	-	966	-	-	-	-	-
K																
Kel-F	6-II	1030	-	-	-	-	-	-	1037	-	1045	-	-	-	-	-
Kennametals																
3047	6-II	-	-	-	-	-	-	-	-	-	934	-	-	-	-	-
3109	6-II	-	-	-	-	-	-	-	-	-	934	-	-	-	-	-
3406	6-II	-	-	-	-	-	-	-	-	-	934	-	-	-	-	-
3411	6-II	-	-	-	-	-	-	-	-	-	934	-	-	-	-	-
K 1	6-II	-	-	-	-	-	-	-	-	-	934	-	-	-	-	-
K2S	6-II	-	-	-	-	-	-	-	889	-	885	-	-	-	-	-
K3H	6-II	-	-	-	-	-	-	-	-	-	881	-	-	-	-	-
K4H	6-II	-	-	-	-	-	-	-	-	-	885	-	-	-	-	-
K5H	6-II	-	-	-	-	-	-	-	-	-	885	-	-	-	-	-
K6	6-II	-	-	-	-	-	-	-	889	-	934	-	-	-	-	-
K7H	6-II	-	-	-	-	-	-	-	-	-	885	-	-	-	-	-
K8	6-II	-	-	-	-	-	-	-	-	-	897	-	-	-	-	-
K9	6-II	-	-	-	-	-	-	-	-	-	934	-	-	-	-	-
K10	2-I	-	-	-	-	-	-	-	-	-	565	-	-	-	-	-
K11	6-II	-	-	-	-	-	-	-	-	-	897	-	-	-	-	-
K21	6-II	-	-	-	-	-	-	-	-	-	883	-	-	-	-	-
K45	6-II	-	-	-	-	-	-	-	-	-	885	-	-	-	-	-
K68	6-II	-	-	-	-	-	-	-	-	-	934	-	-	-	-	-
K81	6-II	-	-	-	-	-	-	-	-	-	881	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Kennametals (cont.)																
K82	6-II	-	-	-	-	-	-	-	-	-	881	-	-	-	-	-
K84	6-II	-	-	-	-	-	-	-	-	-	881	-	-	-	-	-
K86	6-II	-	-	-	-	-	-	-	-	-	881	-	-	-	-	-
K90	6-II	-	-	-	-	-	-	-	-	-	903	-	-	-	-	-
K91	6-II	-	-	-	-	-	-	-	-	-	903	-	-	-	-	-
K92	6-II	-	-	-	-	-	-	-	-	-	903	-	-	-	-	-
K94	6-II	-	-	-	-	-	-	-	-	-	901	-	-	-	-	-
K95	6-II	-	-	-	-	-	-	-	-	-	899	-	-	-	-	-
K96	6-II	-	-	-	-	-	-	-	-	-	899	-	-	-	-	-
K138	6-II	136	-	-	-	-	-	-	-	-	864	-	-	-	-	-
K138A	6-II	136	-	-	-	-	-	-	-	-	864	-	-	-	-	-
K150A	6-II	-	-	-	-	-	-	-	-	-	875	-	-	-	-	-
K151	6-II	-	-	-	-	-	-	-	-	-	875	-	-	-	-	-
K151A	6-II	-	-	-	-	-	-	-	-	-	875	-	-	-	-	-
K151B	6-II	-	-	-	-	-	-	-	-	-	877	-	-	-	-	-
K152B	6-II	142	-	-	-	-	-	-	-	-	877	-	-	-	-	-
K161B	6-II	-	-	-	-	-	-	871	873	-	875	-	-	-	-	-
K162B	6-II	-	-	-	-	-	-	-	-	-	877	-	-	-	-	-
K601	6-II	-	-	-	-	-	-	-	-	-	860	-	-	-	-	-
K701	6-II	-	-	-	-	-	-	-	-	-	895	-	-	-	-	-
K801	6-II	-	-	-	-	-	-	-	-	-	907	-	-	-	-	-
KM	6-II	-	-	-	-	-	-	-	-	-	883	-	-	-	-	-
Kennametal K-151A coating on AISI 310	6-II	-	-	-	-	-	-	-	-	-	-	-	1491	-	-	-
Kennametal K-162B coating on AISI 310	6-II	-	-	-	-	-	-	-	-	-	-	-	1493	-	-	-
Kennertium W-2	6-II	-	-	-	-	-	-	-	-	-	934	-	-	-	-	-
Kennertium W-10	6-II	-	-	-	-	-	-	-	-	-	934	-	-	-	-	-
Kimble N-51A glass	4-II	-	-	-	-	-	-	-	-	-	-	-	1707	1709	1713	-
Kyanite	4-II	-	-	-	-	-	-	1189	1191	-	1195	-		-	-	-
L																
Lamacoid 6045	6-II	-	-	-	-	-	-	-	-	1230	-	-	-	-	-	-
Lamicoid C-6030	6-II	1130	-	-	-	-	-	1144	-	-	-	-	-	-	-	-
Laminac 4129	6-II	-	-	-	-	-	-	-	-	-	968	-	-	-	-	-
Laminates																
Ceramic	6-II	-	-	-	-	-	-	-	-	-	1225	-	-	-	-	-
Forsterite-stainless steel . .	6-II	-	-	-	-	-	-	-	1223	-	-	-	-	-	-	-
Graphite cloth	6-II	-	-	-	-	-	-	-	-	-	1227	-	-	-	-	-
Reinforced epoxide	6-II	-	-	-	-	-	-	1117	1120	1220	1122-1124	-	-	-	-	-

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Laminates (cont.)																
Reinforced epoxy resin	6-II	-	-	-	-	-	-	1115-1117	1120	1220	1122-1124	-	-	-	-	-
Reinforced epoxy and plyophen copolymer resin	6-II	-	-	-	-	-	-	-	-	1218	-	-	-	-	-	-
Reinforced copolymer of phenolic and epoxide resins	6-II	-	-	-	-	-	-	-	-	-	1126	-	-	-	-	-
Reinforced melamine-formaldehyde resin	6-II	-	-	-	-	-	-	-	-	1128	-	-	-	-	-	-
Reinforced phenolic resin	6-II	1130	-	-	-	-	-	1132-1146	1148-1156	1159-1170, 1220	1172-1179	-	-	-	-	-
Reinforced phenyl silane resin	6-II	-	-	-	-	-	-	1212	-	1220	-	-	-	-	-	-
Reinforced polyester resin	6-II	1180	-	-	-	-	-	1191	1195-1198	1220	1200	-	-	-	-	-
Reinforced TAC polyester resin	6-II	1180	-	-	-	-	-	1183	1185	1220	1187-1189	-	-	-	-	-
Reinforced polytetrafluoroethylene	6-II	-	-	-	-	-	-	1214	1218	1220	-	-	-	-	-	-
Reinforced silicone resin	6-II	1204	-	-	-	-	-	1206	1208, 1218	1220	1200	-	-	-	-	-
Reinforced teflon	6-II	-	-	-	-	-	-	1214	1218	1220	-	-	-	-	-	-
Lampblacks																
Lampblack	1	-	-	-	-	-	-	-	97	-	-	-	99-101	103	-	-
CEP National	1	-	-	-	-	-	-	-	-	-	-	-	-	103	-	-
L 113SP	1	-	-	-	-	-	-	-	-	-	-	-	101	103	-	-
RW Spektral II	1	-	-	-	-	-	-	-	-	-	-	-	-	103	-	-
Lanthana	4-I	226	226	-	-	-	-	228	-	-	230	-	-	-	-	232
Lanthanum (La)	1	606	606	606	606	606	608	610	-	-	612	-	-	-	-	614
Lanthanum + Calcium	2-I	-	250	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum + Magnesium	2-I	252	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum + Magnesium + ΣX_i	2-II	1022	1022	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum aluminides																
LaAl	6-I	43	43	-	-	-	-	-	-	-	-	-	-	-	-	-
$LaAl_2$	6-I	43	43	-	-	-	-	-	-	-	-	-	-	-	-	-
$LaAl_4$	6-I	43	43	-	-	-	-	-	-	-	-	-	-	-	-	-
La_3Al_2	6-I	-	43	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum antimonide																
La_2Sb	6-I	-	81	-	-	-	-	-	-	-	-	-	-	-	-	-
La_3Sb_2	6-I	-	81	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum arsenide (LaAs)	6-I	94	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum-bismuth intermetallics (LaBi)	6-I	667	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Lanthanum borides																
LaB_4	6-I	295	296	-	-	-	-	-	-	-	-	-	-	-	-	-
LaB_6	6-I	295	296	-	-	-	300	-	-	-	302	-	-	-	-	-
Lanthanum bromide ($LaBr_3$) . .	5	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum-cadmium intermetallics																
LaCd	6-I	667	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$LaCd_2$	6-I	667	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$LaCd_{11}$	6-I	667	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum carbides																
LaC_2	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
La_2C_3	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum chloride ($LaCl_3$) . .	5	339	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum-copper intermetallics																
LaCu	6-I	667-668	668	-	-	-	-	-	-	-	-	-	-	-	-	-
$LaCu_2$	6-I	667-668	668	-	-	-	-	-	-	-	-	-	-	-	-	-
$LaCu_4$	6-I	-	668	-	-	-	-	-	-	-	-	-	-	-	-	-
$LaCu_5$	6-I	667	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$LaCu_6$	6-I	-	668	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum fluoride (LaF_3) . . .	5	-	407	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum-gallium intermetallics ($LaGa_2$)	6-I	667	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum germanides ($LaGe_2$) .	6-I	323	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum-gold intermetallics																
LaAu	6-I	667-668	668	-	-	-	-	-	-	-	-	-	-	-	-	-
$LaAu_2$	6-I	-	668	-	-	-	-	-	-	-	-	-	-	-	-	-
$LaAu_3$	6-I	667	668	-	-	-	-	-	-	-	-	-	-	-	-	-
La_2Au	6-I	667	668	-	-	-	-	-	-	-	-	-	-	-	-	-
La_3Au	6-I	668	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum hydride (LaH_2) . . .	5	427	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum-indium intermetallics ($LaIn_3$)	6-I	667	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum-lead intermetallics																
LaPb	6-I	-	668	-	-	-	-	-	-	-	-	-	-	-	-	-
$LaPb_3$	6-I	667	668	-	-	-	-	-	-	-	-	-	-	-	-	-
La_2Pb	6-I	-	668	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum-magnesium intermetallics																
LaMg	6-I	667	668	-	-	-	-	-	-	-	-	-	-	-	-	-
$LaMg_3$	6-I	-	668	-	-	-	-	-	-	-	-	-	-	-	-	-
$LaMg_9$	6-I	-	668	-	-	-	-	-	-	-	-	-	-	-	-	-
La_4Mg	6-I	-	668	-	-	-	-	-	-	-	-	-	-	-	-	-

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Lanthanum-mercury intermetallics																
LaHg	6-I	667	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$LaHg_2$	6-I	667	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$LaHg_3$	6-I	667	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum-nickel intermetallics ($LaNi_5$)	6-I	667	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum nitride (LaN)	5	621	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum-osmium intermetallics ($LaOs_2$)	6-I	667	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum oxides																
LaO	4-I	226	-	-	-	-	-	-	-	-	-	-	-	-	-	-
La_2O_3	4-I	226	226	-	-	-	-	228	-	-	230	-	-	-	-	232
Lanthanum phosphide (LaP) . . .	5	635	-	-	-	-	-	-	-	-	-	-	-		-	-
Lanthanum selenides																
LaSe	6-I	365	-	-	-	-	-	-	-	-	-	-	-	-	-	-
La_2Se_3	6-I	365	-	-	-	-	367	-	-	-	-	-	-	-	-	-
La_3Se_4	6-I	365	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum silicides ($LaSi_2$) . .	6-I	415	415	-	-	-	527	-	-	-	417	-	-	-	-	-
Lanthanum-silver intermetallics																
LaAg	6-I	667-668	668	-	-	-	-	-	-	-	-	-	-	-	-	-
$LaAg_2$	6-I	667-668	668	-	-	-	-	-	-	-	-	-	-	-	-	-
$LaAg_3$	6-I	667-668	668	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum stannides																
$LaSn_3$	6-I	541	541	-	-	-	-	-	-	-	-	-	-	-	-	-
La_2Sn	6-I	-	541	-	-	-	-	-	-	-	-	-	-	-	-	-
La_2Sn_3	6-I	-	541	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum sulfides																
LaS	5	684	684	-	-	-	-	-	-	-	686	-	-	-	-	-
LaS_2	5	684	-	-	-	-	-	-	-	-	-	-	-	-	-	-
La_2S_3	5	684	684	-	-	-	-	-	-	-	686	-	-	-	-	-
La_3S_4	5	684	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum telluride (La_2Te_3) .	6-I	-	-	-	-	-	638	-	-	-	-	-	-	-	-	-
Lanthanum-thallium intermetallics																
LaTl	6-I	-	669	-	-	-	-	-	-	-	-	-	-	-	-	-
$LaTl_3$	6-I	667	669	-	-	-	-	-	-	-	-	-	-	-	-	-
La_2Tl	6-I	-	669	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum-zinc intermetallics																
LaZn	6-I	667	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$LaZn_5$	6-I	667	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Lanthanum-zinc intermetallics (cont.)																
$LaZn_{11}$	6-I	667	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lawsonite	4-II	-	-	-	-	-	-	1233	-	-	-	-	-	-	-	-
Lead + Copper	2-I	254	-	-	-	-	-	-	-	-	256	-	-	-	-	-
Lead aluminate ($PbO \cdot Al_2O_3$) . .	4-II	-	-	-	-	-	-	-	-	-	1003	-	-	-	-	-
Lead borate glass	4-II	-	-	-	-	-	-	-	-	-	1615	-	-	-	-	-
Lead borosilicate glass	4-II	-	-	-	-	-	-	-	-	-	1717	-	-	-	-	-
Lead-barium magnesium aluminum silicate	4-II	-	-	-	-	-	-	-	-	-	1256-1258	-	-	-	-	-
Lead boron silicate ($5\ PbO \cdot B_2O_3 \cdot SiO_2$)	4-II	-	-	-	-	-	-	-	-	-	1250	-	-	-	-	-
Lead germanium oxide ($2\ PbO \cdot GeO_2$)	4-II	-	-	-	-	-	-	-	-	-	1133	-	-	-	-	-
Lead germanium phosphate ($5\ PbO \cdot GeO_2 \cdot P_2O_5$)	4-II	-	-	-	-	-	-	-	-	-	1175	-	-	-	-	-
Lead magnesium aluminum silicate	4-II	-	-	-	-	-	-	-	-	-	1252-1254	-	-	-	-	-
Lead molybdate ($PbO_2 \cdot MoO_2$). .	4-II	-	-	-	-	-	-	1113	-	-	1115	-	-	-	-	-
Lead (mon-)oxide (PbO). . . .	4-I	-	-	-	-	-	-	234	-	-	-	-	-	-	-	-
Lead phosphates																
$PbO \cdot P_2O_5$	4-II	-	-	-	-	-	-	-	-	-	1171	-	-	-	-	-
$2\ PbO \cdot P_2O_5$	4-II	-	-	-	-	-	-	-	-	-	1171	-	-	-	-	-
$3\ PbO \cdot P_2O_5$	4-II	-	-	-	-	-	-	-	-	-	1171	-	-	-	-	-
$3\ PbO \cdot 2\ P_2O_5$	4-II	-	-	-	-	-	-	-	-	-	1171	-	-	-	-	-
$5\ PbO \cdot 2\ P_2O_5$	4-II	-	-	-	-	-	-	-	-	-	1171	-	-	-	-	-
$8\ PbO \cdot P_2O_5$	4-II	-	-	-	-	-	-	-	-	-	1171	-	-	-	-	-
Lead potassium silicate glass. .	4-II	-	-	-	-	-	-	-	-	1749	-	-	-	-	-	-
Lead silicates																
$PbO \cdot SiO_2$	4-II	-	-	-	-	-	-	-	-	-	1247	-	-	-	-	-
$2\ PbO \cdot SiO_2$	4-II	-	-	-	-	-	-	-	-	-	1247	-	-	-	-	-
$4\ PbO \cdot SiO_2$	4-II	-	-	-	-	-	-	-	-	-	1247	-	-	-	-	-
Lead silicate glass	4-II	-	-	-	-	-	1739	-	1741	-	-	-	1743	1745	1747	-
Lead silicon phosphate ($5\ PbO \cdot SiO_2 \cdot P_2O_5$)	4-II	-	-	-	-	-	-	-	-	-	1177	-	-	-	-	-
Lead strontium silicate glass . .	4-II	-	-	-	-	-	-	-	-	-	1751	-	-	-	-	-
Lead sulfide (PbS)	5	-	-	-	-	-	-	-	-	-	-	-	-	688	-	-
Lead telluride (PbTe)	6-I	-	-	-	-	-	594	-	596	-	-	-	-	-	-	-
Lead telluride + Tin telluride . .	6-I	-	-	-	-	-	717	-	-	-	-	-	-	-	-	-
Lead (meta-)titanate ($PbO \cdot TiO_2$)	4-II	-	-	-	-	-	-	-	1433	-	1435	-	-	-	-	-
Lead tungstate ($PbO \cdot WO_3$) . . .	4-II	-	-	-	-	-	-	1474	-	-	1476	-	-	-	-	-
Lead zirconate ($PbO \cdot ZrO_2$) . .	4-II	-	-	-	-	-	-	-	1510	-	-	-	-	-	-	-
Leonhardite	4-II	-	-	-	-	-	-	1233	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Libbey-Owens-Ford plate glass no. 9330	4-II	-	-	-	-	-	-	1791	-	-	-	-	-	-	-	-
Lime	4-I	99	99	-	-	-	101	103	105	-	107	-	-	-	-	109
Lime window glass	4-II	-	-	-	-	-	-	-	1831	-	-	-	-	-	-	-
Lithium + Sodium	2-I	-	-	-	-	-	-	-	-	258	-	-	-	-	-	-
Lithium aluminates																
$Li_2O \cdot Al_2O_3$	4-II	-	-	-	-	-	-	-	-	-	1005	-	-	-	-	-
$Li_2O \cdot 5\ Al_2O_3$	4-II	-	-	-	-	-	-	-	-	-	1005	-	-	-	-	-
Lithium aluminum borate glass .	4-II	-	-	-	-	-	-	-	-	-	1617	-	-	-	-	-
Lithium aluminum fluoride (Li_3AlF_6)	5	-	-	-	-	-	-	377	-	-	-	-	-	-	-	-
Lithium aluminum silicate																
$Li_2O \cdot Al_2O_3 \cdot 3\ SiO_2$	4-II	-	-	-	-	-	-	-	-	-	1275	-	-	-	-	-
$Li_2O \cdot Al_2O_3 \cdot 2\ SiO_2$	4-II	-	-	-	-	-	-	-	-	-	1268-1270	-	-	-	-	-
$Li_2O \cdot 1.08\ Al_2O_3 \cdot 3.5\ SiO_2$ . .	4-II	-	-	-	-	-	-	-	-	-	1268	-	-	-	-	-
$Li_2O \cdot Al_2O_3 \cdot 4\ SiO_2$	4-II	-	-	-	-	-	-	-	-	-	1268-1270	-	-	-	-	-
$Li_2O \cdot Al_2O_3 \cdot 6\ SiO_2$	4-II	-	-	-	-	-	-	-	-	-	1268-1270	-	-	-	-	-
$Li_2O \cdot Al_2O_3 \cdot 8\ SiO_2$	4-II	-	-	-	-	-	-	-	-	-	1268, 1275	-	-	-	-	-
$Li_2O \cdot Al_2O_3 \cdot 10\ SiO_2$.	4-II	-	-	-	-	-	-	-	-	-	1275	-	-	-	-	-
Lithium aluminum silicate + + Lead bisilicate	4-II	-	-	-	-	-	-	-	-	-	1566	-	-	-	-	-
Lithium aluminum silicate + + Lead borate	4-II	-	-	-	-	-	-	-	-	-	1560	-	-	-	-	-
Lithium aluminum silicate + + Lithium aluminum germanium oxide	4-II	-	-	-	-	-	-	-	-	-	1568	-	-	-	-	-
Lithium aluminum silicate bodies, barium modified	4-II	-	-	-	-	-	-	-	-	-	1277-1281	-	-	-	-	-
Lithium aluminum silicate glass.	4-II	-	-	-	-	-	-	-	-	-	1757-1759	-	-	-	-	-
Lithium beryllium borate glass .	4-II	-	-	-	-	-	-	-	-	-	1619	-	-	-	-	-
Lithium beryllium fluoride (Li_2BeF_4)	5	-	-	-	-	-	-	379	-	-	-	-	-	-	-	-
Lithium (meta-)borate ($Li_2O \cdot B_2O_3$)	4-II	-	-	-	-	1041	-	-	-	-	-	-	-	-	-	1043
Lithium borate glass	4-II	-	-	-	-	-	1607	-	-	-	-	-	-	-	-	-
Lithium borosilicate glass . . .	4-II	-	-	-	-	-	-	-	-	-	1719	-	-	-	-	-
Lithium calcium silicate glass .	4-II	-	-	-	-	-	-	-	-	-	1761	-	-	-	-	-
Lithium carbide (Li_4C_2)	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lithium chloride ($LiCl$ and Li_2Cl_2)	5	317	317	-	317	317	-	-	-	-	-	-	-	-	-	319
Lithium cobalt oxide ($Li_xCo_{1-x}O$)	4-II	-	-	-	-	-	1135	-	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Lithium cobalt nickel oxide [$Li_x(Co_yNi_{1-y})_{1-x}O$]	4-II	-	-	-	-	-	1137	-	1139	-	-	-	-	-	-	-
Lithium copper oxide ($Li_xCu_{1-x}O$)	4-II	-	-	-	-	-	1141	-	1143	-	-	-	-	-	-	-
Lithium fluoride (LiF and Li_2F_2)	5	369	369	369	369	369	-	-	371	-	-	-	-	373	-	375
Lithium fluoride + Potassium fluoride	5	-	-	-	-	-	-	409	-	-	-	-	-	-	-	-
Lithium germanium oxides																
$Li_2O \cdot GeO_2$	4-II	-	-	-	-	-	-	-	-	-	1145	-	-	-	-	-
$Li_2O \cdot 7\ GeO_2$	4-II	-	-	-	-	-	-	-	-	-	1145	-	-	-	-	-
$2\ Li_2O \cdot GeO_2$	4-II	-	-	-	-	-	-	-	-	-	1145	-	-	-	-	-
$3\ Li_2O \cdot 2\ GeO_2$	4-II	-	-	-	-	-	-	-	-	-	1145	-	-	-	-	-
$3\ Li_2O \cdot 8\ GeO_2$	4-II	-	-	-	-	-	-	-	-	-	1145	-	-	-	-	-
Lithium hydride (LiH)	5	431	431	431	431	-	-	433	435	-	437	-	-	-	-	-
Lithium lead silicate glass . . .	4-II	-	-	-	-	-	1763		-	-	-	-	-	-	-	-
Lithium-magnesium-barium silicate glass	4-II	-	-	-	-	-	1765		-	-	-	-	-	-	-	-
Lithium magnesium borate glass	4-II	-	-	-	-	-	-	-	-		1621	-	-	-	-	-
Lithium manganese oxide ($Li_xMn_{1-x}O$)	4-II	-	-	-	-	-	1147	-	-	-	-	-	-	-	-	-
Lithium manganese selenide ($Li_xMn_{1-x}Se$)	6-I	-	-	-	-	-	337	-	339	-	-	-	-	-	-	-
Lithium nickel oxide ($Li_xNi_{1-x}O$)	6-II	-	-	-	-	-	1149	-	1151	-	-	-	-	-	-	-
Lithium nitride (Li_3N)	5	621	-	621	621	-	-	-	-	-	-	-	-	-	-	-
Lithium oxide (Li_2O).	4-I	236	236	236	236	236	-	238	-	-	-	-	-	-	-	240
Lithium potassium aluminum silicate	4-II	-	-	-	-	-	-	-	-	-	1283	-	-	-	-	-
Lithium silicates																
$Li_2O \cdot 2\ SiO_2$	4-II	-	-	-	-	-	-	-	-	-	1260	-	-	-	-	-
$2\ Li_2O \cdot SiO_2$	4-II	-	-	-	-	-	-	-	-	-	1260	-	-	-	-	-
Lithium silicate glass	4-II	-	-	-	-	-	1753	-	-	-	1755	-	-	-	-	-
Lithium silicate - quartz body . .	4-II	-	-	-	-	-	-	-	-	-	1262-1264	-	-	-	-	-
Lithium sodium silicate glass .	4-II	-	-	-	-	-	1767	-	-	-	-	-	-	-	-	-
Lithium titanate ($Li_2O \cdot TiO_2$). .	4-II	-	-	-	-	-	-	1437	-	-	-	-	-	-	-	-
Lithium uranate ($Li_2O \cdot UO_3$) . .	4-II	-	1482	-	-	-	-	-	-	-	-	-	-	-	-	-
Lithium zinc ferrite ($Li_xZn_{0.9}Fe_{2.1-x}O_4$)	4-II	-	-	-	-	-	-	1101	-	-	-	-	.	-	-	-
Lockfoam	6-II	962	-	-	-	-	-	-	-	-	966	-	-	-	-	-
Lohm	2-I	-	-	-	-	-	-	-	138	-	-	-	-	-	-	-
LT-1 Metamic cermet	6-II	731	-	-	-	-	-	-	-	-	-	-	735	-	-	-
LT-1B Haynes cermet	6-II	-	-	-	-	-	-	-	-	-	739	-	747	-	-	-
LT-2 Haynes cermet.	6-II	-	-	-	-	-	-	-	-	-	743	-	745	-	-	-
Lucalox	4-I	-	-	-	-	-	-	-	11	-	22	-	32	-	-	-
Lucite	6-II	1020	-	-	-	-	-	-	1024	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Lustrex L-2020	6-II	-	1076	-	-	-	-	-	-	-	-	-	-	-	-	-
Lutecium (Lu)	1	616	616	616	616	616	618	620	-	-	-	-	-	-	-	-
Lutecium borides																
LuB_4	6-I	295	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LuB_6	6-I	295	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lutecium carbide (LuC_2)	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lutecium-osmium intermetallics ($LuOs_2$)	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lutecium oxide (Lu_2O_3).	4-I	-	-	-	-	-	-	242	-	-	244	-	246	-	-	-
M																
Magnesia-alumina spinel. . . .	4-II	-	-	-	-	-	-	-	-	1015	-	-	-	-	-	-
Magnesium (Mg)	1	622	622	622	-	622	624	626	628	630	632	-	634	636-638	-	640
Magnesium + ΣX_i	2-II	-	-	-	-	-	1071-1075	1077	1079	-	1081	-	-	-	-	-
Magnesium + Aluminum + ΣX_i .	2-II	1024	1024	1024	-	-	1026	1029	1031	1033	1035	-	-	1038-1042	-	-
Magnesium + Cerium	2-I	-	-	-	-	-	-	-	260	-	-	-	-	-	-	-
Magnesium + Cerium + ΣX_i. . .	2-II	-	-	-	-	-	-	-	1045	-	-	-	-	-	-	-
Magnesium + Thorium	2-I	264	262	262	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium + Thorium + ΣX_i . .	2-II	-	1047	1047	-	-	1049-1053	1055	1057	-	1059	-	-	1061	-	-
Magnesium + Zinc	2-I	-	266	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium + Zinc + ΣX_i	2-II	-	1063	1063	-	-	-	1065	1067	-	1069	-	-	-	-	-
Magnesium L120 (British aircraft material spec.).	1	-	-	-	-	-	-	-	-	-	-	-	-	636	-	-
Magnesium alloys (special designation)																
1959	2-I	-	-	-	-	-	-	-	260	-	-	-	-	-	-	-
1960	2-I	-	-	-	-	-	-	-	260	-	-	-	-	-	-	-
1961	2-I	-	-	-	-	-	-	-	260	-	-	-	-	-	-	-
1964	2-II	-	-	-	-	-	-	-	1045	-	-	-	-	-	-	-
1992	2-II	-	-	-	-	-	-	-	1045	-	-	-	-	-	-	-
AM-100A	2-II	-	-	-	-	-	1026	-	-	-	-	-	-	-	-	-
AN-M-29	2-II	1024	-	-	-	-	-	1029	1031	1033	1035	-	-	-	-	-
AX-81-X1	2-II	-	-	-	-	-	-	-	-	-	1035	-	-	-	-	-
AZ-31	2-II	-	-	-	-	-	-	-	-	-	-	-	-	1038	-	-
AZ-31A	2-II	-	1024	1024	-	-	1026	-	-	-	1035	-	-	1040	-	-
AZ-31B	2-II	-	1024	1024	-	-	1026	1029	-	-	1035	-	-	1040-1042	-	-
AZ-63A	2-II	-	-	-	-	-	1026	-	-	-	1035	-	-	-	-	-
AZ-80	2-II	-	-	-	-	-	-	1029	-	-	-	-	-	-	-	-
AZ-81	2-II	-	-	-	-	-	-	-	-	-	1035	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Magnesium alloys (special designation) (cont.)																
AZ-91C	2-II	-	-	-	-	-	1026	-	-	-	-	-	-	-	-	-
AZ-92A	2-II	-	-	-	-	-	1026	-	-	-	1035	-	-	-	-	-
DTD 350	2-II	-	-	-	-	-	-	-	1079	-	-	-	-	-	-	-
DTD 360	2-II	-	-	-	-	-	-	-	1079	-	-	-	-	-	-	-
EK-30	2-II	-	-	-	-	-	-	-	-	-	1081	-	-	-	-	-
EK-30A	2-II	-	-	-	-	-	1071	-	-	-	-	-	-	-	-	-
EK-32A	2-II	-	-	-	-	-	-	-	-	-	1081	-	-	-	-	-
EK-33A	2-II	-	-	-	-	-	-	-	-	-	1081	-	-	-	-	-
EK-41	2-II	-	-	-	-	-	-	-	-	-	1081	-	-	-	-	-
EK-41A	2-II	-	-	-	-	-	1073	-	-	-	-	-	-	-	-	-
EZ-33A	2-II	-	-	-	-	-	1075	-	-	-	1081	-	-	-	-	-
H-807	2-II	-	-	-	-	-	-	-	1067	-	-	-	-	-	-	-
H-809	2-II	-	-	-	-	-	-	-	1031	-	-	-	-	-	-	-
H-811	2-II	-	-	-	-	-	-	-	1045, 1067	-	-	-	-	-	-	-
H-812	2-II	-	-	-	-	-	-	-	1045	-	-	-	-	-	-	-
H-817	2-II	-	-	-	-	-	-	-	1067	-	-	-	-	-	-	-
HK-31	2-II	-	-	-	-	-	-	-	-	-	1059	-	-	-	-	-
HK-31A	2-II	-	1047	1047	-	-	1049	1055	-	-	-	-	-	1061	-	-
HK-31XA	2-II	-	-	-	-	-	1049	-	-	-	1059	-	-	-	-	-
HM-21XA	2-II	-	1047	1047	-	-	1051	1055	-	-	-	-	-	-	-	-
HM-31XA	2-I	-	262	262	-	-	-	-	-	-	-	-	-	-	-	-
. . . . . .	2-II	-	-	-	-	-	-	1077	-	-	-	-	-	-	-	-
Hydronalium 71	2-II	-	-	-	-	-	1026	-	1031	-	-	-	-	-	-	-
HZ-32A	2-II	-	-	-	-	-	1053	-	-	-	-	-	-	-	-	-
HZ-32XA	2-II	-	-	-	-	-	1053	-	-	-	1059	-	-	-	-	-
Magnox B	2-II	-	-	-	-	-	-	-	1079	-	-	-	-	-	-	-
MSR	2-II	-	-	-	-	-	-	-	1079	-	-	-	-	-	-	-
RZ5	2-II	-	-	-	-	-	-	-	1067	-	-	-	-	-	-	-
TZ6	2-II	-	-	-	-	-	-	-	1067	-	-	-	-	-	-	-
Z3Z	2-II	-	-	-	-	-	-	-	1067	-	-	-	-	-	-	-
ZK-60	2-II	-	1063	1063	-	-	-	-	-	-	-	-	-	-	-	-
ZK-60A	2-II	-	-	-	-	-	-	1065	-	-	1069	-	-	-	-	-
ZREO	2-II	-	-	-	-	-	-	-	1045	-	-	-	-	-	-	-
ZT1	2-II	-	-	-	-	-	-	-	1057	-	-	-	-	-	-	-
ZTY	2-II	-	-	-	-	-	-	-	1057	-	-	-	-	-	-	-
Magnesium aluminate ($MgO \cdot Al_2O_3$)	4-II	1007	1007	-	-	-	1009	1011	1013	1015	1017	-	-	-	-	-
Magnesium aluminate + + Magnesium oxide	4-II	-	-	-	-	-	-	-	1520	-	1522	-	-	-	-	-

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Magnesium aluminate + Silicon (di-)oxide	4-II	-	-	-	-	-	-	-	1532	-	-	-	-	-	-	-
Magnesium aluminate + Sodium (mon-)oxide	4-II	-	-	-	-	-	-	1524	1526	1528	1530	-	-	-	-	-
Magnesium aluminate spinal . .	4-II	1007	1007	-	-	-	1009	1011	1013	1015	1017	-	-	-	-	-
Magnesium aluminate spinel with sodium (mon-)oxide . . .	4-II	-	-	-	-	-	-	1524	1526	1528	1530	-	-	-	-	-
Magnesium aluminum borate glass	4-II	-	-	-	-	-	-	-	-	-	1623	-	-	-	-	-
Magnesium aluminum silicate ($2\ MgO \cdot 2\ Al_2O_3 \cdot 5\ SiO_2$) . . .	4-II	-	-	-	-	-	1298	1300	1302	-	1304-1308	-	-	-	-	-
Magnesium aluminum silicate bodies	4-II	-	-	-	-	-	-	-	-	-	1310	-	-	-	-	-
Magnesium aluminum silicate glass	4-II	-	-	-	-	-	-	-	-	-	1769	-	-	-	-	-
Magnesium antimonide (Mg_3Sb_2).	6-I	-	-	-	-	-	67	-	-	-	-	-	-	-	-	-
Magnesium barium cerium titanate [$(Ba_{1-x-y}Mg_xCe_y)O \cdot TiO_2$]	4-II	-	-	-	-	-	1447	-	-	-	-	-	-	-	-	-
Magnesium barium titanate . . .	4-II	-	-	-	-	-	-	-	-	-	1445	-	-	-	-	-
Magnesium beryllium borate glass	4-II	-	-	-	-	-	-	-	-	-	1625	-	-	-	-	-
Magnesium borides																
MgB_2	6-I	-	-	-	-	-	-	182	-	-	-	-	-	-	-	184
MgB_4	6-I	-	-	-	-	-	-	182	-	-	-	-	-	-	-	-
Magnesium-cadmium intermetallics																
MgCd	6-I	-	-	-	-	-	-	644	-	-	-	-	-	-	-	-
$MgCd_3$	6-I	-	-	-	-	-	-	644	-	-	-	-	-	-	-	-
Mg_3Cd	6-I	-	-	-	-	-	-	644	-	-	-	-	-	-	-	-
Magnesium carbonate ($MgCO_3$) .	4-II	-	-	-	-	-	-	-	-	-	-	-	-	1047	-	-
Magnesium chloride ($MgCl_2$) . .	5	-	321	-	-	323	-	-	-	-	-	-	-	-	-	325
Magnesium chromites																
$MgO \cdot Cr_2O_3$	4-II	-	-	-	-	-	1055	1057	-	-	1059	-	-	-	-	-
$MgO \cdot 4\ Cr_2O_3$	4-II	-	-	-	-	-	1055	-	-	-	-	-	-	-	-	-
$4\ MgO \cdot Cr_2O_3$	4-II	-	-	-	-	-	1055	-	-	-	-	-	-	-	-	-
Magnesium chromite spinal . .	4-II	-	-	-	-	-	-	-	-	-	1059	-	-	-	-	-
Magnesium ferrites																
$MgO \cdot Fe_2O_3$	4-II	-	-	-	-	-	1079	1081	-	-	1083	-	-	-	-	-
$MgO \cdot 2\ FeO$	4-II	-	-	-	-	-	-	-	-	-	1083	-	-	-	-	-
Magnesium fluoride (MgF_2). . .	5	-	381	-	-	383	-	-	-	-	385	-	-	-	-	387
Magnesium fluoride coating on quartz	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1425	1427	-
Magnesium germanide (Mg_2Ge) .	6-I	309	309	-	-	-	311	-	-	-	-	-	-	-	-	-
Magnesium hydride (MgH_2). . .	5	467	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Magnesium-lead intermetallics (Mg_2Pb)	6-I	-	-	-	-	-	650	-	-	-	-	-	-	-	-	-
Magnesium lead silicate glass .	4-II	-	-	-	-	-	1771	-	-	-	-	-	-	-	-	-
Magnesium molybdate ($MgO \cdot MoO_3$)	4-II	-	-	-	-	-	-	1117	-	-	-	-	-	-	-	-
Magnesium niobates																
$MgO \cdot Nb_2O_5$	4-II	-	-	-	-	-	-	-	-	-	1125	-	-	-	-	-
$2\ MgO \cdot Nb_2O_5$	4-II	-	-	-	-	-	-	-	-	-	1125	-	-	-	-	-
$3\ MgO \cdot Nb_2O_5$	4-II	-	-	-	-	-	-	-	-	-	1125	-	-	-	-	-
$4\ MgO \cdot Nb_2O_5$	4-II	-	-	-	-	-	-	-	-	-	1125	-	-	-	-	-
Magnesium nitride (Mg_3N_2). . .	5	-	-	-	-	-	-	633	-	-	-	-	-	-	-	-
Magnesium oxides																
Magnesium oxide (MgO). . .	4-I	248	248	-	-	-	250	252	254	257	259	263	265-267	269	-	271
M-300	4-I	-	-	-	-	-	-	-	-	-	259	-	-	-	-	-
PC-235	4-I	-	-	-	-	-	-	-	-	257	-	-	-	-	-	-
SR-2808	4-I	-	-	-	-	-	-	-	-	257	-	-	-	-	-	-
Magnesium oxide + Aluminum oxide	4-I	-	-	-	-	-	-	-	-	723	-	-	-	-	-	-
Magnesium oxide + Aluminum oxide + Beryllium oxide. . . .	4-I	-	-	-	-	-	-	-	-	-	725	-	-	-	-	-
Magnesium oxide + Aluminum oxide + Iron(ic) oxide + + Silicon (di-) oxide + Calcium oxide	4-I	-	-	-	-	-	-	-	727	-	-	-	-	-	-	-
Magnesium oxide + Beryllium oxide	4-I	-	-	-	-	-	-	-	729	-	731	-	-	-	-	-
Magnesium oxide + Calcium oxide	4-I	-	-	-	-	-	-	-	-	733	735	-	-	-	-	-
Magnesium oxide + Calcium oxide + Iron(ic) oxide	4-I	-	-	-	-	-	-	-	-	737	-	-	-	-	-	-
Magnesium oxide + Chromium (sesqui-) oxide + Aluminum oxide + Iron(ic) oxide + + Silicon (di-) oxide	4-I	-	-	-	-	-	-	-	739	-	-	-	-	-	-	-
Magnesium oxide + Chromium (sesqui-) oxide + Iron(ic) oxide + Aluminum oxide + + Silicon (di-) oxide + + Iron(ous) oxide	4-I	-	-	-	-	-	-	-	741	-	-	-	-	-	-	-
Magnesium oxide + Iron(ic) oxide + Calcium oxide	4-I	-	-	-	-	-	-	-	743	-	-	-	-	-	-	-
Magnesium oxide + Magnesium aluminate	4-II	-	-	-	-	-	-	-	1536	-	-	-	-	-	-	-
Magnesium oxide + Magnesium silicate	4-II	-	-	-	-	-	-	-	1538	-	-	-	-	-	-	-
Magnesium oxide + Nickel (mon-) oxide	4-I	-	-	-	-	-	745	-	747	-	-	-	-	-	-	-
Magnesium oxide + Silicon (di-) oxide	4-I	-	-	-	-	-	-	-	749	-	751	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Magnesium oxide + Talc	4-II	-	-	-	-	-	-	-	1538	-	-	-	-	-	-	-
Magnesium oxide + Tin(ic) oxide	4-I	-	-	-	-	-	-	-	753	-	-	-	-	-	-	-
Magnesium oxide + Titanium (di-)oxide	4-I	-	-	-	-	-	-	-	-	-	755	-	-	-	-	-
Magnesium oxide + Tungsten cermet	6-II	-	-	-	-	-	-	-	-	-	788	-	-	-	-	-
Magnesium oxide + Uranium (di-)oxide	4-I	-	-	-	-	-	-	-	757	-	-	-	-	-	-	-
Magnesium oxide + Yttrium oxide	4-I	-	-	-	-	-	-	-	-	-	759	-	-	-	-	-
Magnesium oxide + Zinc oxide .	4-I	-	-	-	-	-	-	-	761	-	-	-	-	-	-	-
Magnesium silicates																
$MgO \cdot SiO_2$	4-II	1285	1285	-	-	-	1287	1289	1293	-	1295	-	-	-	-	-
$2\ MgO \cdot SiO_2$	4-II	-	-	-	-	-	-	1289	1291	-	1295	-	-	-	-	-
$3\ MgO \cdot 4\ SiO_2 \cdot H_2O$	4-II	-	-	-	-	-	-	1289	-	-	-	-	-	-	-	-
Magnesium (ortho-) silicate + + Zinc (ortho-) silicate	4-II	-	-	-	-	-	-	-	-	-	1571	-	-	-	-	-
Magnesium silicides (Mg_2Si) . .	6-I	-	419	-	-	-	421	-	-	-	-	-	-	-	-	-
Magnesium silicide stannide ($Mg_2Si_xSn_{1-x}$)	6-I	-	-	-	-	-	537	-	539	-	-	-	-	-	-	-
Magnesium stannate ($MgO \cdot SnO_2$)	4-II	-	-	-	-	-	-	-	1361	-	-	-	-	-	-	-
Magnesium stannide (Mg_2Sn) . .	6-I	533	533	-	-	-	535	-	-	-	-	-	-	-	-	-
Magnesium titanates																
$MgO \cdot TiO_2$	4-II	-	-	-	-	-	1439	1441	-	-	1443	-	-	-	-	-
$MgO \cdot 2\ TiO_2$	4-II	-	-	-	-	-	1439	1441	-	-	1443	-	-	-	-	-
$MgO \cdot 5\ TiO_2$	4-II	-	-	-	-	-	-	-	-	-	1443	-	-	-	-	-
$2\ MgO \cdot TiO_2$	4-II	-	-	-	-	-	1439	1441	-	-	1443	-	-	-	-	-
$2\ MgO \cdot 3\ TiO_2$	4-II	-	-	-	-	-	-	-	-	-	1443	-	-	-	-	-
Magnesium titanate porcelain . .	5	1003	-	-	-	-	-	-	1017	-	-	-	-	-	-	-
Magnesium tungstate ($MgO \cdot WO_3$)	4-II	-	-	-	-	-	-	1478	-	-	-	-	-	-	-	-
Magnesium tungsten lead oxide ($2\ PbO \cdot MgO \cdot WO_3$).	4-II	-	-	-	-	-	-	-	-	-	1153	-	-	-	-	-
Magnesium vanadates																
$MgO \cdot V_2O_5$	4-II	-	-	-	-	-	-	1492	-	-	-	-	-	-	-	-
$2\ MgO \cdot V_2O_5$	4-II	-	-	-	-	-	-	1492	-	-	-	-	-	-	-	-
Magnesium uranate ($MgO \cdot UO_3$) .	4-II	-	1482	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium zirconate ($MgO \cdot ZrO_2$)	4-II	-	-	-	-	-	-	-	-	-	1512	-	-	-	-	-
Magnetite	4-I	212	212	-	-	-	-	220	-	-	-	-	-	-	-	-
Manganese (Mn)	1	642	642	-	-	642	644	646	-	-	648	-	-	650	-	652
Manganese, electrolytic	1	-	-	-	-	-	-	646	-	-	648	-	-	-	-	-
Manganese + Aluminum	2-I	-	-	-	-	-	-	268	-	-	-	-	-	-	-	-
Manganese + Copper	2-I	-	-	-	-	-	271	273	-	-	275-277	-	-	-	-	-

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Manganese + Copper + ΣX_i . . .	2-II	-	-	-	-	-	-	-	-	-	1083-1089	-	-	-	-	-
Manganese + Nickel	2-I	-	-	-	-	-	279	-	-	-	281	-	-	-	-	-
Manganese + Nickel + ΣX_i . . .	2-II	-	-	-	-	-	-	-	-	-	1091-1097	-	-	-	-	-
Manganese + Titanium	2-I	283, 519	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese alloys (special designations)																
A-47	2-I	-	-	-	-	-	-	268	-	-	-	-	-	-	-	-
A-48	2-I	-	-	-	-	-	-	268	-	-	-	-	-	-	-	-
A-49	2-I	-	-	-	-	-	-	268	-	-	-	-	-	-	-	-
A-49.5	2-I	-	-	-	-	-	-	268	-	-	-	-	-	-	-	-
A-50	2-I	-	-	-	-	-	-	268	-	-	-	-	-	-	-	-
A-51	2-I	-	-	-	-	-	-	268	-	-	-	-	-	-	-	-
A-52	2-I	-	-	-	-	-	-	268	-	-	-	-	-	-	-	-
A-53	2-I	-	-	-	-	-	-	268	-	-	-	-	-	-	-	-
A-54	2-I	-	-	-	-	-	-	268	-	-	-	-	-	-	-	-
A-55	2-I	-	-	-	-	-	-	268	-	-	-	-	-	-	-	-
A-56	2-I	-	-	-	-	-	-	268	-	-	-	-	-	-	-	-
A-57	2-I	-	-	-	-	-	-	268	-	-	-	-	-	-	-	-
A-58	2-I	-	-	-	-	-	-	268	-	-	-	-	-	-	-	-
A-59	2-I	-	-	-	-	-	-	268	-	-	-	-	-	-	-	-
A-60	2-I	-	-	-	-	-	-	268	-	-	-	-	-	-	-	-
Manganese aluminate ($MnO \cdot Al_2O_3$)	4-II	-	-	-	-	-	-	-	-	-	1019	-	-	-	-	-
Manganese aluminum carbide (Mn_3AlC)	5	-	-	-	-	-	-	73	-	-	-	-	-	-	-	-
Manganese antimonide (MnSb) .	6-I	-	-	-	-	-	69	-	-	-	-	-	-	-	-	-
Manganese arsenide (Mn_7As) . .	6-I	-	94	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese arsenide telluride ($MnTe_{1-x}As_x$)	6-I	-	-	-	-	-	600	-	602	-	-	-	-	-	-	-
Manganese carbide (Mn_3C) . . .	5	67	67	-	-	-	-	69	-	-	-	-	-	-	-	71
Manganese chromite ($MnO \cdot Cr_2O_3$)	4-II	-	-	-	-	-	-	-	-	-	1061	-	-	-	-	-
Manganese ferrite ($MnO \cdot Fe_2O_3$).	4-II	1085	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese nickel	2-II	-	-	-	-	-	-	-	-	-	1273	-	-	-	-	-
Manganese nitride (Mn_4N) . . .	5	-	621	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese oxides																
MnO	4-I	-	-	-	-	-	-	273	-	-	281	-	-	-	-	-
MnO_2	4-I	-	-	-	-	-	-	275	-	-	281	-	-	-	-	-
Mn_2O_3	4-I	-	-	-	-	-	-	277	-	-	-	-	-	-	-	-
Mn_3O_4	4-I	-	-	-	-	-	-	-	279	-	-	-	-	-	-	-
Manganese (sesqui-)oxide + + Magnesium oxide.	4-I	-	-	-	-	-	-	-	763	-	-	-	-	-	-	-

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Manganese-palladium intermetallics (MnPd)	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese phosphides																
MnP	5	635	635	-	-	-	639	-	-	-	-	-	-	-	-	-
Mn_2P	5	-	635	-	-	-	-	-	-	-	-	-	-	-	-	-
Mn_3P	5	-	635	-	-	-	-	-	-	-	-	-	-	-	-	-
Mn_3P_2	5	-	635	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese selenide (MnSe). . .	6-I	-	-	-	-	-	-	341	-	-	-	-	-	-	-	-
Manganese silicate ($MnO \cdot SiO_2$) .	4-II	-	-	-	-	-	-	1312	-	-	1314	-	-	-	-	-
Manganese silicides																
$MnSi_{0.3-0.5}$	6-I	-	-	-	-	-	-	427	-	-	-	-	-	-	-	-
$MnSi$	6-I	-	423	-	-	-	425	427	-	-	431	-	-	-	-	-
$MnSi_2$	6-I	-	-	-	-	-	425	427	429	-	-	-	-	-	-	-
Mn_3Si	6-I	-	423	-	-	-	-	-	-	-	-	-	-	-	-	-
Mn_5Si_3	6-I	-	423	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese telluride (MnTe) . .	6-I	-	-	-	-	-	-	598	-	-	-	-	-	-	-	-
Manganese zinc carbide (Mn_3ZnC)	5	-	-	-	-	-	-	75	-	-	-	-	-	-	-	-
Manganin	2-II	-	-	-	-	-	978	-	-	-	-	-	-	-	-	-
Marlex 20	6-II	-	-	-	-	-	-	-	-	-	1045	-	-	-	-	-
Marlex 50	6-II	-	-	-	-	-	-	-	-	-	1045	-	-	-	-	-
Massicot	4-I	-	-	-	-	-	-	234	-	-	-	-	-	-	-	-
Matte silver	1	-	-	-	-	-	-	-	-	-	-	910	-	-	-	-
Melamine formaldehyde	6-II	-	1014	-	-	-	-	-	-	-	-	-	-	-	-	-
Melamine formaldehyde, reinforced	6-II	-	-	-	-	-	-	-	-	-	1101	-	-	-	-	-
Melamine formaldehyde, alpha cellulose filled	6-II	-	-	-	-	-	-	-	-	-	1018	-	-	-	-	-
Melamine formaldehyde, mineral filled	6-II	-	-	-	-	-	1016	-	-	-	-	-	-	-	-	-
Melamine-formaldehyde resin, reinforced	6-II	-	-	-	-	-	-	-	-	1128	-	-	-	-	-	-
Melmac 592	6-II	-	-	-	-	-	1016	-	-	-	-	-	-	-	-	-
Melmac 1077	6-II	-	-	-	-	-	-	-	-	-	1018	-	-	-	-	-
Melmac 1079	6-II	-	-	-	-	-	-	-	-	-	1018	-	-	-	-	-
Melmac 1502	6-II	-	-	-	-	-	-	-	-	-	1018	-	-	-	-	-
Merwinite	4-II	-	-	-	-	-	-	1239	-	-	-	-	-	-	-	-
Mercuric selenide (HgSe) . . .	6-I	-	-	-	-	-	-	343	-	-	-	-	-	-	-	-
Metal cermets	6-II	925	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Metco XP-1103	6-II	-	-	-	-	-	-	-	-	-	-	1309	1311	-	-	-
Metco XP-1106	6-II	-	-	-	-	-	-	-	-	-	-	1325	1327	-	-	-
Metco XP-1109	6-II	-	-	-	-	-	-	-	-	-	-	1407	1409	-	-	-
Metco XP-1110	6-II	-	-	-	-	-	-	-	-	-	-	1421	1423	-	-	-

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Mica																
Mica	5	983	-	-	-	-	985-987	-	989-991	-	993-1001	-	-	-	-	-
Biotite	5	-	-	-	-	-	-	-	-	-	997	-	-	-	-	-
Cericite	5	-	-	-	-	-	-	-	-	-	993	-	-	-	-	-
Glass bonded	5	-	-	-	-	-	987	-	-	-	-	-	-	-	-	-
Illite	5	-	-	-	-	-	-	-	-	-	993	-	-	-	-	-
Iron	5	-	-	-	-	-	-	-	-	-	997	-	-	-	-	-
Magnesium	5	-	-	-	-	-	-	-	-	-	999	-	-	-	-	-
Muscovite	5	-	-	-	-	-	985	-	-	-	1001	-	-	-	-	-
Phlogophite	5	-	-	-	-	-	-	-	-	-	999	-	-	-	-	-
Ripidolite	5	-	-	-	-	-	-	-	-	-	995	-	-	-	-	-
Synthetic	5	-	-	-	-	-	985	-	991	-	-	-	-	-	-	-
Synthetic, barium-	5	-	-	-	-	-	985	-	-	-	-	-	-	-	-	-
Zinn waldite	5	-	-	-	-	-	-	-	-	-	995	-	-	-	-	-
Micro-Quartz type II	6-II	-	-	-	-	-	-	1216	-	-	-	-	-	-	-	-
MIL-C-7350 type I and II....	6-II	-	-	-	-	-	-	-	-	1275	-	-	-	-	-	-
MIL-C-8021 type I	6-II	-	-	-	-	-	-	-	-	1275	-	-	-	-	-	-
MIL-C-8087	6-II	-	-	-	-	-	-	954	956	-	958	-	-	-	-	-
Mineral aluminum silicates ..	4-II	-	-	-	-	-	1187	-	-	-	-	-	-	-	-	-
Mo-9-8 molybdenum......	1	-	-	-	-	-	-	658	-	-	-	-	-	-	-	-
Molybdenite	5	690	690	-	-	-	-	-	-	-	-	-	-	692	-	-
Molybdenum (Mo)	1	654	654	-	-	654	656	658	660	663	665	667	669-675	677	-	679
Molybdenum coated with boron .	6-II	-	-	-	-	-	-	-	-	-	-	-	1289	-	-	-
Molybdenum coated with carbon.	6-II	-	-	-	-	-	-	-	-	-	-	1293	1295	-	-	-
Molybdenum coated with silicide	6-II	-	-	-	-	-	-	-	-	-	-	-	1467-1469	1471	-	-
Molybdenum coated with titanium (di-)oxide and aluminum ...	6-II	-	-	-	-	-	-	-	-	-	-	-	1395	-	-	-
Molybdenum coating on iron ..	6-II	-	-	-	-	-	-	-	-	-	-	1309	1311	-	-	-
Molybdenum + ΣX_i	2-II	1109	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum + Iron	2-I	285	-	-	-	-	-	287	289	-	-	-	-	-	-	-
Molybdenum + Nickel + ΣX_i...	2-II	1099	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum + Niobium + ΣX_i..	2-II	1101	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum + Silicon	2-I	-	-	-	-	-	-	-	-	-	-	-	291	-	-	-
Molybdenum + Titanium	2-I	-	-	-	-	-	293	295	297	299	301	-	303-307	309	-	-
Molybdenum + Titanium + ΣX_i .	2-II	1103	-	-	-	-	-	1105	-	-	1107	-	-	-	-	-
Molybdenum + Tungsten	2-I	-	-	-	-	-	-	311	313	315	317	-	319	-	-	-
Molybdenum aluminides																
MoAl	6-I	-	9	-	-	-	-	-	-	-	11	-	-	-	-	-
$MoAl_2$	6-I	-	-	-	-	-	-	-	-	-	11	-	-	-	-	-
Mo_3Al	6-I	-	9	-	-	-	-	-	-	-	-	-	-	-	-	-

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Molybdenum beryllides																
$MoBe_2$	6-I	-	102	-	-	-	-	-	-	-	-	-	-	-	-	-
$MoBe_{12}$	6-I	102	-	-	-	-	-	104	106	-	-	-	-	-	-	-
Molybdenum borides																
MoB	6-I	-	186	-	-	-	-	188	-	-	-	-	-	-	-	192
MoB_2	6-I	-	186	186	-	-	-	188	-	-	190	-	-	-	-	-
Mo_2B	6-I	-	186	-	-	-	-	188	-	-	-	-	-	-	-	192
Mo_2B_5	6-I	-	186	-	-	-	-	-	-	-	-	-	-	-	-	-
Mo_3B_2	6-I	-	186	-	-	-	-	-	-	-	-	-	-	-	-	-
(Di-) molybdenum boride + + Molybdenum (di-) silicide . .	6-I	-	724	-	-	-	-	-	-	-	-	-	-	-	-	-
(Di-) molybdenum boride + + (Penta-) niobium (tri-) - silicide	6-I	-	724	-	-	-	-	-	-	-	-	-	-	-	-	-
(Di-) molybdenum boride + + Tantalum (di-) silicide . . .	6-I	-	724	-	-	-	-	-	-	-	-	-	-	-	-	-
(Di-) molybdenum boride + + (Penta-) tantalum (tri-) - silicide	6-I	-	724	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum carbides																
MoC	5	-	-	-	-	-	-	-	-	-	87	-	-	-	-	-
Mo_2C	5	77	77	-	-	-	79	81	83	-	85	-	89	-	-	-
Molybdenum chromium silicides																
(Mo, Cr, Si)	6-I	523	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(Mo, Cr) Si_2	6-I	523	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum germanide (Mo_3Ge_2)	6-I	-	313	-	-	-	-	-	-	-	-	-	-	-	-	315
Molybdenum nitride (Mo_2N) . . .	5	-	621	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum oxides																
MoO_2	4-I	-	-	-	-	-	-	285	-	-	-	-	-	-	-	-
MoO_3	4-I	283	283	283	-	-	-	287	-	-	-	-	-	289	-	291
Molybdenum phosphide (MoP) . .	5	635	635	-	-	-	639	-	-	-	-	-	-	-	-	-
Molybdenum selenides ($MoSe_2$) .	6-I	-	-	-	-	-	367	-	369	-	-	-	-	-	-	-
Molybdenum silicides																
$MoSi_2$	6-I	433	433	-	-	-	435	437	439	-	441	-	445-447	449	-	-
Mo_3Si	6-I	-	-	-	-	-	-	-	-	-	443	-	-	-	-	451
Mo_5Si_3	6-I	433	433	-	-	-	-	-	-	-	443	-	-	-	-	-
Molybdenum (di-) silicide + + Calcium aluminate	5	-	-	-	-	-	-	-	-	-	904	-	-	-	-	-
Molybdenum (di-) silicide + + Chromium (sesqui-) oxide. .	5	-	-	-	-	-	-	-	-	-	-	-	906	-	-	-
Molybdenum (di-) silicide + + Chromium (di-) silicide. . .	6-I	723	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum (di-) silicide + + Copper cermets	6-II	923	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Molybdenum (di-)silicide + + Molybdenum (tri-)oxide. . .	5	-	-	-	-	-	-	-	-	-	-	-	908-910	912	-	-
Molybdenum (di-)silicide + + Molybdenum (tri-)oxide + + Silicon (di-)oxide	5	-	-	-	-	-	-	-	-	-	-	-	914-916	918	-	-
Molybdenum (di-)silicide + + Silicon (di-)oxide	5	-	-	-	-	-	-	-	-	-	-	-	920-922	924	-	-
Molybdenum (di-)silicide + + Zirconium (di-)boride . . .	6-I	-	689, 724	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum-silicon-titanium cermet	6-II	930	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum sulfide (MoS_2). . .	5	690	690	-	-	-	-	-	-	-	-	-	-	692	-	-
Molybdenum tellurides ($MoTe_2$).	6-I	-	-	-	-	-	638	-	640	-	-	-	-	-	-	-
Molybdenum-titanium alloys coated with Chromalloy W-2 .	6-II	-	-	-	-	-	-	-	-	-	-	-	1505-1509	-	-	-
Molybdenum-titanium alloy coated with Durak-MG	6-II	-	-	-	-	-	-	-	-	-	-	-	1501-1503	-	-	-
Molybdenum-zirconium intermetallics (Mo_2Zr)	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Monel	2-I	-	-	-	-	-	-	-	-	-	343	-	-	-	-	-
. . . . . .	2-II	-	-	-	-	-	-	1239	1241	-	1247-1251	-	1253	-	-	-
Monel 400	2-II	-	-	-	-	-	-	1239	1241	-	1247-1249	-	1253	-	-	-
Monel 401	2-II	-	-	-	-	-	-	-	-	-	988	-	-	-	-	-
Monel 403	2-II	-	-	-	-	-	-	-	-	-	1249	-	-	-	-	-
Monel 404	2-II	-	-	-	-	-	-	-	-	-	1251	-	-	-	-	-
Monel 501	2-II	-	-	-	-	-	-	-	-	-	1245	-	-	-	-	-
Monel, H-	2-II	-	-	-	-	-	-	-	1241	-	-	-	-	-	-	-
Monel, K-	2-II	1237	-	-	-	-	-	1239	1241	1243	1245	-	-	-	-	-
Monel K-500	2-II	1237	-	-	-	-	-	1239	1241	1243	1245	-	-	-	-	-
Monel 5700, K-	2-II	-	-	-	-	-	-	-	-	-	-	-	1255	-	-	-
Monel, KR-	2-II	-	-	-	-	-	-	-	-	-	1245	-	-	-	-	-
Monel, R	2-II	-	-	-	-	-	-	-	1241	-	1247	-	-	-	-	-
Monel, R-405	2-II	-	-	-	-	-	-	-	1241	-	1247	-	-	-	-	-
Monel, S-	2-II	-	-	-	-	-	-	-	1241	-	-	-	-	-	-	-
Monel, Si-	2-II	-	-	-	-	-	-	-	1241	-	-	-	-	-	-	-
Moplen	6-II	1076	1076	-	-	-	-	1078	1080	-	1088	-	-	-	-	-
Mullite	4-II	-	-	-	-	-	-	1189	1191	1193	1197	-	1201	-	1203	-
Mullite MV-20	4-II	-	-	-	-	-	-	-	-	1193	-	-	1201	-	-	-
Mullite MV-30	4-I	-	-	-	-	-	-	-	-	-	617	-	-	-	-	-

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Mullite + Alumina	4-II	-	-	-	-	-	-	-	1562	-	-	-	-	-	-	-
Muscovite	4-II	-	-	-	-	-	-	1573	-	-	-	-	-	-	-	-
MX-4926 carbon-phenolic laminate	6-II	-	-	-	-	-	-	1134	-	-	-	-	-	-	-	-
Mylar coated with aluminum . .	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1287	-	-
Mylar coated with copper. . . .	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1301	-	-
Mylar coated with gold.	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1307	-	-
Mylar coated with silver	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1323	-	-
N																
NBS coating A-418 on Inconel. .	6-II	-	-	-	-	-	-	-	-	-	-	-	1361-1363	-	-	-
NBS coating A-418 on stainless steel	6-II	-	-	-	-	-	-	-	-	-	-	-	1365-1367	-	-	-
NBS coating N-143 on Inconel. .	6-II	-	-	-	-	-	-	-	-	-	-	-	1353-1355	-	-	-
NBS coating N-143 on stainless steel	6-II	-	-	-	-	-	-	-	-	-	-	-	1357-1359	-	-	-
Neodymia	4-I	293	293	-	-	-	-	295	-	-	297	-	-	-	-	-
Neodymium (Nd)	1	681	681	681	681	682	684	686	-	-	688	-	-	-	-	690
Neodymium + Magnesium . . .	2-I	323	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neodymium + Magnesium + ΣX_i .	2-II	1115	1115	-	-	-	-	-	-	-	-	-	-	-	-	-
Neodymium aluminide (NdAl). .	6-I	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neodymium-bismuth intermetallics (NdBi)	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neodymium borides																
NdB_4	6-I	296	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NdB_6	6-I	296	296	-	-	-	300	-	-	-	-	-	-	-	-	-
Neodymium-cadmium intermetallics																
NdCd	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$NdCd_2$	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$NdCd_3$	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$NdCd_{11}$	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neodymium carbides																
NdC_2	5	294	294	-	-	-	-	-	-	-	-	-	-	-	-	-
Nd_2C_3	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neodymium chloride ($NdCl_3$) . .	5	339	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neodymium-cobalt intermetallics ($NdCo_5$)	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neodymium-copper intermetallics ($NdCu_5$)	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neodymium-gallium intermetallics ($NdGa_2$)	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Neodymium germanides ($NdGe_3$)	6-I	323	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neodymium hydride (NdH_3) . . .	5	467	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neodymium-lead intermetallics ($NdPb_3$)	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neodymium-mercury intermetallics (NdHg)	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neodymium-nickel intermetallics ($NdNi_5$)	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neodymium nitride (NdN) . . .	5	621	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neodymium-osmium intermetallics ($NdOs_2$)	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neodymium oxides																
NdO	4-I	293	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nd_2O_3	4-I	293	293	-	-	-	-	295	-	-	297	-	-	-	-	-
Neodymium phosphide (NdP) . .	5	635	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neodymium selenides																
NdSe	6-I	365	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nd_2Se_3	6-I	365	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nd_3Se_4	6-I	365	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neodymium silicide ($NdSi_2$) . .	6-I	523	524	-	-	-	527	-	-	-	-	-	-	-	-	-
Neodymium-silver intermetallics (NdAg)	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neodymium sulfides																
NdS	5	694	694	-	-	-	-	-	-	-	696	-	-	-	-	-
NdS_2	5	-	694	-	-	-	-	-	-	-	-	-	-	-	-	-
Nd_2S_3	5	694	694	-	-	-	-	-	-	-	696	-	-	-	-	-
Nd_3S_4	5	694	694	-	-	-	-	-	-	-	-	-	-	-	-	-
Neoprene GN	6-II	-	-	-	-	-	-	-	-	1066	-	-	-	-	-	-
Neoprene W	6-II	1051	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nepheline syenite	4-II	-	-	-	-	-	-	-	-	-	1320	-	-	-	-	-
Neptunium (Np)	1	692	692	-	-	-	-	-	-	-	-	-	-	-	-	-
Neptunium + Calcium + ΣX_i . .	2-II	1111	-	-	-	-	-	1113	-	-	-	-	-	-	-	-
Neptunium + Uranium	2-I	321	321	-	-	-	-	-	-	-	-	-	-	-	-	-
Neptunium bromide ($NpBr_3$) . .	5	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neptunium chlorides																
$NpCl_3$	5	339	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$NpCl_4$	5	339	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neptonium (di-) oxide (NpO_2) . .	4-I	-	-	-	-	-	-	299	-	-	-	-	-	-	-	-
Nichrome	2-I	-	-	-	-	-	-	-	-	-	-	-	331	-	-	-
Nickel (Ni)	1	694	694	-	-	-	696	698	700	702	704	706	708-714	716-718	-	720
Nickel, carbonyl	1	-	694	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel, electrolytic	1	694	694	-	-	-	-	698	-	-	704	-	-	716	-	-

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Nickel coated with aluminum phosphate	6-II	-	-	-	-	-	-	-	-	-	-	-	1429	-	-	-
Nickel + ΣX_i	2-II	1307	-	-	-	-	1309	1311	1313	1315	-	-	-	-	-	-
Nickel + Aluminum	2-I	-	-	-	-	-	325	-	-	-	-	-	-	-	-	-
Nickel + Aluminum + ΣX_i . . .	2-II	-	-	-	-	-	-	-	-	-	1117	-	-	-	-	-
Nickel + Chromium	2-I	-	-	-	-	-	327	329	-	-	-	-	331-333	-	-	-
Nickel + Chromium + ΣX_i . . .	2-II	1119, 1122	1119	-	-	-	1124	1126-1132	1134-1145	1148-1150	1152-1170	-	1172-1201	1203-1215	-	-
Nickel + Cobalt	2-I	335	-	-	-	-	-	-	337	-	-	-	-	-	-	-
Nickel + Cobalt + ΣX_i	2-II	1219	1217	-	-	-	1221	-	1223	-	1225-1227	-	1229-1231	-	-	-
Nickel + Copper	2-I	-	-	-	-	-	339	341	-	-	343	-	-	-	-	-
Nickel + Copper + ΣX_i	2-II	1237	-	-	-	-	-	1239	1241	1243	1245-1251	-	1253-1255	-	-	-
Nickel + Iron	2-I	-	-	-	-	-	345	347	349	-	-	-	-	-	-	-
Nickel + Iron + ΣX_i	2-II	1257	-	-	-	-	-	1259	1261	-	1263-1267	-	1269	-	-	-
Nickel + Manganese	2-I	-	-	-	-	-	351	-	353	-	355	-	-	-	-	-
Nickel + Manganese + ΣX_i . . .	2-II	-	-	-	-	-	-	1271	-	-	1273	-	-	-	-	-
Nickel + Molybdenum + ΣX_i . .	2-II	1277	1275	-	-	-	-	1279	1281	-	1283-1287	1289	1291-1295	1297	-	-
Nickel + Palladium	2-I	-	-	-	-	-	357	-	-	-	-	-	-	-	-	-
Nickel + Palladium + ΣX_i . . .	2-II	-	-	-	-	-	-	-	-	-	1299	-	-	-	-	-
Nickel + Silicon	2-I	-	-	-	-	-	359	-	-	-	-	-	-	-	-	-
Nickel + Silicon + ΣX_i	2-II	-	-	-	-	-	-	-	-	-	1301	-	-	-	-	-
Nickel + Titanium + ΣX_i	2-II	-	-	-	-	-	-	-	-	-	1303	-	-	-	-	-
Nickel + Tungsten + ΣX_i	2-II	-	-	-	-	-	-	-	-	-	1305	-	-	-	-	-
Nickel 200	2-I	-	-	-	-	-	-	-	-	-	355	-	-	-	-	-
(also) . . .	2-II	1307	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel 204	2-II	-	-	-	-	-	-	-	-	-	1227	-	-	-	-	-
Nickel 211	2-I	-	-	-	-	-	-	-	-	-	355	-	-	-	-	-
Nickel 270	1	-	-	-	-	-	-	-	-	-	704	-	-	-	-	-
Nickel A	1	-	-	-	-	-	-	-	700	-	-	-	-	-	-	-
(also) . . .	2-I	-	-	-	-	-	-	-	-	-	355	-	-	-	-	-
(also) . . .	2-II	1307	-	-	-	-	-	-	1313	-	-	-	-	-	-	-
Nickel, admiralty	2-II	-	-	-	-	-	-	-	-	-	988	-	-	-	-	-
Nickel D	2-I	-	-	-	-	-	-	-	-	-	355	-	-	-	-	-
(also) . . .	2-II	-	-	-	-	-	-	-	1313	-	-	-	-	-	-	-
Nickel, grade A	1	694	-	-	-	-	-	-	700	-	704	706	710-712	718	-	-
(also) . . .	2-I	-	-	-	-	-	-	-	353	-	-	-	-	-	-	-
(also) . . .	2-II	-	-	-	-	-	-	-	1223	-	1263, 1301	-	-	-	-	-
Nickel L	1	-	-	-	-	-	-	-	700	-	-	-	-	-	-	-

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Nickel alloys (special designations)																
60 - 15 Cr (ASTM B83-46) . .	2-II	1257	-	-	-	-	-	1259	-	-	-	-	-	-	-	-
80 Ni - 20 Cr	2-II	-	-	-	-	-	-	1130	1144	-	-	-	-	-	-	-
90 Ni - 10 Cr	2-II	-	-	-	-	-	-	1126	-	-	-	-	-	-	-	-
AISI alloy (see AISI designations)																
Alumel	2-II	-	-	-	-	-	-	1271	-	-	-	-	-	-	-	-
Astroloy	2-II	-	-	-	-	-	-	-	-	-	-	-	1229	1231	-	-
Brazing alloys GE-62	2-II	-	-	-	-	-	-	-	-	-	1168	-	-	-	-	-
Brazing compound GEH 62-V.	2-II	-	-	-	-	-	-	1130	-	-	-	-	-	-	-	-
Chromel-P	2-I	-	-	-	-	-	-	329	-	-	-	-	-	-	-	-
Contracid	2-II	-	-	-	-	-	-	-	1261	-	-	-	-	-	-	-
D-979	2-II	-	-	-	-	-	-	-	1261	-	-	-	-	-	-	-
Duranickel 301	2-II	-	-	-	-	-	-	-	-	-	1117	-	-	-	-	-
DVL 32	2-II	1219	-	-	-	-	-	-	-	-	1225	-	-	-	-	-
DVL 321a	2-II	1219	-	-	-	-	-	-	-	-	1225	-	-	-	-	-
DVL 321i	2-II	1219	-	-	-	-	-	-	-	-	1225	-	-	-	-	-
DVL 325a	2-II	1219	-	-	-	-	-	-	-	-	1225	-	-	-	-	-
EI-435	2-II	-	-	-	-	-	-	1132	1144	1150	--	-	-	-	-	-
EI-437	2-II	-	-	-	-	-	-	-	1140	-	-	-	-	-	-	-
EI-607	2-II	-	-	-	-	-	-	-	1145	-	1158	-	-	-	-	-
EI-617	2-II	-	-	-	-	-	-	-	-	-	1170	-	-	-	-	-
GMR-235	2-II	-	-	-	-	-	-	-	-	-	1161	-	-	-	-	-
Haskins alloy 667.	2-II	-	-	-	-	-	-	-	-	-	1273	-	-	-	-	-
Haynes alloy no. R-41. . . .	2-II	-	-	-	-	-	-	-	-	-	1154	-	-	-	-	-
Haynes alloy X	2-II	-	-	-	-	-	-	-	-	-	-	-	1172	-	-	-
Hastelloys (see Hastelloy)																
HU	2-II	-	-	-	-	-	-	-	-	-	1265	-	-	-	-	-
HW	2-II	-	-	-	-	-	-	-	-	-	1267	-	-	-	-	-
Illium alloy	2-II	-	-	-	-	-	-	-	-	-	1156	-	-	-	-	-
Illium G	2-II	-	-	-	-	-	-	-	1136	-	-	-	-	-	-	-
Illium R	2-II	-	-	-	-	-	-	-	1138	-	-	-	-	-	-	-
Inco (see Inco)																
Incoloys (see Incoloy)																
Inconels (see Inconel)																
INOR-8	2-II	-	-	-	-	-	-	-	1281	-	1285	-	1293	-	-	-
J-1500	2-II	-	-	-	-	-	-	-	1136	-	1166	-	-	-	-	-
J-1610	2-II	-	-	-	-	-	-	-	1134	-	1156	-	-	-	-	-
M-252	2-II	-	-	-	-	-	-	1130	1136	-	1166	-	1180, 1197	1209, 1215	-	-
Monels (see Monel)																

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Nickel alloys (special designations) (cont.)																
Ni-O-Nel	2-II	-	-	-	-	-	-	-	-	-	1267	-	-	-	-	-
Nichrome	2-I	-	-	-	-	-	-	-	-	-	-	-	331	-	-	-
Nichrome V	2-II	-	-	-	-	-	-	1130	1144	-	-	-	-	-	-	-
Nimonics (see Nimonic)																
OKh 20N60B	2-II	-	-	-	-	-	-	1132	1136	1150	-	-	-	-	-	-
OKh 21N78T	2-II	-	-	-	-	-	-	1132	-	1150	-	-	-	-	-	-
Permanickel 300	2-II	1257	-	-	-	-	-	-	-	-	1303	-	-	-	-	-
RCA-N91	2-I	-	-	-	-	-	-	-	337	-	-	-	-	-	-	-
RCA-N97	2-I	-	-	-	-	-	-	-	337	-	-	-	-	-	-	-
Refractaloy 26	2-II	-	-	-	-	-	-	-	1223	-	-	-	-	-	-	-
Rene 41	2-II	1122	-	-	-	-	-	1130	1134	-	1156	-	1184, 1199	1211	-	-
SM-200	2-II	-	-	-	-	-	-	-	-	-	1305	-	-	-	-	-
Udimets (see Udimet)																
Unitemp Waspalloy	2-II	-	-	-	-	-	-	-	1138	-	-	-	-	-	-	-
Waspalloy	2-II	-	-	-	-	-	-	-	1136	-	1154	-	-	-	-	-
Nickel aluminate ($NiO \cdot Al_2O_3$). .	4-II	-	-	-	-	-	-	-	-	-	1021	-	1023	-	-	-
Nickel aluminides																
NiAl	6-I	-	-	-	-	-	-	-	-	-	13	-	15-17	19	-	-
Ni_3Al	6-I	-	-	-	-	-	-	-	-	-	13	-	15-17	19	-	-
Nickel aluminides coating on Inconel	6-II	-	-	-	-	-	-	-	-	-	-	-	1453-1455	1457	-	-
Nickel aluminide + Aluminum oxide	5	-	-	-	-	-	-	-	-	-	-	-	844-846	848	-	-
Nickel aluminide + Nickel (mon-) oxide	5	-	-	-	-	-	-	-	-	-	-	-	850-852	854	-	-
Nickel aluminide + Nickel (mon-) oxide + Aluminum oxide	5	-	-	-	-	-	-	-	-	-	-	-	856-858	860	-	-
Nickel borides																
Ni_3B	6-I	-	296	-	-	-	-	-	-	-	-	-	-	-	-	-
Ni_2B	6-I	-	296	-	-	-	-	-	-	-	-	-	-	-	-	-
Ni_3B_2	6-I	-	296	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel carbide (Ni_3C)	5	-	294	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel chrome spinel coating on niobium-zirconium alloys. . .	6-II	-	-	-	-	-	-	-	-	-	-	-	1387	-	-	-
Nickel chromite coating on niobium-zirconium alloy . . .	6-II	-	-	-	-	-	-	-	-	-	-	-	1387	-	-	-

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Nickel-chromium alloy coating on Inconel X	6-II	-	-	-	-	-	-	-	-	-	-	-	1333	1335	-	-
Nickel ferride (Ni_3Fe)	6-I	-	-	-	-	-	-	-	-	-	304	-	-	-	-	-
Nickel ferrite ($NiO \cdot Fe_2O_3$)	4-II	-	-	-	-	-	1087	1089	-	-	1091	-	-	-	-	-
Nickel ferrite spinal	4-II	-	-	-	-	-	-	1089	-	-	-	-	-	-	-	-
Nickel-lead silicate glass	4-II	-	-	-	-	-	1773	-	-	-	-	-	-	-	-	-
Nickel-manganese intermetallics (Ni_3Mn)	6-I	-	-	-	-	-	652	654	-	-	-	-	-	-	-	-
Nickel (mon-)oxide (NiO)	4-I	-	-	-	-	-	-	301	303	-	305	-	307-309	311	-	-
Nickel (mon-)oxide + Magnesium oxide	4-I	-	-	-	-	-	-	-	765	-	-	-	-	-	-	-
Nickel (mon-)oxide + Nickel aluminide	5	-	-	-	-	-	-	-	-	-	-	-	777-779	781	-	-
Nickel phosphides																
Ni_2P	5	-	635	-	-	-	-	-	-	-	-	-	-	-	-	-
Ni_3P	5	-	635	-	-	-	-	-	-	-	-	-	-	-	-	-
$Ni_{12}P_5$	5	-	635	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel selenides																
$NiSe_{1.0-1.05}$	6-I	345	-	-	-	-	-	347	-	-	-	-	-	-	-	-
Nickel silicides																
NiSi	6-I	-	453	-	-	-	-	-	-	-	-	-	-	-	-	-
$NiSi_2$	6-I	-	453	-	-	-	-	-	-	-	-	-	-	-	-	-
Ni_2Si	6-I	-	453	-	-	-	-	-	-	-	455	-	-	-	-	-
Ni_3Si	6-I	-	453	-	-	-	-	-	-	-	455	-	-	-	-	-
Ni_3Si_2	6-I	-	453	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel-tantalum intermetallics (Ni_3Ta)	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel tellurides																
NiTe	6-I	-	-	-	-	-	-	604	-	-	-	-	-	-	-	-
$NiTe_{1.1-1.5}$	6-I	-	-	-	-	-	-	604	-	-	-	-	-	-	-	-
$NiTe_2$	6-I	-	-	-	-	-	-	604	-	-	-	-	-	-	-	-
Nickel titanate ($NiO \cdot TiO_2$)	4-II	-	-	-	-	-	1452	-	-	-	-	-	-	-	-	-
Nickel zinc ferrite ($Ni_xZn_{1-x}O \cdot Fe_2O_3$)	4-II	-	-	-	-	-	-	1093	1095	-	-	-	-	-	-	-
Nickel-zirconium intermetallics																
NiZr	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Ni_3Zr	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Ni_4Zr	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Nimonic 75	2-II	-	-	-	-	-	-	-	1144	-	-	-	1182	-	-	-
Nimonic 80	2-II	-	-	-	-	-	-	-	1140	-	-	-	-	-	-	-
Nimonic 80/80A	2-II	-	-	-	-	-	-	-	1140	-	-	-	-	-	-	-
Nimonic 90	2-II	-	-	-	-	-	-	-	1136	-	-	-	-	-	-	-
Nimonic 95	2-II	-	-	-	-	-	-	-	1136	-	-	-	-	-	-	-

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Nimonic 100	2-II	1219	1217	-	-	-	-	-	1223	-	1227	-	-	-	-	-
Nimonic 105	2-II	-	-	-	-	-	-	-	1223	-	-	-	-	-	-	-
Niobium (Nb)	1	722	722	-	-	-	724	726	728	730	732	-	734-438	740	-	742
Niobium coated with aluminide .	6-II	-	-	-	-	-	-	-	-	-	-	-	1435-1437	1439	-	-
Niobium coated with niobium aluminide	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1459	-	-
Niobium + ΣX_i	2-II	-	-	-	-	-	-	1361	-	-	-	-	-	-	-	-
Niobium + Iron + ΣX_i	2-II	-	-	-	-	-	-	1317	-	-	-	-	-	-	-	-
Niobium + Molybdenum + ΣX_i . .	2-II	1319	-	-	-	-	-	1321	1323	1325	1327	-	-	-	-	-
Niobium + Tantalum	2-I	-	361	-	-	-	363	-	365	-	-	-	-	-	-	-
Niobium + Tantalum + ΣX_i . . .	2-II	-	-	-	-	-	-	1329	1331	1333	1335	-	-	-	-	-
Niobium + Titanium	2-I	-	-	-	-	-	367	-	-	-	-	-	-	-	-	-
Niobium + Titanium + ΣX_i . . .	2-II	1337	-	-	-	-	-	1339	1341	1343	1345	-	1347	-	-	-
Niobium + Tungsten	2-I	-	-	-	-	-	-	-	-	-	-	-	369-371	-	-	-
Niobium + Tungsten + ΣX_i . . .	2-II	-	-	-	-	-	-	1349	1351	1353	1355	-	-	-	-	-
Niobium + Uranium	2-I	-	-	-	-	-	-	-	373	-	375	-	-	-	-	-
Niobium + Vanadium.	2-I	-	-	-	-	-	377	-	-	-	-	-	-	-	-	-
Niobium + Vanadium + ΣX_i . . .	2-II	-	-	-	-	-	-	-	1357	-	1359	-	-	-	-	-
Niobium + Zirconium	2-I	-	-	-	-	-	379	381	383	-	385	-	387-389	-	-	-
Niobium alloys (special design.)																
5 Mo - 5 V - Zr	2-II	-	-	-	-	-	-	1321	-	1325	-	-	-	-	-	-
27 Ta - 12 W - 0.5 Zr	2-II	-	-	-	-	-	-	1329	-	1333	-	-	-	-	-	-
10 Ti - 5 Zr	2-II	-	-	-	-	-	-	1339	-	1348	-	-	-	-	-	-
10 W - 1 Zr - 0.1 C	2-II	-	-	-	-	-	-	1349	-	1353	-	-	-	-	-	-
10 W - 5 Zr	2-II	-	-	-	-	-	-	1349	-	1353	-	-	-	-	-	-
15 W - 5 Mo - 1 Zr	2-II	-	-	-	-	-	-	1349	-	-	-	-	-	-	-	-
15 W - 5 Mo - 1 Zr - 0.5 C . .	2-II	-	-	-	-	-	-	-	-	1353	-	-	-	-	-	-
B-66	2-II	-	-	-	-	-	-	-	-	-	1327, 1359	-	-	-	-	-
Cb-752	2-II	-	-	-	-	-	-	1349	-	-	1355	-	-	-	-	-
F-48	2-II	-	-	-	-	-	-	1349	-	-	1355	-	-	-	-	-
Ferroniobium	2-II	-	-	-	-	-	-	1317	-	-	-	-	-	-	-	-
FS-82	2-II	-	-	-	-	-	-	-	-	-	1335	-	-	-	-	-
FS-82B	2-II	-	-	-	-	-	-	1329	-	-	1335	-	-	-	-	-
FS-85	2-II	-	-	-	-	-	-	-	-	-	1335	-	-	-	-	-
MAR-M200	2-II	-	-	-	-	-	-	-	-	-	1305	-	-	-	-	-
Niobium aluminide ($NbAl_3$) . . .	6-I	-	21	-	-	-	-	-	-	-	-	-	-	23	-	-
Niobium aluminide coating on niobium	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1459	-	-

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Niobium beryllides																
$NbBe_{11}$	6-I	-	108	-	-	-	-	-	-	-	-	-	-	-	-	-
$NbBe_{12}$	6-I	-	108	-	-	-	-	110	112	-	114	-	116	120	-	-
Nb_2Be_{17}	6-I	-	-	-	-	-	-	-	112	-	-	-	116-118	120	-	-
Niobium borides																
NbB	6-I	-	194	-	-	-	-	-	-	-	-	-	-	-	-	-
NbB_2	6-I	194	194	-	-	-	-	196	-	-	198	-	200-202	-	-	-
Nb_3B_2	6-I	-	194	-	-	-	-	-	-	-	-	-	-	-	-	-
Nb_3B_4	6-I	-	194	-	-	-	-	-	-	-	-	-	-	-	-	-
Niobium (di-)boride + Zirconium (di-)boride	6-I	723	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Niobium carbide (NbC).	5	91	91	-	-	-	93	95-97	99	-	101	-	104-106	-	-	-
Niobium-chromium intermetallics ($NbCr_2$)	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Niobium-cobalt intermetallics ($NbCo_2$)	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Niobium ferride ($NbFe_2$)	6-I	-	306	-	-	-	-	-	-	-	-	-	-	-	-	-
Niobium germanides																
$NbGe_2$	6-I	323	323	-	-	-	-	-	327	-	-	-	-	-	-	-
Nb_2Ge	6-I	-	323	-	-	-	-	-	-	-	-	-	-	-	-	-
Nb_3Ge	6-I	323	323	-	-	-	-	-	-	-	-	-	-	-	-	-
Niobium germanide silicides ($NbGe_xSi_{1-x}$)	6-I	-	-	-	-	-	-	-	529	-	-	-	-	-	-	-
Niobium-manganese intermetallics ($NbMn_2$)	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Niobium nitrides																
NbN	5	535	535	-	-	-	537	-	-	-	539	-	-	-	-	-
Nb_2N	5	-	535	-	-	-	-	-	-	-	-	-	-	-	-	-
Niobium oxides																
NbO	4-I	-	-	-	-	-	-	315	-	-	-	-	-	-	-	-
NbO_2	4-I	-	-	-	-	-	-	317	-	-	-	-	-	-	-	-
Nb_2O_5	4-I	313	-	313	-	-	-	319	-	-	321	-	-	-	-	-
Niobium (pent-)oxide + + Aluminum oxide	4-I	-	767	-	-	-	-	-	-	-	769	-	-	-	-	-
Niobium (pent-)oxide + + Beryllium oxide	4-I	-	771	-	-	-	-	-	-	-	-	-	-	-	-	-
Niobium (pent-)oxide + + Magnesium oxide.	4-I	-	773	-	-	-	-	-	-	-	-	-	-	-	-	-
Niobium (pent-)oxide + + Titanium (di-)oxide	4-I	-	775	-	-	-	-	-	-	-	777	-	-	-	-	-
Niobium (pent-)oxide + + Zirconium (di-)oxide. . . .	4-I	-	779	-	-	-	-	-	-	-	781	-	-	-	-	-
Niobium phosphide (NbP) . . .	5	635	635	-	-	-	639	-	-	-	-	-	-	-	-	-
Niobium selenide ($NbSe_2$) . . .	6-I	-	-	-	-	-	367	-	369	-	-	-	-	-	-	-

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Niobium silicides																
$NbSi_2$	6-I	-	-	-	-	-	527	-	529	-	-	-	-	-	-	-
Nb_4Si	6-I	-	457	-	-	-	-	-	-	-	-	-	-	-	-	-
Nb_5Si_3	6-I	-	457	-	-	-	-	-	-	-	459	-	-	-	-	-
(Penta-) niobium (tri-) silicide + + (Di-) molybdenum boride . .	6-I	-	724	-	-	-	-	-	-	-	-	-	-	-	-	-
Niobium silicide germanides																
NbSiGe	6-I	-	-	-	-	-	317	-	319	-	-	-	-	-	-	-
$NbSi_{1-x}Ge_x$	6-I	-	-	-	-	-	317	-	319	-	-	-	-	-	-	-
Niobium stannide (Nb_3Sn) . . .	6-I	-	541	-	-	-	-	-	-	-	-	-	-	-	-	-
Niobium telluride ($NbTe_2$) . . .	6-I	-	-	-	-	-	606	-	608	-	-	-	-	-	-	-
Niobium-zirconium alloy coated with barium titanate	6-II	-	-	-	-	-	-	-	-	-	-	-	1369	-	-	-
Niobium-zirconium alloy coated with boron	6-II	-	-	-	-	-	-	-	-	-	-	-	1291	-	-	-
Niobium-zirconium alloy coated with calcium titanate	6-II	-	-	-	-	-	-	-	-	-	-	-	1371	-	-	-
Niobium-zirconium alloy coated with iron titanate	6-II	-	-	-	-	-	-	-	-	-	-	-	1385	-	-	-
Niobium-zirconium alloy coated with nickel chromite	6-II	-	-	-	-	-	-	-	-	-	-	-	1387	-	-	-
Niobium-zirconium alloys coated with silicon carbide	6-II	-	-	-	-	-	-	-	-	-	-	-	1415	-	-	-
Nodular cast iron	3	-	-	-	-	-	-	-	35-37, 437	-	41, 444	-	-	-	-	-
Nodular cast iron, ferritic base .	3	-	-	-	-	-	-	-	37	-	-	-	-	-	-	-
Nodular cast iron, pearlitic base	3	-	-	-	-	-	-	-	35	-	41	-	-	-	-	-
Nycar PA-21	6-II	1051	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nylon	6-II	-	-	-	-	-	-	1047	-	-	1049	-	-	-	-	-
Nylon 1 N fabrics	6-II	-	-	-	-	-	-	-	-	1273	-	-	-	-	-	-
Nylon 6	6-II	-	-	-	-	-	-	1047	-	-	1049	-	-	-	-	-
Nylon 9	6-II	-	-	-	-	-	-	-	-	-	1049	-	-	-	-	-
Nylon 11	6-II	-	-	-	-	-	-	-	-	-	1049	-	-	-	-	-
Nylon 11 N fabric	6-II	-	-	-	-	-	-	-	-	1273	-	-	-	-	-	-
Nylon 66	6-II	-	-	-	-	-	-	-	-	-	1049	-	-	-	-	-
Nylon fabric	6-II	-	-	-	-	-	-	-	-	1273	-	-	-	-	-	-
Nylon FM-1	6-II	-	-	-	-	-	-	-	-	-	1049	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
O																
OFHC copper	1	-	-	-	-	-	-	-	458	460	-	-	-	-	-	-
Opalon 300 FM	6-II	-	1076	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic fiber cloth	6-II	-	-	-	-	-	-	-	-	-	1275	-	-	-	-	-
Osmium (Os)	1	744	744	-	-	-	746	-	748	-	-	-	750	-	-	-
P																
Palatinol AH	6-II	-	-	-	-	-	-	-	1086	-	-	-	-	-	-	-
Palladium (Pd)	1	752	752	-	-	-	754	756	758	-	-	760	762-764	766	-	-
Palladium + Cobalt + ΣX_i . . .	2-II	-	1363	-	-	-	1366-1368	-	-	-	-	-	-	-	-	-
Palladium + Copper + ΣX_i . . .	2-II	-	1370	-	-	-	-	1372	-	-	-	-	-	-	-	-
Palladium + Gold + ΣX_i	2-II	-	1374	-	-	-	1376	-	-	-	-	-	-	-	-	-
Palladium + Nickel	2-I	-	-	-	-	-	391	-	-	-	-	-	-	-	-	-
Palladium + Nickel + ΣX_i . . .	2-II	-	-	-	-	-	-	-	-	-	1378	-	-	-	-	-
Palladium + Uranium	2-I	-	393	-	-	-	-	-	-	-	-	-	-	-	-	-
Palladium aluminides																
PdAl	6-I	-	43	-	-	-	-	-	-	-	-	-	-	-	-	-
Pd_3Al	6-I	-	43	-	-	-	-	-	-	-	-	-	-	-	-	-
Palladium beryllides																
PdBe	6-I	-	158	-	-	-	-	-	-	-	-	-	-	-	-	-
$PdBe_{12}$	6-I	-	158	-	-	-	-	-	-	-	-	-	-	-	-	-
Palladium brazing alloy GE-76 .	2-II	-	-	-	-	-	-	-	-	-	1378	-	-	-	-	-
Palladium tellurides																
PdTe	6-I	-	-	-	-	-	-	610	-	-	-	-	-	-	-	-
$PdTe_2$	6-I	-	-	-	-	-	-	610	-	-	-	-	-	-	-	-
Panelyte, grade 942	6-II	-	-	-	-	-	-	-	-	-	1107	-	-	-	-	-
Paraplex P43	6-II	-	-	-	-	-	-	-	-	-	976	-	-	-	-	-
Penton 1215	6-II	-	1076	-	-	-	-	-	-	-	-	-	-	-	-	-
Perbunan 18	6-II	-	-	-	-	-	-	-	-	1060	-	-	-	-	-	-
Perbunan 26	6-II	-	-	-	-	-	-	-	-	1060	-	-	-	-	-	-
Perbunan 35	6-II	-	-	-	-	-	-	-	-	1060	-	-	-	-	-	-
Periclase	4-I	-	-	-	-	-	-	-	254	-	-	-	-	-	-	-
Periclase, synthetic	4-I	-	-	-	-	-	-	-	254	-	-	-	-	-	-	-
Permanickel 300	2-II	1257	-	-	-	-	-	-	-	-	1303	-	-	-	-	-
Phenacite, synthetic	4-II	-	-	-	-	-	-	-	-	-	1223	-	-	-	-	-
Phenol formaldehyde	6-II	-	-	-	-	-	-	-	-	-	986	-	-	-	-	-
Phenol formaldehyde, asbestos filled	6-II	-	-	-	-	-	-	-	-	-	988	-	-	-	-	-
Phenol formaldehyde, ceramic filled	6-II	-	-	-	-	-	-	-	-	-	990	-	-	-	-	-
Phenol formaldehyde, cord filled	6-II	-	-	-	-	-	-	-	-	-	992	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Phenol formaldehyde, cotton flock filled	6-II	-	-	-	-	-	-	-	-	-	994	-	-	-	-	-
Phenol formaldehyde, fabric filled	6-II	-	-	-	-	-	-	-	-	-	996	-	-	-	-	-
Phenol formaldehyde, stupalith A-2412	6-II	-	-	-	-	-	-	-	-	-	990	-	-	-	-	-
Phenol formaldehyde, wood flour filled	6-II	-	-	-	-	-	-	-	-	-	998	-	-	-	-	-
Phenolic, alpha cellulose paper reinforced	6-II	-	-	-	-	-	-	-	-	-	1105	-	-	-	-	-
Phenolic, cotton fabric reinforced	6-II	-	-	-	-	-	-	-	-	-	1107	-	-	-	-	-
Phenolic, LMI 304 nylon reinforced	6-II	-	-	-	-	-	1103	-	-	-	-	-	-	-	-	-
Phenolic, long glass fiber reinforced	6-II	-	-	-	-	-	1103	-	-	-	-	-	-	-	-	-
Phenolic and epoxide copolymer resin, reinforced	6-II	-	-	-	-	-	-	-	-	-	1126	-	-	-	-	-
Phenolic novolak	6-II	-	-	-	-	-	982	-	-	-	-	-	-	-	-	-
Phenolic, reinforced	6-II	-	-	-	-	-	1103	-	-	-	1105-1107	-	-	-	-	-
Phenolic resin	6-II	980	-	-	-	-	982	-	984	1082	-	-	-	-	-	-
Phenolic resin, reinforced . . .	6-II	1130	-	-	-	-	-	1132-1146	1148-1156	1159-1170	1172-1179	-	-	-	-	-
Phenolic resin, type S	6-II	980	-	-	-	-	-	-	984	1082	-	-	-	-	-	-
Phenolites																
Phenolite	6-II	-	-	-	-	-	-	-	-	-	1101, 1176	-	-	-	-	-
NEMA C	6-II	-	-	-	-	-	-	-	-	-	1107	-	-	-	-	-
NEMA L	6-II	-	-	-	-	-	-	-	-	-	1107	-	-	-	-	-
NEMA LE	6-II	-	-	-	-	-	-	-	-	-	1107	-	-	-	-	-
NEMA X	6-II	-	-	-	-	-	-	-	-	-	1107	-	-	-	-	-
NEMA XP	6-II	-	-	-	-	-	-	-	-	-	1105	-	-	-	-	-
NEMA XXX	6-II	-	-	-	-	-	-	-	-	-	1105	-	-	-	-	-
NEMA XXXP	6-II	-	-	-	-	-	-	-	-	-	1105	-	-	-	-	-
XXXP	6-II	-	-	-	-	-	-	-	-	-	1105	-	-	-	-	-
Phenyl silane resin	6-II	-	-	-	-	-	-	1074	-	-	-	-	-	-	-	-
Phenyl silane resin, reinforced.	6-II	-	-	-	-	-	-	1212	-	1220	-	-	-	-	-	-
Phenyl silane SC-1013 Monsanto	6-II	-	-	-	-	-	-	1074	-	-	-	-	-	-	-	-
Phosphate glass	4-II	1649	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphorus (pent-)oxide + + Zirconium (di-)oxide. . . .	4-I	-	-	-	-	-	-	-	-	-	787	-	-	-	-	-
Pittsburg no. 3235 glass	4-II	-	-	-	-	-	-	1697	-	-	-	-	1705	1709	1711-1713	-
Plate glass	4-II	1779	-	-	-	-	-	1791	1783	1793	1797	-	-	-	-	-
Plate glass no. 9330.	4-II	-	-	-	-	-	-	1791	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Platinum (Pt)	1	768	768	-	-	-	770	772	774	776	778	780	782-788	790	-	-
Platinum coating on copper . . .	6-II	-	-	-	-	-	-	-	-	-	-	-	1313	-	-	-
Platinum coating on quartz . . .	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1317	1319	-
Platinum coating on stainless steel	6-II	-	-	-	-	-	-	-	-	-	-	-	1315	-	-	-
Platinum + Copper	2-I	-	-	-	-	-	395-397	-	-	-	-	-	-	-	-	-
Platinum + Iron	2-I	-	-	-	-	-	399	-	-	-	401	-	-	-	-	-
Platinum + Rhodium	2-I	-	-	-	-	-	-	-	403	-	-	-	405	407	-	-
Platinum arsenide (Pt_2As_3) . . .	6-I	-	94	-	-	-	-	-	-	-	-	-	-	-	-	-
Platinum beryllide ($PtBe_{12}$) . .	6-I	158	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Platinum stannide (Pt_3Sn) . . .	6-I	-	541	-	-	-	-	-	-	-	-	-	-	-	-	-
Platinum sulfides																
PtS	5	-	-	-	-	-	-	698	-	-	-	-	-	-	-	-
PtS_2	5	-	-	-	-	-	-	698	-	-	-	-	-	-	-	-
Platinum tellurides																
$PtTe$	6-I	-	-	-	-	-	-	612	-	-	-	-	-	-	-	-
$PtTe_2$	6-I	-	-	-	-	-	-	612	-	-	-	-	-	-	-	-
Plexiglas 11	6-II	-	-	-	-	-	-	-	-	-	1026	-	-	-	-	-
Plexiglas AN-P-44A	6-II	1020	1020	-	-	-	-	1022	1024	-	1026	-	-	-	-	-
Plutonium (Pu)	1	794	792	-	792	-	796	799	-	-	801	-	-	-	-	-
Plutonium + Cerium + ΣX_i . . .	2-II	-	-	-	-	-	-	1380	-	-	-	-	-	-	-	-
Plutonium + Osmium	2-I	409	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Plutonium + Thorium	2-I	411	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Plutonium beryllide ($PuBe_{13}$) . .	6-I	158	158	-	-	-	-	-	-	-	-	-	-	-	-	-
Plutonium bromide ($PuBr_3$) . . .	5	3	3	3	3	3	-	-	-	-	-	-	-	-	-	5
Plutonium carbides																
PuC	5	-	-	-	-	-	110	112	-	-	114	-	-	-	-	-
Pu_2C_3	5	108	-	-	-	-	-	-	-	-	117	-	-	-	-	-
Plutonium chloride ($PuCl_3$) . . .	5	327	327	327	327	327	-	-	-	-	-	-	-	-	-	329
Plutonium ferrides																
$PuFe_2$	6-I	306	306	-	-	-	-	-	-	-	-	-	-	-	-	-
Pu_6Fe	6-I	306	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Plutonium fluoride (PuF_3) . . .	5	389	389	389	389	389	-	-	-	-	-	-	-	-	-	391
Plutonium iodide (PuI_3)	5	471	471	471	471	471	-	-	-	-	-	-	-	-	-	473
Plutonium-lead intermetallics ($PuPb_3$)	6-I	-	671	-	-	-	-	-	-	-	-	-	-	-	-	-
Plutonium-manganese intermetallics ($PuMn_2$)	6-I	671	671	-	-	-	-	-	-	-	-	-	-	-	-	-
Plutonium-nickel intermetallics																
$PuNi$	6-I	-	671	-	-	-	-	-	-	-	-	-	-	-	-	-
$PuNi_2$	6-I	-	671	-	-	-	-	-	-	-	-	-	-	-	-	-
$PuNi_5$	6-I	-	671	-	-	-	-	-	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Plutonium nitride (PuN)	5	-	-	-	-	-	-	-	-	-	541	-	-	-	-	-
Plutonium-osmium intermetallics ($PuOs_2$)	6-I	671	671	-	-	-	-	-	-	-	-	-	-	-	-	-
Plutonium oxides																
PuO	4-I	-	-	-	-	323	-	-	-	-	-	-	-	-	-	329
PuO_2	4-I	323	323	-	-	-	-	325	-	-	327	-	-	-	-	329
Plutonium silicide ($PuSi_2$) . . .	6-I	523	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polonium (Po)	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	803
Polybutadiene	6-II	-	-	-	-	-	-	-	-	1066	-	-	-	-	-	-
Polychlorotrifluoroethylene . .	6-II	-	-	-	-	-	-	-	1037	-	1045	-	-	-	-	-
Polyester, glass fiber reinforced	6-II	-	-	-	-	-	-	-	-	-	1109	-	-	-	-	-
Polyester, unsaturated	6-II	-	-	-	-	-	-	-	-	-	968	-	-	-	-	-
Polyester resin, reinforced . .	6-II	1180	-	-	-	-	-	1191	1195-1198	1220	1200	-	-	-	-	-
Polyethylene	6-II	1030	-	-	-	-	-	-	1037	-	1045	-	-	-	-	-
Polyethylene, halogenated . . .	6-II	1030	-	-	-	-	-	-	-	-	1045	-	-	-	-	-
Polyethylene PE 575	6-II	-	1030	-	-	-	-	-	-	-	-	-	-	-	-	-
Polyfluorobutyl acrylate rubber.	6-II	1051	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polyisoprene	6-II	-	-	-	-	-	-	-	-	1066	-	-	-	-	-	-
Polymethyl methacrylate. . . .	6-II	-	-	-	-	-	-	-	-	-	1026	-	-	-	-	-
Polymethyl methacrylate, alumina filled	6-II	-	-	-	-	-	-	-	-	-	1028	-	-	-	-	-
Polymethyl methacrylate, boron phosphate filled	6-II	-	-	-	-	-	-	-	-	-	1028	-	-	-	-	-
Polymethyl methacrylate, calcium carbonate filled . . .	6-II	-	-	-	-	-	-	-	-	-	1028	-	-	-	-	-
Polymethyl methacrylate, silica filled	6-II	-	-	-	-	-	-	-	-	-	1028	-	-	-	-	-
Polymethyl methacrylate, zinc oxide filled	6-II	-	-	-	-	-	-	-	-	-	1028	-	-	-	-	-
Polypropylene	6-II	1076	1076	-	-	-	-	1078	1080	-	1088	-	-	-	-	-
Polystyrene	6-II	-	1076	-	-	-	-	-	1090	-	1092	-	-	-	-	-
Polystyrene, Grade 912A . . .	6-II	-	-	-	-	-	-	-	-	-	1092	-	-	-	-	-
Polystyrene foam	6-II	-	-	-	-	-	-	-	1090	-	-	-	-	-	-	-
Polytetrafluoroethylene	6-II	-	-	-	-	-	-	1035	1039	-	1045	-	-	-	-	-
Polytetrafluoroethylene laminate	6-II	-	-	-	-	-	-	1214	1218	1220	-	-	-	-	-	-
Polythene, germanium (di-)oxide filled	6-II	-	-	-	-	-	-	-	-	-	1041	-	-	-	-	-
Polythene, iron(ic) oxide filled.	6-II	-	-	-	-	-	-	-	-	-	1041	-	-	-	-	-
Polythene, scandium oxide filled	6-II	-	-	-	-	-	-	-	-	-	1041	-	-	-	-	-
Polythene PM-1	6-II	-	-	-	-	-	-	-	-	-	1045	-	-	-	-	-
Polyurethane foam	6-II	962	-	-	-	-	-	-	964	-	966	-	-	-	-	-
Polyvinyl carbazole	6-II	-	-	-	-	-	-	970	972	-	-	-	-	-	-	-
Polyvinyl chloride	6-II	-	1076	-	-	-	-	-	1086	-	-	-	-	-	-	-

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Polyvinyl chloride, cellular . .	6-II	-	-	-	-	-	-	-	1086	-	-	-	-	-	-	-
Porcelain	5	1003	-	-	-	-	1005-1013	1015	1017	-	1019-1021	-	-	-	-	-
Porcelain 7A2	5	-	-	-	-	-	-	-	1017	-	-	-	-	-	-	-
Porcelain 576	5	1003	-	-	-	-	-	-	1017	-	-	-	-	-	-	-
Porcelain, aluminum oxide. . .	5	1003	-	-	-	-	-	1015	1017	-	-	-	-	-	-	-
Porcelain, cone 14	5	-	-	-	-	-	1007	-	-	-	-	-	-	-	-	-
Porcelains, electrical																
K-3 body	5	-	-	-	-	-	1005	-	-	-	-	-	-	-	-	-
K-5 body	5	-	-	-	-	-	1005	-	-	-	-	-	-	-	-	-
K-6 body	5	-	-	-	-	-	1005	-	-	-	-	-	-	-	-	-
K-7 body	5	-	-	-	-	-	1005	-	-	-	-	-	-	-	-	-
K-8 body	5	-	-	-	-	-	1005	-	-	-	-	-	-	-	-	-
K-9 body	5	-	-	-	-	-	1005	-	-	-	-	-	-	-	-	-
Li-K-1 body	5	-	-	-	-	-	1011	-	-	-	-	-	-	-	-	-
Li-K-2a body	5	-	-	-	-	-	1011	-	-	-	-	-	-	-	-	-
Li-K-2b body	5	-	-	-	-	-	1011	-	-	-	-	-	-	-	-	-
Li-K-2c body	5	-	-	-	-	-	1011	-	-	-	-	-	-	-	-	-
Li-K-2d body	5	-	-	-	-	-	1011	-	-	-	-	-	-	-	-	-
Li-K-2e body	5	-	-	-	-	-	1011	-	-	-	-	-	-	-	-	-
Lithium modified	5	-	-	-	-	-	1011	-	-	-	-	-	-	-	-	-
Pelalite body	5	-	-	-	-	-	1011	-	-	-	-	-	-	-	-	-
Porcelain, feldspar, dinnerware cone 12-14	5	-	-	-	-	-	1007	-	-	-	-	-	-	-	-	-
Porcelain, zircon	5	1003	-	-	-	-	1013	-	1017	-	1021	-	-	-	-	-
Potassium aluminum silicates .	4-II	-	-	-	-	-	-	-	-	-	1316-1318	-	-	-	-	-
Potassium aluminum silicate + + Iron(ic) oxide	4-II	-	-	-	-	-	-	1573	-	-	-	-	-	-	-	-
Potassium borate glass	4-II	1605	-	-	-	-	1607	-	-	-	-	-	-	-	-	-
Potassium bromide (KBr) . . .	5	-	-	-	-	-	-	-	-	-	-	-	-	7	-	-
Potassium chloride (KCl) . . .	5	-	-	-	-	-	-	-	-	-	-	-	-	331	-	-
Potassium feldspar	4-II	-	-	-	-	-	-	-	-	-	1316-1318	-	-	-	-	-
Potassium fluoride + Lithium fluoride	5	-	-	-	-	-	-	409	-	-	-	-	-	-	-	-
Potassium mica	5	-	-	-	-	-	-	-	-	-	1001	-	-	-	-	-
Potassium sodium aluminum silicates	4-II	-	-	-	-	-	-	-	-	-	1320	-	-	-	-	-
Potassium uranate ($K_2O \cdot UO_3$) .	4-II	-	1482	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium lead silicate glass. .	4-II	-	-	-	-	-	1777	-	-	-	-	-	-	-	-	-
Potassium silicate glass	4-II	-	-	-	-	-	-	-	-	-	1775	-	-	-	-	-
Praseodymium (Pr)	1	805	805	805	805	-	807	809	-	-	-	-	-	-	-	811
Praseodymium + ΣX_i	2-II	-	1382	-	-	-	-	-	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Praseodymium + Magnesium . .	2-I	413	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium + Neodymium . .	2-I	-	-	-	-	-	-	-	-	-	415	-	-	-	-	-
Praseodymium + Silicon	2-I	-	-	-	-	-	-	417	-	-	-	-	-	-	-	-
Praseodymium aluminides																
PrAl	6-I	-	43	-	-	-	-	-	-	-	-	-	-	-	-	-
$PrAl_2$	6-I	-	43	-	-	-	-	-	-	-	-	-	-	-	-	-
$PrAl_4$	6-I	-	43	-	-	-	-	-	-	-	-	-	-	-	-	-
Pr_3Al_2	6-I	-	43	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium-bismuth intermetallics (PrBi)	6-I	673	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium borides																
PrB_4	6-I	296	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PrB_6	6-I	295-296	-	-	-	-	300	-	-	-	-	-	-	-	-	-
Praseodymium bromide ($PrBr_3$)	5	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium-cadmium intermetallics																
PrCd	6-I	673	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$PrCd_2$	6-I	673	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$PrCd_3$	6-I	673	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$PrCd_{11}$	6-I	673	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium carbides																
PrC_2	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pr_2C_3	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium chloride ($PrCl_3$).	5	339	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium-cobalt intermetallics																
$PrCo_2$	6-I	673	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$PrCo_5$	6-I	673	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium-copper intermetallics																
PrCu	6-I	-	673	-	-	-	-	-	-	-	-	-	-	-	-	-
$PrCu_2$	6-I	-	673	-	-	-	-	-	-	-	-	-	-	-	-	-
$PrCu_4$	6-I	-	673	-	-	-	-	-	-	-	-	-	-	-	-	-
$PrCu_6$	6-I	-	673	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium-gallium intermetallics ($PrGa_2$)	6-I	673	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium germanides																
PrGe	6-I	323	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$PrGe_2$	6-I	323	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium-gold intermetallics																
PrAu	6-I	-	673	-	-	-	-	-	-	-	-	-	-	-	-	-
$PrAu_2$	6-I	-	673	-	-	-	-	-	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Praseodymium-gold intermetallics (cont.)																
$PrAu_3$	6-I	-	673	-	-	-	-	-	-	-	-	-	-	-	-	-
Pr_2Au	6-I	-	673	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium hydride (PrH_2) .	5	467	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium-indium intermetallics																
$PrIn_3$	6-I	673	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pr_3In	6-I	673	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium-lead intermetallics																
PrPb	6-I	-	674	-	-	-	-	-	-	-	-	-	-	-	-	-
$PrPb_3$	6-I	673	674	-	-	-	-	-	-	-	-	-	-	-	-	-
Pr_2Pb	6-I	-	674	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium-magnesium intermetallics																
PrMg	6-I	673	674	-	-	-	-	-	-	-	-	-	-	-	-	-
$PrMg_3$	6-I	673	674	-	-	-	-	-	-	-	-	-	-	-	-	-
$PrMg_9$	6-I	-	674	-	-	-	-	-	-	-	-	-	-	-	-	-
Pr_4Mg	6-I	-	674	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium-mercury intermetallics (PrHg)	6-I	673	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium-nickel intermetallics ($PrNi_5$)	6-I	673	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium-osmium intermetallics ($PrOs_2$)	6-I	673	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium oxides																
$PrO_{1.70-1.83}$	4-I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	335
Pr_6O_{11}	4-I	-	-	-	-	-	-	331	-	-	333	-	-	-	-	-
Praseodymium phosphide (PrP).	5	635	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium selenides																
PrSe	6-I	365	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pr_2Se_3	6-I	365	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pr_3Se_4	6-I	365	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium silicides ($PrSi_2$).	6-I	523	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium-silver intermetallics																
PrAg	6-I	673	673	-	-	-	-	-	-	-	-	-	-	-	-	-
$PrAg_2$	6-I	-	673	-	-	-	-	-	-	-	-	-	-	-	-	-
$PrAg_3$	6-I	-	673	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium stannides																
$PrSn_3$	6-I	-	541	-	-	-	-	-	-	-	-	-	-	-	-	-
Pr_2Sn	6-I	-	541	-	-	-	-	-	-	-	-	-	-	-	-	-
Pr_2Sn_3	6-I	-	541	-	-	-	-	-	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Praseodymium sulfides																
PrS	5	700	-	-	-	-	-	-	-	-	702	-	-	-	-	-
PrS_2	5	700	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pr_2S_3	5	700	-	-	-	-	-	-	-	-	702	-		-	-	-
Pr_3S_4	5	700	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium-thallium intermetallics																
PrTl	6-I	-	674	-	-	-	-	-	-	-	-	-	-	-	-	-
$PrTl_3$	6-I	-	674	-	-	-	-	-	-	-	-	-	-	-	-	-
Pr_2Tl	6-I	-	674	-	-	-	-	-	-	-	-	-	-	-	-	-
Promethium (Pm)	1	-	813	813	-	813	-	-	-	-	-	-	-	-	-	-
Protactinium (Pa)	1	815	815	-	-	-	-	-	-	-	-	-	-	-	-	-
Protactinium oxide (PaO)	4-I	337	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Protoenstatite	4-II	-	-	-	-	-	-	-	-	-	1295	-	-	-	-	-
Pu-Ce-Co eutectic alloy	2-II	-	-	-	-	-	-	1380	-	-	-	-	-	-	-	-
Pyrex 774	4-II	1693	-	-	-	-	-	-	1699	1701	1703	-	1707	1709	1713	-
Pyrex 7740	4-II	-	-	-	-	-	-	1697	-	1701	-	-	1705	1709	1711-1713	-
Pyrex glasses	4-II	1693	-	-	-	-	-	1697	1699	1701	1703	-	1705-1707	1709	1711-1713	-
Pyrocerams																
Pyroceram 9606	4-II	-	-	-	-	-	-	1587	1589	1591	-	-	1593-1599	1601	1603	-
Pyroceram 9608	4-II	-	-	-	-	-	-	1587	1589	1591	-	-	1593-1599	1601	1603	-
Pyroceram 9690	4-II	-	-	-	-	-	-	-	-	1591	-	-	-	-	-	-
Pyrolytic carbon	1	83	-	-	-	-	-	-	89	-	-	-	-	-	-	-
Pyrolytic carbon EYX-4	1	-	-	-	-	-	-	-	89	-	-	-	-	-	-	-
Pyrolytic graphite	1	-	-	-	-	-	-	-	317	-	319	-	325-331	333-335	-	-
Pyrolytic graphite coating on tantalum	6-II	-	-	-	-	-	-	-	-	-	-	-	1297-1299	-	-	-
Pyrolytic graphite + Zirconium (pyro-) carbide	5	-	-	-	-	-	-	-	-	-	745	-	-	-	-	-
Q																
Quartz	4-I	353	353	-	-	-	355	357	361	365	-	-	-	379	381	-
Quartz coated with magnesium fluoride	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1425	1427	-
Quartz coated with platinum	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1317	1319	-
Quartz glass	4-II	1651	-	-	-	-	1653	1655	1657	-	-	-	-	-	-	-

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R																
Rene 41	2-II	1122	-	-	-	-	-	1130	1134	-	1156	-	1184, 1199	1211	-	-
Resimene 814 resin	6-II	-	1014	-	-	-	-	-	-	-	-	-	-	-	-	-
Rhenium (Re)	1	817	817	-	-	817	820	822	824	-	826	-	828-832	-	-	834
Rhenium + Tungsten	2-I	-	419	-	-	-	-	-	-	-	-	-	-	-	-	-
Rhenium arsenide (Re_3As_7) . . .	6-I	-	-	-	-	-	96	-	-	-	-	-	-	-	-	-
Rhenium phosphide (ReP) . . .	5	-	635	-	-	-	-	-	-	-	-	-	-	-	-	-
Rhenium selenide ($ReSe_2$) . . .	6-I	-	-	-	-	-	349	-	351	-	-	-	-	-	-	-
Rhenium silicides																
ReSi	6-I	-	461	-	-	-	-	-	-	-	463	-	-	-	-	465
$ReSi_2$	6-I	-	461	-	-	-	-	-	-	-	463	-	-	-	-	465
Re_3Si	6-I	-	461	-	-	-	-	-	-	-	-	-	-	-	-	465
Rhodium (Rh)	1	836	836	-	-	-	838	840	842	-	-	-	844-848	850	-	-
Rhodium germanides																
RhGe	6-I	323	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rh_2Ge	6-I	323	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rh_3Ge_4	6-I	323	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rh_5Ge_3	6-I	323	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rokide A coating on AISI 446 . .	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1351	-	-
Rokide C coating on titanium alloy 6 Al - 4 V	6-II	-	-	-	-	-	-	-	-	-	-	-	1345-1347	-	-	-
Rubbers																
Board no. 2266, cellular . .	6-II	-	-	-	-	-	-	-	1056	-	-	-	-	-	-	-
Buna	6-II	1051	-	-	-	-	-	1054	1056	1066	-	-	-	-	-	-
Dielectric mix	6-II	-	-	-	-	-	-	-	1056	-	-	-	-	-	-	-
Natural	6-II	1051	-	-	-	-	-	-	1056	1058	1068	-	-	-	-	-
Perbunan	6-II	1051	-	-	-	-	-	1054	1056	1060	-	-	-	-	-	-
Silicone	6-II	-	-	-	-	-	-	-	-	1064	1068	-	-	-	-	-
Synthetic	6-II	1051	-	-	-	-	-	1054	1056	1060-1066	1068	-	-	-	-	-
Rubidium fluoride (RbF)	5	-	-	-	-	-	-	393	-	-	-	-	-	-	-	395
Ruthenium (Ru)	1	852	852	-	-	852	854	856	858	-	-	-	-	-	-	860
Ruthenium-tungsten intermetallics (Ru_2W_3)	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Rutile	4-I	445	-	-	-	-	450	454	460	-	462	-	-	-	-	-

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S																
SAE 1006	3	-	-	-	-	-	-	-	-	329	-	-	-	-	-	-
SAE 1010	3	310	-	-	-	-	312	316	325	329	335	-	-	-	-	-
SAE 1018	3	-	-	-	-	-	-	-	-	333	-	-	-	-	-	-
SAE 1020	3	-	-	-	-	-	-	-	-	329	-	-	345-347	-	-	-
SAE 1045	3	-	-	-	-	-	-	-	-	333	-	-	-	-	-	-
SAE 3140	3	-	-	-	-	-	-	-	-	365	-	-	-	-	-	-
SAE 4130	3	-	-	-	-	-	-	-	-	85	-	-	-	-	-	-
SAE 4340	3	-	-	-	-	-	-	-	387	395	-	-	-	-	-	-
SAE 8630	3	-	-	-	-	-	-	-	-	-	337	-	-	-	-	-
Samaria	4-I	339	339	-	-	-	-	341	-	-	343	-	345	-	-	-
Samarium (Sm)	1	862	862	862	862	862	864	866	-	-	-	-	-	-	-	-
Samarium-bismuth intermetallics (SmBi)	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Samarium borides																
SmB_4	6-I	295	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SmB_6	6-I	295	296	-	-	-	300	-	-	-	302	-	-	-	-	-
Samarium-cadmium intermetallics																
SmCd	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$SmCd_2$	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$SmCd_{11}$	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Samarium carbides																
SmC_2	5	294	294	-	-	-	-	-	-	-	-	-	-	-	-	-
Sm_2C_3	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Samarium-cobalt intermetallics																
$SmCo_2$	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$SmCo_5$	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Samarium ferrides																
$SmFe_2$	6-I	306	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$SmFe_5$	6-I	306	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Samarium-gallium intermetallics ($SmGa_2$)	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Samarium germanide ($SmGe_2$) .	6-I	323	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Samarium hydrides																
SmH_2	5	467	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SmH_3	5	467	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Samarium-indium intermetallics ($SmIn_3$)	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Samarium-lead intermetallics ($SmPb_3$)	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Samarium-mercury intermetallics (SmHg)	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Samarium-nickel intermetallics																
$SmNi_2$	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$SmNi_5$	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Samarium (sesqui-) oxide (Sm_2O_3)	4-I	339	339	-	-	-	-	341	-	-	343	-	345	-	-	-
Samarium (sesqui-) oxide + + Gadolinium oxide......	4-I	-	-	-	-	-	-	-	783	-	-	-	-	-	-	-
Samarium (sesqui-) oxide + + Gadolinium oxide + + Dysprosium oxide + Yttrium oxide	4-I	785	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Samarium phosphide (SmP) ..	5	635	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Samarium selenides (SmSe) ..	6-I	365	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Samarium silicides ($SmSi_2$) ..	6-I	523	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Samarium sulfides																
$SmS_{0.15}$	5	-	-	-	-	-	706	-	-	-	-	-	-	-	-	-
SmS	5	704	704	-	-	-	-	-	708	-	-	-	-	-	-	-
SmS_2	5	-	704	-	-	-	-	-	-	-	-	-	-	-	-	-
Sm_2S_3	5	704	704	-	-	-	-	-	-	-	-	-	-	-	-	-
Sm_3S_4	5	704	704	-	-	-	-	-	-	-	-	-	-	-	-	-
Sandwich panels, TAC-polyester skin and alkyd isocyanate foam core	6-II	-	-	-	-	-	-	1257	1259	-	-	-	-	-	-	-
Sapphire	4-I	41	41	-	-	-	43	8	45	-	47	-	-	-	-	-
Sapphire, synthetic	4-I	41	-	-	-	-	-	8	45	-	47	-	-	-	-	-
Scandia	4-I	347	347	-	-	-	-	349	-	-	351	-	-	-	-	876
Scandium (Sc)	1	868	868	868	868	868	870	872	-	-	874	-	-	-	-	-
Scandium boride (ScB_2)	6-I	204	204	-	-	-	-	-	-	-	206	-	-	-	-	-
Scandium carbide (ScC)	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Scandium nitride (ScN)	5	621	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Scandium oxide (Sc_2O_3)	4-I	347	347	-	-	-	-	349	-	-	351	-	-	-	-	-
Scandium selenide (Sc_2Se_3) ...	6-I	365	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Scandium sulfide (Sc_2S_3)	5	732	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Scandium telluride (Sc_2Te_3) ..	6-I	636	-	-	-	-	-	-	-	-	1026	-	-	-	-	-
Selectron 400	6-II	1020	-	-	-	-	-	-	-	-	968	-	-	-	-	-
Selectron 5026	6-II	-	-	-	-	-	-	-	-	890	-	-	-	-	-	-
Si 142 silicon	1	-	-	-	-	-	-	-	-	1064	1068	-	-	-	-	-
Silastic 160	6-II	-	-	-	-	-	-	-	-	1064	-	-	-	-	-	-
Silastic 180	6-II	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silica	4-I	353	353	-	-	-	355	357	359	363	367	-	373-375	377	-	-
Silica fabric	6-II	-	-	-	-	-	-	-	-	1277	-	-	-	-	-	-
Silica glass	4-II	1651	1651	-	-	-	1653	1655	1657	1659-1661	1663	-	1665-1667	1669	1671-1673	-
Silica rock	4-I	820, 826	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Silicide coating on molybdenum .	6-II	-	-	-	-	-	-	-	-	-	-	-	1467-1469	1471	-	-
Silicide coating on tantalum. . .	6-II	-	-	-	-	-	-	-	-	-	-	-	1473-1475	1477	-	-
Silicide coating on titanium. . .	6-II	-	-	-	-	-	-	-	-	-	-	-	1479-1481	1483	-	-
Silicide coating on tungsten. . .	6-II	-	-	-	-	-	-	-	-	-	-	-	1485-1487	1489	-	-
Silicon (Si)	1	878	878	878	-	878	880-884	886	888	890	892	-	894-896	898	-	-
Silicon + ΣX_i	2-II	-	-	-	-	-	1384	1386	-	-	-	-	-	-	-	-
Silicon + Germanium	2-I	421	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silicon + Iron	2-I	-	-	-	-	-	-	423	425	-	427	-	-	-	-	-
Silicon alloys (special designations)																
Leboite	2-I	-	-	-	-	-	-	-	-	-	427	-	-	-	-	-
Silicon borides																
SiB_4	6-I	-	-	-	-	-	-	-	-	-	210	-	-	-	-	-
SiB_6	6-I	-	208	-	-	-	-	-	-	-	210	-	-	-	-	-
Silicon carbides																
(SiC)	5	119	119	-	-	-	121	123	125-127	-	129	-	131-135	137-139	-	-
Norton RC-4237	5	-	-	-	-	-	-	-	-	-	-	-	311	-	-	-
Silicon carbide coating on niobium-zirconium alloys . . .	6-II	-	-	-	-	-	-	-	-	-	-	-	1415	-	-	-
Silicon carbide coating on tantalum	6-II	-	-	-	-	-	-	-	-	-	-	-	1411-1413	-	-	-
Silicon carbide + Boron carbide .	5	297	-	-	-	-	-	-	-	-	299	-	-	-	-	-
Silicon carbide + Carbon	5	-	-	-	-	-	-	807	-	-	809	-	811	-	-	-
Silicon carbide + Graphite . . .	5	-	-	-	-	-	-	813	-	-	-	-	-	-	-	-
Silicon carbide + Graphite + Silicon	5	-	-	-	-	-	-	815	817	-	-	-	-	-	-	-
Silicon carbide + Magnesium oxide + Nickel aluminide cermet	6-II	-	-	-	-	-	-	-	-	-	854	-	-	-	-	-
Silicon carbide + Silicon	5	-	-	-	-	-	-	819	-	-	-	-	821	-	-	-
Silicon carbide + Silicon cermet .	6-II	-	-	-	-	-	-	-	856	-	-	-	-	-	-	-
Silicon carbide + Silicon nitride .	5	-	-	-	-	-	-	-	-	-	823	-	-	-	-	-
Silicon carbide + (Tetr-) boron carbide	5	297	-	-	-	-	-	-	-	-	299	-	-	-	-	-
Silicon carbide + ΣX_i	5	-	-	-	-	-	-	-	307	-	-	-	309-311	-	-	-
Silicon carbide foam	5	-	-	-	-	-	-	-	127	-	129	-	-	-	-	-
Silicon germanide (SiGe)	6-I	-	-	-	-	-	-	405	-	-	-	-	-	-	-	-
Silicon oxides																
SiO	4-I	-	-	-	-	-	-	-	-	-	-	-	371	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Silicon oxides (cont.)																
SiO_2	4-I	353	353	-	-	-	355	357	359-361	363-365	367-369	-	373-375	377-379	381	-
Silicon (di-)oxide coating on aluminum	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1391	-	-
Silicon (di-)oxide foam	4-I	-	-	-	-	-	-	-	-	-	369	-	-	-	-	-
Silicon (mon-)oxide coating on aluminum	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1389	-	-
Silicon (di-)oxide + ΣX_i	4-I	826	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silicon (di-)oxide + Aluminum cermet	6-II	-	-	-	-	-	-	-	-	-	790	-	-	-	-	-
Silicon (di-)oxide + Aluminum oxide + Calcium oxide	4-I	-	-	-	-	-	-	-	-	796	-	-	-	-	-	-
Silicon (di-)oxide + Aluminum oxide	4-I	-	-	-	-	-	-	-	-	789	792	-	794	-	-	-
Silicon (di-)oxide + Aluminum oxide + Iron(ic) oxide	4-I	-	-	-	-	-	-	-	798	800	802-812	-	-	-	-	-
Silicon (di-)oxide + Aluminum oxide + Iron(ic) oxide + + Magnesium oxide + Potassium (mon-)oxide	4-I	-	-	-	-	-	-	-	814	-	-	-	-	-	-	-
Silicon (di-)oxide + Calcium oxide	4-I	-	-	-	-	-	-	-	816	818	-	-	-	-	-	-
Silicon (di-)oxide + Iron(ic) oxide	4-I	820	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silicon (di-)oxide + Molybdenum (di-)silicide	5	-	-	-	-	-	-	-	-	-	-	-	783-785	787	-	-
Silicon (di-)oxide + Titanium (di-)oxide	4-I	-	-	-	-	-	822	-	-	-	824	-	-	-	-	-
Silicon nitride (Si_3N_4)	5	543	543	-	-	-	-	545	547	-	549	-	551-553	555	-	-
Silicon nitride + Silicon carbide .	5	840	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silicon telluride (SiTe).	6-I	614	614	-	-	-	616	-	640	-	-	-	-	-	-	-
Silicone DC-301	6-II	-	-	-	-	-	1113	-	-	-	-	-	-	-	-	-
Silicone GMGA 5003	6-II	-	-	-	-	-	1070	-	-	-	-	-	-	-	-	-
Silicone coating on Inconel . . .	6-II	-	-	-	-	-	1495	-	-	-	-	-	-	-	-	-
Silicone, filled	6-II	-	-	-	-	-	1070	-	-	-	-	-	-	-	-	-
Silicone, reinforced.	6-II	-	-	-	-	-	1113	-	-	-	-	-	-	-	-	-
Silicone foams																
Silicone foam R-7001.	6-II	1084	-	-	-	-	-	-	1080	-	-	-	-	-	-	-
Silicone foam R-7002.	6-II	1084	-	-	-	-	-	1072	1080	-	-	-	-	-	-	-
Silicone foam R-7091.	6-II	1084	-	-	-	-	-	-	1080	-	-	-	-	-	-	-
Silicone resin	6-II	-	-	-	-	-	-	1072	-	-	-	-	-	-	-	-
Silicone resin, reinforced . . .	6-II	1204	-	-	-	-	-	1206	1208, 1218	1220	1210	-	-	-	-	-
Sillimanite	4-II	-	-	-	-	-	-	1189	-	-	1195	-	1199	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Silver (Ag)	1	900	900	900	900	900	902	904	906	-	908	910	912-914	916-920	-	922
Silver coated with silver sulfide.	6-II	-	-	-	-	-	-	-	-	-	-	1433	1435	-	-	-
Silver coating on mylar	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1325	-	-
Silver lume	1	-	-	-	-	-	-	-	-	-	-	910	-	-	-	-
Silver + Aluminum	2-1	431	-	-	-	429	433	-	-	-	-	-	-	-	-	-
Silver + Cadmium	2-1	-	-	-	-	-	-	-	435	-	-	-	-	437	-	439
Silver + Copper	2-1	-	-	-	-	-	-	-	-	-	441	-	-	-	-	-
Silver + Gold	2-1	-	-	-	-	-	-	-	-	-	443	-	-	-	-	445
Silver + Lead	2-1	-	-	-	-	-	-	-	-	-	447	-	-	-	-	-
Silver + Magnesium	2-I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	449
Silver + Manganese	2-1	-	-	-	-	-	451	-	-	-	-	-	-	-	-	-
Silver + Paliadium	2-I	-	-	-	-	-	458	-	-	-	-	-	-	-	-	-
Silver + Platinum	2-I	-	-	-	-	-	455	-	-	-	-	-	-	-	-	-
Silver + Zinc	2-1	459	457	457	-	-	-	-	-	-	-	-	-	461	-	-
Silver antimony telluride ($AgSbTe_2$)	6-I	-	-	-	-	-	620	-	-	622	-	-	-	-	-	-
Silver antimony telluride + + Germanium telluride	6-I	-	-	-	-	-	719	-	-	-	-	-	-	-	-	-
Silver antimony telluride + + Tin telluride	6-I	-	-	-	-	-	-	-	721	-	-	-	-	-	-	-
Silver beryllide ($AgBe_{12}$). . . .	6-I	158	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver bromide (AgBr).	5	-	-	-	-	-	-	-	-	9	-	-	-	-	-	-
Silver indium telluride ($AgInTe_2$)	6-I	-	-	-	-	-	624	-	640	-	-	-	-	-	-	-
Silver oxide (Ag_2O)	4-I	-	-	-	-	-	-	383	-	-	-	-	-	-	-	-
Silver plated AISI 321	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1321	-	-
Silver selenide (Ag_2Se)	6-I	-	-	-	-	-	-	353	355	-	-	-	-	-	-	-
Silver sulfide (Ag_2S).	5	-	-	-	-	-	-	710	-	-	-	-	-	-	-	-
Silver sulfide coating on silver .	6-II	-	-	-	-	-	-	-	-	-	-	1431	1433	-	-	-
Silver tellurides (Ag_2Te). . . .	6-I	-	-	-	-	-	-	618	-	-	-	-	-	-	-	-
Soda lime glass	4-II	-	-	-	-	-	-	-	-	-	-	-	1809	1811	1813-1815	-
Soda lime aluminosilicate glass .	4-II	-	-	-	-	-	1817	-	-	-	-	-	-	-	-	-
Soda-lime silicate glass	4-II	-	-	-	-	-	-	1791	1795	1793	1797	-	1799	1801	-	-
Soda lime glass LOF.	4-II	-	-	-	-	-	-	-	-	-	-	-	1809	1811	1813-1815	-
Sodium aluminum borate glass .	4-II	-	-	-	-	-	-	-	-	-	1627	-	-	-	-	-
Sodium aluminum silicates ($Na_2O \cdot Al_2O_3 \cdot 4\ SiO_2$)	4-II	-	-	-	-	-	-	1324	-	-	1326	-	-	-	-	-
Sodium barium silicate glass . .	4-II	-	-	-	-	-	-	-	-	-	1789	-	-	-	-	-
Sodium beryllium borate glass .	4-II	-	-	-	-	-	-	-	-	-	1629	-	-	-	-	-
Sodium borate glass	4-II	-	-	-	-	-	1607	-	-	-	-	-	-	-	-	-
Sodium borosilicate glass . . .	4-II	-	-	-	-	-	-	-	-	-	1721	-	-	-	-	-

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Sodium calcium silicate ($Na_2O \cdot CaO \cdot SiO_2$)	4-II	-	-	-	-	-	-	1328	-	-	-	-	-	-	-	-
Sodium calcium silicate glass. .	4-II	-	-	-	-	-	-	1791	1795	1793	1797	-	1799	1801	-	-
Sodium ferrite ($Na_2O \cdot Fe_2O_3$) . .	4-II	-	-	-	-	-	-	1097	-	-	-	-	-	-	-	-
Sodium fluoride + Beryllium ferride cermet	6-II	-	-	-	-	-	-	-	911	-	-	-	-	-	-	-
Sodium fluoride + Zirconium fluoride + Uranium (tetra-) fluoride	5	-	-	-	-	-	-	411	-	-	-	-	-	-	-	-
Sodium lead silicate glass . . .	4-II	-	-	-	-	-	1819	-	-	-	1803	-	-	-	-	-
Sodium magnesium borate glass.	4-II	-	-	-	-	-	-	-	-	-	1631	-	-	-	-	-
Sodium magnesium silicate glass	4-II	-	-	-	-	-	-	-	-	-	1805	-	-	-	-	-
Sodium magnesium copper silicate glass	4-II	-	-	-	-	-	-	-	-	-	1807	-	-	-	-	-
Sodium manganese telluride ($Na_XMn_{1-X}Te$)	6-I	-	-	-	-	-	626	-	628	-	-	-	-	-	-	-
Sodium molybdates																
$Na_2O \cdot MoO_3$	4-II	-	-	-	-	-	-	1119	-	-	-	-	-	-	-	-
$Na_2O \cdot 2\ MoO_3$	4-II	-	-	-	-	-	-	1119	-	-	-	-	-	-	-	-
Sodium (mon-)oxide (Na_2O) . .	4-I	-	-	-	-	-	-	385	-	-	-	-	-	-	-	-
Sodium phosphorus uranate ($2\ NaO \cdot UO_3 \cdot P_2O_5$).	4-II	-	1482	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium potassium aluminum silicates	4-II	-	-	-	-	-	-	-	-	-	1330	-	-	-	-	-
Sodium potassium borosilicate glass	4-II	-	-	-	-	-	-	-	-	-	1723	-	-	-	-	-
Sodium silicates																
$Na_2O \cdot SiO_2$	4-II	-	-	-	-	-	-	1322	-	-	-	-	-	-	-	-
$Na_2O \cdot 2\ SiO_2$	4-II	-	-	-	-	-	-	1322	-	-	-	-	-	-	-	-
Sodium silicate glass	4-II	1779	-	-	-	-	1781	-	1783	-	1785-1787	-	-	-	-	-
Sodium silicate glass no. 23 . .	4-II	-	-	-	-	-	-	1791	-	-	-	-	-	-	-	-
Sodium strontium alumino-silicate glass	4-II	-	-	-	-	-	-	-	-	-	1821	-	-	-	-	-
Sodium tellurate ($Na_2O \cdot TeO_3$) .	4-II	-	-	-	-	-	-	1366	-	-	-	-	-	-	-	-
Sodium titanates																
$Na_2O \cdot TiO_2$	4-II	-	-	-	-	-	-	1454	-	-	-	-	-	-	-	-
$Na_2O \cdot 2\ TiO_2$	4-II	-	-	-	-	-	-	1454	-	-	-	-	-	-	-	-
$Na_2O \cdot 3\ TiO_2$	4-II	-	-	-	-	-	-	1454	-	-	-	-	-	-	-	-
Sodium tungstates																
$Na_2O \cdot WO_3$	4-II	-	-	-	-	-	-	1480	-	-	-	-	-	-	-	-
$Na_2O \cdot 2\ WO_3$	4-II	-	-	-	-	-	-	1480	-	-	-	-	-	-	-	-
Sodium tungsten oxide (Na_XWO_3).	4-II	-	-	-	-	-	-	-	-	-	1155	-	-	-	-	-
Sodium uranate ($Na_2O \cdot UO_3$) . .	4-II	-	1482	-	-	-	-	-	-	-	-	-	-	-	-	-

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Sodium vanadates																
$Na_2O \cdot V_2O_5$	4-II	-	-	-	-	-	-	1494	-	-	-	-	-	-	-	-
2 $Na_2O \cdot V_2O_5$	4-II	-	-	-	-	-	-	1494	-	-	-	-	-	-	-	-
3 $Na_2O \cdot V_2O_5$	4-II	-	-	-	-	-	-	1494	-	-	-	-	-	-	-	-
Sodium zinc borosilicate glass .	4-II	-	-	-	-	-	-	-	-	-	1725	-	-	-	-	-
Solex 2808 plate glass	4-II	1779	-	-	-	-	-	1791	1783	1793	1797	-	-	-	-	-
Solex "S" plate glass.	4-II	1779	-	-	-	-	-	1791	1783	1793	1797	-	-	-	-	-
Spektralkohle artificial graphite.	1	-	-	-	-	-	-	-	360	-	-	-	-	-	-	-
Spinal, magnesium aluminate . .	4-II	1007	1007	-	-	-	1009	1011	1013	1015	1017	-	-	-	-	-
Spinal, magnesium aluminate, with sodium (mon-)oxide . . .	4-II	-	-	-	-	-	-	1524	1526	1528	1530	-	-	-	-	-
Spinal, magnesium chromite . .	4-II	-	-	-	-	-	-	-	-	-	1059	-	-	-	-	-
Spinal, nickel ferrite	4-II	-	-	-	-	-	-	1089	-	-	-	-	-	-	-	-
Spinal, zinc chromate	4-II	-	-	-	-	-	-	-	-	-	1063	-	-	-	-	-
Spodumene	4-II	-	-	-	-	-	-	-	1266	-	1270	-	-	-	-	-
Sponge zirconium	1	-	-	-	-	-	1102	-	1106	-	-	-	-	-	-	-
. . . .	2-I	-	-	-	-	-	690	-	-	-	-	-	-	-	-	-
Stafoam 604	6-II	-	-	-	-	-	-	-	964	-	-	-	-	-	-	-
Stainless steel coated with NBS coating A-418	6-II	-	-	-	-	-	-	-	-	-	-	-	1365-1367	-	-	-
Stainless steel coated with NBS coating N-143	6-II	-	-	-	-	-	-	-	-	-	-	-	1357-1359	-	-	-
Stainless steel coated with platinum	6-II	-	-	-	-	-	-	-	-	-	-	-	1315	-	-	-
Steatite	4-II	1285	-	-	-	-	1287	-	1293	-	1295	-	-	-	-	-
Steatite, ultra-	4-II	-	-	-	-	-	1287	-	-	-	-	-	-	-	-	-
Steatite 10B-2	4-II	-	-	-	-	-	-	-	1293	-	-	-	-	-	-	-
Steatite 12C-2	4-II	-	-	-	-	-	-	-	1293	-	-	-	-	-	-	-
Steatite, grade L-4, AlSiMag 196	4-II	-	-	-	-	-	1287	-	-	-	-	-	-	-	-	-
Steatite, grade L-5, Pass and Seymour E-211-M	4-II	-	-	-	-	-	1287	-	-	-	-	-	-	-	-	-
Steels (special designations)																
1 Kh18N9T	3	-	-	-	-	-	-	161	-	-	215	-	-	-	-	-
1.1 C tool steel	3	-	-	-	-	-	-	-	-	14	-	-	-	-	-	-
4 Kh13	3	-	-	-	-	-	-	73	-	-	-	-	-	-	-	-
12 MoV	3	-	-	-	-	-	-	-	-	-	104	-	-	-	-	-
15 KhM	3	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-
17-4 PH	3	145	-	-	-	-	-	157	170	-	199	-	-	-	-	-
17-5 MnV	3	-	-	-	-	-	-	-	-	-	116	-	-	-	-	-
17-7 PH	3	140	-	-	-	-	-	159	172	-	199, 203	231	255, 259, 270	282	-	-
17-10 P	3	-	-	-	-	-	-	-	-	-	227	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Steels (cont.)																
18 - 8	3	-	-	-	-	-	-	-	-	-	-	-	236, 241	-	-	-
18 - 8 Cr-Cu	3	-	-	-	-	-	-	-	-	-	-	-	-	138	-	-
18 - 20 Cr-Mn	3	-	-	-	-	-	-	-	-	-	-	-	-	348	-	-
18 - 21 Cr-Co	3	-	-	-	-	-	-	-	-	-	-	-	-	302	-	-
19 - 9 DL	3	-	-	-	-	-	-	-	-	189	211	-	-	-	-	-
19 - 9 DX	3	-	-	-	-	-	-	-	-	-	225	-	-	-	-	-
23 D 245	3	-	-	-	-	-	-	-	-	85	-	-	-	-	-	-
815	3	310	-	-	-	-	-	-	-	-	340	-	-	-	-	-
A-286	3	379	-	-	-	-	-	-	391	397	401	-	409-411	413	-	-
AISI steels (see AISI designations)																
Allegheny 18 - 8 M	3	-	-	-	-	-	149	-	-	-	-	-	-	-	-	-
Allegheny steels	3	-	-	-	-	-	-	-	-	-	-	-	257	-	-	-
AM350	3	-	-	-	-	-	-	-	170	-	199	231	236, 259, 268	280	-	-
AM355	3	-	-	-	-	-	-	157	170	-	199	-	-	-	-	-
AMS 2713	3	-	-	-	-	-	-	-	385	-	-	-	-	-	-	-
AMS 2714	3	-	-	-	-	-	-	-	387	-	-	-	-	-	-	-
ATS	3	140	-	-	-	-	-	-	-	-	221	-	-	-	-	-
B-759	3	-	-	-	-	-	-	-	-	-	106	-	-	-	-	-
Carbon steel ASTM A105 grade II	3	-	-	-	-	-	-	-	-	-	337	-	-	-	-	-
Cor-ten	3	-	-	-	-	-	-	-	-	85	-	-	-	-	-	-
DVL 4/V 869	3	-	-	-	-	-	-	-	-	-	403	-	-	-	-	-
DVL 30	3	140	-	-	-	-	-	-	-	-	225	-	-	-	-	-
DVL 31	3	-	-	-	-	-	-	-	-	-	403	-	-	-	-	-
DVL 46	3	140	-	-	-	-	-	-	-	-	217	-	-	-	-	-
DVL 47	3	140	-	-	-	-	-	-	-	-	217	-	-	-	-	-
DVL 48	3	-	-	-	-	-	-	-	-	-	217	-	-	-	-	-
DVL 49	3	140	-	-	-	-	-	-	-	-	217	-	-	-	-	-
DVL 50	3	140	-	-	-	-	-	-	-	-	217	-	-	-	-	-
DVL 51	3	140	-	-	-	-	-	-	-	-	227	-	-	-	-	-
DVL 52	3	140	-	-	-	-	-	-	-	-	225	-	-	-	-	-
EI-257	3	-	-	-	-	-	-	155	-	-	-	-	-	-	-	-
EI-572	3	-	-	-	-	-	-	-	178	-	215	-	-	-	-	-
EI-606	3	-	-	-	-	-	-	-	172	-	215	-	-	-	-	-
EI-783	3	-	-	-	-	-	-	-	-	-	215	-	-	-	-	-
EI-802	3	-	-	-	-	-	-	-	-	-	104	-	-	-	-	-
EI-855	3	-	-	-	-	-	-	383	394	397	-	-	-	-	-	-
EME	3	-	-	-	-	-	-	-	-	-	225	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Steels (cont.)																
En 8	3	-	-	-	-	-	312	-	325	-	-	-	-	-	-	-
En 19	3	-	-	-	-	-	61	-	83	-	-	-	-	-	-	-
En 31	3	-	-	-	-	-	61	-	83	-	-	-	-	-	-	-
FCM	3	311	-	-	-	-	-	-	-	-	341	-	-	-	-	-
Feni 36	3	-	-	-	-	-	-	-	-	-	369	-	-	-	-	-
G 17	3	-	-	-	-	-	-	-	391	-	-	-	-	-	-	-
GX 4881	3	-	-	-	-	-	-	-	-	85	-	-	-	-	-	-
Haynes alloy no. 90	3	-	-	-	-	-	-	-	-	-	106	-	-	-	-	-
Haynes alloy no. 93	3	-	-	-	-	-	-	-	-	-	106	-	-	-	-	-
HF grade	3	-	141	-	-	-	-	-	-	-	195	-	-	-	-	-
H. G. T. 3 (British design.)	3	55	-	-	-	-	61	-	81	-	102	-	-	-	-	-
High speed steel M1	3	-	-	-	-	-	-	-	351	-	-	-	-	-	-	-
High speed steel M2	3	-	-	-	-	-	-	-	450	-	-	-	-	-	-	-
High speed steel M10	3	-	-	-	-	-	-	-	351	-	-	-	-	-	-	-
High speed steel T1	3	-	-	-	-	-	-	-	450	-	-	-	-	-	-	-
HNM crucible	3	-	-	-	-	-	-	161	176	-	227	-	-	-	-	-
HX 4249	3	-	-	-	-	-	-	-	-	85	-	-	-	-	-	-
Incoloys (see Incoloy)																
Invar H	3	-	-	-	-	-	-	-	-	-	369	-	-	-	-	-
Jessop no. 40	3	55	-	-	-	-	-	-	-	-	102	-	-	-	-	-
Jessop no. 46	3	55	-	-	-	-	-	-	-	-	104	-	-	-	-	-
Jessop G-18B	3	379	-	-	-	-	-	-	168	-	217	-	-	-	-	-
Jessop G-21	3	140	-	-	-	-	-	-	-	-	225	-	-	-	-	-
Jessop H-40	3	-	-	-	-	-	-	-	81	-	-	-	-	-	-	-
Jessop R-20	3	140	-	-	-	-	-	-	176	-	221	-	-	-	-	-
Kovar	3	-	-	-	-	-	-	-	363	-	-	-	-	-	-	-
Low carbon	3	-	-	-	-	-	-	319	-	-	-	-	-	-	-	-
Macloy G	3	-	-	-	-	-	-	-	393	-	-	-	-	-	-	-
Mark 12MX	3	-	-	-	-	-	-	323	-	-	-	-	-	-	-	-
Mark 1x 18N9T	3	-	-	-	-	-	-	161	-	-	215	-	-	-	-	-
Mild steel	3	311	-	-	-	-	-	316	-	-	-	-	-	-	-	-
Multimet N-155	3	140	-	-	-	-	-	-	180	191	219	120	126-128, 253, 259	-	-	-
Multimet N-155, low carbon	3	-	-	-	-	-	-	-	296	-	-	-	-	-	-	-
Multimet NR-21 (AMS-55326)	3	140	-	-	-	-	-	-	-	-	219	-	-	-	-	-
Multimet NR-21, low carbon (AMS-53762)	3	-	-	-	-	-	-	-	-	-	219	-	-	-	-	-
N-A-X AC 9115	3	-	-	-	-	-	-	-	-	-	444	-	-	-	-	-
Ni-Span-C alloy 902	3	-	-	-	-	-	-	-	-	-	407	-	-	-	-	-
Okh 16N 36V3T	3	-	-	-	-	-	-	383	-	397	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Steels (cont.)																
P-193	3	379	-	-	-	-	-	-	-	-	405	-	-	-	-	-
PH 15-7 Mo	3	145	-	-	-	-	-	-	-	-	201	231	255, 259, 272	284	-	-
Porous	3	461	-	-	-	-	463	-	-	-	-	-	-	-	-	-
Rex 78	3	-	-	-	-	-	-	-	389	-	-	-	-	-	-	-
Roneusil	3	-		-	-	-	-	-	-	-	-	-	-	349	-	-
S-590	3	-	-	-	-	-	-	-	-	191, 298, 397	221	-	-	-	-	-
SAE steels (see SAE designations)																
SAS-8	3	140	-	-	-	-	-	-	-	-	227	-	-	-	-	-
Steel 15	3	-	-	-	-	-	-	-	-	331	-	-	-	-	-	-
Steel 19	3	-	-	-	-	-	-	71	-	-	-	-	-	-	-	-
Steel 35	3	-	-	-	-	-	-	-	-	331	-	-	-	-	-	-
Steel 45	3	-	-	-	-	-	-	-	-	331	-	-	-	-	-	-
Tenelon	3	-	-	-	-	-	-	-	-	-	116	-	-	-	-	-
U-8	3	-	-	-	-	-	-	10	-	12	-	-	-	-	-	-
Unitemp 212	3	-	-	-	-	-	-	-	391	-	-	-	-	-	-	-
V-444D	3	-	-	-	-	-	-	-	-	-	223	-	-	-	-	-
Vacromin F	3	-	-	-	-	-	-	-	393	-	-	-	-	-	-	-
Vascojet 1000	3	-	-	-	-	-	-	-	81	-	-	-	132	136	-	-
Vickers F. D. P.	3	-	-	-	-	-	-	-	-	-	-	-	257	-	-	-
W	3	-	-	-	-	-	-	-	-	-	203	-	-	-	-	-
WF 100D	3	140	-	-	-	-	-	-	-	-	225	-	-	-	-	-
Steel, clad	6-II	-	-	-	-	-	-	-	-	-	1267	-	-	-	-	-
Stellite no. 3	2-II	-	-	-	-	-	-	-	-	-	904	-	-	-	-	-
Stellite no. 4	2-II	-	-	-	-	-	-	-	-	-	904	-	-	-	-	-
Stellite no. 6	2-II	-	-	-	-	-	-	-	-	-	902	-	-	-	-	-
Stellite no. 6B	2-II	-	-	-	-	-	-	-	-	-	902	-	-	-	-	
Stellite no. 6K	2-II	-	-	-	-	-	-	-	-	-	902	-	-	-	-	-
Stellite no. 12	2-II	-	-	-	-	-	-	-	-	-	902	-	-	-	-	-
Stellite no. 19	2-II	-	-	-	-	-	-	-	-	-	904	-	-	-	-	-
Stellite no. 21 (AMS-5385; NR-10)	2-II	879	-	-	-	-	-	884	886	-	894	-	-	-	-	-
Stellite no. 23 (AMS-5375; NDRC-61)	2-II	879	-	-	-	-	-	-	886	-	900	-	-	-	-	-
Stellite no. 25 (L-605).	2-II	879, 882	-	-	-	-	-	-	-	890	898	-	908-914	916	-	-
Stellite no. 25 (L-605) coated with iron (ic) oxide	6-II	-	-	-	-	-	-	-	-	-	-	-	1381-1383	-	-	-
Stellite no. 27 (AMS-5378; NR-60)	2-II	1219	-	-	-	-	-	-	1223	-	1225	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Stellite no. 30 (AMS-5380; NR-12)	2-II	879	-	-	-	-	-	-	-	-	896	-	-	-	-	-
Stellite no. 31 (AMS-5382; NR-71)	2-II	879	-	-	-	-	-	-	886	-	896	-	-	-	-	-
Stellite no. 36 (L-251).	2-II	879	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stellite 98M2	2-II	-	-	-	-	-	-	-	-	-	906	-	-	-	-	-
Stellite HE1049	2-II	-	-	-	-	-	-	884	888	-	900	-	-	-	-	-
Stellite Star J-metal.	2-II	-	-	-	-	-	-	-	-	-	906	-	-	-	-	-
Strontium (Sr)	1	924	924	-	-	-	926	-	-	-	928	-	-	-	-	-
Strontium aluminates																
$SrO \cdot Al_2O_3$	4-II	1025	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$SrO \cdot 2\ Al_2O_3$	4-II	-	1025	-	-	-	-	-	-	-	1027	-	-	-	-	-
$3\ SrO \cdot Al_2O_3$	4-II	1025	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium aluminum silicate ($SrO \cdot Al_2O_3 \cdot 2\ SiO_2$)	4-II	-	-	-	-	-	-	-	-	-	1334	-	-	-	-	-
Strontium barium cerium titanate [$(Ba_{1-x-y}Sr_xCe_y)O \cdot TiO_2$].	4-II	-	-	-	-	-	1466	-	-	-	-	-	-	-	-	-
Strontium barium cerium titanate stannate [$(Ba_{1-x}Sr_{x-y}Ce_y)O \cdot (Ti_{1-z}Sn_z)O_2$]	4-II	-	-	-	-	-	1363	-	-	-	-	-	-	-	-	-
Strontium borate glass.	4-II	-	-	-	-	-	-	-	-	-	1633	-	-	-	-	-
Strontium (hexa-)boride (SrB_6).	6-I	295	296	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium chloride ($SrCl_2$) . . .	5	-	-	-	-	-	-	333	-	-	-	-	-	-	-	-
Strontium copper silicate ($SrO \cdot CuO \cdot 4\ SiO_2$).	4-II	-	-	-	-	-	-	-	-	-	1336	-	-	-	-	-
Strontium fluoride (SrF_2). . . .	5	397	397	-	-	-	-	399	-	-	-	-	-	401	-	-
Strontium lead silicate glass . .	4-II	-	-	-	-	-	1823	-	-	-	-	-	-	-	-	-
Strontium oxide (SrO)	4-I	387	387	-	-	387	389	391	393	-	395	-	-	-	-	397
Strontium oxide + Lithium (meta-)aluminate + Aluminum oxide	4-II	-	-	-	-	-	-	-	1540	-	-	-	-	-	-	-
Strontium oxide + Lithium zirconium silicate + Aluminum oxide	4-II	-	-	-	-	-	-	-	1542	-	-	-	-	-	-	-
Strontium oxide + Lithium zirconium silicate + Zinc oxide	4-II	-	-	-	-	-	-	-	1544	-	-	-	-	-	-	-
Strontium oxide + Titanium (di-)oxide	4-I	-	828	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium oxide + Titanium (di-)oxide + Lithium zirconium silicate	4-II	-	-	-	-	-	-	-	1546	-	-	-	-	-	-	-
Strontium oxide + Zinc oxide + + Lithium zirconium silicate .	4-II	-	-	-	-	-	-	-	1548	-	-	-	-	-	-	-
Strontium silicates																
$SrO \cdot SiO_2$	4-II	1332	1332	-	-	-	-	-	-	-	-	-	-	-	-	-
$2\ SrO \cdot SiO_2$	4-II	1332	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Strontium sulfide (SrS).	5	-	-	-	-	-	-	712	-	-	-	-	-	-	-	-
Strontium titanates																
$SrO \cdot TiO_2$	4-II	1456	1456	-	-	-	1458	1460	1462	-	1464	-	-	-	-	-
$SrO \cdot 2\ TiO_2$	4-II	-	-	-	-	-	-	-	-	-	1464	-	-	-	-	-
$2\ SrO \cdot TiO_2$	4-II	-	-	-	-	-	-	1460	-	-	-	-	-	-	-	-
Strontium titanate coating on AISI 310	6-II	-	-	-	-	-	-	-	-	-	-	-	1393	-	-	-
Strontium titanate + Cobalt cermet	6-II	-	-	-	-	-	-	-	792	-	-	-	-	-	-	-
Strontium uranate ($SrO \cdot UO_3$). .	4-II	-	1482	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium zirconate ($SrO \cdot ZrO_2$).	4-II	1514	-	-	-	-	-	1516	-	-	1518	-	-	-	-	-
Styrene-butadiene copolymer . .	6-II		-	-	-	-	-	1054	-	-	-	-	-	-	-	-
Styrofoam Q-103	6-II	-	-	-	-	-	-	-	1090	-	-	-	-	-	-	-
Super Dylon	6-II	1030	-		-	-	-	-	-	-	-	-	-	-	-	-
Supramica 557	5	-	-	-	-	-	987	-	-	-	-	-	-	-	-	-
Svea Iron	1	-	-	-	-	-	-	-	585	-	-	-	-	-	-	-
T																
TAC polyester	6-II	974	-	-	-	-	-	-	976	-	978	-	-	-	-	-
TAC polyester resin, reinforced	6-II	1180	-	-	-	-	-	1183	1185	1220	1187-1189	-	-	-	-	-
Talc	4-II	-	-	-	-	-	-	1289	-	-	-	-	-	-	-	-
Tan 9-4 tantalum	1	-	-	-	-	-	-	934	-	-	-	-	-	-	-	-
Tantalum (Ta)	1	930	930	-	-	930	932	934	936	938	940	942	944-950	952	-	954
Tantalum coated with aluminide.	6-II	-	-	-	-	-	-	-	-	-	-	-	1441-1443	1445	-	-
Tantalum coated with cobalt oxide	6-II	-	-	-	-	-	-	-	-	-	-	-	1373-1375	-	-	-
Tantalum coated with pyrolytic graphite	6-II	-	-	-	-	-	-	-	-	-	-	-	1297-1299	-	-	-
Tantalum coated with silicide. .	6-II	-	-	-	-	-	-	-	-	-	-	-	1473-1475	1477	-	-
Tantalum coated with silicon carbide	6-II	-	-	-	-	-	-	-	-	-	-	-	1411-1413	-	-	-
Tantalum coated with tantalum aluminide	6-II	-	-	-	-	-	-	-	-	-	-	-	1461-1463	1465	-	-
Tantalum + Copper + ΣX_i . . .	2-II	1388	-	-	-	-	-	-	1390	-	1392	-	-	-	-	-
Tantalum + Niobium	2-I	-	-	-	-	-	463	-	465	-	-	-	-	-	-	-
Tantalum + Niobium + ΣX_i . . .	2-II	-	-	-	-	-	-	1394	1396	1398	1400	-	-	-	-	-
Tantalum + Titanium	2-I	467, 549	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tantalum + Tungsten	2-I	-	-	-	-	-	-	469	471	473	475	477-479	-	-	-	-

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Tantalum + Tungsten + ΣX_i . . .	2-II	-	1402	-	-	-	1404	1406	1408	1410	1412	-	-	-	-	-
Tantalum + Zirconium + ΣX_i . .	2-II	1414	-	-	-	-	-	1416	1418	-	1420	-	-	-	-	-
Tantalum alloys (special designations)																
30 Nb - 7.5 V	2-II	-	-	-	-	-	-	1394	-	1398	-	-	-	-	-	-
8 W - 2 Hf	2-II	-	1402	-	-	-	1404	1406	-	1410	-	-	-	-	-	-
Tantalum aluminide ($TaAl_3$) . .	6-I	-	-	-	-	-	-	-	-	-	-	-	-	25	-	-
Tantalum aluminides coating on tantalum	6-II	-	-	-	-	-	-	-	-	-	-	-	1461-1463	1465	-	-
Tantalum antimonide (TaSb) . .	6-I	-	-	-	-	-	71	-	73	-	-	-	-	-	-	-
Tantalum arsenide (Ta_2As_3) . .	6-I	-	-	-	-	-	96	-	-	-	-	-	-	-	-	-
Tantalum beryllides																
$TaBe_{12}$	6-I	-	122	-	-	-	-	124	126	-	128	-	130-132	134	-	-
Ta_2Be_{17}	6-I	-	122	-	-	-	-	124	126	-	128	-	130-132	134	-	-
Tantalum beryllide + Beryllium oxide	5	-	-	-	-	-	-	-	-	-	-	-	868-870	872	-	-
Tantalum beryllide + Beryllium oxide + Tantalum (pent-)oxide .	5	-	-	-	-	-	-	-	-	-	-	-	874-876	878	-	-
Tantalum beryllide + Tantalum (pent-)oxide	5	-	-	-	-	-	-	-	-	-	-	-	880-882	884	-	-
Tantalum borides																
TaB	6-I	212	212	-	-	-	-	214	216	-	218	-	-	-	-	-
TaB_2	6-I	212	212	-	-	-	-	214	-	-	220	-	-	-	-	-
Ta_3B_2	6-I	-	212	-	-	-	-	-	-	-	-	-	-	-	-	-
Ta_3B_4	6-I	212	212	-	-	-	-	-	-	-	-	-	-	-	-	-
Tantalum carbides																
TaC	5	141	141	-	-	-	143	145	147	149	151	-	154-158	-	-	160
Ta_2C	5	-	141	-	-	-	-	-	-	-	-	-	-	-	-	-
Tantalum carbide coating on Inconel X	6-II	-	-	-	-	-	-	-	-	-	-	-	1417	1419	-	-
Tantalum carbide + Iron cermet.	6-II	858	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tantalum carbide + Tungsten cermet	6-II	-	-	-	-	-	-	-	-	-	860	-	-	-	-	-
Tantalum-cobalt intermetallics ($TaCo_2$)	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Tantalum-chromium intermetallics ($TaCr_2$)	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Tantalum ferrides ($TaFe_2$) . . .	6-I	-	306	-	-	-	-	-	-	-	-	-	-	-	-	-
Tantalum germanides																
TaGe	6-I	-	-	-	-	-	325	-	-	-	-	-	-	-	-	-

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Tantalum germanides (cont.)																
$TaGe_2$	6-I	-	-	-	-	-	325	-	327	-	-	-	-	-	-	-
Ta_4Ge	6-I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	321
Tantalum germanide silicides																
$TaGeSi_2$	6-I	-	-	-	-	-	-	-	529	-	-	-	-	-	-	-
$TaGe_xSi_{1-x}$	6-I	-	-	-	-	-	-	-	529	-	-	-	-	-	-	-
Tantalum iron lead oxide ($4\ PbO \cdot Fe_2O_3 \cdot Ta_2O_5$)	4-II	-	-	-	-	-	-	-	-	-	1157	-	-	-	-	-
Tantalum nitrides																
TaN	5	557	557	-	-	-	559	561	563	-	565	-	567-569	-	-	-
Ta_2N	5	-	557	-	-	-	-	-	-	-	-	-	-	-	-	-
Tantalum (pent-) oxide (Ta_2O_5) .	4-I	-	-	-	-	-	-	399	-	-	401	-	403-405	407	-	-
Tantalum (pent-) oxide + + Tantalum beryllide	5	-	-	-	-	-	-	-	-	-	-	-	-	789	-	-
Tantalum phosphide (TaP) . . .	5	635	636	-	-	-	639	-	-	-	-	-	-	-	-	-
Tantalum selenides ($TaSe_2$). . .	6-I	-	-	-	-	-	367	-	369	-	-	-	-	-	-	-
Tantalum silicides																
Ta_5Si_3	6-I	-	467	-	-	-	-	-	-	-	-	-	-	-	-	-
$TaSi_2$	6-I	-	467	-	-	-	527	469	529	-	471	-	473-475	477	-	-
Ta_2Si	6-I	-	467	-	-	-	-	-	-	-	-	-	-	-	-	-
Ta_5Si_2	6-I	-	467	-	-	-	-	-	-	-	-	-	-	-	-	-
$Ta_{4.5}Si$	6-I	-	467	-	-	-	-	-	-	-	-	-	-	-	-	-
(Penta-) tantalum (tri-) silicide + + (Di-) molybdenum boride . .	6-I	-	724	-	-	-	-	-	-	-	-	-	-	-	-	-
Tantalum silicide germanides																
$TaGe_{1-x}Si_x$	6-I	-	-	-	-	-	325	-	-	-	-	-	-	-	-	-
TaGeSi	6-I	-	-	-	-	-	325	-	-	-	-	-	-	-	-	-
Tantalum tellurides																
TaTe	6-I	-	-	-	-	-	-	-	640	-	-	-	-	-	-	-
$TaTe_2$	6-I	-	-	-	-	-	630	-	640	-	-	-	-	-	-	-
$Ta_{21}Te_3$	6-I	-	-	-	-	-	630	-	-	-	-	-	-	-	-	-
Tantalum tungsten selenide ($W_{1-x}Ta_xSe_2$)	6-I	-	-	-	-	-	357	-	-	-	-	-	-	-	-	-
Teflon	6-II	1030	-	-	-	-	-	1035	1039	-	1045	-	-	-	-	-
Teflon, type TF-1	6-II	1030	-	-	-	-	-	-	-	-	1045	-	-	-	-	-
Teflon, barium titanate filled. .	6-II	1032	-	-	-	-	-	-	-	-	1043	-	-	-	-	-
Teflon, boron carbide filled . .	6-II	1032	-	-	-	-	-	-	-	-	1043	-	-	-	-	-
Teflon, calcium boride filled . .	6-II	1032	-	-	-	-	-	-	-	-	1043	-	-	-	-	-
Teflon, carbonyl iron grade HP filled	6-II	1032	-	-	-	-	-	-	-	-	1043	-	-	-	-	-
Teflon, J-ferrite filled	6-II	1032	-	-	-	-	-	-	-	-	1043	-	-	-	-	-
Teflon, J-mica filled	6-II	1032	-	-	-	-	-	-	-	-	1043	-	-	-	-	-

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Teflon laminate	6-II	-	-	-	-	-	-	1214	1218	1220	-	-	-	-	-	-
Teflon, litharge filled	6-II	1032	-	-	-	-	-	-	-	-	1043	-	-	-	-	-
Teflon, powdered iron-9 filled .	6-II	1032	-	-	-	-	-	-	-	-	1043	-	-	-	-	-
Teflon, quartz no. 7900 filled .	6-II	1032	-	-	-	-	-	-	-	-	1043	-	-	-	-	-
Teflon, reinforced	6-II	1097	-	-	-	-	-	-	1099	-	-	-	-	-	-	-
Teflon, titanium dioxide filled .	6-II	1032	-	-	-	-	-	-	-	-	1043	-	-	-	-	-
Teflon, zero-plast type 6 filled .	6-II	1032	-	-	-	-	-	-	-	-	1043	-	-	-	-	-
Television tube glass	4-II	-	-	-	-	-	-	-	-	-	-	-	1743	1745	1747	-
Tellurite	4-I	409	409	-	-	409	-	411	-	-	-	-	413	-	415	417
Tellurium (Te)	1	-	-	-	-	-	-	-	964	-	-	-	-	-	-	-
Tellurium + Chromium	2-I	-	-	-	-	-	481	483	-	-	-	-	-	-	-	-
Tellurium copper	2-I	-	-	-	-	-	-	-	-	-	152	-	-	-	-	-
Brass, tellurium-nickel	2-II	-	-	-	-	-	-	-	-	-	1002	-	-	-	-	-
Tellurium (di-)oxide (TeO_2) . .	4-I	409	409	-	-	409	-	411	-	-	-	-	413	-	415	417
Tellurium oxide - molybdenum oxide glass	4-II	-	-	-	-	-	-	-	-	-	1641	-	-	-	-	-
Tellurium oxide - tungsten oxide glass	4-II	-	-	-	-	-	-	-	-	-	1643	-	-	-	-	-
Tenite I 0072-MS	6-II	-	-	-	-	-	-	-	-	-	941	-	-	-	-	-
Tenite I 204-MS	6-II	-	-	-	-	-	-	-	-	-	946	-	-	-	-	-
Tenite II 205A-MS	6-II	-	-	-	-	-	-	-	-	-	946	-	-	-	-	-
Tenite G 204-H2	6-II	-	-	-	-	-	-	-	-	-	946	-	-	-	-	-
Tenite Q 264-H2	6-II	-	-	-	-	-	-	-	-	-	946	-	-	-	-	-
Tenite S 264-MS	6-II	-	-	-	-	-	-	-	-	-	946	-	-	-	-	-
Terbium (Tb)	1	956	956	956	956	956	958	960	-	-	962	-	-	-	-	-
Terbium borides																
TbB_4	6-II	295	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TbB_6	6-I	295	-	-	-	-	300	-	-	-	-	-	-	-	-	-
Terbium carbides																
TbC_2	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tb_2C_3	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Terbium-cobalt intermetallics ($TbCo_3$)	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Terbium-gallium intermetallics ($TbGa_2$)	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Terbium hydride (TbH_3)	5	467	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Terbium oxide ($TbO_{1.814}$) . . .	4-I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	419
Thorianite	4-I	421	421	-	-	422	425	428	430	-	432	-	435	-	-	437
Thorite	4-II	-	-	-	-	-	-	-	-	-	1338	-	-	-	-	-
Thorium (Th)	1	966	966	967	-	-	971	973	975	977	979	-	981	-	-	983
Thorium + Plutonium	2-I	411, 485	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium + Titanium	2-I	-	-	-	-	-	-	-	-	-	487	-	-	-	-	-
Thorium + Uranium	2-I	-	-	-	-	-	489	-	-	-	-	-	-	-	-	-

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Thorium + Uranium + ΣX_i . . .	2-II	-	1422	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium + Zirconium	2-I	-	-	-	-	-	-	-	-	-	491	-	-	-	-	-
Thorium + Zirconium + ΣX_i . .	2-II	-	1424	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium aluminate ($2\,ThO_2 \cdot 3\,Al_2O_3$)	4-II	-	-	-	-	-	-	-	-	-	1029	-	-	-	-	-
Thorium antimonides																
$ThSb$	6-I	81	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$ThSb_2$	6-I	81	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Th_3Sb_4	6-I	81	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium borides																
ThB_4	6-I	222	222	-	-	-	224	226	228	-	230	-	232	-	-	-
ThB_6	6-I	-	222	-	-	-	224	-	-	-	-	-	-	-	-	-
Thorium carbides																
ThC	5	-	162	-	-	-	-	-	168	-	-	-	172	-	-	-
ThC_2	5	162	162	-	-	-	164	166	168	-	170	-	172	-	-	-
Thorium carbide + Uranium (di-) carbide	5	-	-	-	-	-	-	-	-	-	301	-	-	-	-	-
Thorium chloride ($ThCl_4$) . . .	5	339	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium fluoride (ThF_4)	5	403	403	403	403	403	-	-	-	-	-	-	-	-	-	405
Thorium hydrides																
ThH_2	5	439	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ThH_3	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	441
Thorium-manganese intermetallics																
$ThMn_{12}$	6-I	683	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Th_6Mn_{23}	6-I	683	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium nitrides																
ThN	5	-	621	-	-	-	-	-	-	-	-	-	-	-	-	-
Th_3N_4	5	-	621	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium (di-) oxide (ThO_2) . . .	4-I	421	421	-	-	422	425	428	430	-	432	-	435	-	-	437
Thorium (di-) oxide, molybdenum fibers reinforced	6-II	-	-	-	-	-	-	-	1265	-	-	-	-	-	-	-
Thorium (di-) oxide + Aluminum oxide	4-I	-	830	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium (di-) oxide + Aluminum oxide + Beryllium oxide. . . .	4-I	-	832	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium (di-) oxide + Graphite .	5	-	-	-	-	-	-	-	739	-	-	-	-	-	-	-
Thorium (di-) oxide + Tungsten cermet	6-II	-	-	-	-	-	-	-	-	-	-	-	-	-	-	784
Thorium (di-) oxide + Uranium (di-) oxide	4-I	-	-	-	-	-	834	-	-	-	-	-	-	-	-	-
Thorium (di-) oxide + Uranium (di-) oxide + Yttrium oxide . .	4-I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	836
Thorium (di-) oxide + Zirconium (di-) oxide	4-I	-	-	-	-	-	-	-	-	-	838	-	-	-	-	-

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Thorium (ortho-) silicate ($ThO_2 \cdot SiO_2$)	4-II	-	-	-	-	-	-	-	-	-	1338	-	-	-	-	-
Thorium silicides																
ThSi	6-I	-	524	-	-	-	-	-	-	-	-	-	-	-	-	-
$ThSi_2$	6-I	-	523-524	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium sulfides																
ThS	5	714	714	-	-	-	-	-	-	-	718	-	-	-	-	-
ThS_2	5	714	714	-	-	-	-	716	-	-	-	-	-	-	-	-
Th_2S_3	5	-	714	-	-	-	-	-	-	-	-	-	-	-	-	-
Th_4S_7	5	714	714	-	-	-	-	-	-	-	-	-	-	-	-	-
Th_7S_{12}	5	-	714	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium uranium beryllide [$(Th,U)Be_{13}$]	6-I	-	-	-	-	-	-	-	-	-	136	-	-	-	-	-
Thorium uranium boride [$(Th,U)B_4$]	6-I	-	-	-	-	-	-	-	-	-	234	-	-	-	-	-
Thorium uranium carbides																
$(Th,U)C$	5	-	-	-	-	-	-	-	-	-	174	-	-	-	-	-
$(Th,U)C_2$	5	-	-	-	-	-	-	-	-	-	174	-	-	-	-	-
Thulia	4-I	-	-	-	-	-	-	-	-	-	439	-	-	-	-	-
Thulium (Tm)	1	985	985	985	985	985	987	989	-	-	-	-	-	-	-	991
Thulium (hexa-)boride (TmB_6) .	6-I	295	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thulium carbide (TmC_2)	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thulium oxide (Tm_2O_3)	4-I	-	-	-	-	-	-	-	-	-	439	-	-	-	-	-
Tin + Magnesium	2-I	-	-	-	-	-	493	-	-	-	-	-	-	-	-	-
Tin(ic) aluminate ($2SnO_2 \cdot 3Al_2O_3$)	4-II	-	-	-	-	-	-	-	-	-	1031	-	-	-	-	-
Tin(ic) oxide (SnO_2).	4-I	-	-	-	-	-	-	-	441	-	443	-	-	-	-	-
Tin(ic) oxide + Magnesium oxide	4-I	-	-	-	-	-	-	-	840	-	-	-	-	-	-	-
Tin(ic) oxide + Magnesium oxide + Zinc oxide	4-I	-	-	-	-	-	-	-	842	-	-	-	-	-	-	-
Tin(ic) oxide + Vanadium (pent-) oxide	4-I	-	-	-	-	-	-	-	-	-	844	-	-	-	-	-
Tin(ic) oxide + Zinc oxide . . .	4-I	-	-	-	-	-	-	-	846	-	-	-	-	-	-	-
Tin(ic) oxide + Zinc oxide + + Magnesium oxide.	4-I	-	-	-	-	-	-	-	848	-	-	-	-	-	-	-
Tin(ous) (ortho-) phosphate ($3SnO \cdot P_2O_5$)	4-II	-	-	-	-	-	-	-	-	-	1179	-	-	-	-	-
Tin sulfide (SnS)	5	-	-	-	-	-	-	-	-	-	-	-	-	720	-	-
Tin telluride (SnTe)	6-I	-	-	-	-	-	632	-	-	-	-	-	-	-	-	-
Tin telluride + Silver antimony telluride	6-I	-	-	-	-	-	-	-	721	-	-	-	-	-	-	-
Tin-zirconium intermetallics																
$SnZr_2$	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Sn_3Zr_5	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-

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Titanium (Ti)	1	993	993	–	–	993	996	999	1001	1003	1005	–	1007-1013	1015	–	1017
Titanium coated with aluminide .	6-II	–	–	–	–	–	–	–	–	–	–	–	1447-1449	1451	–	–
Titanium coated with aluminized-silicone paint	6-II	–	–	–	–	–	–	–	–	–	–	–	–	1497	–	–
Titanium coated with gold . . .	6-II	–	–	–	–	–	–	–	–	–	–	–	1303	1305	–	–
Titanium coated with silicides .	6-II	–	–	–	–	–	–	–	–	–	–	–	1479-1481	1483	–	–
Titanium A-55	1	–	–	–	–	–	996	–	–	–	1005	–	–	–	–	–
Titanium A-70	1	–	–	–	–	–	–	–	–	–	1005	–	–	–	–	–
Titanium Ti-75A	1	–	–	–	–	–	996	999	1001	–	1005	–	1007-1009	1015	–	–
Titanium Ti-75A (AMS 4901) coated with Dow-Corning XP-310	6-II	–	–	–	–	–	–	–	–	–	–	–	–	1497	–	–
Titanium RC-55	1	–	–	–	–	–	996	–	–	–	–	–	–	–	–	–
Titanium VT-1	1	–	–	–	–	–	–	–	–	1003	–	–	–	–	–	–
Titanium + ΣX_i	2-II	1502	–	–	–	–	1504	1506	–	–	1508	–	–	–	–	–
Titanium + Aluminum	2-I	–	–	–	–	–	495-501	–	503	505	–	–	–	–	–	–
Titanium + Aluminum + ΣX_i . .	2-II	–	–	–	–	–	1426-1432	1434	1436-1442	1444-1446	1448-1454	–	1456-1459	1461	–	–
Titanium + Chromium	2-I	–	–	–	–	–	–	–	–	–	507	–	–	–	–	–
Titanium + Chromium + ΣX_i . .	2-II	–	–	–	–	–	–	1464	1466	–	1468	–	–	–	–	–
Titanium + Copper	2-I	–	–	–	–	–	509	–	–	–	511	–	–	–	–	–
Titanium + Germanium . . .	2-I	–	–	–	–	–	513	–	–	–	515	–	–	–	–	–
Titanium + Iron	2-I	–	–	–	–	–	–	–	–	–	517	–	–	–	–	–
Titanium + Iron + ΣX_i	2-II	1470	–	–	–	–	1472	–	1474	–	1476	–	–	–	–	–
Titanium + Manganese	2-I	519	–	–	–	–	521	523	525	527	529	–	531-535	537	–	–
Titanium + Manganese + ΣX_i . .	2-II	–	–	–	–	–	1478	–	–	–	1480	–	–	–	–	–
Titanium + Molybdenum	2-I	–	–	–	–	–	–	–	–	–	539	–	–	–	–	–
Titanium + Molybdenum + ΣX_i .	2-II	–	–	–	–	–	1482	–	–	–	–	–	–	–	–	–
Titanium + Nickel	2-I	–	–	–	–	–	–	–	–	–	541	–	–	–	–	–
Titanium + Niobium	2-I	–	–	–	–	–	543	–	–	–	545	–	–	–	–	–
Titanium + Silicon	2-I	–	–	–	–	–	–	–	–	–	547	–	–	–	–	–
Titanium + Tantalum	2-I	549	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Titanium + Tin	2-I	–	–	–	–	–	551	–	553	–	–	–	–	–	–	–
Titanium + Tin + ΣX_i	2-II	–	–	–	–	–	1484	–	1486	–	–	–	–	–	–	–
Titanium + Tungsten.	2-I	555	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Titanium + Vanadium	2-I	557	–	–	–	–	–	–	–	–	559	–	–	–	–	–
Titanium + Vanadium + ΣX_i. . .	2-II	1488	–	–	–	–	–	1490	1492	–	1494	–	–	1496	–	–
Titanium + Zirconium	2-I	–	–	–	–	–	561	–	–	–	563	–	–	–	–	–
Titanium + Zirconium + ΣX_i . .	2-II	–	–	–	–	–	1498	–	1500	–	–	–	–	–	–	–

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Titanium alloys (special designations)																
2.5 Al - 16 V	2-II	-	-	-	-	-	-	1490	-	-	-	-	-	-	-	-
3 Al - 2.5 V	2-II	-	-	-	-	-	-	-	-	-	1454	-	-	-	-	-
4 Al - 3 Mo	2-II	-	-	-	-	-	-	-	-	-	1452	-	-	-	-	-
4 Al - 3 Mo - 1 V	2-II	-	-	-	-	-	-	1434	-	-	-	-	-	-	-	-
4 Al - 4 Mn	2-II	-	-	-	-	-	-	-	-	-	1450, 1481	-	-	-	-	-
6 Al - 4 V	2-II	-	-	-	-	-	1428	1434	1440	1444	1454	-	1456-1459	-	-	-
7 Al - 4 Mo	2-II	-	-	-	-	-	-	-	-	-	1452	-	-	-	-	-
7 Al - 2 Nb - 1 Ta	2-II	-	-	-	-	-	-	-	-	-	1448	-	-	-	-	-
13 V - 11 Cr - 3 Al	2-II	-	-	-	-	-	-	1490	-	-	-	-	-	-	-	-
48 - OT - 3	2-I	-	-	-	-	-	-	-	-	505	-	-	-	-	-	-
A - 110 AT	2-II	-	-	-	-	-	1432	-	1438	-	1448	-	1456-1459	1461	-	-
B120VCA (crucible heat no. R6759 sheet no. 9MB3) . . .	2-II	-	-	-	-	-	-	-	1492	-	1494	-	-	1496	-	
BT-5	2-I	-	-	-	-	-	-	-	-	505	-	-	-	-	-	
C-110M	2-I	-	-	-	-	-	521	523	525	527	529	-	533-535	537	-	-
C-120AV	2-II	-	-	-	-	-	-	-	-	-	1454	-	-	-	-	-
C-130AM	2-II	-	-	-	-	-	1426, 1478	-	1442	-	-	-	-	-	-	-
Cr - Mo	2-II	-	-	-	-	-	-	-	1466	-	-	-	-	-	-	-
Heat no. 32167 and sheet no. 1777A-1	2-II	-	-	-	-	-	-	-	-	-	1454	-	-	-	-	-
Heat no. R6736 sheet no. B-32	2-II	-	-	-	-	-	-	-	1436	-	1452	-	-	-	-	-
Heat no. 23345 sheet no. 1149-3	2-II	-	-	-	-	-	-	-	1492	-	1494	-	-	-	-	-
Hylite 20	2-II	-	-	-	-	-	1432	-	1438	-	-	-	-	-	-	-
Hylite 30	2-II	-	-	-	-	-	1426, 1478	-	1442	-	-	-	-	-	-	-
Hylite 40	2-II	-	-	-	-	-	1426, 1478	-	1442	-	-	-	-	-	-	-
Hylite 50	2-II	-	-	-	-	-	1432, 1482	-	1436	-	-	-	-	-	-	-
Hylite 55	2-II	-	-	-	-	-	1484	-	1486	-	-	-	-	-	-	-
Hylite 60	2-II	-	-	-	-	-	1484	-	1486	-	-	-	-	-	-	-
MST-3Mn	2-II	-	-	-	-	-	-	-	-	-	1481	-	-	-	-	-
RC-130A	2-I	-	-	-	-	-	521	523	525	527	529	-	533-535	537	-	-
RC-130B	2-II	-	-	-	-	-	1426, 1478	-	-	-	1450	-	-	-	-	-
RMI-8Mn	2-II	-	-	-	-	-	-	-	-	-	1481	-	-	-	-	-
RMI-30	2-I	-	-	-	-	-	-	-	-	-	517	-	-	-	-	-
RMI-40	2-I	-	-	-	-	-	-	-	-	-	517	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Titanium alloys (special designations) (cont.)																
RMI-55	2-I	-	-	-	-	-	-	-	-	-	517	-	-	-	-	-
RMI-70	2-I	-	-	-	-	-	-	-	-	-	517	-	-	-	-	-
RS-120	2-I	-	-	-	-	-	-	-	-	-	-		531	-	-	-
Ti-140A	2-II	-	-	-	-	-	1472	-	1474	-	-	-	-	-	-	-
Ti-150A	2-II	-	-	-	-	-	-	-	1466	-	-	-	-	-	-	-
Ti-155A	2-II	-	-	-	-	-	1432	-	1442	-	-	-	-	-	-	-
Titanium alloy 6 Al - 4 V coated with Rokide C	6-II	-	-	-	-	-	-	-	-	-	-	-	1345-1347	-	-	-
Titanium aluminide (TiAl) . . .	6-I	27	27	-	-	-	-	-	-	-	-	-	29-31	33	-	-
Titanium aluminide + Aluminum oxide	5	-	-	-	-	-	-	-	-	-	-	-	862-864	866	-	-
Titanium beryllides																
TiBe	6-I	138	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$TiBe_2$	6-I	138	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$TiBe_{12}$	6-I	-	-	-	-	-	-	140	142	-	-	-	-	-	-	-
Titanium borides																
TiB	6-I	236	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TiB_2	6-I	236	236	-	-	-	238	240	242	-	244	-	246-248	-	-	-
Ti_2B	6-I	-	236	-	-	-	-	-	-	-	-	-	-	-	-	-
Titanium (di-)boride + + Aluminum boride	6-I	723	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Titanium (di-)boride + + Boracic acid	5	-	-	-	-	-	-	-	-	-	-	-	886-888	890	-	-
Titanium (di-)boride + + Chromium (di-)boride . . .	6-I	723	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Titanium (di-)boride + + (Penta-)niobium (tri-)-silicide	6-I	-	724	-	-	-	-	-	-	-	-	-	-	-	-	-
Titanium (di-)boride + + Tantalum (di-)silicide . . .	6-I	-	724	-	-	-	-	-	-	-	-	-	-	-	-	-
Titanium (di-)boride + + Titanium (di-)oxide	5	-	-	-	-	-	-	-	-	-	-	-	892-894	896	-	-
Titanium (di-)boride + + Titanium (di-)oxide + + Boracic acid	5	-	-	-	-	-	-	-	-	-	-	-	898-900	902	-	-
Titanium (di-)boride + + Titanium nitride	5	-	-	-	-	-	-	-	-	-	801	-	-	-	-	-
Titanium (di-)boride + + Vanadium (di-)boride . . .	6-I	723	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Titanium carbide (TiC)	5	176	176	-	-	-	178	180	182	185	187	-	189-193	-	-	-

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Titanium carbide + Cobalt cermet	6-II	862	-	-	-	-	-	-	911	-	864	-	-	-	-	-
Titanium carbide + Molybdenum + + Tungsten cermet	6-II	-	-	-	-	-	-	-	-	-	866	-	-	-	-	-
Titanium carbide + Nickel cermet	6-II	868	-	-	-	-	-	871	873	-	875-877	-	-	-	-	-
Titanium carbide + Niobium carbide + Nickel cermet . . .	6-II	-	-	-	-	-	-	-	911	-	-	-	-	-	-	-
Titanium carbide + Tungsten cermet	6-II	-	-	-	-	-	-	-	-	-	879	-	-	-	-	-
Titanium-chromium intermetallics ($TiCr_2$)	6-I	-	-	-	-	-	-	-	-	-	-	-	656-658	660	-	-
Titanium-chromium intermetallics + Chromium (sesqui-) - oxide	5	-	-	-	-	-	-	-	-	-	926	-	928-930	932	-	-
Titanium-chromium intermetallics + Chromium (sesqui-) - oxide + Titanium (di-)oxide . .	5	-	-	-	-	-	-	-	-	-	-	-	934-936	938	-	-
Titanium-chromium intermetallics + Titanium (di-)oxide . .	5	-	-	-	-	-	-	-	-	-	-	-	940-942	944	-	-
Titanium ferrides																
TiFe	6-I	-	306	-	-	-	-	-	-	-	-	-	-	-	-	-
$TiFe_2$	6-I	-	306	-	-	-	-	-	-	-	-	-	-	-	-	-
Titanium-gold intermetallics																
TiAu	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
$TiAu_2$	6-I	-	[illegible]	-	-	-	-	-	-	-	-	-	-	-	-	-
Ti_3Au	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Titanium hydride (TiH)	5	-	-	-	-	-	443	445	-	-	-	-	-	-	-	-
Titanium iodide (TiI_2)	5	-	-	-	-	-	-	-	-	-	475	-	-	-	-	-
Titanium nitride (TiN).	5	571	571	-	-	-	573	575	577	579	581	-	584	-	-	-
Titanium nitride + Chromium + + Titanium cermet	6-II	-	-	-	-	-	-	-	-	-	909	-	-	-	-	-
Titanium nitride + Titanium (di-)boride	5	-	-	-	-	-	-	-	-	-	842	-	-	-	-	-
Titanium oxides																
TiO	4-I	-	-	-	-	446	-	452	-	-	462	-	-	-	-	479
TiO_2	4-I	445	445	-	-	446	450	454	460	-	462	465	467-471	473-475	477	479
Ti_2O_3	4-I	-	-	-	-	-	-	456	-	-	-	-	-	-	-	-
Ti_3O_5	4-I	-	-	-	-	-	-	458	-	-	-	-	-	-	-	479
Titanium (mon-)oxide + + Chromium-titanium alloys cermet	6-II	-	-	-	-	-	-	-	-	-	796	-	-	-	-	-

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Titanium (di-) oxide and aluminum oxide coating on molybdenum	6-II	-	-	-	-	-	-	-	-	-	-	-	1395	-	-	-
Titanium (di-) oxide + Antimony (tri-) oxide	4-I	-	-	-	-	-	-	-	-	-	850	-	-	-	-	-
Titanium (di-) oxide + Beryllium oxide + Calcium titanium silicate + Magnesium oxide . .	4-II	-	-	-	-	-	-	-	-	-	1550	-	-	-	-	-
Titanium (di-) oxide + Lithium carbonate	4-II	-	-	-	-	-	-	-	-	-	1552	-	-	-	-	-
Titanium (di-) oxide + Manganese (di-) oxide	4-I	-	-	-	-	-	-	-	-	-	852	-	-	-	-	-
Titanium (di-) oxide + Niobium (pent-) oxide	4-I	-	854	-	-	-	-	-	-	-	856	-	-	-	-	-
Titanium (di-) oxide + Silicon (di-) oxide	4-I	-	-	-	-	-	858	-	-	-	860	-	-	-	-	-
Titanium (di-) oxide + Strontium oxide	4-I	-	862	-	-	-	-	-	-	-	-	-	-	-	-	-
Titanium (di-) oxide + Tin(ic) oxide	4-I	-	-	-	-	-	-	-	-	-	864	-	-	-	-	-
Titanium (di-) oxide + Titanium (di-) boride	5	-	-	-	-	-	-	-	-	-	-	-	791-793	795	-	-
Titanium (di-) oxide + Tungsten (tri-) oxide	4-I	-	-	-	-	-	-	-	-	-	866	-	-	-	-	-
Titanium (di-) oxide + Vanadium (pent-) oxide	4-I	-	-	-	-	-	-	-	-	-	868-870	-	-	-	-	-
Titanium (di-) oxide + Zirconium (di-) oxide	4-I	-	-	-	-	-	-	-	-	-	872	-	-	-	-	-
Titanium phosphates																
$TiO_2 \cdot P_2O_5$	4-II	-	-	-	-	-	-	-	-	-	1181	-	-	-	-	-
$5\ TiO_2 \cdot 2\ P_2O_5$	4-II	-	-	-	-	-	-	-	-	-	1181	-	-	-	-	-
Titanium phosphide (TiP) . . .	5	635	636	-	-	-	639	-	-	-	-	-	-	-	-	-
Titanium silicides																
TiSi	6-I	-	479	-	-	-	-	481	-	-	483	-	-	-	-	-
$TiSi_2$	6-I	479	479	-	-	-	-	481	-	-	483	-	485-487	489	-	-
Ti_5Si_3	6-I	-	479	-	-	-	-	481	-	-	483	-	-	489	-	-
Titanium (di-) silicide + + (Penta-) titanium (tri-) silicide	6-I	-	-	-	-	-	-	-	-	-	-	-	693-695	697	-	-
(Penta-) titanium (tri-) silicide + + Titanium (di-) silicide . . .	6-I	-	-	-	-	-	-	-	-	-	-	-	699-701	703	-	-
Titanium tungsten (di-) carbide + + Cobalt cermet	6-II	-	-	-	-	-	-	-	-	-	881	-	-	-	-	-
Titanium tungsten (di-) carbide + + Tantalum cermet.	6-II	-	-	-	-	-	-	-	-	-	883	-	-	-	-	-

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Titanox TG	4-I	-	-	-	-	-	-	-	-	-	462	-	-	-	-	-
Transite	6-II	-	-	-	-	-	-	1216	-	-	-	-	-	-	-	-
Tremolite	4-II	-	-	-	-	-	-	1239	-	-	-	-	-	-	-	-
Trolitul Luv-M150	6-II	-	-	-	-	-	-	970	972	1082	-	-	-	-	-	-
Tungsten (W)	1	1019	1019	-	-	-	1021	1023	1025	1027	1029	-	1031-1038	1040-1042	-	1044
Tungsten, lamp grade	1	-	-	-	-	-	-	-	-	-	-	-	1038	-	-	-
Tungsten coated with hafnium (di-) oxide	6-II	-	-	-	-	-	-	-	-	-	-	-	1377-1379	-	-	-
Tungsten coated with silicide . .	6-II	-	-	-	-	-	-	-	-	-	-	-	1485-1487	1489	-	-
Tungsten coating on Inconel X .	6-II	-	-	-	-	-	-	-	-	-	-	-	1329	1331	-	-
Tungsten coating on iron	6-II	-	-	-	-	-	-	-	-	-	-	1325	1327	-	-	-
Tungsten + ΣX_i	2-II	1516	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tungsten + Cobalt	2-I	-	-	-	-	-	-	-	-	-	565	-	-	-	-	-
Tungsten + Copper	2-I	-	-	-	-	-	-	-	-	-	567	-	-	-	-	-
Tungsten + Molybdenum	2-I	-	-	-	-	-	-	-	-	-	-	-	569-573	-	-	-
Tungsten + Nickel + ΣX_i	2-II	1510	-	-	-	-	-	-	1512	-	1514	-	-	-	-	-
Tungsten + Niobium	2-I	-	575	-	-	-	-	-	-	-	-	-	-	-	-	-
Tungsten + Rhenium	2-I	-	-	-	-	-	577	-	-	-	-	-	-	-	-	-
Tungsten alloys (special design.)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B50YA12B	2-II	-	-	-	-	-	-	-	-	-	1514	-	-	-	-	-
Heavy alloy	2-II	-	-	-	-	-	-	-	-	-	1514	-	-	-	-	-
Mallory 1000	2-II	-	-	-	-	-	-	-	-	-	1514	-	-	-	-	-
Tungsten aluminide (WAl) . . .	6-I	-	43	-	-	-	-	-	-	-	-	-	-	-	-	-
Tungsten arsenide (W_3As_7) . . .	6-I	-	-	-	-	-	96	-	-	-	-	-	-	-	-	-
Tungsten borides																
WB	6-I	-	250	-	-	-	252	254	258	260	262	-	264	-	-	-
WB_2	6-I	-	250	-	-	-	-	-	-	-	-	-	-	-	-	-
W_2B	6-I	-	250	-	-	-	-	256	-	-	-	-	-	-	-	-
W_2B_5	6-I	-	250	-	-	-	-	256	-	-	-	-	-	-	-	-
Tungsten carbides																
WC	5	195	195	-	-	-	197	199	201	-	203	-	205-209	-	-	215
W_2C	5		195	-	-	-	-	-	-	-	203	-	211-213	-	-	-
Tungsten carbide coating on iron	6-II	-	-	-	-	-	-	-	-	-	-	1421	1423	-	-	-
Tungsten carbide + Chromium-cobalt alloys cermet	6-II	-	-	-	-	-	-	-	-	-	895	-	-	-	-	-
Tungsten carbide + Cobalt cermet	6-II	-	-	-	-	-	-	-	889	-	897-905	-	-	-	-	-

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Tungsten carbide + Nickel cermet	6-II	-	-	-	-	-	-	-	-	-	907	-	-	-	-	-
Tungsten-cobalt alloy coating on Inconel X	6-II	-	-	-	-	-	-	-	-	-	-	-	1341	1343	-	-
Tungsten-cobalt intermetallics (WCo_2)	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Tungsten iron lead oxide ($3\ PbO \cdot Fe_2O_3 \cdot WO_3$)	4-II	-	-	-	-	-	-	-	-	-	1159	-	-	-	-	-
Tungsten nitride (WN)	5	-	621	-	-	-	-	-	-	-	-	-	-	-	-	-
Tungsten oxides																
WO_2	4-I	-	-	-	-	-	-	-	-	-	485	-	-	-	-	-
WO_3	4-I	-	-	-	-	-	-	481	483	-	485	-	-	-	-	-
$W_{18}O_{49}$	4-I	-	-	-	-	-	-	-	-	-	485	-	-	-	-	-
$W_{20}O_{58}$	4-I	-	-	-	-	-	-	-	-	-	485	-	-	-	-	-
Tungsten (tri-)oxide + Zinc oxide	4-I	-	-	-	-	-	-	-	874	-	-	-	-	-	-	-
Tungsten phosphide (WP). . . .	5	635	636	-	-	-	639	-	-	-	-	-	-	-	-	-
Tungsten selenide (WSe_2). . . .	6-I	-	-	-	-	-	359	-	361	-	-	-	-	-	-	-
Tungsten selenide tellurides ($WSe_{2-x}Te_x$)	6-I	-	-	-	-	-	634	-	-	-	-	-	-	-	-	-
Tungsten silicides																
WSi	6-I	-	491	-	-	-	-	-	-	-	-	-	-	-	-	-
WSi_2	6-I	-	491	-	-	-	-	493	495	-	497	-	-	499	-	-
W_5Si_2	6-I	-	491	-	-	-	-	-	-	-	-	-	-	-	-	-
W_5Si_3	6-I	-	491	-	-	-	-	-	-	-	-	-	-	-	-	-
Tungsten tellurides (WTe_2). . .	6-I	-	-	-	-	-	638	-	640	-	-	-	-	-	-	-
Tungsten-zirconium intermetallics (W_2Zr)	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
U																
Udimet 500	2-II	-	-	-	-	-	-	-	1134	-	-	-	1201, 1233	1213, 1235	-	-
Udimet 600	2-II	-	-	-	-	-	-	-	1134	-	-	-	-	-	-	-
Uranium (U)	1	1046	1046	-	-	-	1049	1051	1053	1056	1058	-	1061-1063	-	-	-
Uranium + ΣX_i	2-II	-	-	1544	1544	1544	-	-	-	-	-	-	-	-	-	1546
Uranium + Chromium	2-I	579	579	-	-	-	581	583	585	-	587	-	-	-	-	-
Uranium + Iron	2-I	589	-	-	-	-	-	-	-	-	591	-	-	-	-	-
Uranium + Magnesium	2-I	-	-	-	-	-	-	-	593	-	595	-	-	-	-	-
Uranium + Molybdenum	2-I	599	597	-	-	-	601	603	605	-	607-613	-	-	-	-	-
Uranium + Molybdenum + ΣX_i. .	2-II	-	1518	-	-	-	-	-	1520	-	1522-1526	-	-	-	-	-
Uranium + Niobium	2-I	-	617	-	-	-	-	-	619	-	-	-	621-623	-	-	-
Uranium + Plutonium + ΣX_i . .	2-II	-	1528	-	-	-	-	-	-	-	1530	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Uranium + Thorium + ΣX_i . . .	2-II	-	1532	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium + Zirconium	2-I	625	-	-	-	-	627	-	629	-	631-641	-	-	-	-	-
Uranium + Zirconium + ΣX_i . .	2-II	-	1534	-	-	-	1536	-	1538	-	-	-	1540-1542	-	-	-
Uranium alloys (special design.)																
Fissium alloy	2-II	-	1518	-	-	-	-	-	1520	-	-	-	-	-	-	-
U-3% FS	2-II	-	-	-	-	-	-	-	1520	-	-	-	-	-	-	-
U-5% FS	2-II	-	-	-	-	-	-	-	1520	-	-	-	-	-	-	-
U-5% FS-2.25 Zr	2-II	-	-	-	-	-	-	-	1538	-	-	-	-	-	-	-
U-8% FS	2-II	-	-	-	-	-	-	-	1520	-	-	-	-	-	-	-
U-10% FS	2-II	-	-	-	-	-	-	-	1520	-	-	-	-	-	-	-
Uranium aluminides																
UAl_2	6-I	35	35	-	-	-	-	-	-	-	37	-	-	-	-	-
UAl_3	6-I	35	35	-	-	-	-	-	-	-	-	-	-	-	-	-
UAl_4	6-I	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium beryllide (UBe_{13}) . .	6-I	144	-	-	-	-	-	-	146	-	-	-	-	-	-	-
Uranium-bismuth intermetallics																
UBi	6-I	676	676	-	-	-	-	-	-	-	-	-	-	-	-	-
UBi_2	6-I	676	676	-	-	-	-	-	-	-	-	-	-	-	-	-
U_3Bi_4	6-I	676	676	-	-	-	-	-	-	-	-	-	-	-	-	-
U_4Bi_5	6-I	676	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium borides																
UB_2	6-I	-	266	-	-	-	-	-	-	-	268	-	-	-	-	-
UB_4	6-I	266	266	-	-	-	-	-	-	-	-	-	-	-	-	-
UB_{12}	6-I	-	266	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium bromide (UBr_3). . . .	5	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium carbides																
UC	5	217	217	-	-	-	219	223	231	235	237	-	243, 245	-	-	-
UC_2	5	-	217	-	-	-	221	225-227	233	-	239	-	243-245	-	-	-
U_2C_3	5	217	217	-	-	-	-	229	-	-	241	-	-	-	-	-
Uranium (mono-)carbide + + Molybdenum cermet	6-II	-	-	-	-	-	-	-	-	-	891	-	-	-	-	-
Uranium (mono-)carbide + + Uranium cermet	6-II	-	-	-	-	-	-	-	-	-	893	-	-	-	-	-
Uranium (di-)carbide + Graphite	5	-	-	-	-	-	-	-	743	-	-	-	-	-	-	-
Uranium chlorides																
UCl_3	5	335	-	-	-	-	-	337	-	-	-	-	-	-	-	-
UCl_4	5	335	-	-	-	-	-	337	-	-	-	-	-	-	-	-
Uranium-cobalt intermetallics																
UCo	6-I	676	-	-	-	-	-	-	-	-	-	-	-	-	-	-
U_6Co	6-I	676	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Uranium ferrides																
UFe_2	6-I	306	306	-	-	-	-	-	-	-	-	-	-	-	-	-
U_6Fe	6-I	306	306	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium fluorides																
UF_3	5	-	407	-	-	-	-	-	-	-	-	-	-	-	-	-
UF_4	5	407	407	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium hydride (UH_3).	5	447	-	-	-	-	-	449	-	-	-	-	-	-	-	-
Uranium iodides																
UI_3	5	-	477	-	-	-	-	-	-	-	-	-	-	-	-	
UI_4	5	-	477	-	-	-	-	-	-	-	-	-	-	-	-	[illegible]
Uranium-lead intermetallics																
[illegible]	6-I	676	676	-	-	-	-	-	-	-	-	-	-	-	-	-
UPb_3	6-I	676	676	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium-manganese intermetallics																
UMn_2	6-I	676	676	-	-	-	-	-	-	-	-	-	-	-	-	-
U_6Mn	6-I	676	676	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium-nickel intermetallics (U_6Ni)	6-I	676	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium nitrides																
UN	5	586	586	-	-	-	-	-	588	590	592	-	-	-	-	-
$UN_{1.58-1.65}$	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	594
UN_2	5	586	-	-	-	-	-	-	-	-	-	-	-	-	-	-
U_2N_3	5	586	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium oxides																
UO_2	4-I	488	489	-	-	-	493	495	503-511	515	517	-	520	-	-	522
$UO_{2.03-2.18}$	4-I	-	-	-	-	-	-	-	508	-	517	-	-	-	-	-
UO_3	4-I	488	489	-	-	-	-	497	-	-	-	-	-	-	-	-
U_2O_3	4-I	-	-	-	-	-	493	-	-	-	-	-	-	-	-	-
U_2O_5	4-I	488	-	-	-	-	-	-	-	-	-	-	-	-	-	-
U_3O_8	4-I	488	489	-	-	-	-	499	513	-	-	-	-	-	-	-
U_4O_9	4-I	-	-	-	-	-	-	501	-	-	-	-	-	-	-	-
Uranium (di-) oxide powder. . . .	4-I	-	-	-	-	-	-	-	511	-	-	-	520	-	-	-
Uranium (di-) oxide + Beryllium oxide	4-I	-	-	-	-	-	-	-	876	-	878	-	-	-	-	-
Uranium (di-) oxide + Chromium cermet	6-II	-	-	-	-	-	798	-	800	-	802	-	-	-	-	-
Uranium (di-) oxide + + Dysprosium oxide	4-I	-	-	-	-	-	-	-	-	-	880	-	-	-	-	-
Uranium (di-) oxide + Graphite .	5	-	-	-	-	-	-	-	741	-	-	-	-	-	-	-
Uranium (di-) oxide + + Magnesium oxide.	4-I	-	-	-	-	-	-	-	-	-	882	-	-	-	-	-
Uranium (di-) oxide + + Molybdenum cermet	6-II	-	-	-	-	-	804	-	806	-	808	-	-	-	-	-

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Uranium (di-) oxide + Niobium cermet	6-II	-	-	-	-	-	810	-	812	-	-	-	-	-	-	-
Uranium (di-) oxide + Stainless steel cermet	6-II	-	-	-	-	-	814	-	816	-	818	-	-	-	-	-
Uranium (di-) oxide + Thorium (di-) oxide	4-I	-	-	-	-	-	884	-	-	-	-	-	-	-	-	-
Uranium (di-) oxide + Thorium (di-) oxide + Yttrium oxide . .	4-I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	886
Uranium (di-) oxide + Yttrium oxide	4-I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	888
Uranium (di-) oxide + + Zirconium cermet	6-II	820	-	-	-	-	-	-	822	-	824	-	-	-	-	-
Uranium (di-) oxide + + Zirconium (di-) oxide	4-I	-	890	-	-	-	-	-	-	-	892	-	-	-	-	-
Uranium phosphate ($UO_2 \cdot P_2O_5$) .	4-II	-	-	-	-	-	-	-	-	-	1183	-	-	-	-	-
Uranium plutonium carbide ($U_{1-x}Pu_xC$)	5	-	-	-	-	-	247	-	-	-	-	-	-	-	-	-
Uranium silicides																
USi	6-I	501	501	-	-	-	-	-	-	-	509	-	-	-	-	-
USi_2	6-I	501	501	-	-	-	-	505	-	-	509	-	-	-	-	-
USi_3	6-I	501	501	-	-	-	503	505	-	-	509	-	-	-	-	-
U_3Si	6-I	501	501	-	-	-	503	505	507	-	509	-	-	-	-	-
U_3Si_2	6-I	501	501	-	-	-	-	-	-	-	509	-	-	-	-	-
Uranium stannide (USn_3)	6-I	541	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium sulfides																
US	5	722	722	-	-	-	-	-	-	-	724	-	-	-	-	-
US_2	5	722	722	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium thorium oxide ($Th_{1-x}U_xO_2$)	4-II	-	-	-	-	-	-	-	1161	-	-	-	-	-	-	-
Uranium-titanium intermetallics (U_2Ti)	6-I	-	676	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium zirconium carbide ($U_{1-x}Zr_xC$)	5	-	-	-	-	-	-	-	-	-	-	-	249	-	-	-
Uranium zirconium hydride ($U_{1-x}Zr_xH$)	5	-	-	-	-	-	-	-	-	-	451	-	-	-	-	-
Uranyl oxide	4-I	488	489	-	-	-	-	497	-	-	-	-	-	-	-	-
Urea formaldehyde, alpha cellulose filled	6-II	-	-	-	-	-	-	-	-	-	1002	-	-	-	-	-
V																
Vanadate glass	4-II	-	-	-	-	-	1645	-	-	-	1647	-	-	-	-	-
Vanadium (V)	1	1065	1065	-	-	1065	1067	1069	1071	-	1073	-	1075	1077	-	1079
Vanadium + ΣX_i	2-I	-	-	-	-	-	643	-	-	-	-	-	-	-	-	-
Vanadium + Aluminum	2-I	-	-	-	-	-	643	-	-	-	-	-	-	-	-	-
Vanadium + Antimony	2-I	-	-	-	-	-	643	-	-	-	-	-	-	-	-	-
Vanadium + Chromium	2-I	-	-	-	-	-	643	-	-	-	-	-	-	-	-	-

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Vanadium + Copper	2-I	-	-	-	-	-	643	-	-	-	-	-	-	-	-	-
Vanadium + Iron	2-I	-	-	-	-	-	643	-	-	-	-	-	-	-	-	-
Vanadium + Manganese	2-I	-	-	-	-	-	643	-	-	-	-	-	-	-	-	-
Vanadium + Nickel	2-I	-	-	-	-	-	643	-	-	-	-	-	-	-	-	-
Vanadium + Palladium	2-I	-	-	-	-	-	643	-	-	-	-	-	-	-	-	-
Vanadium + Silicon	2-I	-	-	-	-	-	-	-	-	-	645	-	-	-	-	-
Vanadium + Silicon + ΣX_i . . .	2-II	-	-	-	-	-	-	-	1548	-	-	-	-	-	-	-
Vanadium + Tin	2-I	-	-	-	-	-	643	-	-	-	-	-	-	-	-	-
Vanadium + Titanium	2-I	647	-	-	-	-	643	-	649	-	651	-	-	-	-	-
Vanadium + Titanium + ΣX_i . .	2-II	-	-	-	-	-	-	-	1550	-	-	-	-	-	-	-
Vanadium + Zirconium	2-I	-	-	-	-	-	643	-	-	-	-	-	-	-	-	-
Vanadium aluminide (V_5Al_8) . .	6-I	-	43	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium beryllide (VBe_{12}) . .	6-I	-	158	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium borides																
VB	6-I	-	270	-	-	-	-	-	-	-	-	-	-	-	-	-
VB_2	6-I	270	270	-	-	-	-	-	-	-	272	-	-	-	-	-
V_3B_2	6-I	-	270	-	-	-	-	-	-	-	-	-	-	-	-	-
V_3B_4	6-I	-	270	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium (di-)boride + + Chromium (di-)boride . . .	6-I	723	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium (di-)boride + + Titanium (di-)boride	6-I	723	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium carbides																
VC	5	251	251	-	-	-	253	255	257	-	259	-	261	-	-	-
V_2C	5	-	251	-	-	-	-	-	-	-	259	-	-	-	-	-
Vanadium germanium lead oxide ($5\ PbO \cdot GeO_2 \cdot V_2O_5$)	4-II	-	-	-	-	-	-	-	-	-	1163	-	-	-	-	-
Vanadium hydride (VH)	5	-	-	-	-	-	-	453	-	-	-	-	-	-	-	-
Vanadium-manganese inter-metallics (VMn_x)	6-I	-	685	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium nitride (VN)	5	596	596	-	-	-	-	598	-	-	600	-	-	-	-	-
Vanadium oxides																
VO	4-I	-	-	-	-	524	-	528	-	-	-	-	-	-	-	536
V_2O_3	4-I	-	-	-	-	-	526	530	-	-	-	-	-	-	-	-
V_2O_4	4-I	-	-	-	-	-	-	532	-	-	-	-	-	-	-	-
V_2O_5	4-I	524	524	-	-	-	526	534	-	-	-	-	-	-	-	-
Vanadium (pent-)oxide + + Titanium (di-)oxide	4-I	-	-	-	-	-	-	-	-	-	894	-	-	-	-	-
Vanadium phosphide (VP) . . .	5	635	636	-	-	-	639	-	-	-	-	-	-	-	-	-
Vanadium silicides																
VSi	6-I	-	511	-	-	-	-	-	-	-	-	-	-	-	-	-
VSi_2	6-I	-	-	-	-	-	-	513	-	-	515	-	-	-	-	-
V_3Si	6-I	-	511	-	-	-	-	513	-	-	515	-	-	-	-	-
V_5Si_3	6-I	-	511	-	-	-	-	513	-	-	515	-	-	-	-	-

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Vanadium silicon lead oxide ($5\,PbO \cdot SiO_2 \cdot V_2O_5$)	4-II	-	-	-	-	-	-	-	-	-	1165	-	-	-	-	-
Vanadium-zirconium intermetallics (V_2Zr)	6-I	-	685	-	-	-	-	-	-	-	-	-	-	-	-	-
Vermiculite, expanded	4-I	-	-	-	-	-	-	-	814	-	-	-	-	-	-	-
Vinylite VMCH	6-II	-	-	-	-	-	-	-	-	-	950	-	-	-	-	-
Vinylite VYDR	6-II	-	-	-	-	-	-	-	-	-	950	-	-	-	-	-
Vitreous bonded aluminum titanate	5	-	-	-	-	-	949-953	-	-	-	955-977	-	-	-	-	-
Vulcollan	6-II	1051	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vycor no. 790	4-II	-	1651	-	-	-	1653	-	-	-	1663	-	-	-	-	-
Vycor 7900	4-II	-	-	-	-	-	-	1655	-	1661	-	-	1665	1669	1671-1673	-
Vycor glasses	4-II	1651	1651	-	-	-	1653	1655	1657, 1699	1659-1661	1663	-	1665-1667	1669	1671-1673	-
W																
Willemite	4-II	-	-	-	-	-	-	1340	-	-	-	-	-	-	-	-
Wollastonite	4-II	-	-	-	-	-	-	1229	-	-	-	-	-	-	-	-
Wustite	4-I	-	-	-	-	-	-	-	-	-	222	-	-	-	-	-
Y																
Ytterbia	4-I	538	-	-	-	-	-	540	-	-	542	-	-	-	544	-
Ytterbium (Yb)	1	1081	1081	1081	1081	1081	1083	1085	-	-	-	-	-	-	-	-
Ytterbium + Calcium	2-I	-	-	-	-	-	-	-	-	-	653	-	-	-	-	-
Ytterbium borides																
YbB_4	6-I	295	-	-	-	-	-	-	-	-	-	-	-	-	-	-
YbB_6	6-I	295	-	-	-	-	300	-	-	-	-	-	-	-	-	-
Ytterbium carbide (YbC_2) . . .	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ytterbium oxide (Yb_2O_3)	4-I	538	-	-	-	-	-	540	-	-	542	-	-	-	544	-
Ytterbium selenide (YbSe) . . .	6-I	365	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ytterbium sulfide (Yb_2S_3) . . .	5	732	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Yttria	4-I	546	-	-	-	-	-	548	550	-	552	-	555-559	-	561	-
Yttrium (Y)	1	1087	1087	1087	1087	1087	1089	1091	1093	-	-	-	1095	-	-	1097
Yttrium + ΣX_i	2-II	-	-	-	-	-	-	1554	-	1556	-	-	-	-	-	-
Yttrium + Tantalum	2-I	-	-	-	-	-	-	655	-	-	-	-	-	-	-	-
Yttrium + Terbium	2-I	-	-	-	-	-	657	-	-	-	-	-	-	-	-	-
Yttrium + Terbium + ΣX_i	2-II	1552	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Yttrium borides																
YB_2	6-I	295	297	-	-	-	-	-	-	-	-	-	-	-	-	-
YB_4	6-I	295	297	-	-	-	-	-	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Yttrium borides (cont.)																
YB_6	6-I	295	297	-	-	-	300	-	-	-	-	-	-	-	-	-
Yttrium carbides																
YC	5	-	295	-	-	-	-	-	-	-	-	-	-	-	-	-
YC, ...	5	294	295	-	-	-	-	-	-	-	-	-	-	-	-	-
Y_2C_3	5	-	295	-	-	-	-	-	-	-	-	-	-	-	-	-
Y_3C	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Yttrium-cobalt intermetallics																
YCo_2	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
YCo_5	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Yttrium-copper intermetallics (YCu_5)	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Yttrium ferride (YFe_5)	6-I	306	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Yttrium fluoride (YF_3)	5	407	407	-	-	-	-	-	-	-	-	-	-	-	-	-
Yttrium-gallium intermetallics (YGa_2)	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Yttrium germanides (Y_5Ge_3) . .	6-I	323	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Yttrium hydrides																
YH_2	5	455	-	-	-	-	-	-	-	-	-	-	-	-	-	-
YH_3	5	455	-	-	-	-	-	457	-	-	-	-	-	-	-	-
Yttrium-manganese intermetallics																
YMn_2	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
YMn_5	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Yttrium-nickel intermetallics (YNi_5)	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Yttrium nitride (YN)	5	621	621	-	-	-	-	-	-	-	-	-	-	-	-	-
Yttrium-osmium intermetallics (YOs_2)	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Yttrium oxide (Y_2O_3)	4-I	546	-	-	-	-	-	548	550	-	552	-	555-559	-	561	-
Yttrium oxide + Chromium (sesqui-) oxide	4-I	-	-	-	-	-	-	-	-	-	-	-	896	-	-	-
Yttrium oxide + Uranium (di-) oxide	4-I	-	..	-	-	-	-	-	898	-	-	-	-	-	-	-
Yttrium-rhodium intermetallics (YRh)	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Yttrium silicides																
YSi	6-I	523	524	-	-	-	-	-	-	-	-	-	-	-	-	-
YSi_2	6-I	523	524	-	-	-	-	-	-	-	-	-	-	-	-	-
Y_3Si_5	6-I	-	524	-	-	-	-	-	-	-	-	-	-	-	-	-
Y_5Si_3	6-I	523	524	-	-	-	-	-	-	-	-	-	-	-	-	-
Yttrium-silver intermetallics (YAg)	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Yttrium sulfides																
YS	5	732	732	-	-	-	-	-	-	-	-	-	-	-	-	-
YS_2	5	732	732	-	-	-	-	-	-	-	-	-	-	-	-	-
Y_2S_3	5	732	732	-	-	-	-	-	-	-	-	-	-	-	-	-
Y_5S_7	5	732	732	-	-	-	-	-	-	-	-	-	-	-	-	-
Yttrium tellurides (Y_2Te_3) . . .	6-I	-	-	-	-	-	638	-	-	-	-	-	-	-	-	-
Z																
Zinc + Copper	2-I	-	-	-	-	-	659	-	-	-	-	-	-	-	-	-
Zinc + Silver	2-I	-	661	661	-	-	-	-	-	-	-	-	-	-	-	-
Zinc + Zirconium	2-I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	663
Zinc aluminate ($ZnO \cdot Al_2O_3$) . .	4-II	-	-	-	-	-	-	-	-	-	1033	-	-	-	-	-
Zinc antimonide (ZnSb)	6-I	-	-	-	-	-	75	-	77	-	-	-	-	-	-	79
Zinc chromate ($ZnO \cdot Cr_2O_3$) . .	4-II	-	-	-	-	-	-	-	-	-	1063	-	-	-	-	-
Zinc chromate spinal	4-II	-	-	-	-	-	-	-	-	-	1063	-	-	-	-	-
Zinc ferrite ($ZnO \cdot Fe_2O_3$) . . .	4-II	-	-	-	-	-	1099	1101	1103	-	1105	-	-	-	-	-
Zinc fluoride (ZnF_2).	5	407	407	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc germanide oxide ($2\ ZnO \cdot GeO_2$)	4-II	-	-	-	-	-	-	-	-	-	1167	-	-	-	-	-
Zinc germanium oxide + + Magnesium germanium oxide.	4-II	-	-	-	-	-	-	-	-	-	1556	-	-	-	-	-
Zinc germanium oxide + Zinc (ortho-) silicate	4-II	-	-	-	-	-	-	-	-	-	1558	-	-	-	-	-
Zinc lead silicate glass	4-II	-	-	-	-	-	1825	-	-	-	-	-	-	-	-	-
Zinc magnesium aluminum borosilicate glass	4-II	-	-	-	-	-	-	-	-	-	1727	-	-	-	-	-
Zinc oxide (ZnO)	4-I	-	-	-	-	-	563	-	565	-	567	-	569	-	-	-
Zinc oxide + Magnesium oxide .	4-I	-	-	-	-	-	-	-	900	-	-	-	-	-	-	-
Zinc oxide + Strontium oxide + + Lithium zirconium silicate .	4-II	-	-	-	-	-	-	-	1554	-	-	-	-	-	-	-
Zinc oxide + Tin(ic) oxide . . .	4-I	-	-	-	-	-	-	-	902	-	-	-	-	-	-	-
Zinc oxide + Tin(ic) oxide + + Magnesium oxide.	4-I	-	-	-	-	-	-	-	904	-	-	-	-	-	-	-
Zinc selenide (ZnSe)	6-I	-	-	-	-	-	-	-	-	-	363	-	-	-	-	-
Zinc (ortho-) silicate ($2\ ZnO \cdot SiO_2$)	4-II	-	-	-	-	-	-	1340	-	-	1342	-	-	-	-	-
Zinc (ortho-) silicate + + Magnesium (ortho-) silicate .	4-II	-	-	-	-	-	-	-	-	-	1575	-	-	-	-	-
Zinc sulfide (ZnS)	5	-	-	-	-	-	726	-	-	-	-	-	-	728-730	-	-
Zinc (ortho-) titanate ($2\ ZnO \cdot TiO_2$)	4-II	-	-	-	-	-	-	1468	-	-	-	-	-	-	-	-
Zircaloy 2	2-I	-	-	-	-	-	699	702	704	-	-	-	709-714	-	-	-
Zircaloy 2, low nickel	2-I	-	-	-	-	-	-	702	-	-	-	-	-	-	-	-

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Zircaloy 4	2-I	-	-	-	-	-	-	702	-	-	-	-	-	-	-	-
Zircon	4-II	1344	-	-	-	-	1346	1348	-	-	-	-	-	-	-	-
Zircon 475	4-II	1344	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zircon CZ-5, Taylor	4-II	-	-	-	-	-	-	1348	1350	-	1352	-	-	-	-	-
Zircon + Beryl	4-II	-	-	-	-	-	-	-	-	-	1577	-	-	-	-	-
Zirconia	4-I	571	571	-	-	571	574	576	578	580	582-587	-	589-593	595	-	597
Zirconium (Zr)	1	1099	1099	-	-	1099	1102	1104	1106	1109	1111	-	1113-1117	-	-	1119
Zirconium no. 715	1	-	-	-	-	-	-	-	1106	-	-	-	-	-	-	-
Zirconium + ΣX_i	2-II	1580	-	-	-	-	1582	-	1584	-	1586	-	-	-	-	-
Zirconium + Aluminum	2-I	-	-	-	-	-	665	-	667	-	-	-	-	-	-	-
Zirconium + Aluminum + ΣX_i . .	2-II	1558	-	-	-	-	1560	-	1562	-	-	-	-	-	-	-
Zirconium + Boron	2-I	669	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zirconium + Hafnium	2-I	671	-	-	-	671	673	675	-	-	677	-	-	-	-	-
Zirconium + Hafnium + ΣX_i . .	2-II	-	-	-	-	-	-	1566	-	-	-	-	-	-	-	-
Zirconium + Indium	2-I	-	-	-	-	-	-	679	-	-	-	-	-	-	-	-
Zirconium + Iron + ΣX_i	2-II	-	-	-	-	-	-	1568	-	-	-	-	-	-	-	-
Zirconium + Molybdenum . . .	2-I	-	-	-	-	-	681	-	683	-	-	-	-	-	-	-
Zirconium + Niobium	2-I	-	-	-	-	-	685	687	689	-	-	-	-	-	-	-
Zirconium + Silver	2-I	-	-	-	-	-	-	691	-	-	-	-	-	-	-	-
Zirconium + Tantalum + ΣX_i . .	2-II	-	-	-	-	-	1570	-	-	-	-	-	-	-	-	-
Zirconium + Thorium	2-I	-	-	-	-	-	-	-	-	-	693-695	-	-	-	-	-
Zirconium + Tin	2-I	697	-	-	-	-	699	702	704	-	707	-	709-714	-	-	-
Zirconium + Tin + ΣX_i	2-II	-	-	-	-	-	1572	-	-	-	-	-	-	-	-	-
Zirconium + Titanium	2-I	-	-	-	-	-	-	715	-	-	-	-	-	-	-	-
Zirconium + Uranium	2-I	717	-	-	-	-	719	721	723	-	725	-	-	-	-	-
Zirconium + Uranium + ΣX_i . .	2-II	-	-	-	-	-	-	1574	-	-	-	-	1576-1578	-	-	-
Zirconium alloys (special designations)																
3ZI	2-II	1558	-	-	-	-	1560	-	1562	1564	-	-	-	-	-	-
Zircaloys (see Zircaloy)																
Zirconium aluminides																
$ZrAl_2$	6-I	-	39	-	-	-	-	-	-	-	41	-	-	-	-	-
$ZrAl_3$	6-I	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-
Zr_2Al_3	6-I	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-
Zr_3Al_2	6-I	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-
Zr_3Al_4	6-I	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-
Zirconium beryllides																
$ZrBe_6$	6-I	-	148	-	-	-	-	-	-	-	-	-	-	-	-	-
$ZrBe_9$	6-I	-	148	-	-	-	-	-	-	-	-	-	-	-	-	-

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Zirconium beryllides (cont.)																
$ZrBe_{13}$	6-I	-	148	-	-	-	-	150	152	-	154	-	-	156	-	-
$ZrBe_{16}$	6-I	-	148	-	-	-	-	-	-	-	-	-	-	-	-	-
Zr_2Be_{17}	6-I	-	-	-	-	-	-	-	-	-	-	-	-	156	-	-
Zirconium borides																
ZrB	6-I	-	-	-	-	-	-	-	281	-	-	-	-	-	-	-
ZrB_2	6-I	274	274	-	274	-	277	279	-	-	283	-	286-288	291	-	293
ZrB_{12}	6-I	274	274	-	-	-	277	-	281	-	-	-	-	-	-	-
Zirconium (di-)boride cermet .	6-II	842	-	-	-	-	844	846	848	-	850	-	-	-	-	-
Zirconium (di-)boride + + Molybdenum (di-)boride . .	6-I	723	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zirconium (di-)boride + + Molybdenum (di-)silicide . .	6-I	-	689	-	-	-	-	-	-	-	691	-	-	-	-	-
Zirconium (di-)boride + + Niobium (di-)boride	6-I	723	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zirconium (di-)boride + + Tantalum (di-)boride. . . .	6-I	723	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zirconium carbide (ZrC). . . .	5	263	263	-	-	-	265	267	269	271	273	-	277-283	-	-	285
Zirconium (pyro-)carbide . . .	5	-	-	-	-	-	-	-	-	-	273	-	-	-	-	-
Zirconium carbide + Graphite .	5	-	-	-	-	-	-	-	-	-	825	-	-	-	-	-
Zirconium-cobalt intermetallics ($ZrCo_2$)	6-I	-	685	-	-	-	-	-	-	-	-	-	-	-	-	-
Zirconium ferride ($ZrFe_2$) . . .	6-I	-	306	-	-	-	-	-	-	-	-	-	-	-	-	-
Zirconium fluoride (ZrF_4) . . .	5	407	407	-	-	407	-	-	-	-	-	-	-	-	-	-
Zirconium fluoride + Lithium fluoride	5	-	413	-	-	-	-	-	-	-	-	-	-	-	-	415
Zirconium fluoride + Rubidium fluoride	5	-	417	-	-	-	-	-	-	-	-	-	-	-	-	419
Zirconium fluoride + Sodium fluoride	5	-	421	-	-	-	-	-	-	-	-	-	-	-	-	423
Zirconium germanides																
ZrGe	6-I	-	323	-	-	-	-	-	-	-	-	-	-	-	-	-
$ZrGe_2$	6-I	-	323	-	-	-	-	-	-	-	-	-	-	-	-	-
Zr_3Ge	6-I	-	323	-	-	-	-	-	-	-	-	-	-	-	-	-
Zr_5Ge_3	6-I	-	323	-	-	-	-	-	-	-	-	-	-	-	-	-
Zirconium hydride (ZrH_2) . . .	5	459	-	-	-	-	-	461	463	-	465	-	-	-	-	-
Zirconium nitride (ZrN)	5	602	602	-	-	-	-	604	606	608	610	-	613-615	-	-	617-619
Zirconium (di-)oxide (ZrO_2) . .	4-I	571	571	-	-	571	574	576	578	580	582-587	-	589-593	595	-	597
Zirconium (di-)oxide foam. . .	4-I	-	-	-	-	-	-	-	-	-	587	-	-	-	-	-
Zirconium (di-)oxide mix 148 .	4-I	-	-	-	-	-	-	-	916	-	-	-	-	-	-	-
Zirconium (di-)oxide mix 187 .	4-I	-	-	-	-	-	-	-	916	-	-	-	-	-	-	-

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Zirconium (di-) oxide Norton mix 302	4-I	-	-	-	-	-	-	-	-	580	-	-	-	-	-	-
Zirconium (di-) oxide ZP-58 . .	5	-	-	-	-	-	-	799	-	-	-	-	-	-	-	-
Zirconium (di-) oxide ZP-74 . .	5	-	-	-	-	-	-	799	-	-	-	-	-	-	-	-
Zirconium (di-) oxide coating on Inconel	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1397	-	-
Zirconium (di-) oxide coating on Inconel X	6-II	-	-	-	-	-	-	-	-	-	-	-	1399	1401	-	-
Zirconium (di-) oxide + ΣX_i . .	5	-	-	-	-	-	-	799	-	-	-	-	-	-	-	-
Zirconium (di-) oxide + Aluminum oxide	4-I	-	-	-	-	-	-	-	-	906	908	-	-	-	-	-
Zirconium (di-) oxide + + Beryllium oxide + Aluminum oxide	4-I	-	-	-	-	-	-	-	-	-	910	-	-	-	-	-
Zirconium (di-) oxide + Calcium oxide	4-I	-	-	-	-	-	912	914	916	918	920	-	923	-	-	-
Zirconium (di-) oxide + Calcium oxide + Cerium (di-) oxide . .	4-I	-	-	-	-	-	-	-	925	-	-	-	-	-	-	-
Zirconium (di-) oxide + Calcium oxide + Silicon (di-) oxide . .	4-I	-	-	-	-	-	-	-	-	-	927	-	-	-	-	-
Zirconium (di-) oxide + Cerium (di-) oxide	4-I	-	-	-	-	-	-	-	-	929	931	-	-	-	-	-
Zirconium (di-) oxide + + Dysprosium oxide	4-I	-	-	-	-	-	-	-	-	-	934	-	-	-	-	-
Zirconium (di-) oxide + Hafnium + + Magnesium	5	-	-	-	-	-	-	797	-	-	-	-	-	-	-	-
Zirconium (di-) oxide + Hafnium (di-) oxide	4-I	-	936	-	-	-	-	-	-	-	-	-	-	-	-	-
Zirconium (di-) oxide + + Magnesium oxide	4-I	-	-	-	-	-	938	-	940	942	944	-	-	-	-	-
Zirconium (di-) oxide + + Magnesium oxide + Beryllium oxide	4-I	-	947	-	-	-	-	-	-	-	-	-	-	-	-	-
Zirconium (di-) oxide + Niobium (pent-) oxide	4-I	-	949	-	-	-	-	-	-	-	951	-	-	-	-	-
Zirconium (di-) oxide + + Phosphorus (pent-) oxide . .	4-I	-	-	-	-	-	-	-	-	-	953	-	-	-	-	-
Zirconium (di-) oxide + Silicon (di-) oxide	4-I	-	-	-	-	-	-	-	-	-	955	-	-	-	-	-
Zirconium (di-) oxide + Thorium (di-) oxide	4-I	-	-	-	-	-	-	-	-	-	958	-	-	-	-	-
Zirconium (di-) oxide + Titanium cermet	6-II	-	-	-	-	-	-	826	828	830	832	-	-	-	-	-
Zirconium (di-) oxide + Titanium (di-) oxide	4-I	-	-	-	-	-	-	-	-	-	960	-	-	-	-	-
Zirconium (di-) oxide + Uranium (di-) oxide	4-I	962	964	-	-	-	-	-	-	-	966	-	-	-	-	-
Zirconium (di-) oxide + Yttrium oxide	4-I	-	-	-	-	-	-	-	968	-	970	-	-	-	-	-
Zirconium (di-) oxide + Yttrium oxide + Cerium (di-) oxide . .	4-I	-	-	-	-	-	-	-	972	-		-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Zirconium (di-)oxide + Yttrium oxide + Zirconium cermet . . .	6-II	-	-	-	-	-	-	-	834	-	-	-	-	-	-	-
Zirconium (di-)oxide + + Zirconium cermet	6-II	-	-	-	-	-	-	-	-	836	838	-	-	-	-	840
Zirconium (di-)oxide ZT-15-M cermet	6-II	-	-	-	-	-	-	826	-	830	-	-	-	-	-	-
Zirconium phosphates																
$ZrO_2 \cdot P_2O_5$	4-II	-	-	-	-	-	-	-	-	-	1185	-	-	-	-	-
$2\ ZrO_2 \cdot P_2O_5$	4-II	-	-	-	-	-	-	-	-	-	1185	-	-	-	-	-
Zirconium (ortho-)silicate ($ZrO_2 \cdot SiO_2$)	4-II	1344	1344	-	-	-	1346	1348	1350	-	1352	-	-	-	-	-
Zirconium (ortho-)silicate + + Beryllium aluminum silicate	4-II	-	-	-	-	-	-	-	-	-	1577	-	-	-	-	-
Zirconium silicides																
ZrSi	6-I	517	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$ZrSi_2$	6-I	517	517	-	-	-	-	-	-	-	519	-	-	521	-	-
Zr_2Si	6-I	517	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zr_3Si_2	6-I	517	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zr_4Si	6-I	517	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zr_4Si_3	6-I	517	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zr_5Si_3	6-I	517	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zr_5Si_4	6-I	517	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zirconium tantalum carbide ($Ta_xZr_yC_z$)	5	-	-	-	-	-	-	-	-	-	287	-	290	-	-	-
Zirconium titanate ($ZrO_2 \cdot TiO_2$).	4-II	-	-	-	-	-	-	-	-	-	1470	-	-	-	-	-
Zirconium uranium carbide ($Zr_xU_{1-x}C$)	5	-	-	-	-	-	292	-	-	-	-	-	-	-	-	-
Zirconium-vanadium intermetallics (ZrV_2)	6-I	-	685	-	-	-	-	-	-	-	-	-	-	-	-	-
Zirox, grade A	4-I	-	-	-	-	-	-	-	-	-	582	-	-	-	-	-
ZT-15-M zirconium (di-)oxide cermet	6-II	-	-	-	-	-	-	826	-	830	-	-	-	-	-	-