ERDC/CERL TR-11-45

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Evaluation of Moisture-Cure Urethane Coatings for Compliance with Industry Specifications

Alfred D. Beitelman and Jeffrey P. Ryan

December 2011

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Final report

Prepared for U.S. Army Corps of Engineers
Washington, DC 20314-1000

Under Customer Order W74RDV82058922

Abstract: The Army Corps of Engineers has observed the performance of commercially available moisture-cure coatings on various hydraulic structures over the years, but has had no generic specifications—government or private industry—for reference in specifying the products. The Society for Protective Coatings (SSPC) recently published specifications for several moisture-cure urethane coatings. However, it cannot be assumed that other commercially available moisture-cure urethanes meet those specifications without confirmation through formal testing. In this project, commercially available products were obtained and tested against the requirements of the SSPC specifications. As a result of this work, new coating systems employing moisture-cure urethane paints were added to the Corps of Engineers Guide Specification UFGS 099702, Painting: Hydraulic Structures.

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Preface

This study was conducted for the Directorate of Civil Works, Headquarters, US Army Corps of Engineers, under Customer Order W74RDV82058922, Task SC80014, "Paint Evaluation for HSS," dated 23 July 2008. The proponent was Christopher H. Westbrook, CECW-CE; and the Technical Monitor was Peter J. Rossbach, Jr., CECW-CE.

The work was performed by the Materials and Structures Branch (CF-M) of the Facilities Division (CF), US Army Engineer Research and Development Center, Construction Engineering Research Laboratory (ERDC-CERL). The Project Manager was Alfred D. Beitelman (CEERD-CF-M). At the time of publication, Vicki L. Van Blaricum was Chief, CEERD-CF-M; Mike Golish was Chief, CEERD-CF; and Martin J. Savoie (CEERD-CV-ZT) was the Technical Director for Installations. The Deputy Director of ERDC-CERL was Dr. Kirankumar Topudurti and the Director was Dr. Ilker Adiguzel.

COL Kevin J. Wilson was the Commander and Executive Director of ERDC, and Dr. Jeffery P. Holland was the Director.

Unit Conversion Factors

Multiply	By	To Obtain
inches	0.254	centimeters
inch-pounds (force)	0.1129848	newton meters
mils	0.0254	millimeters

1 Introduction

1.1 Background

Moisture-cure (MC) urethane coating systems are quite common in Europe and have been marketed in this country for several decades. The Corps of Engineers has evaluated products from several manufacturers in the laboratory and applied the products in the field on immersed dams and atmospheric bridges, cranes, etc. All of this preliminary work has been done on a brand name basis using only major manufacturers of the products. All of the products did not perform equally. There are now numerous small companies marketing MC products, none of which have been subjected to any standardized testing regiment. To allow these coatings to be used on Corps projects without some level of testing would pose a significant potential for failure.

Specifications have been developed in the past several years by private industry notably by SSPC (SSPC: The Society for Protective Coatings) and MPI (Master Painters Institute). While these organizations have developed the specifications, there has not been any significant testing of the products for specification compliance.

1.2 Objective

The objective of this work is to evaluate a number of MC coatings and coating systems for compliance with industry specifications. Assuming the industry specifications can identify superior products, the specifications will be included in draft text for inclusion in the painting guide specification UFGS 099702, “Painting: Hydraulic Structures”.

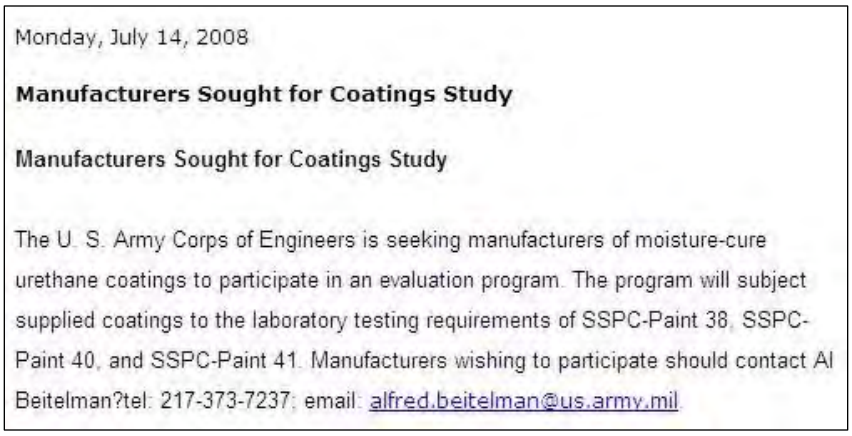
1.3 Approach

Work consisted of obtaining samples of MC products and subjecting them to the tests specified in SSPC Paint Specifications No. 38, 40, and 41. If products known to provide satisfactory performance in field applications are also found to comply with SSPC specifications, then they will be made available to Corps districts through draft revisions of the guide specification UFGS 099702 by referencing the industry specifications.

2 Testing of Products

2.1 Obtaining Samples

An advertisement was published by Journal of Protective Coatings & Linings (JPCL) in their Paint Square News on July 14, 2008 asking manufacturers to participate in the study by sending in samples to be tested along with associated documentation (Figure 1). Thirteen manufacturers requested additional information and four submitted the required samples and documentation (Appendix C). The samples submitted by the four manufacturers were then given laboratory numbers (Table 1).



Monday, July 14, 2008

Manufacturers Sought for Coatings Study

Manufacturers Sought for Coatings Study

The U. S. Army Corps of Engineers is seeking manufacturers of moisture-cure urethane coatings to participate in an evaluation program. The program will subject supplied coatings to the laboratory testing requirements of SSPC-Paint 38, SSPC-Paint 40, and SSPC-Paint 41. Manufacturers wishing to participate should contact Al Beitelman?tel: 217-373-7237; email: alfred.beitelman@us.army.mil

Figure 1. Advertisement for manufacturer submittals.

Table 1. Sample identification.

Laboratory Number	Manufacturer	Trade Designation	SSPC Specification Reference
MC 1	Sherwin Williams	Corothane I Galvapac	40
MC 2	Sherwin Williams	Corothane I Ironox B	41
MC 3	Sherwin Williams	Corothane I HS	38
MC 4	Superior Products	Rust Grip	41
MC 5	Wasser Coatings	MC-Zinc 100	40
MC 6	Wasser Coatings	MC Ferrox B 100	41
MC 7	Wasser Coatings	MC Luster 100	38

Laboratory Number	Manufacturer	Trade Designation	SSPC Specification Reference
MC 8	Wasser Coatings	MC-Miomastic 100 Red Oxide	41
MC 9	Indmar Coatings Corp.	Zinc-thane 2805	40
MC 10	Indmar Coatings Corp.	Chem-thane 2821	41
MC 11	Indmar Coatings Corp.	Chem-thane 2822HS	38

Three zinc-rich primers were submitted to be tested for compliance with SSPC Paint Specification No. 40 and were given laboratory numbers of MC1, MC 5, and MC 9. The manufacturer's documentation submitted with the samples, Appendix C, was reviewed to determine compliance with the pigment and resin requirements. The paints were tested for package stability in accordance with ASTM D 1849.

For all tests that required application to steel substrates, steel panels were prepared by blast cleaning to a white metal grade (SSPC SP 5) in an abrasive blast cabinet with aluminum oxide grit. The surface profile was 2.5 mils when measured according to ASTM D 4417 Method C using replica tape. The coatings were applied according to the manufacturer's directions using conventional air atomization spray equipment consisting of a DeVilbiss MBC gun with an E tip and needle. During application of the paint, the mixing and working properties were observed. The primers were allowed to cure according to the manufacturer's drying schedule. Three of the panels per manufacturer were then top-coated with the respective manufacturer's topcoat that was submitted for SSPC Paint Specification No. 41 testing. The applied thickness of each coat was measured prior to the application of the next coat in accordance with SSPC-PA2, using a Positector, Model 6000 thickness gage.

Weathering resistance was tested according to ASTM D 5894 which requires scribed panels to be cycled between a fluorescent UV/Condensation apparatus and a salt fog apparatus. The UV/Condensation portion of the test was performed in accordance with ASTM D 4587, Cycle 2, using a QUV Accelerated Weathering Tester complying with ASTM G 154. The salt fog exposure portion was performed in accordance with ASTM G 85 using a Q-Fog apparatus. The panels were cycled for 5000 hours and then in-

spected and evaluated for rust and blistering according to paragraph 8.1.1 of the SSPC Paint Specification No. 40 and ASTM D 614, respectively. The scribe on each panel was inspected and evaluated in accordance with ASTM D 1654.

Water immersion testing was performed in accordance with paragraph 7.4 of SSPC Paint Specification No. 40. The panels were completely immersed in de-ionized water with conductivity no higher than 5 μΩ-1 (5 μS). The test only required the panels be immersed for one year, but the panels were evaluated at one year and again at eighteen months. Upon removal from the water immersion, the panels were inspected and evaluated for rust and blistering according to paragraphs 7.4.2 and 7.4.3 of the specification. The scribe was inspected and evaluated according to ASTM D 1654.

Primer adhesion to the substrate was tested in accordance with ASTM D 4541 using a DeFelsko PosiTest AT-M adhesion tester which is designated as a Type V adhesion tester. The dollies used with the adhesion tester were 0.787 in (20 mm) in diameter. The panels used for this test were 1/8 in. (3.18 mm) thick steel panels. Three pulls per panel were performed and the average was recorded as the result. The three panels that had been topcoated were used to test topcoat adhesion in the same manner as the panels with just primer. The results recorded are the average of three pulls per panel.

Impact resistance was tested in accordance with ASTM D 2794 using a Paul N Gardner Co. Impact Apparatus with a 0.500 in. (12.7 mm) diameter indenter and a Panasonic Light Scope with 30X magnification for crack detection. The panels used for this test were 0.032 in. (0.813 mm) thick. ASTM D 2794 does not use the term “direct impact” but uses the terms “intrusion” and “extrusion”. Both intrusion and extrusion results were recorded.

2.2 SSPC Paint Specification No. 41

Five paints were submitted for performance testing for compliance with SSPC Paint Specification No. 41 and were given laboratory numbers of MC 2, MC 4, MC 6, MC 8, and MC 10. The manufacturer’s documentation submitted with the samples was reviewed to determine compliance with the pigment and resin requirements. The paints were tested for package stability in accordance with ASTM D 1849.

For all tests that required application to steel substrates, steel panels were prepared by blast cleaning to a white metal grade (SSPC SP 5) in an abrasive blast cabinet with aluminum oxide grit. The surface profile was 2.5 mils when measured according to ASTM D 4417 Method C using replica tape. All of the paints used were applied according to the manufacturer's directions using conventional air atomization spray equipment including a DeVilbiss MBC gun with an E tip and needle. The mixing and working properties were observed upon application.

A series of panels was set up with paint systems to test for adhesion with MC 2, MC 6, and MC 10 as intermediate coats. They were applied to three panels per manufacturer on top of each respective manufacturer's primer that had been submitted for SSPC Paint Specification No. 40. MC 4 and MC 8 were treated as primers and were applied to three panels per manufacturer and were not top-coated. The paints were allowed to cure according to the manufacturer's drying schedule. The applied thickness of each coat was measured prior to the application of the next coat in accordance with SSPC-PA2, using a Positector model 6000 thickness gage.

Weathering resistance was tested in accordance with ASTM D 5894 which requires scribed panels be cycled between a fluorescent UV/Condensation apparatus and a salt fog apparatus. The UV/Condensation was performed in accordance with ASTM D 4587, Cycle 2, using a QUV Accelerated Weathering Tester complying with ASTM G 154. The salt fog exposure was performed in accordance with ASTM G 85 using a Q-Fog apparatus. The panels were cycled for 1500 hours and then inspected and evaluated for rust and blistering according to paragraph 8.1.1 of the spec and ASTM D 614, respectively. The scribe on each panel was inspected and evaluated in accordance with ASTM D 1654.

Adhesion to the substrate was tested in accordance with ASTM D 4541 using a DeFelsko PosiTest AT-M adhesion tester which is designated as a Type V adhesion tester. The dollies used with the adhesion tester were 0.787 in (20 mm) in diameter. The panels used for this test were 1/8 in. (3.18 mm) thick steel panels. Three pulls per panel were performed and the average was recorded as the result. The three panels that had been topcoated were used to test topcoat adhesion in the same manner as the panels with just primer. The results recorded are the average of three pulls per panel.

Impact resistance was tested in accordance with ASTM D 2794 using a Paul N Gardner Co. Impact Apparatus with a 0.500 in. (12.7 mm) diameter indenter and a Panasonic Light Scope with 30X magnification for crack detection. The panels used for this test were 0.032 in. (0.813 mm) thick. ASTM D 2794 does not use the term "direct impact" but uses the terms "intrusion" and "extrusion". Both intrusion and extrusion results were recorded.

2.3 SSPC Paint Specification No. 38

Three paints were submitted to be performance tested for compliance with SSPC Paint Specification No. 38 and were given laboratory numbers of MC 3, MC 7, and MC 11. The manufacturer's documentation submitted with the samples was reviewed to determine compliance with the resin requirement. The paints were tested for package stability in accordance with ASTM D 1849.

For all tests that required application to steel substrates, steel panels were prepared by blast cleaning to a white metal grade (SSPC SP 5) in an abrasive blast cabinet with aluminum oxide grit. The surface profile was 2.5 mils when measured according to ASTM D 4417 Method C using replica tape. All of the paints were applied according to manufacturer's directions using conventional air atomization spray equipment consisting of a DeVilbiss MBC gun with an E tip and needle. The mixing and working properties were observed upon application. The coating system applied to the panels consisted of a primer, intermediate topcoat, and a final topcoat with each coating being specific to the manufacturer. The paint was allowed to cure in accordance with the manufacturer's drying schedule. The applied thickness of each coat was measured prior to the application of the next coat in accordance with SSPC-PA2, using a Positector model 6000 thickness gage.

Weathering resistance was tested in accordance with ASTM D 4587, Cycle 2, using a QUV Accelerated Weathering Tester complying with ASTM G 154. The panels were tested for color change and gloss reduction at 500, 1000, and 2000 hours in accordance with ASTM D 2244 and ASTM D 523 respectively. The color change was tested using a Konica Minolta Spectrophotometer CM-2500C using a standard D65 illuminant. The panels were then tested for gloss reduction using a BYK Gardner Micro-TRI-Gloss Glossmeter calibrated with a 60° black glass standard. The individual results from triplicate panels was recorded.

Adhesion to the primer was tested in accordance with ASTM D 4541 using a DeFelsko PosiTest AT-M adhesion tester which is designated as a Type V adhesion tester. The dollies used with the adhesion tester were 0.787 in (20 mm) in diameter. The panels used for this test were 1/8 in. (3.18 mm) thick steel panels. Three pulls per panel were performed and the average was recorded as the result.

Impact resistance was tested in accordance with ASTM D 2794 using a Paul N Gardner Co. Impact Apparatus with a 0.500 in. (12.7 mm) diameter indenter and a Panasonic Light Scope with 30X magnification for crack detection. The panels used for this test were 0.032 in. (0.813 mm) thick. ASTM D 2794 does not use the term “direct impact” but uses the terms “intrusion” and “extrusion”. Both intrusion and extrusion results were recorded.

Solvent (MEK) resistance was tested in accordance with ASTM D 5402 using Method A and the degree of chalking was tested in accordance with ASTM D 4214 using the wet finger method.

3 Test Results

3.1 SSPC Paint Specification No. 40

Upon completion of testing for compliance with SSPC Paint Specification No. 40, only one of the products failed to meet all requirements within the specification. All of the products, MC 1, MC 5, and MC 9, met the storage stability, mixing properties, and spraying properties requirements of the specification except for MC 9. MC 9 failed the storage stability requirement because the product packaging was bulging which constituted a failure according to paragraph 6.2 of the specification.

All of the products performed above specification requirements for adhesion to the substrate and topcoat adhesion to the primer (Appendix A, Table A1). Additionally, the products all met specification requirements when subjected to water immersion and accelerated weathering tests. There were no signs of rust or blisters, and the scribes showed no undercutting (Appendix A, Tables A2 and A3).

All of the products exceeded the minimum impact requirement for intrusion testing but fell far short of the specification value when evaluated on the extrusion side of the panel (Appendix A, Table A4). Although MC 9 exceeded the minimum requirement for impact resistance, it is worth noting that it had an impact resistance of 40 in-lb (4.52 N-m), which is lower than the other products.

3.2 SSPC Paint Specification No. 41

Testing for compliance with SSPC Paint Specification No. 41 has shown that all of the products, MC 2, MC 4, MC 6, MC 8, and MC 10, met the requirements of the specification for storage stability, mixing properties, and spraying properties except for MC 10. MC 10 failed the storage stability requirement because the product packaging was bulging thus constituting a failure according to paragraph 6.2 of the specification.

Test results showed that MC 4 and MC 8 exceeded the minimum requirements for adhesion to the substrate (Appendix A, Table A1). Additionally, Table A1 shows that the products that were used as intermediate topcoats exceeded the minimum requirement for adhesion to the primer.

All of the products subjected to the weathering resistance testing exceeded the minimum requirements for blistering and rust undercutting at the scribe (Appendix A, Table A2). Only two of the products, MC 2 and MC 4, passed the rust evaluation requirement of the specification. The other three products, MC 6, MC 8, and MC 10, showed a range of rusting with MC 10 being the worst. Dry film thickness measurements confirmed that all three products had been applied according to the manufacturer's recommendations. The three products were closely inspected under a 30X Bosch & Lomb MDL microscope and found to have no apparent pin holes or coating abnormalities. Areas of the coating were removed and it was observed that the rusting originated at the substrate.

All of the products exceeded the minimum impact requirement for intrusion testing but fell far short of the specification value when evaluated on the extrusion side of the panel (Appendix A, Table A4). It is worth noting that MC 10 had the lowest impact resistance out of all of the products. All of the products fell far short of meeting the impact value when evaluated on the extrusion side of the panel (Table A4).

3.3 SSPC Paint Specification No. 38

Testing for compliance with SSPC Paint Specification No. 38 has shown that all of the products, MC 3, MC 7, and MC 11, met the requirements within the specification for storage stability, mixing properties, and spraying properties except for MC 11. MC 11 failed the storage stability requirement because the product packaging was bulging which constitutes a failure according to paragraph 5.1 of the specification.

Testing results show that all of the products exceeded specification requirements for adhesion to the primer (Appendix A, Table A1).

All of the products (with the exception of a single panel) met accelerated weathering requirements for color change and gloss reduction required for the Level 1 performance (Appendix A, Tables A5 and A6). None of the panels met the Level 2 or Level 3 requirements for gloss retention. It should be noted that all of the products tested were white in color. One would not expect any significant color change of a white coating but the significant change in gloss indicates all the products are affected by UV light and implies that colored products may exhibit a significant color change in sunlight. SSPC Paint 38 has 3 levels of performance for both accelerated testing and South Florida exposure. The specification states that, "If no level is

specified, Level 3 will be assumed" and references South Florida testing. It is unknown how the performance of the products exposed in South Florida might compare to the accelerated testing performed in this program.

All of the products exceeded the minimum impact requirement for intrusion testing but fell far short of the specification value when evaluated on the extrusion side of the panel (Appendix A, Table A4). It is worth noting that MC 11 had the lowest impact resistance out of all of the products.

MC 3 was the only product that met the solvent (MEK) resistance requirement of the specification (Appendix A, Table A7). All of the products did exceed the minimum requirement used for evaluating the degree of chalking (Appendix A, Table A8).

4 Conclusions and Recommendations

This study has successfully shown that there are commercial products available that can meet the requirements of SSPC Specification No. 38, 40, and 41. The study has also shown that there are products available that come close to meeting specification requirements but pose a potential risk of failure if applied to Corps projects.

It has been shown that there are moisture-cure urethane products which meet SSPC specification requirements and can be successfully used on Corps projects. It is recommended that these specifications be included in UFGS 099702. The inclusion of these specifications will also benefit the Corps by eliminating inferior moisture-cured urethane products from being coated on Corps projects. It is also recommended that UFGS 099702 require the performance level of SSPC Paint 38 be a performance Level 1 using accelerated testing.

It is also recommended that all three SSPC specifications be edited so that terminology describing the method of impact resistance testing be made consistent with the ASTM test method. It is recommended that the method of impact resistance testing for all three specifications be the “intrusion” method with a minimum requirement of 60 in-lb (6.8 N-m).

Appendix A: Tables of Test Results

Table A1. Adhesion test results (ASTM D 4541).

	System			Pressure (MPa)		
1st Coat	2nd Coat	3rd Coat	4TH Coat	Pull 1	Pull 2	Pull 3
MC 1				16.2 (∞GF)	14.8 (∞GF)	14 (∞GF*)
MC 1	MC 2			19 (intercoat)	16.4 (intercoat)	18 (intercoat)
MC 1	MC 2	MC 3		16 (~30% GF)	17 (~40% GF)	7.4 (~60% GF)
MC 4				12.8 (∞GF)	17.2 (∞GF)	13.4 (∞GF)
MC 5				16	17	14
MC 5	MC 6			15 (60% GF)	15 (30% GF)	13.2 (∞GF)
MC 5	MC 6	MC 7		14.4 (60% GF)	14.2 (∞GF)	13.6 (∞GF)
MC 8				13.4	12.2	12.4
MC 9				13.6 (∞GF)	12.8 (∞GF)	13.2 (∞GF)
MC 9	MC 10			10.8 (∞GF)	11.8 (∞GF)	11 (∞GF)
MC 9	MC 10	MC 11		17.8	17.8	16.2
MC 9	MC 10	MC 11	MC 11	13.8 (80% GF)	14 (90%GF)	15.4 (60% GF)

*GF indicates glue failure.

Table A2. Accelerated weathering test results.

Sample	Rust Rating SSPC-VIS-2	Blister Rating ASTM D714	Scribe Rating ASTM D1654
MC 1	10	10	10
MC 2	10	10	8
MC 4	10	10	7
MC 5	10	10	10
MC 6	9G	10	9
MC 8	4P	10	10
MC 9	10	10	10
MC 10	3G	10	9

SSPC specifications require a minimum rust and blister ratings of 10 and scribe rating of 7.

Table A3. Water immersion test results.

Sample	Rust Rating SSPC-VIS-2	Blister Rating ASTM D714	Scribe Rating ASTM D1654
MC 1	10	10	10
MC 5	10	10	10
MC 9	10	10	10

SSPC Paint 38 requires minimum rust and blister ratings of 10 and a minimum scribe rating of 7.

Table A4. Impact resistance test results (ASTM D 2794).

Sample	Avg. Thickness (mils)	Minimum Force to Cause Cracking (Intrusion) (lbs-in)	Minimum Force to Cause Cracking (Extrusion) (lbs-in)
MC 1	4	155	3
MC 2	4	85	14
MC 3	3	83	6
MC 4	4	74	4
MC 5	4	140	3
MC 6	3	78	4
MC 7	5	78	7
MC 8	7	70	4
MC 9	3	100	3
MC 10	2	66	8
MC 11	5	70	3

SSPC specifications require a minimum direct impact of 6.8 N•m (60 inch-lb).

Table A5. Color change test results after accelerated weathering test (ASTM D 2244).

Duration of Cycle	MC3			MC7			MC11		
	Panel A	Panel B	Panel C	Panel A	Panel B	Panel C	Panel A	Panel B	Panel C
500 hours	0.98	0.91	1.26	1.17	1.16	1.19	0.66	1.21	0.46
1000 hours	1.23	1.33	1.49	1.58	1.61	1.66	2.19	2.76	2.45
2000 hours	1.88	2.09	2.01	1.70	1.80	1.82	2.54	3.04	2.89

SSPC Paint 38 requires a color change no greater than 3.0 ΔE* C.I.E.1976 L*A*B*.

Table A6. Gloss change test results after accelerated weathering test (ASTM D 523).

Duration of Cycle	MC3			MC7			MC11		
	A	B	C	A	B	C	A	B	C
Initial	88.9	88.9	88.9	42.7	42.7	42.7	13.1	12.7	12.7
500 hours	66	68.9	65.1	31.2	32.6	34.1	9.0	11.1	10.3
1000 hours	58.8	60.1	59.2	28.7	29.6	29.3	5.2	6.3	6.5
2000 hours	44.4	42.4	47.3	21.7	24.3	20.3	4.1	4.9	3.5

SSPC Paint 38 requires a 60˚gloss change no greater than 25% from original reading.

Table A7. MEK resistance test results (ASTM D 5402).

Sample	Avg. Thickness (mils)	# Rubs till Intermediate Topcoat Exposed
MC 3	3	121
MC 7	5	96
MC 11	5	72

Table A8.Degree of chalking test results (ASTM D 4214).

Sample	Chalk Rating
MC 3	3
MC 7	5
MC 11	5

Appendix B: Lab Data

Table B1. Product samples.

Laboratory Number	Manufacturer	Product	SSPC Specification
MC 1	Sherwin Williams	Corothane I Galvapac	40
MC 2	Sherwin Williams	Corothane I Ironox B	41
MC 3	Sherwin Williams	Corothane I HS	38
MC 4	Superior Products	Rust Grip	41
MC 5	Wasser Coatings	MC-Zinc 100	40
MC 6	Wasser Coatings	MC Ferrox B 100	41
MC 7	Wasser Coatings	MC Luster 100	38
MC 8	Wasser Coatings	MC-Miomastic 100 Red Oxide	41
MC 9	Indmar Coating Co	Zinc-thane 2805	40
MC 10	Indmar Coating Co	Chem-thane 2821	41
MC 11	Indmar Coating Co	Chem-thane 2822HS	38

Table B2. Adhesion test results.

	Pressure (MPa)		
System	Pull 1	Pull 2	Pull 3
MC 1	16.2 (GF)	14.8 (GF)	14 (GF)
MC 1,2	19 (intercoat)	16.4 (intercoat)	18 (intercoat)
MC 1,2,3	16 (~30% GF)	17 (~40% GF)	7.4 (~60% GF)
MC 4	12.8 (GF)	17.2 (GF)	13.4 (GF)
MC 5	16	17	14
MC 5,6	15 (60% GF)	15 (30% GF)	13.2 (GF)
MC 5,6,7	14.4 (60% GF)	14.2 (GF)	13.6 (GF)
MC 8	13.4	12.2	12.4
MC 9	13.6 (GF)	12.8 (GF)	13.2 (GF)
MC 9,10	10.8 (GF)	11.8 (GF)	11 (GF)
MC 9,10,11	17.8	17.8	16.2
MC 9,10,11, 11	13.8 (80% GF)	14 (90%GF)	15.4 (60% GF)

GF indicates virtually 100% glue failure.

Table B3. MEK resistance results.

Sample	Avg. Thickness (mils)	# Rubs till Intermediate Topcoat Exposed
MC3	3	121
MC7	5	96
MC11	5	72

Table B4. Chalking results for Spec 38.

Sample	Chalk Rating (ASTM 4214)
MC3	3
MC7	5
MC11	5

Table B5. Impact resistance results.

Sample	Avg. Thickness (mils)	Minimum Force to Cause Cracking (Intrusion) (lbs-in)	Minimum Force to Cause Cracking (Extrusion) (lbs-in)
MC1	4	155	3
MC2	4	85	14
MC3	3	83	6
MC4	4	74	4
MC5	4	140	3
MC6	3	78	4
MC7	5	78	7
MC8	7	70	4
MC9	3	100	3
MC10	2	66	8
MC11	5	70	3

Table B6. Water immersion test results for Spec. 40.

Sample	Rust Rating SSPC-VIS-2	Blister Rating ASTM D714	Scribe Rating ASTM D1654
MC1	10	10	10
MC5	10	10	10
MC9	10	10	10

Table B7. Accelerated weathering test results for Spec. 40 and 41.

Sample	Rust Rating SSPC-VIS-2	Blister Rating ASTM D714	Scribe Rating ASTM D1654	Comments
MC1	10	10	10	1/3 panels with rust rating 9G
MC2	10	10	8	1/3 panels with rust rating 9G
MC4	10	10	7	
MC5	10	10	10	1/3 panels with rust rating 9G
MC6	9G	10	9	1/3 panels with rust rating 8G
MC8	4P	10	10	
MC9	10	10	10	
MC10	3G	10	9	

Table B8. Color change results for accelerated weathering test for Spec. 38.

Duration of Cycle	MC3			MC7			MC11		
	A	B	C	A	B	C	A	B	C
500 hours	0.98	0.91	1.26	1.17	1.16	1.19	0.66	1.21	0.46
1000 hours	1.23	1.33	1.49	1.58	1.61	1.66	2.19	2.76	2.45
2000 hours	1.88	2.09	2.01	1.70	1.80	1.82	2.54	3.04	2.89

Table B9. Gloss change results for accelerated weathering test for Spec. 38.

Duration of Cycle	MC3			MC7			MC11		
	A	B	C	A	B	C	A	B	C
Initial	88.9	88.9	88.9	42.7	42.7	42.7	13.1	12.7	12.7
500 hours	66	68.9	65.1	31.2	32.6	34.1	9.0	11.1	10.3
1000 hours	58.8	60.1	59.2	28.7	29.6	29.3	5.2	6.3	6.5
2000 hours	44.4	42.4	47.3	21.7	24.3	20.3	4.1	4.9	3.5

Table B10. Tristimulus data for change in color (ΔE) calculations.

MC 3A												
	Initial/Standard t=0 hours			t = 500 hours			t = 1000 hours			t = 2000 hours		
	x	y	Y	x	y	Y	x	y	Y	x	y	Y
	0.307	0.3274	86.71	0.3085	0.3297	87.05	0.3088	0.3293	88.57	0.3091	0.3298	90.31
	0.3082	0.3281	87.08	0.3081	0.3288	87.32	0.3095	0.3299	88.66	0.3098	0.3311	89.85
	0.311	0.3281	86.82	0.308	0.3288	87.01	0.3092	0.3295	88.75	0.3096	0.3297	89.99
average x, y, Y	0.308733	0.327867	86.87	0.3082	0.3291	87.12667	0.309167	0.329567	88.66	0.3095	0.3302	90.05
X	81.80052257			81.59355414			83.17199353			84.40483041		
Y	86.87			87.12666667			88.66			90.05		
Z	96.2847438			96.02200547			97.18793163			98.25867656		
L*	98.21788982			98.33026885			98.99706796			99.5949241		
a*	-1.3532083			-2.252024021			-1.983079906			-2.132701087		
b*	-3.013607977			-2.637821421			-2.293427157			-1.996508449		
ΔL*				0.112379034			0.779178141			1.377034285		
Δa*				-0.898815721			-0.629871606			-0.779492787		
Δb*				0.375786556			0.72018082			1.017099528		
ΔE*				0.980670323			1.233903249			1.881043295		
Gloss (60 ° reflec-tance)	88.9			66.0			58.8			44.4		

MC 3B												
	Initial/Standard t=0 hours			t = 500 hours			t = 1000 hours			t = 2000 hours		
	x	y	Y	x	y	Y	x	y	Y	x	y	Y
	0.307	0.3274	86.71	0.3093	0.3294	86.86	0.3088	0.3296	88.28	0.3084	0.3291	91.45
	0.3082	0.3281	87.08	0.3095	0.3295	87.32	0.3092	0.3298	88.16	0.3097	0.3286	91.38
	0.311	0.3281	86.92	0.3093	0.3297	87.16	0.3105	0.3308	88.21	0.3092	0.3301	91.41
average x, y, Y	0.3087	0.3278	86.9033	0.3093	0.3295	87.113	0.3095	0.330067	88.216	0.3091	0.3292	91.4133
X	81.83191067			81.78220177			82.71982933			85.81452116		
Y	86.90333333			87.11333333			88.21666667			91.41333333		
Z	96.32168971			95.4580963			96.33274254			100.3991955		
L*	98.23249699			98.32443642			98.80507139			100.1753636		
a*	-1.35338136			-1.849117339			-2.051789693			-1.887834112		
b*	-3.013993383			-2.256067317			-2.034444516			-2.446991103		
ΔL*				0.091939425			0.572574399			1.94286658		
Δa*				-0.495735978			-0.698408333			-0.534452751		
Δb*				0.757926066			0.979548867			0.56700228		
ΔE*				0.910307058			1.332340656			2.093289726		
Gloss (60 ° reflec-tance)	88.9			68.9			60.1			42.4		

MC 3C												
	Initial/Standard t=0 hours			t = 500 hours			t = 1000 hours			t = 2000 hours		
	x	y	Y	x	y	Y	x	y	Y	x	y	Y
	0.307	0.3274	87.61	0.3105	0.331	87.89	0.3095	0.3301	89.13	0.3096	0.3304	90.52
	0.3082	0.3281	87.08	0.3093	0.33	87.33	0.3092	0.3298	89.27	0.3097	0.3304	90.89
	0.311	0.3281	87.22	0.3095	0.3296	87.61	0.3097	0.3305	89.15	0.3101	0.3305	90.69
average x, y, Y	0.30873	0.32786	87.3033	0.30976	0.3302	87.61	0.309467	0.33013	89.1833	0.3098	0.3304	90.7
X	82.20856785			82.18854533			83.60037022			85.03639665		
Y	87.30333333			87.61			89.18333333			90.7		
Z	96.76504067			95.52550071			97.35967286			98.75164935		
L*	98.40749248			98.54129403			99.2228886			99.87238714		
a*	-1.355454637			-1.972114302			-2.110306849			-2.094312959		
b*	-3.018610591			-1.929089244			-2.022151026			-1.854206163		
ΔL*				0.13380155			0.815396124			1.464894659		
Δa*				-0.616659665			-0.754852211			-0.738858322		
Δb*				1.089521347			0.996459565			1.164404428		
ΔE*				1.259058681			1.492516119			2.011881123		
Gloss (60 ° reflectance)	88.9			65.1			59.2			47.3		

MC 7A												
	Initial/Standard t=0 hours			t = 500 hours			t = 1000 hours			t = 2000 hours		
	x	y	Y	x	y	Y	x	y	Y	x	y	Y
	0.3084	0.3291	36.06	0.3082	0.3288	37.74	0.3074	0.328	38.09	0.3078	0.3284	38.44
	0.308	0.329	35.46	0.3078	0.3285	37.95	0.3079	0.3278	38.55	0.3071	0.3276	38.62
	0.307	0.3282	36.91	0.308	0.3282	37.22	0.3083	0.3273	37.58	0.3078	0.3283	37.89
average x, y, Y	0.3078	0.32876	36.1433	0.308	0.3285	37.6366	0.30786	0.3277	38.0733	0.30756	0.3281	38.31667
X	33.83833925			35.28795535			35.76902723			35.91871211		
Y	36.14333333			37.63666667			38.07333333			38.31666667		
Z	39.95445233			41.64666159			42.34114061			42.54812218		
L*	69.26816681			70.42669573			70.75965682			70.9440965		
a*	-1.714366607			-1.557039856			-1.314031421			-1.589936176		
b*	-2.118008968			-2.196921569			-2.458714042			-2.388064523		
ΔL*				1.15852892			1.491490011			1.675929687		
Δa*				0.157326751			0.400335186			0.12443043		
Δb*				-0.078912601			-0.340705074			-0.270055555		
ΔE*				1.171822582			1.581420457			1.702102597		
Gloss (60 ° reflectance)	42.7			31.2			28.7			21.7		

MC 7B												
	Initial/Standard t=0 hours			t = 500 hours			t = 1000 hours			t = 2000 hours		
	x	y	Y	x	y	Y	x	y	Y	x	y	Y
	0.3084	0.3291	36.06	0.3082	0.3286	37.62	0.3076	0.3285	38.34	0.3086	0.3293	39.14
	0.308	0.329	35.46	0.3077	0.3285	37.15	0.3081	0.3283	37.42	0.3071	0.3276	38.26
	0.307	0.3282	36.91	0.3075	0.3282	38.11	0.3084	0.3291	38.92	0.3079	0.3284	38.01
average x, y, Y	0.3078	0.32876	36.1433	0.3078	0.32843	37.6266	0.30803	0.32863	38.2266	0.30786	0.32843	38.47
X	33.83833925			35.26282757			35.83047233			36.06098853		
Y	36.14333333			37.62666667			38.22666667			38.47		
Z	39.95445233			41.67459792			42.26297461			42.60084949		
L*	69.26816681			70.41904058			70.87597033			71.05991802		
a*	-1.714366607			-1.61211807			-1.602121714			-1.59710012		
b*	-2.118008968			-2.243922464			-2.164552843			-2.251254874		
ΔL*				1.150873765			1.607803517			1.791751214		
Δa*				0.102248536			0.112244892			0.117266487		
Δb*				-0.125913496			-0.046543875			-0.133245906		
ΔE*				1.162247562			1.612388724			1.800521678		
Gloss (60 ° reflectance)	42.7			32.6			29.6			24.3		

MC 7C												
	Initial/Standard t=0 hours			t = 500 hours			t = 1000 hours			t = 2000 hours		
	x	y	Y	x	y	Y	x	y	Y	x	y	Y
	0.3084	0.3291	36.06	0.3081	0.3297	37.23	0.3079	0.3284	38.86	0.3084	0.3294	39.06
	0.308	0.329	35.46	0.3067	0.3289	37.67	0.3079	0.3282	36.74	0.3099	0.3307	37.98
	0.307	0.3282	36.91	0.3075	0.3276	38.08	0.3083	0.3287	39.24	0.3074	0.3281	38.42
average x, y, Y	0.3078	0.32876	36.1433	0.3074	0.32873	37.66	0.30803	0.32843	38.28	0.3085	0.3294	38.48667
X	33.83833925			35.21985196			35.90231199			36.05252715		
Y	36.14333333			37.66			38.28			38.48666667		
Z	39.95445233			41.68108903			42.37102202			42.2995028		
L*	69.26816681			70.44455249			70.91635428			71.07248876		
a*	-1.714366607			-1.872812597			-1.527161411			-1.680512011		
b*	-2.118008968			-2.207788345			-2.224305013			-1.869492705		
ΔL*				1.176385676			1.648187471			1.804321954		
Δa*				-0.15844599			0.187205196			0.033854595		
Δb*				-0.089779377			-0.106296045			0.248516263		
ΔE*				1.190398558			1.662187286			1.821670712		
Gloss (60 ° reflectance)	42.7			34.1			29.3			20.3		

MC 11A												
	Initial/Standard t=0 hours			t = 500 hours			t = 1000 hours			t = 2000 hours		
	x	y	Y	x	y	Y	x	y	Y	x	y	Y
	0.3024	0.327	20.63	0.3028	0.3265	21.28	0.3071	0.3309	22.37	0.3076	0.3313	22.13
	0.3038	0.3284	20.22	0.3046	0.3286	20.51	0.3072	0.331	22.47	0.3076	0.3311	22.69
	0.3051	0.3293	19.99	0.3047	0.3289	20.73	0.3072	0.3315	21.13	0.3074	0.3312	22.13
average x, y, Y	0.303767	0.328233	20.28	0.304033	0.328	20.84	0.307167	0.331133	21.99	0.307533	0.3312	22.3166
X	18.76831929			19.31723984			20.39841454			20.72197732		
Y	20.28			20.84			21.99			22.31666667		
Z	22.73699604			23.37934553			24.01988021			24.34259595		
L*	54.32884881			54.97031998			56.2524539			56.60847255		
a*	-2.575105603			-2.437937897			-2.405183025			-2.314361269		
b*	-2.326839651			-2.373861695			-1.292192429			-1.239543702		
ΔL*				0.641471168			1.923605088			2.279623732		
Δa*				0.137167706			0.169922578			0.260744334		
Δb*				-0.047022043			1.034647223			1.08729595		
ΔE*				0.657655922			2.190804667			2.539071572		
Gloss (60 ° reflectance)	13.1			9.0			5.2			4.1		

MC 11B												
	Initial/Standard t=0 hours			t = 500 hours			t = 1000 hours			t = 2000 hours		
	x	y	Y	x	y	Y	x	y	Y	x	y	Y
	0.3048	0.329	19.44	0.3026	0.3256	20.26	0.3065	0.3301	22.37	0.3067	0.3299	22.45
	0.3044	0.3284	19.07	0.3035	0.327	21.09	0.3063	0.3298	22.47	0.3067	0.3302	22.3
	0.3038	0.3282	20.38	0.3034	0.3267	20.09	0.3071	0.3311	21.13	0.3069	0.3308	22
average x, y, Y	0.30433	0.32853	19.63	0.30316	0.32643	20.48	0.306633	0.330333	21.99	0.306767	0.3303	22.25
X	18.18404018			19.02027979			20.41231181			20.66472399		
Y	19.63			20.48			21.99			22.25		
Z	21.93636567			23.23841111			24.16681029			24.44827934		
L*	53.56929863			54.55928575			56.2524539			56.53609924		
a*	-2.453112036			-2.229329873			-2.335019598			-2.288775402		
b*	-2.168473598			-2.831392286			-1.548311268			-1.547021465		
ΔL*				0.989987117			2.683155273			2.96680061		
Δa*				0.223782163			0.118092439			0.164336634		
Δb*				-0.662918688			0.62016233			0.621452133		
ΔE*				1.212276427			2.756423291			3.035640813		
Gloss (60 ° reflectance)	12.7			11.1			6.3			4.9		

MC 11C												
	Initial/Standard t=0 hours			t = 500 hours			t = 1000 hours			t = 2000 hours		
	x	y	Y	x	y	Y	x	y	Y	x	y	Y
	0.3033	0.3277	20.35	0.3038	0.3277	20.2	0.3072	0.3312	21.86	0.3074	0.3308	22.34
	0.3042	0.329	20	0.3042	0.3283	19.92	0.3073	0.3313	21.9	0.3074	0.3309	22.26
	0.3045	0.3291	19.28	0.3034	0.3266	20.18	0.3069	0.3309	21.86	0.3075	0.3311	22.31
average x, y, Y	0.304	0.3286	19.8766	0.3038	0.32753	20.1	0.30713	0.33113	21.8733	0.30743	0.33093	22.30333
X	18.38863867			18.64353755			20.28799007			20.71954506		
Y	19.87666667			20.1			21.87333333			22.30333333		
Z	22.22363765			22.62426216			23.894646			24.37236738		
L*	53.85948451			54.12015664			56.1244502			56.59400943		
a*	-2.59261338			-2.343160483			-2.412080995			-2.264175128		
b*	-2.198905644			-2.482065974			-1.293762666			-1.315999768		
ΔL*				0.260672133			2.26496569			2.734524919		
Δa*				0.249452897			0.180532385			0.328438253		
Δb*				-0.283160329			0.905142979			0.882905876		
ΔE*				0.458646357			2.445801572			2.892234604		
Gloss (60 ° reflectance)	12.7			10.3			6.5			3.5		

Appendix C: Manufacturers' Documentation

Manufacturer Participation in Testing Program

The U. S. Army Corps of Engineers is seeking manufacturers of moisture cure urethane coatings interested in participating in an evaluation program. The program will subject supplied coatings to the laboratory testing requirements of SSPC Paint 38, SSPC Paint 40, and SSPC Paint 41. Manufacturers wishing to participate should contact Al Beitelman at 217-373-7237 {alfred.beitelman@us.army.mil}

Products to be tested must be standard production materials for the manufacturer. To be considered for inclusion in the study, the following must be submitted:

1. A one gallon size liquid sample of each product to be tested delivered to the laboratory. (Shipping address below.)
2. The liquid sample must have the manufacturer's standard label for the product and product data information which includes application recommendations.
3. Any thinner that would normally be required for conventional spray application at laboratory conditions.
4. A statement identifying the above SSPC specification the product is to be tested under.
5. A statement specifically affirming the product meets the Compositional Requirements (Resin content, Pigment requirement) of the specification.
6. The manufacturers calculated VOC for the product.
7. The MSDS for the product.
8. When samples for SSPC Paint 38 are submitted, a medium gray color (reflectance 20-24) is preferred but not required.

Shipping address:

Al Beitelman
U. S. Army ERDC-CERL
2902 Newmark Drive
Champaign, IL 61822

To: Albert Beitelman, CERL

From: John Grey, Superior Products
(843) 813-6402

Date: October 21, 2008

Re: Moisture Cure Urethane Testing Program

1. 1 gallon of Rust Grip – primer and topcoat all in one – enclosed.
2. Product label must show application recommendations – on gallon container.
3. Thinner – Not required.
4. Statement of SSPC Specification Conformance – attached.
5. Statement of affirming compositional requirements of the SSPC Specification – attached.
6. Manufactures calculated VOC for the product – attached.
7. Product MSDS
8. SSPC 38 – medium gray color preferred – Rust Grip cannot be tinted but is gray in color.

STATEMENT IDENTIFYING THE SSPC SPECIFICATION THE PRODUCT IS TO BE TESTED UNDER:

SSPC 38 – SINGLE COMPONENT MOISTURE CURE WEATHERABLE ALIPHATIC POLYURETHANE TOPCOAT. It is intended to be used as a topcoat that provides good color and gloss retention. Generally applied over a primer or intermediate coat.

SSPC 40 - ZINC RICH MOISTURE CURE POLYURETHANE PRIMER – PERFORMANCE BASED
This specification contains performance requirements for an organic zinc-rich moisture cure polyurethane with a thermoset binder.

SSPC 41 – MOISTURE CURE POLYURETHANE PRIMER OR INTERMEDIATE TOPCOAT, MICACEOUS, IRON OXIDE REIN
This standard contains performance requirements for a moisture-cure aromatic polyurethane coating with a thermoset binder and micaceous iron oxide pigment reinforcement.

Since SSPC paint specifications are designed for zinc rich primers, intermediate coats and topcoat systems, we feel the only SSPC specification we can work under is SSPC 38. This is a common problem Rust Grip faces, performing tests designed for other type of paint systems. It like comparing apples and oranges. You must follow Rust Grip instructions because we are not applied in the same manner as traditional 3-coat systems. Any deviations from our application instructions will result in a failure. We are not a 3-coat system and cannot be applied as such.

Rust Grip is a ONE-COAT, one-part paint system. It is a primer and topcoat all in one. It cannot be tinted due to its metallic content.

RUST GRIP®

TECHNICAL DATA SHEET (6/27/06)

DESCRIPTION:

RUST GRIP is a one-part polyurethane metallic pigmented coating that absorbs atmospheric moisture to cure. Upon curing, RUST GRIP provides a protective coating of superior adhesion, flexibility, abrasion- and impact-resistance. It is resistant to most chemical solvents and acid splash.

RUST GRIP can be used as a primer or a stand-alone coating. It is patented as an encapsulant of lead-based paints and other toxic materials, including asbestos. RUST GRIP can be applied over cleaned flash rust or most firmly bonded paints. In most cases, no near-white metal blasting is required.

TYPICAL USES:

* As an encapsulant for lead-based paints, rust and other biohazardous materials
* As a protective coating on metal, concrete, wood, etc. to add strength and prevent deterioration
* As a single coat for bridges, oil platforms, roofs, etc. with minimal surface preparation
* As a moisture barrier to stop water penetration, contamination, and mold/mildew

APPLICATION METHODS:

Surfaces should be clean, dry and sound; all dirt, salts, oil, tar, grease and film must be removed prior to application. Can be sprayed, brushed or rolled in 2 coats (20-30 minutes apart). Before using, stir thoroughly--without creating a vortex--to blend all metallic paste from the bottom. For specific instructions on surface preparation, mixing and application, refer to the SPI's application instructions for RUST GRIP. **NOTE: SURFACE MUST BE COMPLETELY DRY**.

PHYSICAL DATA:

* Solids: By weight 62.2% / By Volume 51.37%
* Cure time at 70F (21C): 2 hours to touch. Overcoat with RUST GRIP or other coatings immediately after surface is dry to the touch to achieve proper adhesion. Higher temperatures and humidity will shorten cure times, lower temperatures will slow curing. Must be overcoated within 2 hours or within 1 hour after reaching the dry-to-touch stage, or the surface must be lightly sanded to achieve good adhesion.
* Lead and Chromate free
* Cures by reacting to moisture in the air
* Weight: 9.18 lbs. per gallon
* Surface Tensile Strength: 6,780+ psi
* VOC Level: 414 grams/liter
* Impact Resistance: 200+ psi front/160+ psi back
* Shelf Life: up to 3 years (unopened) under appropriate storage conditions (see MSDS)

TESTS AND CERTIFICATIONS:

1) Tensile Properties (6,780 psi after 3 weeks)
2) USDA Approved
3) Marine Approvals for salt water/maritime use:
   *DNV (Det Norske Veritas) *US Coast Guard
   *ABS (American Bureau of Shipping)
   *IMO (International Marine Organization)
4) Factory Mutual Approval
5) E-108-00: spread of flame on pitched roofs (Class "A" non-combustible)
6) Mildew Resistance - (ASTM D3273, 3274)
7) Chemical Resistance (24 hours/12 reagents)
8) Flexibility (Mandrel Bend: ASTM D522) - 1/8"
9) Direct Impact Resistance (ASTM D2794)
10) Adhesion (ASTM D3359, D4541)
11) Water Vapor Transmission (ASTM D1653)
12) Surface Burning Characteristics (E84)
13) Weathering (2000 hours) - China
14) Scrub Resistance (ASTM D2486)
15) Biohazard Encapsulation Approval - (ASTM E1795)

SAFETY PRECAUTIONS:

Do not use this product without first taking all appropriate safety measures to prevent property damage and injuries. These measures may include, without limitation: proper ventilation, use of proper lamps, wearing of protective clothing and masks, tenting, and proper separation of application areas.

This coating is flammable. Keep away from flame, fire, or other sources of ignition.

KEEP OUT OF REACH OF CHILDREN.

For more specific safety procedures, please refer to the RUST GRIP Material Safety Data Sheet.

MINIMUM SPREAD RATES:

Film Thickness: Metal (non bridges) - 8 mils wet / 4 mils dry; Concrete - 10 mils wet / 5 mils dry; Wood - 8 mils wet / 4 mils dry

SUPERIOR PRODUCTS INTERNATIONAL II, INC.

RUST GRIP®

APPLICATION INSTRUCTIONS (8/4/06)

Rust Grip is a one-part, moisture-cured polyurethane that can be used as a primer, topcoat or encapsulant. It can be applied to metal, concrete, masonry and wood.

SURFACE PREPARATION

New construction (metal, concrete, masonry, wood):

1) Power wash surface (3,500 psi) with a citrus cleaner to remove dirt, oil, tar, grease and film. In coastal areas, Chlor-Rid should be used in addition to the citrus cleaner to remove salts.
2) Surface must be completely dry (if surface moisture persists, wipe down with Acetone prior to application).

NOTE: Flash rust on the substrate surface will not hinder the adhesion strength of Rust Grip. Rust Grip can be applied directly over flash rust when completely dry.

Previously coated (metal, concrete, masonry, wood):

1) Power wash surface (3,500 psi) with citrus cleaner to remove loose or flaking paint, and to clean the surface of dirt, oil, tar, grease and film. Chlor-Rid should also be used to remove salts.
2) Wipe down with Acetone to remove any loose particles and to completely dry the surface.
3) Surface must be completely dry before applying the coating.
4) If existing coating surface is glossed, sanding or roughing the surface must be done before application -- no glossed surface.

NOTE: If pack rust, scale or bright glossy painted surfaces exist, they must be removed by grit blast, power tool or needle gun down to surface rust. Once removed, begin with step 1 (power wash).

MIXING

1) Rust Grip can be mixed by hand or with a power drill using low speed.
2) When the container is opened, the coating will be a yellowish green color. Mix continuously until the entire surface of the coating turns a silver gray color. Once the coating color is completely silver grey, mix for two more minutes making sure the paste is off of the bottom. (Metallics are visible when the coating is stirred properly.)

NOTE: Once a container is opened, the product must be used or repackaged and sealed well in an unlined metal can. If left open, the product will harden in the container.

POT LIFE

Four hours at 70F. degrees, and 60% humidity or higher.

APPLICATION

1) Rust Grip can be applied by brush (soft bristle), roller (1/4-inch nap) or spray (use a standard airless sprayer--3,000 psi or less--with a .015 tip).
2) In all applications (brush, roller or spray), use the cross-hatch method (side-to-side, then top-to-bottom) slowly to prevent pinholes.
3) If using a brush or roller, keep them very wet at all times to insure proper coverage.
4) If spraying, use half-speed and cross hatch to insure proper coverage.
5) If encapsulating rust, lead-based paint, other biohazardous materials or bridges, brushing is the preferred application method. Apply the first coat by brush (keeping it very wet at all times), using the cross-hatch method. Go about 30 feet then return to the beginning and apply a second coat identical to the first. This method will insure the coating is worked into the pores and fully encapsulates the existing surface to, while leaving enough coating over the surface to avoid pinholes.
6) Overcoating Rust Grip with Rust Grip has to be done within four hours or less. All other compatible overcoatings have to be utilized within fourteen days.

NOTE: The number of coats necessary and the thickness of each coat will be in accordance with the job specifications.

CURE TIME

1) Two hours to touch at 70F. degrees.
2) Overcoating window is four hours at 70F. degrees and up to two weeks. The exception is overcoating Rust Grip with Rust Grip, which has to be done within four hours or less.
3) Fully cures in thirty days.
4) After three weeks, the coating will have a surface tensile strength of 6,780 psi. That number could easily double after four months.

TEMPERATURE

1) Apply between 30F. and 100F. degrees.
2) Store between 30F. and 100F. degrees according to hazmat standards indicated on MSDS.

CLEAN-UP OF EQUIPMENT

1) If breaks are taken, spray systems should be flushed with solvent.
2) After completion, spray systems should be flushed and cleaned with solvent.
3) After completion, brushes and rollers should be discarded.

Notice

. 142, No. 17 — April 26, 2008

Volatile Organic Compound (VOC) Concentration Limits for Architectural Coatings Regulations

Statutory authority

Canadian Environmental Protection Act, 1999

Sponsoring department

Department of the Environment

REGULATORY IMPACT ANALYSIS STATEMENT

(*This statement is not part of the Regulations.*)

Description

Purpose

The purpose of the proposed *Volatile Organic Compound (VOC) Concentration Limits for Architectural Coatings Regulations* (the proposed Regulations), to be made pursuant to subsection 93(1) of the *Canadian Environmental Protection Act, 1999* (CEPA 1999), is to protect the environment and health of Canadians by setting VOC

Item	Column 1	Column 2	Column 3
	Architectural Coating	VOC Concentration Limit (g/L)	Anniversary of the Day on which these Regulations Come into Force
1.	Antenna coating, including coatings for an antenna2019;s associated structural appurtenances	530	1st
2.	Thermoplastic rubber coating and mastic, incorporating no less than 40% by weight of thermoplastic rubbers in its total resin solids, for application to roofing or other structural surfaces	550	1st
3.	Metallic pigmented coating, containing at least 48 g of elemental metallic pigment per litre of coating as applied	500	1st
4.	Bituminous roof primer	350	3rd
5.	Any other bituminous roof coating	300	3rd
6.	Non-bituminous roof coating, for application to roofs to prevent penetration of the substrate by water or to reflect heat and ultraviolet radiation	250	1st
7.	Calcimine recoater, flat solvent-borne coating for re-coating calcimine-painted surfaces	475	1st
8.	Bond breaker, for application between layers of concrete	350	1st
9.	Concrete curing compound, for application to freshly poured concrete to retard the evaporation of water	350	1st
10.	Concrete surface retarder,	780	1st

MATERIAL SAFETY DATA SHEET

SECTION I - PRODUCT INFORMATION:
PRODUCT IDENTIFIER: **RUST GRIP**
MANUFACTURER: **SUPERIOR PRODUCTS INT'L II, INC.**
ADDRESS: **10835 W. 78th St., Shawnee, KS 66214**
PRODUCT USE: **Corrosion coating protection for steel and concrete surfaces**
EMERGENCY TELEPHONE NUMBER: **800-424-9300; 202/483-7616**

SECTION II - HAZARDOUS INGREDIENTS:

HAZARDOUS INGREDIENTS	%	CAS/PIN	LD_{50} (Species/Route)	LC_{50} (Species)
aromatic 100	15-40	64742-95-6	2.9 g/kg (oral,rat) 21.6 g/kg (dermal,rabbit)	1500 ppm (rat)
mineral spirits	5-10	64741-41-9	8.5 g/kg (i.p.,rat)	NAV
prepolymer diphenyl methane diisocyanate	3-7	26447-40-5	NAV	NAV
4,4-diphenyl methane diisocyanate	3-7	101-68-8	2.2 g/kb (oral,mouse)	178 mg/m3 (rat) 369-490 mg/m3, 4h (rat)
aluminum pigment	10-30	7429-90-5	NAV	NAV
isocynate catalysed polyurethane	15-40	58043-05-3	NAV	NAV

SECTION III - HAZARD IDENTIFICATION:
The product is a flammable, solvent-based product and should be treated according to all known safety precautions. Refer to Section VII for Storage and Handling recommendations, Section VIII for Personal Protection, Section XIV for transport.

SECTION IV - FIRST AID MEASURES:
INHALATION: Remove to fresh air. Give oxygen if required. Seek medical help.
EYES: Flush w/water for at least 15 minutes; see physician.
SKIN: Remove contaminated clothing; wash affected areas w/mild soap & water.
INGESTION: Do not induce vomiting. Give 1-2 glasses milk or water. Seek medical attention according to amount of product ingested.

SECTION V - FIREFIGHTING MEASURES:
CONDITIONS OF FLAMMABILITY: Spraying/activities that create fine mist
HAZARDOUS COMBUSTION PRODUCTS: Carbon monoxide, isocyanate-based fume **AUTOIGNITION TEMP.**: 214C. degrees
MINIMUM IGNITION ENERGY: 6.1% **FLASH POINT & METHOD**: 44C. TCC
FLAMMABLE LIMITS: (Lower) 1.4% **(Upper)** NAV%
SENSITIVITY TO STATIC DISCHARGE? Yes
SENSITIVITY TO MECHANICAL IMPACT? POssible due to aluminum content
SPECIAL PROCEDURES: Firefighters should wear full-body protection & SCBA
MEANS OF EXTINCTION: Foam, dry chemical, carbon dioxide; water fog to cool containers exposed to heat.

SECTION VI - ACCIDENTAL RELEASE MEASURES: Use kitty litter or similar absorbent to contain spill. Neutralize w/solution of 80% water/20% Tergitol TMN-10. Use protective clothing; use non-sparking tools.

SECTION VII - HANDLING AND STORAGE:
Storage Requirements: Maintain temperature between 32-122F. degrees; average shelf life is 12 months @ 77F. degrees.
Handling Procedures/Equipment: Ground all containers; use non-sparking tools.

NAP = Not Applicable NAV = Not Available

SECTION VIII - EXPOSURE CONTROLS AND PERSONAL PROTECTION:
PERSONAL PROTECTIVE EQUIPMENT: To be worn when spraying or within contained areas--Half-face respirator w/organic vapor filter, safety glasses w/shields, PVA or nitrile chemical-resistant gloves, skin protection; for all other applications, good judgement should be used.
ENGINEERING CONTROLS: To spray, mechanical exhaust ventilation is required
SECTION IX - PHYSICAL AND CHEMICAL PROPERTIES:
PHYSICAL STATE: Liquid **SOLUBILITYIN WATER**: Insoluable
APPEARANCE AND ODOR: Silver grey liquid, aromatic odor
FREEZING POINT: NAP **BOILING POINT**: >150C. deg. **pH**: NAP
SPECIFIC GRAVITY: 1.1 **ODOR THRESHOLD**: 0.4ppm
COEFF. WATER/OIL: NAV **EVAPORATION RATE**: very slow% **VOLATILES**: 45
VAPOUR DENSITY (Air=1): NAV **VAPOUR PRESSURE**: 8mmHg@20C. deg.
SECTION X - STABILITY AND REACTIVITY:
CONDITIONS OF REACTIVITY: Dry aluminum powder **CORROSIVE**? No
CHEMICAL INCOMPATIBILITY: Ammonium nitrate chorofluoro carbons, chlorinated solvents, metal oxides, strong bases, peroxides, amines
CONDITIONS OF INSTABILITY: Impact, heat, friction
HAZARDOUS DECOMPOSITION PRODUCTS: Hydrogen gas, reactive chlorides
SECTION VI - TOXICOLOGICAL PROPERTIES:
ROUTES OF ENTRY:SKIN CONTACT **_X_** EYE CONTACT **_X_** INHALATION **_X_** INGESTION **_X_** SYNERGISTIC PRODUCTS **NAV**
EXPOSURE LIMITS: Diphenyl methane diisocyanate prepolymer (0.005 mg/m3); 4,4-diphenyl methane diisocyanate (0.005 mg/m3)
EFFECTS OF ACUTE EXPOSURE: Headache, dizziness, nausea, intoxication, pulmonary edema
EFFECTS OF CHRONIC EXPOSURE: Defatting of skin, dryness; allergic asthma
MUTAGENICITY: NAV **TERATOGENICITY**: Insufficient information
CARCINOGENICITY: Possible based on study of population exposed to mineral spirits
IRRITANCY: Skin & eye irritation **REPRODUCTIVE TOXICITY**: NAV
SENSITIZATION: Respirator sensitization, skin sensitization
SECTION XII - ENVIRONMENTAL INFORMATION:
Air: 3.48 lbs./gallon; 414 grams/liter V.O.C.
Water: Insoluble in water; reacts slowly w/water forming polyurea polymer and liberating CO2 gas
Soil: Lead- and chromate-free, not hazardous under RCRA 40CFR
SECTION XIII - WASTE DISPOSAL:
Dispose of as paint/aluminum waste according to local regulations.
SECTION XIV - TRANSPORT INFORMATION:
Product is considered hazardous material, to be handled according to Class 3//UN1263//P.G. III guidelines.
SECTION XV - REGULATORY INFORMATION:
No listed materials under Superfund Amendments & Reauthorization Act of 1988 (SARA) 302, 304, 311, 312, 313
SECTION XVI - OTHER INFORMATION: NAV

PREPARED BY: J. Pritchett, Superior Products Int'l II, Inc. **DATE**: 05/18/06

STATEMENT SPECIFICALLY AFFIRMING THE PRODUCT MEETS THE COMPOSITIONAL REQUIREMENTS OF THE SPECIFICATION – SSPC 38

Rust Grip does not meet the compositional requirements of the SSPC Paint 38 specification. We discussed this during our telephone conversation and you said submit it anyway. I have attached the composition of Rust Grip for your use.

October 21, 2008

Component Breakdown for RUST GRIP®.

Material	**Percentage**	**CAS#**
Aromatic 100	30.0%	100/64742-95-6
Mineral Spirits	10.0%	64741-41-9
Pre-polymer Diphenyl Methane Diisoyanate	5.0%	26447-40-5
Aluminum Pigment	30.0%	7429-90-5
Catalysed Polyurethane	25.0%	58043-05-5
Total	100.00%	

Solids By Weight	62.20%
Solids By Volume	51.37%
Theoretrical Coverage Per Mils	8 mils wft/4 mils dft
Pot Life	4 hours @ 70 F. degrees

This information is true and accurate.

Signed:

J.E. Pritchett
President
Superior Products International II, Inc.
USA

CHEM-THANE 2821

MIO MOISTURE CURE URETHANE INTERMEDIATE COAT

TECHNICAL PRODUCT BULLETIN

PRODUCT DESCRIPTION AND USES

CHEM-THANE 2821 is a single component, moisture cure urethane coating which contains Micaceous Iron Oxide pigments. It is intended as an intermediate coat in a high performance weather and chemical resistant urethane system.

CHEM-THANE 2821 is a high solids, VOC compliant coating and does not contain lead or chromate pigments. This coating forms part of a urethane system which can be applied at high humidities and at low temperatures. It contains a minimum of four pounds of micaceous iron oxide per gallon.

CHEM-THANE 2821 is an extremely hard abrasion resistant coating. It is ideally suited for usage such as bridges, tanks, locks and dams, marine structures and vessels and general industrial maintenance.

CHEM-THANE 2821 can be applied at low temperatures down to 20 ºF and humidities up to 99% with no dew point restrictions.

CHEM-THANE 2821 meets USDA requirements for incidental contact with food surfaces.

CHEM-THANE 2821 meets the requirements of SSPC-PAINT 41 and MPI #201.

PRODUCT DATA

VOC Content:
2.75 lbs/gal; 326 grams/liter

Type of Material:
Moisture-Cured Urethane

Volume Solids:
61.0% + or - 2.0%

Estimated Coverage:
978 sq. ft./gal. @ 1 mil DFT

Recommended Film Thickness:
3 - 5 mils DFT, as required

Method of Application:
Spray preferred; Brush or roll small areas

Number of Coats:
One

Thinner and Clean Up Solvent:
T-100

Shelf Life:
One year from DOM

Pot Life:
Single Component

Dry Time:
30 mins to touch; 4 hrs to recoat, no recoat maximum

Flash Point:
100'F minimum

Color and Gloss:
Reddish-Grey, Greenish-Grey, Aluminum Grey; Matte

Mixing Ratio:
Single Component

PHONE: (757)899-3807
FAX: (757)899-3907
E-MAIL:INDMAR@EARTHLINK.NET

IndMar Coatings Corp.
P.O.Box 456
Wakefield, VA 23888

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: CHEM-THANE 2821 M/C URETHANE INT. **HMIS CODES:** H F R P
PRODUCT CODE: 2821 2 3 1 K

SECTION I - MANUFACTURER IDENTIFICATION

MANUFACTURER'S NAME: INDMAR COATINGS CORP.
ADDRESS: P.O. BOX 456, WAKEFIELD, VA 23888
EMERGENCY PHONE: 1-757-899-3807 **INFORMATION PHONE:** 1-757-899-3807
DATE REVISED: 2/97 **NAME OF PREPARER:** M. WHITED

SECTION II - HAZARDOUS INGREDIENTS/SARA III INFORMATION

HAZARDOUS COMPONENTS	CAS NUMBER	OCCUPATIONAL EXPOSURE LIMITS OSHA PEL	ACGIH TLV	OTHER	VAPOR PRESSURE mm Hg @ TEMP		WEIGHT PERCENT
*SUPER HIGH FLASH NAPHTHA	64742-95-6	100 PPM	25 PPM		2.7	68F	14
*AROMATIC POLYISOCYANATE PREPOLYMER	MIXTURE	.02 PPM@@	.005 PPM@@		1.4	77F	38
*METHYLAMYLKETONE	110-43-0	50 PPM					6

*Indicates toxic chemical(s) subject to the reporting requirements of Section 313 of Title III and of 40 CFR 372.
@,**,#,##,#*,#@,@@, BEHIND THE TLV & PEL VALUES INDICATE SPECIAL HEALTH AND FIRE HAZARD NOTATIONS TO BE FOUND IN THE BODY OF THE MSDS. READ ALL SECTIONS CAREFULLY AND CHECK FOR NOTATIONS.

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

BOILING POINT: 280'F. **SPECIFIC GRAVITY (H2O=1):** 1.56
VAPOR DENSITY: HEAVIER THAN AIR **EVAPORATION RATE:** SLOWER THAN ETHER
COATING V.O.C.: 2.80 LB/GAL (336 G/L)
MATERIAL V.O.C.: 2.80 LB/GAL (336 G/L)
SOLUBILITY IN WATER: NOT SOLUBLE IN WATER
APPEARANCE AND ODOR: COLORED VISCOUS LIQUID WITH AROMATIC SOLVENT ODOR

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: 114 Deg F **METHOD USED:** TCC
FLAMMABLE LIMITS IN AIR BY VOLUME - LOWER: 0.5% **UPPER:** 6.0%

EXTINGUISHING MEDIA: FOAM, CO2, DRY CHEMICAL, WATER FOG

SPECIAL FIREFIGHTING PROCEDURES
WEAR SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACE PIECE OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE WHEN FIGHTING FIRES.

UNUSUAL FIRE AND EXPLOSION HAZARDS
VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL ALONG THE GROUND OR BE MOVED BY VENTILATION AND IGNITED BY HEAT, PILOT LIGHTS, OTHER FLAMES AND IGNITION SOURCES AT LOCATIONS DISTANT FROM MATERIAL HANDLING PORT.

========== SECTION V - REACTIVITY DATA ==========

STABILITY: STABLE

CONDITIONS TO AVOID
NEVER USE WELDING OR CUTTING TORCH ON OR NEAR DRUMS(EVEN EMPTY) BECAUSE PRODUCT(EVEN JUST RESIDUE) CAN IGNITE EXPLOSIVELY.

INCOMPATIBILITY (MATERIALS TO AVOID)
AVOID CONTACT WITH STRONG OXIDIZING AGENTS.

HAZARDOUS DECOMPOSITION OR BYPRODUCTS
MAY FORM TOXIC MATERIALS; CARBON DIOXIDE AND CARBON MONOXIDE, VARIOUS HYDROCARBONS, ETC.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

========== SECTION VI - HEALTH HAZARD DATA ==========

INHALATION HEALTH RISKS AND SYMPTOMS OF EXPOSURE
EXCESSIVE INHALATION OF VAPORS CAN CAUSE NASAL AND RESPIRATORY IRRITATION, DIZZINESS, FATIGUE, NAUSEA, HEADACHE, POSSIBLE UNCONCIOUSNESS, AND EVEN ASPHYXIATION.**AS NUISANCE DUSTS. #AS RESPIRABLE NUISANCE DUSTS.

SKIN AND EYE CONTACT HEALTH RISKS AND SYMPTOMS OF EXPOSURE
PROLONGED OR REPEATED CONTACT WITH PRODUCT CAN CAUSE MODERATE SKIN IRRITATION, DEFATTING, DERMATITIS.
EYES: CAN CAUSE SEVERE IRRITATION, REDNESS, TEARING, BLURRED VISION.

SKIN ABSORPTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE
@SKIN ABSORPTION MAY POTENTIALLY CONTRIBUTE TO OVERALL EXPOSURE TO THIS MATERIAL. APPROPRIATE MEASURES SHOULD BE TAKEN TO PREVENT ABSORPTION SO THAT TLV IS NOT INVALIDATED.

INGESTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE
CAN CAUSE GASTROINTESTINAL IRRITATION, NAUSEA, VOMITTING, AND DIARRHEA. ASPIRATION OF MATERIAL INTO THE LUNGS CAN CAUSE CHEMICAL PNEUMONITIS, WHICH CAN BE FATAL.

HEALTH HAZARDS (ACUTE AND CHRONIC)
ACUTE: IRRITATION OF SKIN, EYES, MUCOUS MEMBRANES. DRYING, DEFATTING OF SKIN. AVOID INGESTION AND BREATHING OF VAPORS.
CHRONIC: EYE, LIVER, KIDNEY, AND CENTRAL NERVOUS SYSTEM DAMAGE MAY OCCUR.

CARCINOGENICITY: NTP? NO **IARC MONOGRAPHS?** NO **OSHA REGULATED?** NO

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE

EMERGENCY AND FIRST AID PROCEDURES
SKIN: THOROUGHLY WASH EXPOSED AREA WITH SOAP AND WATER. REMOVE CONTAMINATED CLOTHING. LAUNDER CLOTHING BEFORE REUSE.
EYES: FLUSH WITH LARGE AMOUNTS OF WATER, LIFTING UPPER AND LOWER LIDS OCCASIONALLY. GET MEDICAL ATTENTION.
INGESTION: DO NOT INDUCE VOMITTING. KEEP PERSON WARM, QUIET, AND GET MEDICAL ATTENTION. ASPIRATION OF MATERIAL INTO LUNGS DUE TO VOMITTING CAN CAUSE CHEMICAL PNEUMONITIS, WHICH CAN BE FATAL.
BREATHING: REMOVE PERSON TO FRESH AIR. GIVE OXYGEN IF BREATHING DIFFICULT; GIVE ARTIFICIAL RESPIRATION IF BREATHING STOPS. KEEP PERSON WARM AND GET MEDICAL ATTENTION.

CHEM-THANE 2822HS

MIO MOISTURE CURED URETHANE FINISH COAT

TECHNICAL PRODUCT BULLETIN

PRODUCT DESCRIPTION AND USES

CHEM-THANE 2822HS is a single component, moisture curing, urethane coating which contains Micaceous Iron Oxide pigments. It is intended as a finish coat in a coating system for use in areas that require outstanding weather and chemical resistance.

CHEM-THANE 2822HS is a high solids, VOC compliant coating and does not contain lead or chromate pigments. This coating forms part of a urethane system which can be applied at high humidities and at low temperatures. Application can be achieved at humidities as high as 99% and temperatures as low as 20”F. The high level of Micaceous Iron Oxide provides an extra barrier of corrosion resistance in additional to the wide range of chemical resistance.

CHEM-THANE 2822HS is an extremely hard abrasion resistant coating. It makes an excellent coating for concrete floors when used directly on concrete.

CHEM-THANE 2822HS conforms to USDA regulations for incidental contact with food.

CHEM-THANE 2822HS meets the requirements of SSPC-PAINT 38.

PRODUCT DATA

VOC Content:
2.75lbs/gal; 330 grams/liter

Type of Material:
Moisture-Cured Urethane

Volume Solids:
61.0% + or - 2.0%

Estimated Coverage:
978 sq. ft./gal. @ 1 mil DFT

Recommended Film Thickness:
2.5-3.5 mils DFT, as required

Method of Application:
Spray preferred; Brush or roll small areas

Number of Coats:
One

Thinner and Clean Up Solvent:
T-100

Shelf Life:
One year from DOM

Pot Life:
Single Component

Dry Time:
30 mins to touch; 4 hrs to recoat

Flash Point:
100’F minimum

Color and Gloss:
Most colors except pastels and bright; low gloss

Mixing Ratio:
Single Component

IndMar Coatings Corp.
P.O.Box 456
Wakefield, VA 23888

PHONE: (757)899-3807
FAX: (757)899-3907

SURFACE PREPARATION

CHEM-THANE 2822HS should be applied over properly prepared and primed surfaces. It is
recommended as the finish coat in a high performance system but is also suitable for direct to
metal surfaces.

APPLICATION INSTRUCTIONS

Spray application is preferred, however brush and roll application is acceptable with proper care and equipment.

5 wet mils results in 3 dry mils.

Recommended airless tip size .019 - .023.

Dry times are dependent upon humidity, temperature and film thickness. Low humidity, higher film builds or lower temperatures can extend cure times.

DO NOT APPLY ON SURFACES OF ICE OR VISIBLE WATER.

MIXING

Thoroughly mix contents of container prior to use. Use of thinner should be determined by VOC requirements.

Material should be power mixed using gentle agitation to prevent moisture inclusion. Do not box or pour material from one container to another.

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: CHEM-THANE 2822HS M/C URETHANE INT. **HMIS CODES:** H F R P
PRODUCT CODE: 2822HS 2 3 1 K

========== SECTION I - MANUFACTURER IDENTIFICATION ==========

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ADDRESS: P.O. BOX 456, WAKEFIELD, VA 23888
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HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

SECTION VI - HEALTH HAZARD DATA

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CAN CAUSE GASTROINTESTINAL IRRITATION, NAUSEA, VOMITTING, AND DIARRHEA. ASPIRATION OF MATERIAL INTO THE LUNGS CAN CAUSE CHEMICAL PNEUMONITIS, WHICH CAN BE FATAL.

HEALTH HAZARDS (ACUTE AND CHRONIC)
ACUTE: IRRITATION OF SKIN, EYES, MUCOUS MEMBRANES. DRYING, DEFATTING OF SKIN. AVOID INGESTION AND BREATHING OF VAPORS.
CHRONIC: EYE, LIVER, KIDNEY, AND CENTRAL NERVOUS SYSTEM DAMAGE MAY OCCUR.

CARCINOGENICITY: NTP? NO **IARC MONOGRAPHS?** NO **OSHA REGULATED?** NO

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE

EMERGENCY AND FIRST AID PROCEDURES
SKIN: THOROUGHLY WASH EXPOSED AREA WITH SOAP AND WATER. REMOVE CONTAMINATED CLOTHING. LAUNDER CLOTHING BEFORE REUSE.
EYES: FLUSH WITH LARGE AMOUNTS OF WATER, LIFTING UPPER AND LOWER LIDS OCCASIONALLY. GET MEDICAL ATTENTION.
INGESTION: DO NOT INDUCE VOMITTING. KEEP PERSON WARM, QUIET, AND GET MEDICAL ATTENTION. ASPIRATION OF MATERIAL INTO LUNGS DUE TO VOMITTING CAN CAUSE CHEMICAL PNEUMONITIS, WHICH CAN BE FATAL.
BREATHING: REMOVE PERSON TO FRESH AIR. GIVE OXYGEN IF BREATHING DIFFICULT; GIVE ARTIFICIAL RESPIRATION IF BREATHING STOPS. KEEP PERSON WARM AND GET MEDICAL ATTENTION.

========== SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE ==========

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
SMALL: ABSORB, PREFERRABLY WITH FLOOR ABSORBENT. TRANSFER TO HOOD.
LARGE: ELIMINATE ALL IGNITION SOURCES. WEAR PROTECTIVE CLOTHING. STOP SPILL, DIKE AREA, PUMP TO SALVAGE TANK. PREVENT RUN-OFF TO SEWERS, STREAMS. NOTIFY AUTHORITIES.

WASTE DISPOSAL METHOD
SMALL SPILL: ALLOW VOLATILE PORTION TO EVAPORATE IN HOOD. ALLOW SUFFICIENT TIME FOR VAPORS TO COMPLETELY CLEAR HOOD DUCT WORK. DISPOSE OF REMAINING MATERIAL IN ACCORDANCE WITH APPLICABLE REGULATIONS.
LARGE SPILL: DESTROY BY LIQUID INCINERATION. CONTAMINATED ABSORBENT MAY BE DEPOSITED IN A LANDFILL IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
DO NOT STORE OR USE IN HIGH TEMPERATURE AREAS OR NEAR HEAT, SPARKS, OR OPEN FLAME. KEP CLOSURE TIGHT AND CONTAINER UPRIGHT TO PREVENT LEAKAGE. STORE ONLY IN WELL VENTILATED AREAS. AVOID CONTACT WITH OR BREATHING OF VAPORS RELEASED DURING CURING PROCESS.

OTHER PRECAUTIONS
DO NOT TAKE INTERNALLY. AVOID CONTACT WITH SKIN AND EYES. AVOID BREATHING OF VAPORS OR SPRAY MIST. ALL HAZARD PRECAUTIONS GIVEN IN THE DATA SHEET MUST BE OBSERVED.

========== SECTION VIII - CONTROL MEASURES ==========

RESPIRATORY PROTECTION
IF TLV OF THE PRODUCT OR ANY COMPONENT IS EXCEEDED, A NIOSH/MSHA JOINTLY APPROVED AIR SUPPLIED RESPIRATOR IS ADVISED IN ABSENCE OF PROPER ENVIRONMENTAL CONTROL. OSHA REGULATIONS ALSO PERMIT OTHER NIOSH/MSHA RESPIRATORS UNDER SPECIFIED CONDITIONS(SEE SAFETY EQUIPMENT SUPPLIER). ENGINEERING OR ADMINISTRATIVE CONTROLS SHOULD BE IMPLEMENTED TO REDUCE EXPOSURE.

VENTILATION
PROVIDE SUFFICIENT MECHANICAL (GENERAL AND/OR LOCAL EXHAUST) VENTILATION TO MAINTAIN EXPOSURE BELOW TLV (S).

PROTECTIVE GLOVES
WEAR RESISTANT GLOVES SUCH AS NITRILE RUBBER.

EYE PROTECTION
CHEMICAL SPLASH GOGGLES IN COMPLIANCE WITH OSHA REGULATIONS ARE ADVISED. CHECK TO SEE IF OTHERS ARE PERMITTED.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT
TO PREVENT REPEATED OR PROLONGED SKIN CONTACT, WEAR IMPERVIOUS CLOTHING AND BOOTS.

WORK/HYGIENIC PRACTICES
WASH HANDS BEFORE EATING, SMOKING, OR USING WASHROOM. SMOKE IN SMOKING PERMITTED AREAS ONLY.

========== SECTION IX - TRANSPORTATION DATA ==========

PAINT, NON-REGULATED IF SHIPPED IN CONTAINERS LESS THAN 5 LITERS.

IF SHIPPED IN LARGER CONTAINERS: UN-1263, PAINT 3, PG II
FLAMMABLE LIQUID

========== SECTION X - DISCLAIMER ==========

THE DATA CONTAINED HEREIN IS BELIEVED TO BE ACCURATE AT THE TIME OF PREPARATION. INDMAR COATINGS MAKES NO WARRANTY CONCERNING THEIR ACCURACY AND WILL NOT BE LIABLE FOR CLAIMS RELATING TO USE OR RELIANCE ON DATA OR RECOMMENDATIONS CONTAINED HEREIN, REGARDLESS OF WHETHER IT IS CLAIMED THAT THE INFORMATION IS INACCURATE, INCOMPLETE OR OTHERWISE MISLEADING.

PHONE: (757)899-3807
FAX: (757)899-3907

TECHNICAL PRODUCT BULLETIN

PRODUCT DATA

VOC Content:
2.8 lbs./gal.; 336 grams/liter

Type of Material:
Zinc Pigmented Urethane

Volume Solids:
63%

Estimated Coverage:
1,010 sq. ft./gal. @ 1 mil DFT

Recommended Film Thickness:
2 1/2 - 3 1/2 mils DFT

Method of Application:
Spray or brush

Number of Coats:
One

Thinner and Clean Up Solvent:
#100 Thinner

Shelf Life:
1 year from DOM

Pot Life:
Use open containers within 24hrs.

Dry Time:
4 - 6 hrs. to recoat; No recoat window

Flash Point:
100'F minimum closed cup

Color and Gloss:
Gray, reddish-gray, greenish-gray; Low gloss

Mixing Ratio:
Single Component

Weight Per Gallon: **23 pounds minimum**

A Woman-Owned Business

IndMar Coatings Corp.

P.O.Box 456
Wakefield, VA 23888

PRODUCT DESCRIPTION AND USES

IND

IND-PON 2300HB

EPOXY
PRIMER/FINISH

ZINC-THANE 2805

ZINC-THANE 2805 is a single component organic moisture curing zinc rich primer designed for application to steel substrates. Although proper abrasive blast cleaning results in superior performance, this product may be applied over marginally prepared surfaces with excellent performance.

ZINC-THANE 2805 contains limited amounts of organic solvents and is considered environmentally safe in most areas.

ZINC-THANE 2805 contains over 84% zinc in the dry film and provides excellent corrosion protection. Due to its unique chemical nature, it can be applied to surfaces at dry temperatures as low as 20'F and relative humidities up to 99% with no dew point restrictions. The high performance qualities of the product make it an exceptional coating for a wide range of usages which include bridges, tanks, offshore and marine structures and vessels, locks and dams, industrial facilities such as chemical plants, pulp and paper mills and other manufacturing plants, and general purpose structural steel.

ZINC-THANE 2805 conforms to USDA standards for incidental contact with food.

ZINC-THANE 2805 meets the requirements of SSPC-PAINT 20, TYPE II, SSPC-PAINT 40 and MPI #200.

MOISTURE-CURED
URETHANE
ZINC PRIMER

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: ZINC-THANE 2805 ZINC-RICH PRIMER **HMIS CODES:** H F R P
PRODUCT CODE: ZINCTHANE2805P 3 1 1 K

========== SECTION I - MANUFACTURER IDENTIFICATION ==========

MANUFACTURER'S NAME: INDMAR COATINGS CORP.
ADDRESS: P.O. BOX 456, WAKEFIELD, VA 23888
EMERGENCY PHONE: 1-757-899-3807 **INFORMATION PHONE:** 1-757-899-3807
DATE REVISED: 2/05 **NAME OF PREPARER:** M. WHITED

========== SECTION II - HAZARDOUS INGREDIENTS/SARA III INFORMATION ==========

HAZARDOUS COMPONENTS	CAS NUMBER	OCCUPATIONAL EXPOSURE LIMITS OSHA PEL	ACGIH TLV	OTHER	VAPOR PRESSURE mm Hg @ TEMP		WEIGHT PERCENT
*SUPER HIGH FLASH NAPHTHA	64742-95-6	100 PPM	25 PPM		2.7	68F	11
*AROMATIC POLYISOCYANATE PREPOLYMER	MIXTURE	.02 PPM@@	.005 PPM@@		1.4	77F	9
*ZINC DUST	7440-66-6	15 MG/M3*	10 MG/M3*		N/A		79

*Indicates toxic chemical(s) subject to the reporting requirements of Section 313 of Title III and of 40 CFR 372.
@,**,#,##,#*,#@,@@, BEHIND THE TLV & PEL VALUES INDICATE SPECIAL HEALTH AND FIRE HAZARD NOTATIONS TO BE FOUND IN THE BODY OF THE MSDS. READ ALL SECTIONS CAREFULLY AND CHECK FOR NOTATIONS.

========== SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS ==========

BOILING POINT: 313 to 1665 Deg F **SPECIFIC GRAVITY (H2O=1):** 3.1
VAPOR DENSITY: HEAVIER THAN AIR **EVAPORATION RATE:** SLOWER THAN ETHER
COATING V.O.C.: 2.80 LB/GAL (336 G/L)
MATERIAL V.O.C.: 2.80 LB/GAL (336 G/L)
SOLUBILITY IN WATER: NOT SOLUBLE IN WATER
APPEARANCE AND ODOR: COLORED VISCOUS LIQUID WITH AROMATIC SOLVENT ODOR

========== SECTION IV - FIRE AND EXPLOSION HAZARD DATA ==========

FLASH POINT: 114 Deg F **METHOD USED:** TCC
FLAMMABLE LIMITS IN AIR BY VOLUME - LOWER: 0.5% **UPPER:** 6.0%

EXTINGUISHING MEDIA: FOAM, CO2, DRY CHEMICAL, WATER FOG

SPECIAL FIREFIGHTING PROCEDURES
WEAR SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACE PIECE OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE WHEN FIGHTING FIRES.

UNUSUAL FIRE AND EXPLOSION HAZARDS
VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL ALONG THE GROUND OR BE MOVED BY VENTILATION AND IGNITED BY HEAT, PILOT LIGHTS, OTHER FLAMES AND IGNITION SOURCES AT LOCATIONS DISTANT FROM MATERIAL HANDLING PORT.

SECTION V - REACTIVITY DATA

STABILITY: STABLE

CONDITIONS TO AVOID
NEVER USE WELDING OR CUTTING TORCH ON OR NEAR DRUMS(EVEN EMPTY) BECAUSE PRODUCT(EVEN JUST RESIDUE) CAN IGNITE EXPLOSIVELY.

INCOMPATIBILITY (MATERIALS TO AVOID)
AVOID CONTACT WITH STRONG OXIDIZING AGENTS.

HAZARDOUS DECOMPOSITION OR BYPRODUCTS
MAY FORM TOXIC MATERIALS; CARBON DIOXIDE AND CARBON MONOXIDE, VARIOUS HYDROCARBONS, ETC.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

SECTION VI - HEALTH HAZARD DATA

INHALATION HEALTH RISKS AND SYMPTOMS OF EXPOSURE
EXCESSIVE INHALATION OF VAPORS CAN CAUSE NASAL AND RESPIRATORY IRRITATION, DIZZINESS, FATIGUE, NAUSEA, HEADACHE, POSSIBLE UNCONCIOUSNESS, AND EVEN ASPHYXIATION.**AS NUISANCE DUSTS. #AS RESPIRABLE NUISANCE DUSTS.

SKIN AND EYE CONTACT HEALTH RISKS AND SYMPTOMS OF EXPOSURE
PROLONGED OR REPEATED CONTACT WITH PRODUCT CAN CAUSE MODERATE SKIN IRRITATION, DEFATTING, DERMATITIS.
EYES: CAN CAUSE SEVERE IRRITATION, REDNESS, TEARING, BLURRED VISION.

SKIN ABSORPTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE
@SKIN ABSORPTION MAY POTENTIALLY CONTRIBUTE TO OVERALL EXPOSURE TO THIS MATERIAL. APPROPRIATE MEASURES SHOULD BE TAKEN TO PREVENT ABSORPTION SO THAT TLV IS NOT INVALIDATED.

INGESTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE
CAN CAUSE GASTROINTESTINAL IRRITATION, NAUSEA, VOMITTING, AND DIARRHEA. ASPIRATION OF MATERIAL INTO THE LUNGS CAN CAUSE CHEMICAL PNEUMONITIS, WHICH CAN BE FATAL.

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LARGE: ELIMINATE ALL IGNITION SOURCES. WEAR PROTECTIVE CLOTHING. STOP SPILL, DIKE AREA, PUMP TO SALVAGE TANK. PREVENT RUN-OFF TO SEWERS, STREAMS. NOTIFY AUTHORITIES.

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SMALL SPILL: ALLOW VOLATILE PORTION TO EVAPORATE IN HOOD. ALLOW SUFFICIENT TIME FOR VAPORS TO COMPLETELY CLEAR HOOD DUCT WORK. DISPOSE OF REMAINING MATERIAL IN ACCORDANCE WITH APPLICABLE REGULATIONS.
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OTHER PRECAUTIONS
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========== SECTION VIII - CONTROL MEASURES ==========

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PROVIDE SUFFICIENT MECHANICAL (GENERAL AND/OR LOCAL EXHAUST) VENTILATION TO MAINTAIN EXPOSURE BELOW TLV (S).

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WEAR RESISTANT GLOVES SUCH AS NITRILE RUBBER.

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CHEMICAL SPLASH GOGGLES IN COMPLIANCE WITH OSHA REGULATIONS ARE ADVISED. CHECK TO SEE IF OTHERS ARE PERMITTED.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT
TO PREVENT REPEATED OR PROLONGED SKIN CONTACT, WEAR IMPERVIOUS CLOTHING AND BOOTS.

WORK/HYGIENIC PRACTICES
WASH HANDS BEFORE EATING, SMOKING, OR USING WASHROOM. SMOKE IN SMOKING PERMITTED AREAS ONLY.

========== SECTION IX - TRANSPORTATION DATA ==========

PAINT, NON-REGULATED IF SHIPPED IN CONTAINERS LESS THAN 5 LITERS.

IF SHIPPED IN LARGER CONTAINERS: UN-1263, PAINT 3, PG II
FLAMMABLE LIQUID

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Industrial & Marine Coatings

Certified to NSF/ANSI 61

5.14

COROTHANE® I

GALVAPAC ONE PACK ZINC PRIMER

B65G11 GRAY

PRODUCT INFORMATION

Revised 8/07

PRODUCT DESCRIPTION

COROTHANE I GALVAPAC ONE PACK ZINC PRIMER is a VOC compliant, moisture curing urethane zinc-rich primer, designed for low temperature application to steel surfaces.

- Low temperature application - down to 20°F
- NSF approved to Standard 61 for potable water
- Abrasion and chemical resistant
- Easy to apply and recoat
- Usable for immersion service with recommended topcoated
- Resistant to mudcracking
- Meets Class B requirements for Slip Coefficient and Creep Resistance, .54

RECOMMENDED USES

- **Immersion Service - potable water:** Meets NSF Standard 61 for use in potable water storage.
  - 250,000 gallon untopcoated
  - 20,000 gallon minimum topcoated
- Meets performance requirements of SSPC Paint Spec No. 40 for zinc rich moisture cure Polyurethane primer
- As a primer in a urethane coating system for bridges, tanks, chemical, and marine structures
- Ideal for priming water assisted abrasive blasted surfaces where flash rusting or blooming limits the use of conventional zinc rich coatings
- Acceptable for use with cathodic protection with select topcoats
- Conforms to AWWA D102 Inside Coating System #5 (ICS-5), Outside Coating System #6 (OCS-6)

PRODUCT CHARACTERISTICS

Finish: Flat

Color: Gray

Volume Solids: 67% ± 2%

Weight Solids: 91.7% ± 2%

VOC (calculated): <340 g/L; 2.8 lb/gal

Zinc Content in Dry Film: 83% ±2% by weight

Recommended Spreading Rate per coat:

	Standard	AWWA
Wet mils:	4.5 - 6.8	3.0 - 6.0
Dry mils:	3.0 - 4.0	2.0 - 4.0*
Coverage:	268 - 358 sq ft/gal approximate	268 - 536

*See recommended systems on reverse side

Drying Schedule @ 5.0 mils wet @ 50% RH:

	@ 40°F	@ 77°F	@ 100°F
To touch:	45 minutes	20 minutes	10 minutes
To recoat (minimum), atmospheric service:	8 hours	4-6 hours	1 hour
To recoat (minimum), immersion service:	24 hours	12 hours	10 hours
To cure, atmospheric service:	5 days	3 days	1 day
To cure, immersion service:	14 days	7 days	5 days

Drying time is temperature, humidity, and film thickness dependent. For **Potable Water Service**, allow a minimum cure time of 7 days at 77°F prior to placing in service. Sterilize and rinse per AWWA C652.

Shelf Life: 12 months, unopened. Store indoors at 40°F to 100°F

Flash Point: 94°F, PMCC

Reducer/Clean Up: Reducer #15, R7K15

PERFORMANCE CHARACTERISTICS

System Tested: (unless otherwise indicated)
Substrate: Steel
Surface Preparation: SSPC-SP5
1 ct. Corothane I GalvaPac Zinc Primer @ 3.5 mils dft
1 ct. Corothane I MIO-Aluminum @ 3.0 mils dft

Abrasion Resistance:
Method: ASTM D4060, CS17 wheel, 1000 cycles, 1 kg load
Result: 45 mg loss

Adhesion: (GalvaPac only)
Method: ASTM D4541 Method: ASTM D3359
Result: 1943 psi Result: 5B

Corrosion Weathering:
Method: ASTM D5984, 15 cycles, 5000 hours
Result: Rating 10 per ASTM D610 Rusting (field)
Result: Rating 10 per ASTM D714 Blistering

Direct Impact Resistance (Galva-Pac only):
Method: ASTM G14
Result: 160 in. lb.

Dry Heat Resistance:
Method: ASTM D2485
Result: 300°F continuous, 350°F intermittent

Immersion: Galvapac/2 cts Macropoxy 646 NSF)
Method: 5 year potable water
Result: Rating 10 per ASTM D610 for Rusting
Result: Rating 10 Per ASTM D714 for Blistering

Flexibility:
Method: ASTM D522, 180° bend, 1/4" mandrel
Result: Passes

Moisture Condensation Resistance: (GalvaPac only)
Method: ASTM D4585, 100°F, 4000 hours
Result: Rating 10 per ASTM D610 for Rusting
Result: Rating 10 per ASTM D714 for Blistering

Pencil Hardness:
Method: ASTM D3363
Result: 2H (zinc only)

Salt Fog Resistance: (GalvaPac only)
Method: ASTM B117, 5000 hours
Result: Rating 10 per ASTM D610 for Rusting
Result: Rating 10 per ASTM D714 for Blistering

Slip Coefficient: (GalvaPac only)
Method: AISC Specification for Structural Joints Using ASTM A325 or ASTM A490 Bolts
Result: Class B, .54, tension and creep <.005"

Wet Heat Resistance:
Method: Non-immersion
Result: 190°F

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Industrial & Marine Coatings

Certified to NSF/ANSI 61

5.14A

COROTHANE® I GALVAPAC ONE PACK ZINC PRIMER

B65G11 GRAY

APPLICATION BULLETIN

APPLICATION PROCEDURES

Surface preparation must be completed as indicated.

Stir material thoroughly prior to use with a power agitator until completely uniform. After mixing, pour through a 50 mesh filter.

Apply paint at the recommended film thickness and spreading rate as indicated below:

Recommended Spreading Rate per coat:

	Standard	AWWA
Wet mils:	4.5 - 6.8	3.0 - 6.0
Dry mils:	3.0 - 4.0	2.0 - 4.0
Coverage:	268 - 358	268 - 536

sq ft/gal approximate

*See recommended systems on Product Information page

Drying Schedule @ 5.0 mils wet @ 50% RH:

	@ 40°F	@ 77°F	@100°F
To touch:	45 minutes	20 minutes	10 minutes
To recoat (minimum), atmospheric service:	8 hours	4-6 hours	1 hour
To recoat (minimum), immersion service:	24 hours	12 hours	10 hours
To cure, atmospheric service:	5 days	3 days	1 day
To cure, immersion service:	14 days	7 days	5 days

Drying time is temperature, humidity, and film thickness dependent.

For **Potable Water Service**, allow a minimum cure time of 7 days at 77°F prior to placing in service. Sterilize and rinse per AWWA C652.

Application of coating above maximum or below minimum recommended spreading rate may adversely affect coating performance.

PERFORMANCE TIPS

Stripe coat all crevices, welds, and sharp angles to prevent early failure in these areas.

Spreading rates are calculated on volume solids and do not include an application loss factor due to surface profile, roughness or porosity of the surface, skill and technique of the applicator, method of application, various surface irregularities, material lost during mixing, spillage, overthinning, climatic conditions, and excessive film build.

Excessive reduction of material can affect film build, appearance, and adhesion.

In order to avoid blockage of spray equipment, clean equipment before use or before periods of extended downtime with Reducer #15, R7K15.

Pour a small amount of Reducer #15, R7K15 over the top of the paint in the can to prevent skinning or gelling.

Place a temporary cover over the pail to keep excessive moisture, condensation, fog, or rain from contaminating the coating.

Do not use continuous agitation.

It is recommended that partially used cans not be sealed/closed for use at a later date.

An intermediate coat is recommended to provide a uniform appearance of the topcoat.

Not for use with cathodic protection except as indicated under the recommended systems.

Corothane I KA Accelerator is acceptable for use (except NSF applications). See data page 5.98 for details.

Refer to Product Information sheet for additional performance characteristics and properties.

CLEAN UP INSTRUCTIONS

Clean spills and spatters immediately with Reducer #15, R7K15. Clean tools immediately after use with Reducer #15, R7K15. Follow manufacturer's safety recommendations when using any solvent.

SAFETY PRECAUTIONS

Refer to the MSDS sheet before use.

Published technical data and instructions are subject to change without notice. Contact your Sherwin-Williams representative for additional technical data and instructions.

DISCLAIMER

The information and recommendations set forth in this Product Data Sheet are based upon tests conducted by or on behalf of The Sherwin-Williams Company. Such information and recommendations set forth herein are subject to change and pertain to the product offered at the time of publication. Consult your Sherwin-Williams representative to obtain the most recent Product Data Information and Application Bulletin.

WARRANTY

The Sherwin-Williams Company warrants our products to be free of manufacturing defects in accord with applicable Sherwin-Williams quality control procedures. Liability for products proven defective, if any, is limited to replacement of the defective product or the refund of the purchase price paid for the defective product as determined by Sherwin-Williams. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY SHERWIN-WILLIAMS, EXPRESSED OR IMPLIED, STATUTORY, BY OPERATION OF LAW OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Industrial & Marine Coatings

Certified to NSF/ANSI 61

5.14A

COROTHANE® I GALVAPAC ONE PACK ZINC PRIMER

B65G11 GRAY

APPLICATION BULLETIN

Revised 8/07

SURFACE PREPARATION

Surface must be clean, dry, and in sound condition. Remove all oil, dust, grease, dirt, loose rust, and other foreign material to ensure adequate adhesion.

Iron & Steel (immersion service)
Remove all oil and grease from surface by Solvent Cleaning per SSPC-SP1. Minimum surface preparation is Near White Metal Blast Cleaning per SSPC-SP10/NACE 2. Blast clean all surfaces using a sharp, angular abrasive for optimum surface profile (2 mils). Remove all weld spatter and round all sharp edges by grinding. Prime any bare steel the same day as it is cleaned or before flash rusting occurs.

Iron & Steel (atmospheric service)
Remove all oil and grease from surface by Solvent Cleaning per SSPC-SP1. Minimum surface preparation is Power Tool Cleaning per SSPC-SP3. For better performance, use Near White Metal Blast Cleaning per SSPC-SP10/NACE 2. Blast clean all surfaces using a sharp, angular abrasive for optimum surface profile (2 mils). Prime any bare steel the same day as it is cleaned or before flash rusting occurs.

APPLICATION CONDITIONS

Temperature:	
air and surface	20°F minimum, 120°F maximum
material:	45°F minimum
	Do not apply over surface ice
Relative humidity:	Can be applied at relative humidities up to 99%.

APPLICATION EQUIPMENT

The following is a guide. Changes in pressures and tip sizes may be needed for proper spray characteristics. Always purge spray equipment before use with listed reducer. Any reduction must be compatible with the existing environmental and application conditions.

Reducer/Clean Up ..... Reducer #15, R7K15

Airless Spray

Pump	30:1
Pressure	2500 - 3000 psi
Hose	1/4" ID
Tip	.017" - .019"
Filter	60 mesh
Reduction	As needed up to 10% by volume

Conventional Spray

	Graco	Binks
Unit		
Gun	900	95
Fluid Nozzle	070	66/65
Air Nozzle	947	66PR
Atomization Pressure	60-70 psi	60-70 psi
Fluid Pressure	15-20 psi	15-20 psi
Reduction	As needed up to 10% by volume	

Brush

Brush	Natural bristle
Reduction	As needed up to 10% by volume

Roller

Cover	3/8" natural or synthetic with phenolic core
Reduction	As needed up to 10% by volume

If specific application equipment is not listed above, equivalent equipment may be substituted.

continued on back

Industrial & Marine Coatings

Certified to NSF/ANSI 61

5.14

COROTHANE® I GALVAPAC ONE PACK ZINC PRIMER

B65G11 GRAY

PRODUCT INFORMATION

RECOMMENDED SYSTEMS

Immersion Service (Potable Water),Steel:
*AWWA D102: Inside Coating System No. 5
(minimum AWWA DFT 10.0 mils)
1 ct. Corothane I — GalvaPac Zinc Primer @ 2.0 mils dft
2 ct. Macropoxy 646 PW @ 4.0 mils dft/ct

Immersion Services, Potable Water, Steel: **
1 ct. Corothane GalvaPac Zinc Primer @ 3.0 - 4.0 mils dft
2 cts. Tank Clad HS @ 4.0 - 8.0 mils dft/ct

Immersion Service (Non-Potable Water),Steel:
1 ct. Corothane I GalvaPac Zinc Primer @ 3.0 - 4.0 mils dft
2 cts. Corothane I Coal Tar @ 5.0 - 7.0 mils dft/ct

Atmospheric Service,Steel:
*AWWA D102 Outside Coating System No.2
(minimum AWWA DFT 7.5 mils)
1 ct. Corothane I GalvaPac Zinc Primer @ 3.0 mils dft
1 ct. Corothane Ironox B @ 3.0 mils dft
1 ct. Corothane I HS @ 1.5 mils dft

*AWWA D102: Outside Coating System No. 6
(minimum AWWA DFT 6.0 mils)
1 ct. Corothane I — GalvaPac Zinc Primer @ 2.0 mils dft
1 ct. Macropoxy 646 NSF @ 2.0 mils dft
1 ct Acrolon 218HS @ 2.0 mils dft

Steel: Rapid Return to Service
1 ct. Corothane I GalvaPac Zinc Primer @ 3.0 - 4.0 mils dft
1 ct. Fast Clad Urethane @ 6.0 - 9.0 mils dft

**System acceptable for use with cathodic protection

The systems listed above are representative of the product's use. Other systems may be appropriate.

SURFACE PREPARATION

Surface must be clean, dry, and in sound condition. Remove all oil, dust, grease, dirt, loose rust, and other foreign material to ensure adequate adhesion.

Refer to product Application Bulletin for detailed surface preparation information.

Minimum recommended surface preparation:
Iron & Steel
Atmospheric: SSPC-SP3, 2 mil profile perferred
Immersion, with recommended topcoat: SSPC-SP10/NACE 2, 2 mil profile

TINTING

Do not tint.

APPLICATION CONDITIONS

Temperature: air and surface material:	20°F minimum, 120°F maximum 45°F minimum
	Do not apply over surface ice
Relative humidity:	Can be applied at relative humidities up to 99%.

Refer to product Application Bulletin for detailed application information.

ORDERING INFORMATION

Packaging:	3 gallon container
Weight per gallon:	28.5 ± 0.2 lb

SAFETY PRECAUTIONS

Refer to the MSDS sheet before use.

Published technical data and instructions are subject to change without notice. Contact your Sherwin-Williams representative for additional technical data and instructions.

DISCLAIMER

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WARRANTY

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Section 1 -- PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NUMBER	DATE OF PREPARATION	HMIS CODES	
		Health	3*
B65G11	29-APR-08	Flammability	3
		Reactivity	1

PRODUCT NAME
COROTHANE® GALVAPAK Zinc Primer Moisture Cure Urethane 1K, Gray

MANUFACTURER'S NAME
THE SHERWIN-WILLIAMS COMPANY
101 Prospect Avenue N.W.
Cleveland, OH 44115

TELEPHONE NUMBERS and WEBSITES
Product Information
www.sherwin-williams.com
Regulatory Information
(216) 566-2902 www.paintdocs.com
Medical Emergency
(216) 566-2917
Transportation Emergency for Chemical Emergency ONLY (spill, leak,
(800) 424-9300 fire, exposure, or accident)

Section 2 -- COMPOSITION/INFORMATION ON INGREDIENTS

% by WT	CAS No.	INGREDIENT			UNITS	VAPOR PRESSURE
1	100-41-4	Ethylbenzene				
			ACGIH TLV	100	ppm	7.1 mm
			ACGIH TLV	125	ppm STEL	
			OSHA PEL	100	ppm	
			OSHA PEL	125	ppm STEL	
6	1330-20-7	Xylene				
			ACGIH TLV	100	ppm	5.9 mm
			ACGIH TLV	150	ppm STEL	
			OSHA PEL	100	ppm	
			OSHA PEL	150	ppm STEL	
2	101-68-8	4, 4'-Diphenylmethane Diisocyanate				
			ACGIH TLV	0.005	ppm	
			OSHA PEL	0.02	ppm CEILING	
6	9016-87-9	Diphenylmethane Diisocyanate Polymer				
			ACGIH TLV	Not Available		
			OSHA PEL	Not Available		
76	7440-66-6	Zinc				
			ACGIH TLV	Not Available		
			OSHA PEL	Not Available		

Continued on page 2

Section 3 -- HAZARDS IDENTIFICATION

ROUTES OF EXPOSURE

INHALATION of vapor or spray mist.

EYE or SKIN contact with the product, vapor or spray mist.

EFFECTS OF OVEREXPOSURE

EYES: Irritation.

SKIN: Prolonged or repeated exposure may cause irritation.

INHALATION: Irritation of the upper respiratory system.

May cause nervous system depression. Extreme overexposure may result in unconsciousness and possibly death.

Prolonged overexposure to solvent ingredients in Section 2 may cause adverse effects to the liver, urinary and reproductive systems.

SIGNS AND SYMPTOMS OF OVEREXPOSURE

Headache, dizziness, nausea, and loss of coordination are indications of excessive exposure to vapors or spray mists.

Redness and itching or burning sensation may indicate eye or excessive skin exposure.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

May cause allergic respiratory and/or skin reaction in susceptible persons or sensitization. This effect may be delayed several hours after exposure.

Persons sensitive to isocyanates will experience increased allergic reaction on repeated exposure.

CANCER INFORMATION

For complete discussion of toxicology data refer to Section 11.

Section 4 -- FIRST AID MEASURES

EYES: Flush eyes with large amounts of water for 15 minutes. Get medical attention.

SKIN: Wash affected area thoroughly with soap and water. Remove contaminated clothing and launder before re-use.

INHALATION: If any breathing problems occur during use, LEAVE THE AREA and get fresh air. If problems remain or occur later, IMMEDIATELY get medical attention.

INGESTION: Do not induce vomiting. Get medical attention immediately.

Section 5 -- FIRE FIGHTING MEASURES

FLASH POINT	LEL	UEL
90 F PMCC	1.0	7.0

FLAMMABILITY CLASSIFICATION

RED LABEL -- Flammable, Flash below 100 F (38 C)

EXTINGUISHING MEDIA

Carbon Dioxide, Dry Chemical, Foam

UNUSUAL FIRE AND EXPLOSION HAZARDS

Closed containers may explode when exposed to extreme heat.

Application to hot surfaces requires special precautions.

During emergency conditions overexposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent. Obtain medical attention.

Continued on page 3

SPECIAL FIRE FIGHTING PROCEDURES

Full protective equipment including self-contained breathing apparatus should be used.

Water spray may be ineffective. If water is used, fog nozzles are preferable. Water may be used to cool closed containers to prevent pressure build-up and possible autoignition or explosion when exposed to extreme heat.

Section 6 -- ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Remove all sources of ignition. Ventilate the area.

All personnel in the area should be protected as in Section 8.

Cover spill with absorbent material. Deactivate spilled material with a 10% ammonium hydroxide solution (household ammonia). After 10 minutes, collect in open containers and add more ammonia. Cover loosely. Wash spill area with soap and water.

Section 7 -- HANDLING AND STORAGE

STORAGE CATEGORY

DOL Storage Class IC

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Contents are FLAMMABLE. Keep away from heat, sparks, and open flame.

During use and until all vapors are gone: Keep area ventilated - Do not smoke - Extinguish all flames, pilot lights, and heaters - Turn off stoves, electric tools and appliances, and any other sources of ignition.

Consult NFPA Code. Use approved Bonding and Grounding procedures.

Keep container closed when not in use. Transfer only to approved containers with complete and appropriate labeling. Do not take internally. Keep out of the reach of children.

Section 8 -- EXPOSURE CONTROLS/PERSONAL PROTECTION

PRECAUTIONS TO BE TAKEN IN USE

NO PERSON SHOULD USE THIS PRODUCT, OR BE IN THE AREA WHERE IT IS BEING USED, IF THEY HAVE CHRONIC (LONG-TERM) LUNG OR BREATHING PROBLEMS OR IF THEY EVER HAD A REACTION TO ISOCYANATES.

Use only with adequate ventilation.

Avoid contact with skin and eyes. Avoid breathing vapor and spray mist.

Wash hands after using.

This coating may contain materials classified as nuisance particulates (listed "as Dust" in Section 2) which may be present at hazardous levels only during sanding or abrading of the dried film. If no specific dusts are listed in Section 2, the applicable limits for nuisance dusts are ACGIH TLV 10 mg/m3 (total dust), 3 mg/m3 (respirable fraction), OSHA PEL 15 mg/m3 (total dust), 5 mg/m3 (respirable fraction).

VENTILATION

Local exhaust preferable. General exhaust acceptable if the exposure to materials in Section 2 is maintained below applicable exposure limits. Refer to OSHA Standards 1910.94, 1910.107, 1910.108.

Continued on page 4

RESPIRATORY PROTECTION

Where overspray is present, a positive pressure air supplied respirator (TC19C NIOSH/MSHA approved) should be worn. If unavailable, a properly fitted organic vapor/particulate respirator approved by NIOSH/MSHA for protection against materials in Section 2 may be effective. Follow respirator manufacturer's directions for use. Wear the respirator for the whole time of spraying and until all vapors and mists are gone. NO PERSONS SHOULD BE ALLOWED IN THE AREA WHERE THIS PRODUCT IS BEING USED UNLESS EQUIPPED WITH THE SAME RESPIRATOR PROTECTION RECOMMENDED FOR THE PAINTERS.

When sanding or abrading the dried film, wear a dust/mist respirator approved by NIOSH/MSHA for dust which may be generated from this product, underlying paint, or the abrasive.

PROTECTIVE GLOVES

To prevent skin contact, wear gloves which are recommended by glove supplier for protection against materials in Section 2.

EYE PROTECTION

Wear safety spectacles with unperforated sideshields.

OTHER PROTECTIVE EQUIPMENT

Use barrier cream on exposed skin.

OTHER PRECAUTIONS

Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal.

Section 9 -- PHYSICAL AND CHEMICAL PROPERTIES

PRODUCT WEIGHT	28.59 lb/gal	3425 g/l
SPECIFIC GRAVITY	3.44	
BOILING POINT	277 - 292 F	136 - 144 C
MELTING POINT	Not Available	
VOLATILE VOLUME	32 %	
EVAPORATION RATE	Slower than ether	
VAPOR DENSITY	Heavier than air	
SOLUBILITY IN WATER	N.A.	

VOLATILE ORGANIC COMPOUNDS (VOC Theoretical - As Packaged)

2.35 lb/gal	282 g/l	Less Water and Federally Exempt Solvents
2.35 lb/gal	282 g/l	Emitted VOC

Section 10 -- STABILITY AND REACTIVITY

STABILITY -- Stable

CONDITIONS TO AVOID

None known.

INCOMPATIBILITY

Contamination with Water, Alcohols, Amines and other compounds which react with isocyanates, may result in dangerous pressure in, and possible bursting of, closed containers.

HAZARDOUS DECOMPOSITION PRODUCTS

By fire: Carbon Dioxide, Carbon Monoxide

HAZARDOUS POLYMERIZATION

Will not occur

Continued on page 5

Section 11 -- TOXICOLOGICAL INFORMATION

CHRONIC HEALTH HAZARDS

Reports have associated repeated and prolonged overexposure to solvents with permanent brain and nervous system damage.

Ethylbenzene is classified by IARC as possibly carcinogenic to humans (2B) based on inadequate evidence in humans and sufficient evidence in laboratory animals. Lifetime inhalation exposure of rats and mice to high ethylbenzene concentrations resulted in increases in certain types of cancer, including kidney tumors in rats and lung and liver tumors in mice. These effects were not observed in animals exposed to lower concentrations. There is no evidence that ethylbenzene causes cancer in humans.

TOXICOLOGY DATA

CAS No.	Ingredient Name				
100-41-4	Ethylbenzene				
		LC50	RAT	4HR	Not Available
		LD50	RAT		3500 mg/kg
1330-20-7	Xylene				
		LC50	RAT	4HR	5000 ppm
		LD50	RAT		4300 mg/kg
101-68-8	4, 4'-Diphenylmethane Diisocyanate				
		LC50	RAT	4HR	Not Available
		LD50	RAT		Not Available
9016-87-9	Diphenylmethane Diisocyanate Polym				
		LC50	RAT	4HR	Not Available
		LD50	RAT		Not Available
7440-66-6	Zinc				
		LC50	RAT	4HR	Not Available
		LD50	RAT		Not Available

Section 12 -- ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION

No data available.

Section 13 -- DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD

Waste from this product may be hazardous as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261.

Waste must be tested for ignitability to determine the applicable EPA hazardous waste numbers.

Incinerate in approved facility. Do not incinerate closed container. Dispose of in accordance with Federal, State/Provincial, and Local regulations regarding pollution.

Continued on page 6

Section 14 -- TRANSPORT INFORMATION

US Ground (DOT)
1 Gallon and Less may be Classed as CONSUMER COMMODITY, ORM-D
Larger Containers are Regulated as:
UN1263, PAINT, 3, PG III, (ERG#128)

DOT (Dept of Transportation) Hazardous Substances & Reportable Quantities
Ethyl benzene 1000 lb RQ
Xylenes (isomers and mixture) 100 lb RQ
Zinc 1000 lb RQ

Bulk Containers may be Shipped as (check reportable quantities):
RQ, UN1263, PAINT, 3, PG III, (ZINC, XYLENES (ISOMERS AND MIXTURE)), (ERG#128)

Canada (TDG)
UN1263, PAINT, CLASS 3, PG III, LIMITED QUANTITY, (ERG#128)

IMO
UN1263, PAINT, CLASS 3, PG III, (32 C c.c.), EmS F-E, S-E

Section 15 -- REGULATORY INFORMATION

SARA 313 (40 CFR 372.65C) SUPPLIER NOTIFICATION

CAS No.	CHEMICAL/COMPOUND	% by WT	% Element
100-41-4	Ethylbenzene	1	
1330-20-7	Xylene	6	
101-68-8	4, 4'-Diphenylmethane Diisocyanate	2	
9016-87-9	Diphenylmethane Diisocyanate Polymer	6	
	Zinc		74

CALIFORNIA PROPOSITION 65
WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.
TSCA CERTIFICATION
All chemicals in this product are listed, or are exempt from listing, on the TSCA Inventory.

Section 16 -- OTHER INFORMATION

This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

The above information pertains to this product as currently formulated, and is based on the information available at this time. Addition of reducers or other additives to this product may substantially alter the composition and hazards of the product. Since conditions of use are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information.

Industrial & Marine Coatings

5.12A

COROTHANE® I HS

ALIPHATIC FINISH COAT

B65-50 SERIES

APPLICATION BULLETIN

APPLICATION PROCEDURES

Surface preparation must be completed as indicated.

Stir paint thoroughly prior to use with a power agitator. Filter slowly through a 55 mesh screen.

Apply paint at the recommended film thickness and spreading rate as indicated below:

Recommended Spreading Rate per coat:

Wet mils:	3.5 - 5.0
Dry mils:	2.0 - 3.0
Coverage:	326 - 489 sq ft/gal approximate

Drying Schedule @ 4.0 mils wet @ 50% RH:

	@ 40°F	@ 77°F	@ 100°F
To touch:	4 hours	2 hours	45 minutes
To recoat:			
minimum:	24 hours	12 hours	6 hours
maximum:	14 days	14 days	14 days
To cure:	7 days	3 days	3 days

If maximum recoat time is exceeded, abrade surface before recoating. Drying time is temperature, humidity, and film thickness dependent.

Application of coating above maximum or below minimum recommended spreading rate may adversely affect coating performance.

PERFORMANCE TIPS

Stripe coat all crevices, welds, and sharp angles to prevent early failure in these areas.

When using spray application, use a 50% overlap with each pass of the gun to avoid holidays, bare areas, and pinholes. If necessary, cross spray at a right angle.

Spreading rates are calculated on volume solids and do not include an application loss factor due to surface profile, roughness or porosity of the surface, skill and technique of the applicator, method of application, various surface irregularities, material lost during mixing, spillage, overthinning, climatic conditions, and excessive film build.

Excessive reduction of material can affect film build, appearance, and adhesion.

In order to avoid blockage of spray equipment, clean equipment before use or before periods of extended downtime with Reducer #15, R7K15.

Pour a small amount of Reducer #15, R7K15 over the top of the paint in the can to prevent skinning or gelling.

Place a temporary cover over the pail to keep excessive moisture, condensation, fog, or rain from contaminating the coating.

Do not exceed recommended dry film thickness.

When applying Corothane I - HS over dark colors, Corothane I Zinc Primers, or porous surfaces, an intermediate coat or a minimum of 2 finish coats is required for adequate hide and uniformity of appearance.

Tinted colors must be used within 7 days after tinting.

E-Z Roll Urethane Defoamer is acceptable for use. See data page 5.99 for details.

Corothane KA Accelerator is acceptable for use. See data page 5.98 for details.

It is recommend that partially used cans not be sealed/closed for use at a later date.

Refer to Product Information sheet for additional performance characteristics and properties.

CLEAN UP INSTRUCTIONS

Clean spills and spatters immediately with Reducer #15, R7K15. Clean tools immediately after use with Reducer #15, R7K15. Follow manufacturer's safety recommendations when using any solvent.

SAFETY PRECAUTIONS

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Section 1 -- PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NUMBER	DATE OF PREPARATION	HMIS CODES	
		Health	3*
B65W50	17-JUN-08	Flammability	2
		Reactivity	2

PRODUCT NAME
COROTHANE® I - HS Moisture Cure Urethane, White

MANUFACTURER'S NAME
THE SHERWIN-WILLIAMS COMPANY
101 Prospect Avenue N.W.
Cleveland, OH 44115

TELEPHONE NUMBERS and WEBSITES
Product Information
www.sherwin-williams.com
Regulatory Information
(216) 566-2902 www.paintdocs.com
Medical Emergency
(216) 566-2917
Transportation Emergency for Chemical Emergency ONLY (spill, leak,
(800) 424-9300 fire, exposure, or accident)

Section 2 -- COMPOSITION/INFORMATION ON INGREDIENTS

% by WT	CAS No.	INGREDIENT			UNITS	VAPOR PRESSURE
0.8	100-41-4	Ethylbenzene				
			ACGIH TLV	100	ppm	7.1 mm
			ACGIH TLV	125	ppm STEL	
			OSHA PEL	100	ppm	
			OSHA PEL	125	ppm STEL	
4	1330-20-7	Xylene				
			ACGIH TLV	100	ppm	5.9 mm
			ACGIH TLV	150	ppm STEL	
			OSHA PEL	100	ppm	
			OSHA PEL	150	ppm STEL	
1	64742-95-6	Light Aromatic Hydrocarbons				
			ACGIH TLV	Not Available		3.8 mm
			OSHA PEL	Not Available		
1	108-67-8	1,3,5-Trimethylbenzene				
			ACGIH TLV	25	ppm	2 mm
			OSHA PEL	25	ppm	
2	95-63-6	1,2,4-Trimethylbenzene				
			ACGIH TLV	25	ppm	2.03 mm
			OSHA PEL	25	ppm	
1	108-10-1	Methyl Isobutyl Ketone				
			ACGIH TLV	50	ppm	16 mm
			ACGIH TLV	75	ppm STEL	
			OSHA PEL	50	ppm	
			OSHA PEL	75	ppm STEL	

Continued on page 2

8	110-43-0	Methyl n-Amyl Ketone				
		ACGIH TLV	50	ppm		3.855 mm
		OSHA PEL	100	ppm		
0.1	822-06-0	Hexamethylene Diisocyanate (max.)				
		ACGIH TLV	0.005	ppm		0.05 mm
		OSHA PEL	Not Available			
3	4083-64-1	p-Toluenesulfonyl Isocyanate				
		ACGIH TLV	Not Available			
		OSHA PEL	Not Available			
27	28182-81-2	Hexamethylene Diisocyanate Polymer				
		ACGIH TLV	Not Available			
		OSHA PEL	Not Available			
10	14808-60-7	Quartz				
		ACGIH TLV	0.025	mg/m3 as Resp. Dust		
		OSHA PEL	0.1	mg/m3 as Resp. Dust		
4	14464-46-1	Cristobalite				
		ACGIH TLV	0.025	mg/m3 as Resp. Dust		
		OSHA PEL	0.05	mg/m3 as Resp. Dust		
26	13463-67-7	Titanium Dioxide				
		ACGIH TLV	10	mg/m3 as Dust		
		OSHA PEL	10	mg/m3 Total Dust		
		OSHA PEL	5	mg/m3 Respirable Fraction		

Section 3 -- HAZARDS IDENTIFICATION

ROUTES OF EXPOSURE

INHALATION of vapor or spray mist.

EYE or SKIN contact with the product, vapor or spray mist.

EFFECTS OF OVEREXPOSURE

EYES: Irritation.

SKIN: Prolonged or repeated exposure may cause irritation.

INHALATION: Irritation of the upper respiratory system.

May cause nervous system depression. Extreme overexposure may result in unconsciousness and possibly death.

Prolonged overexposure to solvent ingredients in Section 2 may cause adverse effects to the liver, urinary and reproductive systems.

SIGNS AND SYMPTOMS OF OVEREXPOSURE

Headache, dizziness, nausea, and loss of coordination are indications of excessive exposure to vapors or spray mists.

Redness and itching or burning sensation may indicate eye or excessive skin exposure.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

May cause allergic respiratory and/or skin reaction in susceptible persons or sensitization. This effect may be delayed several hours after exposure.

Persons sensitive to isocyanates will experience increased allergic reaction on repeated exposure.

CANCER INFORMATION

For complete discussion of toxicology data refer to Section 11.

Continued on page 3

Section 4 -- FIRST AID MEASURES

EYES: Flush eyes with large amounts of water for 15 minutes. Get medical attention.
SKIN: Wash affected area thoroughly with soap and water. Remove contaminated clothing and launder before re-use.
INHALATION: If any breathing problems occur during use, LEAVE THE AREA and get fresh air. If problems remain or occur later, IMMEDIATELY get medical attention.
INGESTION: Do not induce vomiting. Get medical attention immediately.

Section 5 -- FIRE FIGHTING MEASURES

FLASH POINT	LEL	UEL
108 F PMCC	0.7	7.9

FLAMMABILITY CLASSIFICATION
Combustible, Flash above 99 and below 200 F
EXTINGUISHING MEDIA
Carbon Dioxide, Dry Chemical, Foam
UNUSUAL FIRE AND EXPLOSION HAZARDS
Closed containers may explode when exposed to extreme heat.
Application to hot surfaces requires special precautions.
During emergency conditions overexposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent. Obtain medical attention.
SPECIAL FIRE FIGHTING PROCEDURES
Full protective equipment including self-contained breathing apparatus should be used.
Water spray may be ineffective. If water is used, fog nozzles are preferable. Water may be used to cool closed containers to prevent pressure build-up and possible autoignition or explosion when exposed to extreme heat.

Section 6 -- ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Remove all sources of ignition. Ventilate the area.
All personnel in the area should be protected as in Section 8.
Cover spill with absorbent material. Deactivate spilled material with a 10% ammonium hydroxide solution (household ammonia). After 10 minutes, collect in open containers and add more ammonia. Cover loosely. Wash spill area with soap and water.

Section 7 -- HANDLING AND STORAGE

STORAGE CATEGORY
DOL Storage Class II
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE
Contents are COMBUSTIBLE. Keep away from heat and open flame.
Consult NFPA Code. Use approved Bonding and Grounding procedures.
Keep container closed when not in use. Transfer only to approved containers with complete and appropriate labeling. Do not take internally. Keep out of the reach of children.

Continued on page 4

Section 8 -- EXPOSURE CONTROLS/PERSONAL PROTECTION

PRECAUTIONS TO BE TAKEN IN USE

NO PERSON SHOULD USE THIS PRODUCT, OR BE IN THE AREA WHERE IT IS BEING USED, IF THEY HAVE CHRONIC (LONG-TERM) LUNG OR BREATHING PROBLEMS OR IF THEY EVER HAD A REACTION TO ISOCYANATES.

Use only with adequate ventilation.

Avoid contact with skin and eyes. Avoid breathing vapor and spray mist.

Wash hands after using.

This coating may contain materials classified as nuisance particulates (listed "as Dust" in Section 2) which may be present at hazardous levels only during sanding or abrading of the dried film. If no specific dusts are listed in Section 2, the applicable limits for nuisance dusts are ACGIH TLV 10 mg/m3 (total dust), 3 mg/m3 (respirable fraction), OSHA PEL 15 mg/m3 (total dust), 5 mg/m3 (respirable fraction).

VENTILATION

Local exhaust preferable. General exhaust acceptable if the exposure to materials in Section 2 is maintained below applicable exposure limits. Refer to OSHA Standards 1910.94, 1910.107, 1910.108.

RESPIRATORY PROTECTION

Where overspray is present, a positive pressure air supplied respirator (TC19C NIOSH/MSHA approved) should be worn. If unavailable, a properly fitted organic vapor/particulate respirator approved by NIOSH/MSHA for protection against materials in Section 2 may be effective. Follow respirator manufacturer's directions for use. Wear the respirator for the whole time of spraying and until all vapors and mists are gone. NO PERSONS SHOULD BE ALLOWED IN THE AREA WHERE THIS PRODUCT IS BEING USED UNLESS EQUIPPED WITH THE SAME RESPIRATOR PROTECTION RECOMMENDED FOR THE PAINTERS.

When sanding or abrading the dried film, wear a dust/mist respirator approved by NIOSH/MSHA for dust which may be generated from this product, underlying paint, or the abrasive.

PROTECTIVE GLOVES

To prevent skin contact, wear gloves which are recommended by glove supplier for protection against materials in Section 2.

EYE PROTECTION

Wear safety spectacles with unperforated sideshields.

OTHER PROTECTIVE EQUIPMENT

Use barrier cream on exposed skin.

OTHER PRECAUTIONS

Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal.

Section 9 -- PHYSICAL AND CHEMICAL PROPERTIES

PRODUCT WEIGHT	11.76 lb/gal	1409 g/l
SPECIFIC GRAVITY	1.42	
BOILING POINT	237 - 360 F	113 - 182 C
MELTING POINT	Not Available	
VOLATILE VOLUME	36 %	
EVAPORATION RATE	Slower than ether	
VAPOR DENSITY	Heavier than air	
SOLUBILITY IN WATER	N.A.	

Continued on page 5

VOLATILE ORGANIC COMPOUNDS (VOC Theoretical - As Packaged)
2.57 lb/gal 308 g/l Less Water and Federally Exempt Solvents
2.57 lb/gal 308 g/l Emitted VOC

Section 10 -- STABILITY AND REACTIVITY

STABILITY -- Stable

CONDITIONS TO AVOID

None known.

INCOMPATIBILITY

Contamination with Water, Alcohols, Amines and other compounds which react with isocyanates, may result in dangerous pressure in, and possible bursting of, closed containers.

HAZARDOUS DECOMPOSITION PRODUCTS

By fire: Carbon Dioxide, Carbon Monoxide, Oxides of Nitrogen, possibility of Hydrogen Cyanide

HAZARDOUS POLYMERIZATION

Will not occur

Section 11 -- TOXICOLOGICAL INFORMATION

CHRONIC HEALTH HAZARDS

Reports have associated repeated and prolonged overexposure to solvents with permanent brain and nervous system damage.

Ethylbenzene is classified by IARC as possibly carcinogenic to humans (2B) based on inadequate evidence in humans and sufficient evidence in laboratory animals. Lifetime inhalation exposure of rats and mice to high ethylbenzene concentrations resulted in increases in certain types of cancer, including kidney tumors in rats and lung and liver tumors in mice. These effects were not observed in animals exposed to lower concentrations. There is no evidence that ethylbenzene causes cancer in humans.

Crystalline Silica (Quartz, Cristobalite) is listed by IARC and NTP. Long term exposure to high levels of silica dust, which can occur only when sanding or abrading the dry film, may cause lung damage (silicosis) and possibly cancer.

IARC's Monograph No. 93 reports there is sufficient evidence of carcinogenicity in experimental rats exposed to titanium dioxide but inadequate evidence for carcinogenicity in humans and has assigned a Group 2B rating. In addition, the IARC summary concludes, "No significant exposure to titanium dioxide is thought to occur during the use of products in which titanium is bound to other materials, such as paint."

TOXICOLOGY DATA

Continued on page 6

CAS No.	Ingredient Name				
100-41-4	Ethylbenzene				
		LC50	RAT	4HR	Not Available
		LD50	RAT		3500 mg/kg
1330-20-7	Xylene				
		LC50	RAT	4HR	5000 ppm
		LD50	RAT		4300 mg/kg
64742-95-6	Light Aromatic Hydrocarbons				
		LC50	RAT	4HR	Not Available
		LD50	RAT		Not Available
108-67-8	1,3,5-Trimethylbenzene				
		LC50	RAT	4HR	Not Available
		LD50	RAT		Not Available
95-63-6	1,2,4-Trimethylbenzene				
		LC50	RAT	4HR	Not Available
		LD50	RAT		Not Available
108-10-1	Methyl Isobutyl Ketone				
		LC50	RAT	4HR	Not Available
		LD50	RAT		2080 mg/kg
110-43-0	Methyl n-Amyl Ketone				
		LC50	RAT	4HR	Not Available
		LD50	RAT		1670 mg/kg
822-06-0	Hexamethylene Diisocyanate (max.)				
		LC50	RAT	4HR	Not Available
		LD50	RAT		738 mg/kg
4083-64-1	p-Toluenesulfonyl Isocyanate				
		LC50	RAT	4HR	Not Available
		LD50	RAT		Not Available
28182-81-2	Hexamethylene Diisocyanate Polymer				
		LC50	RAT	4HR	Not Available
		LD50	RAT		Not Available
14808-60-7	Quartz				
		LC50	RAT	4HR	Not Available
		LD50	RAT		Not Available
14464-46-1	Cristobalite				
		LC50	RAT	4HR	Not Available
		LD50	RAT		Not Available
13463-67-7	Titanium Dioxide				
		LC50	RAT	4HR	Not Available
		LD50	RAT		Not Available

Section 12 -- ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION
No data available.

Continued on page 7

Section 13 -- DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD

Waste from this product may be hazardous as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261.

Waste must be tested for ignitability to determine the applicable EPA hazardous waste numbers.

Incinerate in approved facility. Do not incinerate closed container. Dispose of in accordance with Federal, State/Provincial, and Local regulations regarding pollution.

Section 14 -- TRANSPORT INFORMATION

US Ground (DOT)

May be Classed as a Combustible Liquid for U.S. Ground.
UN1263, PAINT, 3, PG III, (ERG#128)

DOT (Dept of Transportation) Hazardous Substances & Reportable Quantities

Xylenes (isomers and mixture) 100 lb RQ

Bulk Containers may be Shipped as (check reportable quantities):

RQ, UN1263, PAINT, 3, PG III, (XYLENES (ISOMERS AND MIXTURE)), (ERG#128)

Canada (TDG)

May be Classed as a Combustible Liquid for Canadian Ground.
UN1263, PAINT, CLASS 3, PG III, (ERG#128)

IMO

UN1263, PAINT, CLASS 3, PG III, (42 C c.c.), EmS F-E, S-E

Section 15 -- REGULATORY INFORMATION

SARA 313 (40 CFR 372.65C) SUPPLIER NOTIFICATION

CAS No.	CHEMICAL/COMPOUND	% by WT	% Element
100-41-4	Ethylbenzene	0.7	
1330-20-7	Xylene	4	
95-63-6	1,2,4-Trimethylbenzene	2	
108-10-1	Methyl Isobutyl Ketone	1	

CALIFORNIA PROPOSITION 65

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

TSCA CERTIFICATION

All chemicals in this product are listed, or are exempt from listing, on the TSCA Inventory.

Continued on page 8

Section 16 -- OTHER INFORMATION

This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

The above information pertains to this product as currently formulated, and is based on the information available at this time. Addition of reducers or other additives to this product may substantially alter the composition and hazards of the product. Since conditions of use are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information.

Industrial & Marine Coatings

5.07A
COROTHANE® I IRONOX® B

REDDISH GRAY B65A11

APPLICATION BULLETIN

APPLICATION PROCEDURES

Surface preparation must be completed as indicated.

Stir paint thoroughly prior to use with a power agitator. Filter slowly through a 55 mesh screen.

Apply paint at the recommended film thickness and spreading rate as indicated below:

Recommended Spreading Rate per coat:

Wet mils:	5.0 - 8.0
Dry mils:	3.0 - 5.0
Coverage:	195 - 326 sq ft/gal approximate

Drying Schedule @ 5.0 mils wet @ 50% RH:

	@40°F	@ 75°F	@100°F
To touch:	2 hours	40 minutes	20 minutes
To handle:	8 hours	6 hours	2 hours
To recoat:			
minimum:	8 hours	6 hours	2 hours
maximum:	12 months	12 months	12 months
To cure:	4 days	3 days	1 day

Drying time is temperature, humidity, and film thickness dependent.

Application of coating above maximum or below minimum recommended spreading rate may adversely affect coating performance.

PERFORMANCE TIPS

Stripe coat all crevices, welds, and sharp angles to prevent early failure in these areas.

When using spray application, use a 50% overlap with each pass of the gun to avoid holidays, bare areas, and pinholes. If necessary, cross spray at a right angle.

Spreading rates are calculated on volume solids and do not include an application loss factor due to surface profile, roughness or porosity of the surface, skill and technique of the applicator, method of application, various surface irregularities, material lost during mixing, spillage, overthinning, climatic conditions, and excessive film build.

Excessive reduction of material can affect film build, appearance, and adhesion.

In order to avoid blockage of spray equipment, clean equipment before use or before periods of extended downtime with Reducer #15, R7K15.

Pour a small amount of Reducer #15, R7K15 over the top of the paint in the can to prevent skinning or gelling.

Place a temporary cover over the pail to keep excessive moisture, condensation, fog, or rain from contaminating the coating.

It is recommended that partially used cans not be sealed/closed for use at a later date.

Corothane KA Accelerator is acceptable for use. See data page 5.98 for details.

Must be topcoated for exterior use.

Refer to Product Information sheet for additional performance characteristics and properties.

CLEAN UP INSTRUCTIONS

Clean spills and spatters immediately with Reducer #15, R7K15. Clean tools immediately after use with Reducer #15, R7K15. Follow manufacturer's safety recommendations when using any solvent.

SAFETY PRECAUTIONS

Refer to the MSDS sheet before use.

Published technical data and instructions are subject to change without notice. Contact your Sherwin-Williams representative for additional technical data and instructions.

DISCLAIMER

The information and recommendations set forth in this Product Data Sheet are based upon tests conducted by or on behalf of The Sherwin-Williams Company. Such information and recommendations set forth herein are subject to change and pertain to the product offered at the time of publication: Consult your Sherwin-Williams representative to obtain the most recent Product Data Information and Application Bulletin.

WARRANTY

The Sherwin-Williams Company warrants our products to be free of manufacturing defects in accord with applicable Sherwin-Williams quality control procedures. Liability for products proven defective, if any, is limited to replacement of the defective product or the refund of the purchase price paid for the defective product as determined by Sherwin-Williams. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY SHERWIN-WILLIAMS, EXPRESSED OR IMPLIED, STATUTORY, BY OPERATION OF LAW OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Material Safety Data Sheet (MSDS) – Product: Rust Grip/Rust Grip (HS)

SECTION I: Product Information	
Product Identifier	Rust Grip/Rust Grip (HS)
Manufacturer	Superior Products
Address:	10835 W. 78th Street Shawnee Mission, KS 66214
Product Use:	corrosion coating protection for steel and concrete surfaces
Emergency PHONE #	1-800-424-9300

SECTION II: Hazardous Ingredients

Hazardous Ingredients	%	CAS/PIN	LD50 (Species Route)	LC50 (Species)
Aromatic 100	15-40	64742-95-6	2.9 g/kg (oral, rat) 21.6 g/kg (dermal, rabbit)	1500 PPM (rat)
Mineral spirits	5-10	64741-41-9	8.5 g/kg (i.p., rat)	NAV
Prepolymer diphenyl methane diisocyanate	3-7	26447-40-5	NAV	NAV
4,4-diphenyl methane disocyanate	3-7	101-68-8	2.2g/kg (oral, mouse)	178 mg/m3 (rat) 369-490 mg/m3, 4h (rat)
Aluminum pigment	10-30	7429-90-5	NAV	NAV
Isocyanate catalysed polyurethane	15-40	58043-05-3	NAV	NAV

SECTION III: Physical Data

Physical State	Liquid				
Appearance and Odor	silver grey liquid, aromatic odor				
Solubility in Water	Insoluble				
Freezing Point	NAP	**Boiling Point**	>150C deg.	**pH**	NAP
Specific Gravity	1.1	**Odor Threshold**	0.4 ppm		
Coeff. Water/Oil	NAV	**Evaporation Rate**	very slow	**%Volatiles**	45
Vapour Density (air =1)	NAV	**Vapor Pressure**	8mmHg @20C. deg.		

SECTION IV: Fire Or Explosive Hazard

Conditions of Flammability: spraying/activities that create finely divided droplets					
Hazardous Combustion Products: Carbon Monoxide, isocyanate-based fumes					
Auto Ignition Temp.	214C. Deg.	**Minimum Ignition energy**		NAV	
Flammable Limits (Lower)	1.0	**(Upper)**	6.1	**% Fire Point**	NAP
Flash Point & Method	44C. deg.	**Sensitivity to Mechanical Impact**		possible due to aluminum content	
Sensitivity to Static Discharge? Yes					
Special Procedures	Firefighters should wear full-body protection and SCBA				
Means of Extinction	foam, dry chemical, carbon dioxide; water fog to cool containers exposed to heat				

NAV= Not Available *NAP=Not Applicable*

SECTION V: Reactivity Data

Conditions of Reactivity	Dry aluminum powder
Chemical Incompatibility	Ammonium nitrate chlorofluoro carbons, chlorinated solvents, metal oxides, strong bases, peroxides, amines
Conditions of Instability	Impact, heat, friction
Hazardous Decomposition Products	Hydrogen gas, reactive chlorides
Corrosive Behaviors?	No

SECTION VI: Toxicological Properties

Routes of Entry: Skin Contact	X	**Skin Absorption**	NAV	**Eye Contact**	X
Inhalation	X	**Ingestion**	X	**Synergistic Products**	NAV

Exposure Limits	Diphenyl methane diisocyanate prepolymer (0.005mg/m3); 4,4-diphenyl methane diisocyanate (0.005mg/m3)
Effects of Acute Exposure	headache, dizziness, nausea, intoxication, pulmonary edema
Effects of Chronic Exposure	Defatting of skin, dryness, allergic asthma
Mutagenecity	NAV
Carcinogenecity	possible based on study of population exposed to mineral spirits
Irritancy	skin and eye irritation
Teratogenecity	Insufficient information
Reproductive Toxicity	NAV
Sensitization	Respiratory sensitization; skin sensitization

SECTION VII: Preventive Measures

Personal Protective Equipment	1/2 face respirator w/ organic vapor and particulate filter cartridges, skin protection, PVA/nitrile gloves; goggles; airline respirator for spray application.
Engineering Controls	if product sprayed mechanical exhaust ventilation will be required.
Storage Requirements	keep container closed; store between 5-50C. degrees; shelf life= 12 mos. @ 25C. deg; use flammable liquid storage cabinet for inside storage.
Handling Procedures/Equipment	ground all containers; use non-sparking tools
Leak/Spill Procedures	use kitty litter or similar absorbent to contain spill; neutralize w/ solution of 80% water, 20% tergitol TMN-10; use protection clothing; non-spark tools
Waste Disposal	dispose of as paint/aluminum waste according to local regulations

SECTION VIII: First Aid Measures

Inhalation	Remove to fresh air; give oxygen if required; seek medical attention
Eyes	Flush eyes with large amounts of water for 15 minutes. Get medical attention.
Skin	remove contaminated clothing; Wash affected areas with mild soap and water.
Other	Ingestion: Drink 1-2 glasses of milk/water. Do not induce vomiting. get medical attention

SECTION IV: Preparation Information

Contact Info:	Superior Products, Inc.		
Telephone No:	1-800-424-9300 Emergency phone	**Date of Preparation:**	5/27/00

NAV= Not Available *NAP=Not Applicable*

The right coating for ultimate protection.

RUST GRIP®

Technical Data Sheet (04/13/09)

DESCRIPTION

RUST GRIP® is a tough, one-part polyurethane coating that absorbs atmospheric moisture to cure. RUST GRIP® is loaded with a metallic pigment for strength and is also resistant to chemical solvents and acid splash. Upon curing, RUST GRIP® provides a protective coating film of superior adhesion and flexibility, and is resistant to abrasion and impact. RUST GRIP® can be used as a primer or as a one-coating system. It is patented to encapsulate lead-based paints and other toxic materials, including asbestos. RUST GRIP® can be applied over pressure-washed, dry flash rust and firmly bonded commercial paints. In most cases, a white or near-white blasting is not required.

TYPICAL USES

- Good acid and very good alkali resistance.
- As a coating to encapsulate rust, lead-based paints and other hazardous materials.
- As a protective coating on metal, concrete, wood, etc. to add strength and prevent deterioration.
- As a one-coat system on new or existing bridges, oil platforms, roofs, and other commercial/industrial surfaces with minimal surface preparation.
- As a moisture protective membrane to stop moisture penetration, contaminants, and mold and mildew.

APPLICATION METHODS

RUST GRIP® can be applied to concrete or masonry substrates. The coating can be applied by spray, brush or roller. For specific instructions on surface preparation, mixing and application, please refer to the SPI's application instructions for RUST GRIP® (millage may vary due to surface profile).

TEST AND CERTIFICATIONS

1. Tensile Strength (6,780 psi after 3 weeks)
2. USDA approved
3. Marine approvals for salt water/maritime user:
   - DNV (Det Norske Veritas)
   - ABS (American Bureau of Shipping)
   - IMO (International Maritime Organization)
   - US Coast Guard
4. Factory Mutual approval
5. E-108-00: Spread of flame on pitched roofs (Class "A" non-combustible)
6. G85: Prohesion over rusted metal
7. Mildew Resistance – excellent (ASTM D3273, 3274)
8. Chemical Resistance (24 hours/12 reagents)
9. Flexibility (Mandrel Bend: ASTM D522) – 1/8"
10. Direct Impact Resistance (ASTM D2794)
11. Adhesion (ASTM D3359, D4541)
12. Water Vapor Transmission (ASTM D1653)
13. Surface Burning Characteristics (E84)
14. Weathering (2000 hours) – China
15. Scrub Resistance (ASTM D2486)

PHYSICAL DATA

- Solids: By weight 62.2% / By volume 51.4%
- 30-60 MINUTES TO TACK FREE AT 70°F (21°C)
- Overcoat window is three hours or less at 70°F (21°C)
- Lead and chromate free
- Hygroscopic: Cures by absorbing moisture in the air
- Weight: 9.8 lbs. per gallon
- Moisture-cure Polyurethane
- Shelf Life: Up to 3 years (unopened) under appropriate storage condition (see MSDS)
- One component coating; No curing agent needed
- VOC Level: 400 grams/liter
- Silver-gray in color; not available in colors
- Resistant to most solvents, chemicals and some acids
- Maximum Surface Temperature when applying; 150°F (65°C)
- Minimum Surface Temperature when applying; 50°F (10°C)
- Maximum Surface Temperature after curing; 325°F (163°C)
- Failure will occur at a constant temperature equal to or greater than 325°F (163°C); consult SPI for intermittent temperatures greater than 325°F (163°C)

SAFETY PRECAUTIONS

Do not use this product without first taking all appropriate safety measures to prevent property damage and injuries. These measures may include, without limitation: proper ventilation, use of proper lamps, wearing of protective clothing and masks, tenting, and proper separation of application areas. This coating is flammable. Keep away from fire, or other sources of ignition. For more specific safety procedures, please refer to the RUST GRIP Material Safety Data Sheet. **KEEP OUT OF REACH OF CHILDREN.**

Material Safety Data Sheet

Date Originated: 03/06/2009

NFPA	HCS Risk Phrases	Protective Clothing
	**HCS CLASS: Toxic.** **HCS CLASS: Irritating substance.** **HCS CLASS: Sensitizing substance.** **HCS CLASS: Target organ effects.** **HCS CLASS: Flammable liquid having a flash point lower than 37.8℃ (100℉).**	

Section 1. Chemical Product and Company Identification

Product Name

MC-Ferrox B 100

Synonym

W111.61

Manufacturer

SUPPLIER:
Wasser Corporation
4118 B PL NW, Suite B
Auburn, WA 98001, US
Phone# 253-850-2967

Chemical Family

Not applicable. (Paint)

In case of Emergency

EMERGENCY PHONE NUMBERS:
USA and Canada: 1-800 424-9300
International: 1-703 527-3887

Section 2. Composition and Information on Ingredients

Name	CAS #	% by Weight	TLV/PEL	LC_{50}/LD_{50}
Ferric oxide	1309-37-1	10-30	TWA: 5 (mg/m^3) from ACGIH (TLV)	ORAL (LD50): Acute: 10000 mg/kg [Rat].
Tert Butyl Acetate	540-88-5	10-30	TWA: 200 (ppm) from ACGIH (TLV) TWA: 200 (ppm) from OSHA	ORAL (LD50): Acute: 4100 mg/kg [Rat]. DERMAL (LD50): Acute: 2000 mg/kg [Rabbit].
Modified MDI	Not disclosed	5-10	Not available.	Not available.
Hydrous calcium magnesium silicate mix	14807-96-6	5-10	TWA: 2 (mg/m^3) from ACGIH (TLV)	Not available.
TDI Prepolymer	Proprietary	7-13	Not available.	Not available.
Parachlorobenzotrifluoride	98-56-6	1-5	CEIL: 25 (ppm)	DERMAL (LD50): Acute: 2700 mg/kg [Rabbit]. VAPOR (LC50): Acute: 4479 ppm 4 hour(s) [Rat].
Light aromatic solvent naphtha (petroleum)	64742-95-6	1-5	TWA: 50 (ppm) from ACGIH (TLV)	DERMAL (LD50): Acute: 14000 mg/kg [Rabbit]. VAPOR (LC50): Acute: 3670 ppm 4 hour(s) [Rat].
Isocyanic acid, polymethylene polyphenylene ester	9016-87-9	1-5	TWA: 0.005 CEIL: 0.02 (ppm) from ACGIH (TLV)	DERMAL (LD50): Acute: 6000 mg/kg [Rabbit]. VAPOR (LC50): Acute: 103 ppm 4 hour(s) [Rat].
Titanium oxide	13463-67-7	1-5	TWA: 10 (mg/m^3) from ACGIH INHALATION	ORAL (LD50): Acute: 24000 mg/kg [Rat]. DERMAL (LD50): Acute: 10000 mg/kg [Rabbit].
Silica, crystalline, quartz	14808-60-7	0-1	TWA: 0.1 (mg/m^3) from OSHA (PEL) ACGIH (TLV) INHALATION	Not available.
Toluene diisocyanate - mixture (TDI)	26471-62-5	0-1	TWA: 0.005 CEIL: 0.02 (ppm) from OSHA (PEL) and ACGIH (TLV)	DERMAL (LD50): Acute: 10000 mg/kg [Rabbit]. VAPOR (LC50): Acute: 1.5 ppm 4 hour(s) [Rat].

Material Safety Data Sheet

Product Name: **MC-Ferrox B 100**

Section 3. Hazards Identification

Routes of Entry: Inhalation. Skin contact (absorption). Eye contact. Ingestion.

Potential Acute Health Effects

Eyes: Liquid or spray mist may severely irritate eyes. Inflammation of the eye is characterized by redness, watering, and itching.

Skin: This product may irritate skin upon contact. Harmful if absorbed through the skin. May cause skin sensitization. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Ingestion: Harmful if swallowed. Irritation or chemical burns of the mouth, pharynx, esophagus and stomach can develop following ingestion of this product. May cause headaches, weakness, nausea, vomiting and diarrhea. Even small amounts of liquid aspirated into lungs during ingestion or from vomiting may cause mild to severe pulmonary injury and possibly death.

Inhalation: Harmful if inhaled (irritant, sensitizer). Over-exposure by inhalation of the vapors/spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. May cause nausea, vomiting and headaches. May cause sensitization by inhalation. Severe overexposure may cause unconciousness and death.

Potential Chronic Health Effects

Eyes: Repeated or prolonged contact with spray mist may produce chronic eye irritation.

Skin: Repeated skin exposure can produce local skin destruction, or dermatitis, possibly sensitization.

Ingestion: May be fatal if swallowed.

Inhalation: Repeated or prolonged inhalation of vapors/spray mist may lead to chronic respiratory irritation. May cause sensitization by inhalation.

Other chronic effects on Humans The substance is toxic to mucous membranes, upper respiratory tract, lungs, blood, kidney, liver. Exposure may cause asthma, dermatitis and pulmonary oedema; effects may be delayed. Sensitive individuals may develop eczema and/or asthma on inhalation of this material. However, in light of good industrial hygiene, exposure to any chemical should be kept to a minimum.

Section 4. First Aid Measures

Eye Contact Check for and remove any contact lenses. IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. DO NOT use an eye ointment. Seek medical attention.

Skin Contact Wash gently and thoroughly the contaminated skin with running water and non-abrasive soap. Rinse with plenty of running water (15-30 minutes). If irritation persists, seek medical attention.

Hazardous Skin Contact If the product gets onto the clothed portion of the body, remove the contaminated clothes as quickly as possible, protecting your own hands and body. Place the person under shower. Wash gently and thoroughly the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Rinse with plenty of running water (15-30 minutes). Seek medical attention. Wash contaminated clothing before reusing.

Inhalation Allow the person to rest in a well ventilated area. Loosen tight clothing around the person's neck and waist. If symptoms persist, seek medical advice immediately (show the label when possible).

Hazardous Inhalation Evacuate the person to a safe area as soon as possible. Loosen tight clothing around the person's neck and waist. If the person is not breathing, administer mouth-to-mouth resuscitation. Warning: It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation if the inhaled material is toxic, infectious or corrosive. Oxygen may be administered if breathing is difficult. Seek medical attention.

Ingestion DO NOT induce vomiting. Have conscious person drink several glasses of water or milk. Seek immediate medical attention.

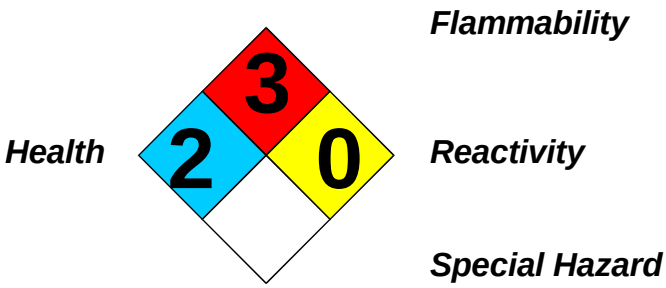
Hazardous Ingestion DO NOT induce vomiting. Have conscious person drink several glasses of water or milk. Never give an unconscious person anything to ingest. Even small amounts of liquid aspirated into lungs during ingestion or from vomiting may cause mild to severe pulmonary injury and possibly death. If breathing is difficult, administer oxygen. If the person is not breathing, administer mouth-to-mouth resuscitation. WARNING: It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation when the material is toxic, infectious or corrosive. Avoid mouth-to-mouth contact by using mouth guards or shields. Seek immediate medical attention.

Material Safety Data Sheet

Product Name: **MC-Ferrox B 100**

Section 5. Fire and Explosion Data

Flammability of the Product	Flammable.
Auto-Ignition Temperature	Not available.
Flash Points	The lowest known value is CLOSED CUP: 4.4℃ (39.9℉). (Tert Butyl Acetate)
Flammable Limits	The greatest known range is LOWER: 0.9% UPPER: 10.5% (Parachlorobenzotrifluoride)
Products of Combustion	Carbon oxides (CO, CO2), and other toxic compounds (nitrogen oxides, isocyanate vapors and traces of hydrogen cyanide).
Fire Hazards in Presence of Various Substances	Flammable in presence of open flames and sparks.
Explosion Hazards in Presence of Various Substances	Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Yes
Fire Fighting Media and Instructions	Flammable liquid, insoluble in water. SMALL FIRE: Use DRY chemicals, CO2, soda ash, lime. LARGE FIRE: Use DRY chemicals, CO2, soda ash, lime and water spray or fog. Never direct a water jet in the container in order to prevent any splashing of the product which could cause spreading of the fire. Cool the containers with water spray or fog in order to prevent pressure build-up, autoignition or explosion. Firefighters should be equipped with self-contained breathing apparatus to protect against toxic and irritating fumes. During a fire, isocyanate vapors and other irritating, highly toxic gases may be generated by thermal decomposition or combustion.
Special Remarks on Fire Hazards	Vapor may travel considerable distance to source of ignition and flash back. When heated to decomposition it emits highly toxic fumes.
Special Remarks on Explosion Hazards	Container explosion may occur under fire conditions or when heated (due to pressure build-up). Vapor forms explosive mixture with air between upper and lower flammable limits.



Section 6. Accidental Release Measures

Small Spill	Absorb with an inert material and place in an appropriate waste disposal container. Treat with a neutralizing solution (5% ammonia water, or 5-10 % sodium carbonate in water). Wear suitable protective clothing and respirator.
Large Spill	Flammable, poisonous liquid, insoluble or very slightly soluble in water. Ventilate. Eliminate all sources of ignition. Wear suitable protective clothing, gloves and eye/face protection. A self-contained breathing apparatus should be used to avoid inhalation of the product. Warn personnel to move away. Stop leak if without risk. DO NOT touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Cover with WET earth, sand or other non-combustible material, or with DRY absorbent wetted with a neutralizing solution (5% ammonia water, or 5-10% sodium carbonate in water). After 15 minutes transfer it to waste container, or put in open drums - fill the drums half way. Do not seal - evolution of CO2 can cause pressure build-up. Keep drums (not sealed) outside, or in safe ventilated area for a few days. After clean-up monitor the vapors concentration. Use the neutralizing solution to decontaminate the surface and the tools. The spilled material, clean-up residues, and spent decontamination solution are hazardous wastes. Call for assistance on disposal.

Material Safety Data Sheet

Product Name: **MC-Ferrox B 100**

Section 7. Handling and Storage

Precautions

Keep locked up and out of reach of children. Manipulate in a well ventilated area. In case of insufficient ventilation, wear suitable respiratory equipment. Do not breathe gas/fumes/vapor/spray. Avoid contact with skin and eyes. Contact lenses should not be worn. Keep away from foodstuff, drinks and tobacco. Eating, drinking and smoking should be prohibited in area where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Ensure that eyewash station and safety shower are proximal to the work-station location. In case of accident or if you feel unwell, seek medical advice immediately (show the label when possible). Individuals with respiratory problems (asthma, chronic bronchitis), or allergic to isocyanates or solvents, should avoid any contact with this product. ATTENTION: Isocyanate vapors cannot be smelled until concentrations are well above the safe exposure limit! Ground all equipment containing material (during handling, mixing, and spraying).

Storage

Keep away from heat. Keep away from sources of ignition. Keep container tightly closed and in a well-ventilated place. Contains moisture sensitive material; store in a dry place. Keep away from incompatibles.

Section 8. Exposure Controls/Personal Protection

Engineering Controls

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash station and safety shower are proximal to the work-station location. Do air monitoring if possible.

Personal Protection

During mixing, handling and application: Splash goggles. Full protective clothing. Gloves (impervious). Suitable respiratory equipment. When air concentrations are not known or above the TLV, an air-supplied respirator, or self-contained breathing apparatus is required. Refer to OSHA Respiratory Protection Standard (29 CFR 1910.134). When welding, refer to OSHA Standard (29 CFR 1926.354): Welding, Cutting and Heating in Way of Preservative Coatings. ATTN: Air-purifying (cartridge type) respirators are not approved for protection against isocyanates due to their low warning properties.

Personal Protection in Case of a Large Spill

Splash goggles. Full suit. Boots. Gloves (impervious). Self-contained breathing apparatus (for above TLV, or unknown vapor concentrations), must be used to avoid inhalation af the product. NOTE: Air-purifying (cartridge type) respirators are not approved for protection against isocyanates.

Section 9. Physical and Chemical Properties

Physical state and appearance	Liquid.	**Odor**	Aromatic.
Molecular Weight	Not applicable.	**Taste**	Not available.
pH (1% soln/water)	Neutral.	**Color**	Grey.
Boiling Point	The lowest known value is 139°C (282.2°F) (Parachlorobenzotrifluoride). Weighted average: 165.01°C (329°F)	**Odor Threshold**	ATTENTION: ISOCYANATE VAPORS CANNOT BE SMELLED UNTIL CONCENTRATIONS ARE WELL ABOVE THE SAFE EXPOSURE LIMIT!
Melting Point	May start to solidify at -2°C (28.4°F). Weighted average: -17.46°C (0.6°F)	**Evaporation rate**	0.42 (Light aromatic solvent naphtha (petroleum)).compared to Butyl acetate.
Critical Temperature	Not available.	**Viscosity**	Not available.
Specific Gravity	1.65 (Water = 1)	**Water/Oil Dist. Coeff.**	Not available.
Vapor Pressure	The highest known value is 34 mm of Hg (@ 20°C) (Tert Butyl Acetate). Weighted average: 20.49 mm of Hg (@ 20°C)	**Ionicity (in Water)**	Not available.
Vapor Density	The highest known value is 4.3 (Air = 1) (Light aromatic solvent naphtha (petroleum)). Weighted average: 4.3 (Air = 1)	**Dispersion Properties**	Is not dispersed water.
Volatility	38% (v/v). 21% (w/w).	**Solubility**	Insoluble in water.

Section 10. Stability and Reactivity Data

Stability

The product is stable.

Instability Temperature

Not available.

Conditions of Instability

Not available.

Incompatibility with various substances

Incompatible with water, strong oxidizing agents, amines, strong bases, strong acids, alcohols. Absorbs moisture from the air. Reacts slowly with water to liberate CO2 gas.

Corrosivity

Not considered to be corrosive for glass and metals according to our data base.

Special Remarks on Reactivity

No additional remarks.

Section 11. Toxicological Information

Routes of Entry	Inhalation. Skin contact (absorption). Eye contact. Ingestion.
Toxicity to Animals	See: Section 2
Chronic Effects on Humans	The substance is toxic to mucous membranes, upper respiratory tract, lungs, blood, kidney, liver. Exposure may cause asthma, dermatitis and pulmonary oedema; effects may be delayed. Sensitive individuals may develop eczema and/or asthma on inhalation of this material. However, in light of good industrial hygiene, exposure to any chemical should be kept to a minimum.
Other Toxic Effects on Humans	No additional remarks
Special Remarks on Toxicity to Animals	IARC cancer review : Group 2A - Probably carcinogenic in humans (Silica, crystalline, quartz). IARC Cancer Review: Group 2B - Animal Sufficient Evidence. Human Inadequate Evidence. (Toluene diisocyanate - mixture (TDI)) IARC Group 2B carcinogen - possibly carcinogenic to humans (Titanium dioxide).
Special Remarks on Chronic Effects on Humans	Isocyanates are not known to cause cancer in humans, but may cause skin and respiratory sensitization in humans. Sensitive individuals may develop eczema and/or asthma on inhalation of this material. Exposure may cause asthma, dermatitis and pulmonary oedema; effects may be delayed. Reports have associated repeated and prolonged occupational exposure to solvents with permanent brain and nervous system damage, and other systemic effects. Intentional misuse by deliberately concentrating and inhaling vapors may be harmful or fatal.
Special Remarks on other Toxic Effects on Humans	Exposure can cause nausea, headache and vomiting. Over-exposure can cause lung irritation, chest pain and oedema which may be fatal. Sensitizer - skin and inhalation. Medical supervision of all employees who come in contact with this product is recommended (preemployment and periodic medical examinations).

Section 12. Ecological Information

Ecotoxicity	Not available.
BOD5 and COD	Not available.
Products of Biodegradation	Not available.
Toxicity of the Products of Biodegradation	Not available.
Special Remarks on the Products of Biodegradation	No additional remarks.

Section 13. Disposal Considerations

Waste Disposal	In accordance with municipal, state, and federal regulations. Consult your local or regional authorities. Empty containers must be handled with care due to product residue. Do not heat or cut empty containers with electric or gas torch.

Section 14. Transport Information

DOT Classification	DOT CLASS 3: Flammable liquid with a flash point greater than 37.8℃ (100℉). PG: II
DOT Identification number	PIN: UN1263 - Paint.
Special Provisions for Transport	No specific remarks.
DOT (Pictograms)	

Material Safety Data Sheet

Product Name: MC-Ferrox B 100

Section 15. Other Regulatory Information and Pictograms

Other Regulations

TSCA (Toxic Substance Control Act): All components of this product are either reported in EPA TSCA Inventory, or exempt. OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications

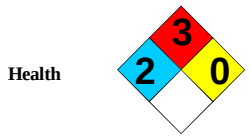
WHMIS (Canada)

DSCL (EEC)

Hazardous Material Information System (U.S.A.)

Health Hazard	3
Fire Hazard	2
Reactivity	0
Personal Protection	x

National Fire Protection Association (U.S.A.)



Health

Fire Hazard

Reactivity

Specific hazard

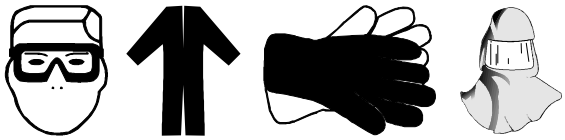
WHMIS (Canada) (Pictograms)

DSCL (Europe) (Pictograms)

TDG (Canada) (Pictograms)

ADR (Europe) (Pictograms)

Protective Clothing (Pictograms)



Section 16. Other Information

References

Manufacturer's MSDS, RTESC, NIOSH, CCOHS.

Other Special Considerations

Medical supervision of all employees who come in contact with this product is recommended (pre-employment and periodic medical examination). Individuals with respiratory problems (asthma, chronic bronchitis), or allergic to isocyanates or solvents, should avoid any contact with this product.

Validated by Heidi Brown on 03/06/2009.

Verified by Heidi Brown.

Printed 03/06/2009.

EMERGENCY PHONE NUMBERS:
USA and Canada: 1-800 424-9300
International: 1-703 527-3887

Notice to Reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

MC-Ferrox B 100

Product Description

MC-Ferrox B 100 is a unique single-component, moisture-cure urethane intermediate coating utilizing the benefits a high load micaceous iron oxide (MIO). This is a popular intermediate for new construction and full removal maintenance project applications.

Area of Use

Substrates

Over properly prepared:
Ferrous Metal
Galvanized Metal
Aluminium/Non-Ferrous Metal
Metallized
Previously Exisiting Coatings

Possible Uses

Water Treatment Facilities
Wastewater Treatment Facilities
Tank Exteriors
Pipes
Hydropower Facilities
Marine/Port Facilities
Chemical Processing Facilities
Refineries
Structural Steel
Work Boats
Bridges

Ready Reference Information

Resin Type: Urethane

Pigment type: Micaceous Iron Oxide (3.5 lbs/gal)

Sheen: Flat

Colors: Standard Brownish Grey

Volume Solids: 62.0% ± 2.0

VOC: < 0.8 lb/gal (100 g/l)
(Volatile Organic Content)

Theoretical Coverage: At 1 mil DFT: 994 ft^2/gal
At 25 µm DFT: 24.4 m^2/l

Recommended Film Thickness:
Wet: 4.8-8.0 mils (122-203 microns)
Dry: 3.0-5.0 mils (76-127 microns)

Recommended Coverage Per Coat:
199 ft^2/gal at 5.0 mils DFT - 331 ft^2/gal at 3.0 mils DFT
(4.9 m^2/l at 127 microns DFT – 8.1 m^2/l at 76 microns DFT)

Thinning: MC-Thinner, MC-Thinner 100, MC-Thinner XMT
Clean Up: MC-Thinner, MC-Thinner 100, MC-Thinner XMT

Drying Times and Temperatures

*At 50% Humidity	50°F/10°C		75°F/24°C		95°F/35°C	
	Without *PURQuik®*	With *PURQuik®*	Without *PURQuik®*	With *PURQuik®*	Without *PURQuik®*	With *PURQuik®*
Tack Free	4 hours	--	2 hours	--	1 hour	--
Recoat Minimum[1]	8 hours	1 hour	6 hours	30 minutes	4 hours	20 minutes
Full Cure	10 Days	7 days	7 days	5 days	5 days	4 days

*Humidity, temperature and coating thickness will affect recoat and curing times
[1]14 day outer recoat window on clean surfaces
Refer to Wasser's PURQuik® Accelerator Product Data for additional information

Product Features

- High performance intermediate coating for primed steel and aluminium
- Easy to apply by brush, roller or spray methods
- Maintains build on edges, threads and weld seams
- Single component Moisture Cure Urethane
- No mixing errors – no pot life
- Superior adhesion to most aged coatings
- VOC compliant at less than 100 g/l
- Impact and abrasion resistant
- Can be applied at 99% relative humidity (substrate must be visibly dry.)
- Can be applied in below freezing temperatures (no ice or frost)
- No dew point restrictions (substrate must be visibly dry)
- Compatible with PURQuik® Accelerator for faster recoat and cure times
- Use as a prime coat over new or weathered galvanized surfaces

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Recommended Systems

Ferrous Metals (New Construction / Full Removal):

1st Coat: MC-Zinc 100	3.0-5.0 mils DFT
2nd Coat: MC-Ferrox B 100	3.0-5.0 mils DFT
3rd Coat: MC-Ferrox A 100	2.0-4.0 mils DFT
Or MC-Luster 100	
Or Polyflex 102 Rapidthane	6.0-10.0 mils DFT
Total System DFT:	14.0-24.0 mils DFT
1st Coat: MC-Miozinc 100	3.0-5.0 mils DFT
2nd Coat: MC-Ferrox B 100	3.0-5.0 mils DFT
3rd Coat: MC-Ferrox A 100	2.0-4.0 mils DFT
Or MC-Luster 100	
Total System DFT:	8.0-14.0 mils DFT

Ferrous Metals (Overcoat):

1st Coat: MC-Miozinc 100 (Spot Prime)	3.0-5.0 mils DFT
2nd Coat: MC-Ferrox B 100	3.0-5.0 mils DFT
3rd Coat: MC-Ferrox A 100	2.0-4.0 mils DFT
Or MC-Luster 100	
Total System DFT:	8.0-14.0 mils DFT

Aluminum/Galvanized Metal:

1st Coat: MC-Ferrox B 100	3.0-5.0 mils DFT
2nd Coat: MC-Ferrox A 100	2.0-4.0 mils DFT
Or MC-Luster 100	
Total System DFT:	5.0-9.0 mils DFT

Note: Use as an intermediate over recommended primers for ferrous metal. Not recommended for direct to ferrous metal applications.

***Other Systems are available and appropriate. Contact your Wasser Representative for any questions.**

Performance Testing Data

*Contact Wasser Corporation for detailed testing of this product

Compatable Coatings

Primer:
MC-Prepbond 100
MC-Zinc 100
MC-Miozinc 100
MC-Ferroclad 100
MC-Ultra Build DTM 100

Topcoats:
MC-Ferrox A 100
MC-Luster 100
MC-Shieldcoat 100
MC-Tar 100
MC-Ballastcoat 100
Polyflex 102 Rapid thane

Coating Accelerator:
PURQuik® Coating Accelerator

Surface Preparation

Ferrous Metal

Apply to clean, dry, Wasser recommended primers. Refer to the primer Product Data for additional information.

Aluminum/Galvanized/Non-Ferrous Metal

Prepare surfaces using SSPC-SP1 Solvent Cleaning and SSPC-SP12/NACE No. 5 Low Pressure Water Cleaning methods to remove surface contamination. Supplement weathered galvanized surface preparation with SSPC-SP2 and SSPC-SP3 Hand and Power Tool cleaning to remove excessive corrosion and impart surface profile on bare metal. Supplement new galvanized surface cleaning with mechanical abrasion to impart surface profile and support mechanical adhesion.

Previously Existing Coatings

Prepare surfaces using SSPC-SP12/NACE No. 5 Low Pressure Water Cleaning methods to remove surface contamination. Supplement SSPC-SP 12 LPWC with SSPC-SP1 Solvent Cleaning and SSPC-SP2 and SSPC-SP3 Hand and Power Tool clean areas of corrosion and loose or flaking paint (feather edges of sound, existing paint back to a firm edge). Spot prime clean, bare metal with Wasser recommended primer. Sand glossy surfaces to provide profile. Apply a test sample to a small area to determine coating compatibility.

Good Practices

MC-Ferrox B 100 is designed for application to tightly adhering, previously existing coatings. Apply a test sample to a small area to determine coating compatibility. Spot prime any areas cleaned to bare metal with a Wasser recommended primer.

The surface to be coated must be dry, clean, dull, and free from dirt, grease, oil, heavy rust, salts or any other surface contaminants that interfere with adhesion.

Ensure welds, repair areas, joints, and surface defects exposed by surface preparation are properly cleaned and treated prior to coating application.

When surfaces are cleaned to bare metal, areas of oxidation, after surface preparation and prior to coating application, should be prepared to specified standard prior to applying the Wasser recommended primer.

Consult the referenced standards, SSPC-PA1 and your Wasser Representative for additional information or recommendations.

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MC-Ferrox B 100

Application Information

MC-Ferrox B 100 can be applied by brush, roll, airless spray and conventional spray equipment. Follow proper mixing instructions before applying.

Mixing:

Material temperature must be 5° F above the dew point before opening and agitating.
Power mix thoroughly prior to application.
Do not keep under constant agitation.
Apply a 3-6 oz solvent float over material to prevent moisture intrusion and cover pail.

Brush/Roller:

Brush:	Natural fiber
Roller:	Natural or synthetic fiber cover
Nap:	¼" to ⅜"
Core:	Phenolic

Reduction: Typically not required. If necessary, reduce with MC-Thinner 100.

Airless Spray:

Pump Ratio:	28 - 40:1
Pressure:	2400 - 2800psi
Hose:	¼" to ⅜"
Tip Size:	.013 - .019
Filter Size:	60 mesh (250 μm)

Reduction: Typically not required. If necessary, reduce with MC-Thinner or MC-Thinner 100.

Conventional Spray: (DeVilbis MBC, JGA or equivalent)

Fluid Nozzle:	E Fluid Tip
Air Cap:	704 or 765
Atomizing Air:	45 - 75 lbs.
Fluid Pressure:	15 - 20 lbs.
Hose:	½" ID; 50' Max

Reduction: Typically not required. If necessary, reduce with MC-Thinner or MC-Thinner 100.

Reducer: MC-Thinner, MC-Thinner 100, (if VOC regulations restrict thinning, use MC-Thinner XMT).

Reduction is typically not required. If necessary, thin up to 10% with recommended thinner. Thin in accordance with local and federal regulatory standards.

Clean up: MC-Thinner, MC-Thinner 100.

If Wasser thinners are not available, use MEK, MIBK, Xylene, a 50:50 blend of Xylene and MEK or MIBK, or acetone for clean up only. Do not add unauthorized solvents to a Wasser coating.

Application Conditions

Temperature: 20° - 100°F (-8° - 38°C)

This temperature range should be achieved for ambient, surface and material temperature. Substrate must be visibly dry. MC-Thinner 100 is recommended for spray application in temperatures above 90°F.

Relative Humidity: 6% - 99%

Coating Accelerator: PURQuik® Accelerator.

See Wasser's PURQuik® Accelerator Product Data for information.

Storage: Store off the ground in a dry, protected area in temperature between 40 - 100°F (4 - 38°C). MCU containers must be kept sealed when not in use. Use a solvent float to reseal partial containers.

Certifications and Qualifications

VOC Compliant(NationalStandard) SCAQMD Rule 1113 IM Coating
VOC≤0.8 lbs/gal (100gr/ltr)

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Ordering Information

Product Numbers: W111.61Standard Brownish Grey

Package Size: 1 gallon and 5 gallon pails

Shelf Life: 12 months from date of shipment when stored unopened at 75°F (24°C)

Shipping Information

Flash Point:	75°F (24°C)
Weight/gallon:	13.5 ± 1.0 lbs.
DOT HAZARD CLASS	3
DOT PACKAGING GROUP	III
DOT LABEL	FLAMMABLE LIQUID
DOT SHIPPING NAME	PAINT
DOT PLACARD	FLAMMABLE LIQUID
UN/NA NUMBER	1263

Safety Precautions

DANGER!

VAPOR AND SPRAY MIST HARMFUL. OVEREXPOSURE MAY CAUSE LUNG DAMAGE. MAY CAUSE ALLERGIC SKIN AND RESPIRATORY REACTION, EFFECTS MAY BE PERMANENT, MAY AFFECT THE BRAIN OR NERVOUS SYSTEM CAUSING DIZZINESS HEADACHE OR NAUSEA. CAUSES EYE, SKIN, NOSE AND THROAT IRRITATION. FLAMMABLE LIQUID AND VAPOR.

CONTAINS: Parachlorobenzottrifluoride, Xylene, Isocyanic acid, polymethlene polyphenylene ester, Methyl-n-Amyl Ketone, Toluene, MDI, Modified MDI, Silica

NOTICE: Reports have associated repeated and prolonged occupational over-exposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling contents may be harmful or fatal. INDIVIDUALS WITH LUNG OR BREATHING PROBLEMS OR PRIOR REACTION TO ISOCYANATES MUST NOT BE EXPOSED TO VAPOR OR SPRAY MIST. **Use Only With Adequate Ventilation**. Do not breathe dust, vapors or spray mist. Ensure fresh air entry during application and drying. If you experience eye watering, headache or dizziness or if air monitoring demonstrates vapor/mist levels are above applicable limits, wear an appropriate, properly fitted respirator (NIOSH approved) during and after application. Follow respirator manufacturer's directions for respirator use. Do not get in eyes, on skin or on clothing. Wash thoroughly after handling. Keep away from heat, sparks and flame. Vapor may cause flash fire.

KEEP OUT OF REACH OF CHILDREN

FIRST AID: If affected by inhalation of vapor or spray mist, remove to fresh air. If breathing difficulty persists or occurs later, consult a physician and have label information available. In case of eye contact, flush immediately with plenty of water for at least 15 minutes and get medical attention; for skin, wash thoroughly with soap and water. If swallowed, get medical attention immediately. If swallowed, do not induce vomiting. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean or destroy contaminated shoes.
Keep container closed when not in use. If spilled, contain spilled material and remove with inert absorbent. Dispose of contaminated absorbent, container and unused contents in accordance with local, state and federal regulations.

WARNING: This product contains a chemical known to the state of California to cause cancer and birth defects, or other reproductive harm.

Obtain and Read the Material Safety Data Sheet Before Using.
INTENDED FOR PROFESSIONAL USE ONLY.

Note: Ingredients and VOC/VOS may vary for products with catalysts, tint bases, and other colors

Wasser Corporation's liability on any claim of any kind, including claims based upon Wasser Corporation's negligence or strict liability, for any loss or damage arising out of, connected with or resulting from the use of the products, shall in no case exceed the purchase price allowable for the products or part thereof that give rise to the claim. In no event shall Wasser Corporation be liable for consequential or incidental damages. Published Product Data Sheets are subject to change without notice. Contact your Wasser Representative for current Product Data Sheets.

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Material Safety Data Sheet

Date Originated: 28/05/2009

NFPA	HCS Risk Phrases	Protective Clothing
	**HCS CLASS: Highly toxic.** **HCS CLASS: Irritating substance.** **HCS CLASS: Sensitizing substance.** **HCS CLASS: Target organ effects.** **HCS CLASS: Flammable liquid having a flash point lower than 23°C (73.4°F).**	

Section 1. Chemical Product and Company Identification

Product Name

MC-Luster 100 White

Synonym

W211.7

Manufacturer

SUPPLIER:
Wasser Corporation
4118 B PL NW, Suite B
Auburn, WA 98001, US
Phone# 253-850-2967

Chemical Family

Not applicable. (Paint)

In case of Emergency

EMERGENCY PHONE NUMBERS:
USA and Canada: 1-800 424-9300
International: 1-703 527-3887

Section 2. Composition and Information on Ingredients

Name	CAS #	% by Weight	TLV/PEL	LC_{50}/LD_{50}
Isophorone diisocyanate prepolymer	Proprietary	10-30	Not available.	Not available.
Tert Butyl Acetate	540-88-5	10-30	TWA: 200 (ppm) from ACGIH (TLV) TWA: 200 (ppm) from OSHA	DERMAL (LD50): Acute: 2000 mg/kg [Rabbit].
Titanium oxide	13463-67-7	10-30	TWA: 10 (mg/m^3) from ACGIH INHALATION	ORAL (LD50): Acute: 24000 mg/kg [Rat]. DERMAL (LD50): Acute: 10000 mg/kg [Rabbit].
Homopolymer of HDI	28182-81-2	3-7	Not available.	DERMAL (LD50): Acute: 5000 mg/kg [Rabbit].
Methyl n-amyl ketone	110-43-0	1-5	TWA: 50 (ppm) from ACGIH (TLV) TWA: 100 (ppm) from OSHA (PEL)	DERMAL (LD50): Acute: 12600 mg/kg [Rabbit]. VAPOR (LC50): Acute: 3000 ppm 4 hour(s) [Rat].
Light aromatic solvent naphtha (petroleum)	64742-95-6	1-5	TWA: 50 (ppm) from ACGIH (TLV)	DERMAL (LD50): Acute: 14000 mg/kg [Rabbit]. VAPOR (LC50): Acute: 3670 ppm 4 hour(s) [Rat].
Isophorone diisocyanate homopolymer	53880-05-0	1-5	Not available.	Not available.
Di(2-ethylhexyl) phthalate	117-81-7	1-5	TWA: 0.3 (ppm) from ACGIH (TLV)	DERMAL (LD50): Acute: 2500 mg/kg [Rabbit].
1,2,4-Trimethylbenzene	95-63-6	0-2	TWA: 25 CEIL: 35 (ppm) TWA: 125 CEIL: 170 (mg/m^3)	Not available.
Isophorone Diisocyanate (IPDI)	4098-71-9	0-2	TWA: 0.005 STEL: 0.02 (ppm) from OSHA (PEL) & ACGIH (TLV) SKIN	DERMAL (LD50): Acute: 1000 mg/kg [Rat]. VAPOR (LC50): Acute: 13.5 ppm 4 hour(s) [Rat].

Section 3. Hazards Identification

Routes of Entry: Inhalation. Skin contact (absorption). Eye contact. Ingestion.

Potential Acute Health Effects

Eyes: Liquid or spray mist may severely irritate eyes. Inflammation of the eye is characterized by redness, watering, and itching.

Skin: This product may irritate skin upon contact. Harmful if absorbed through the skin. May cause skin sensitization. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Ingestion: Harmful if swallowed. Irritation or chemical burns of the mouth, pharynx, esophagus and stomach can develop following ingestion of this product. Even small amounts of liquid aspirated into the lungs during ingestion or vomiting may cause pulmonary injury and possibly death.

Inhalation: Harmful if inhaled (irritant, sensitizer). Over-exposure by inhalation of the vapors/spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. May cause sensitization by inhalation. May cause nausea, vomiting and general weakness. Massive overexposure can cause unconciousness and death.

Potential Chronic Health Effects

Eyes: Repeated or prolonged contact with spray mist may produce chronic eye irritation.

Skin: Repeated skin exposure can produce local skin destruction, or dermatitis, possibly skin and/or respiratory sensitization. (Skin only exposure can result in lung sensitization).

Ingestion: May be fatal if swallowed.

Inhalation: Repeated or prolonged inhalation of vapors/spray mist may lead to chronic respiratory irritation and decrease of lungs capacity. May cause respiratory (lung) sensitization by inhalation and skin contact.

Other chronic effects on Humans The substance is toxic to mucous membranes, upper respiratory tract, lungs, blood, kidney, liver. Exposure may cause asthma, decrease of lung capacity, dermatitis and pulmonary oedema; effects may be delayed. Sensitive individuals may develop eczema and/or asthma on inhalation of this material. However, in light of good industrial hygiene, exposure to any chemical should be kept to a minimum.

Section 4. First Aid Measures

Eye Contact Check for and remove any contact lenses. IMMEDIATELY flush eyes with running (lukewarm) water for at least 15 minutes, keeping eyelids open. DO NOT use an eye ointment. Seek medical attention.

Skin Contact Wash gently and thoroughly the contaminated skin with running water and non-abrasive soap. Rinse with plenty of running water (15-30 minutes). If irritation persists, seek medical attention.

Hazardous Skin Contact If the product gets onto the clothed portion of the body, remove the contaminated clothes as quickly as possible, protecting your own hands and body. Place the person under shower. Wash gently and thoroughly the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Rinse with plenty of running water (15-30 minutes). Seek medical attention. Wash contaminated clothing before reusing.

Inhalation Allow the person to rest in a well ventilated area. Loosen tight clothing around the person's neck and waist. If symptoms persist, seek medical advice immediately (show the label when possible).

Hazardous Inhalation Evacuate the person to a safe area as soon as possible. Loosen tight clothing around the person's neck and waist. If the person is not breathing, administer mouth-to-mouth resuscitation. Warning: It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation if the inhaled material is toxic, infectious or corrosive. Oxygen may be administered if breathing is difficult. Seek medical attention.

Ingestion DO NOT induce vomiting. Have conscious person drink several glasses of water or milk. Seek immediate medical attention.

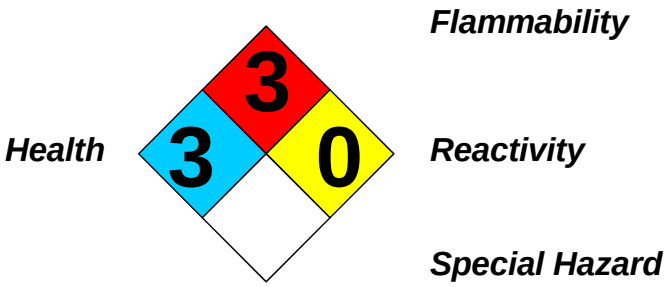
Hazardous Ingestion DO NOT induce vomiting. Have conscious person drink several glasses of water or milk. Never give an unconscious person anything to ingest. Even small amounts of liquid aspirated into lungs during ingestion or from vomiting may cause mild to severe pulmonary injury and possibly death. If breathing is difficult, administer oxygen. If the person is not breathing, administer mouth-to-mouth resuscitation. WARNING: It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation when the material is toxic, infectious or corrosive. Avoid mouth-to-mouth contact by using mouth guards or shields. Seek immediate medical attention.

Material Safety Data Sheet

Product Name: **MC-Luster 100 White**

Section 5. Fire and Explosion Data

Flammability of the Product	Flammable.
Auto-Ignition Temperature	The lowest known value is 382℃ (719.6℉) (Di(2-eth ylhexyl) phthalate).
Flash Points	The lowest known value is CLOSED CUP: 4.4℃ (39.9℉). (Tert Butyl Acetate)
Flammable Limits	The greatest known range is LOWER: 1.1% UPPER: 7.9% (Methyl n-amyl ketone)
Products of Combustion	Carbon oxides (CO, CO2), and other toxic compounds (nitrogen oxides, isocyanate vapors and traces of hydrogen cyanide).
Fire Hazards in Presence of Various Substances	Flammable in presence of open flames and sparks.
Explosion Hazards in Presence of Various Substances	Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Yes.
Fire Fighting Media and Instructions	SMALL FIRE: Use DRY chemicals, CO2, alcohol foam or water spray. LARGE FIRE: Use water spray or fog. Never direct a water jet in the container in order to prevent any splashing of the product which could cause spreading of the fire. Cool the containers with water spray or fog in order to prevent pressure build-up, autoignition or explosion. Firefighters should be equipped with self-contained breathing apparatus to protect against toxic and irritating fumes. During a fire, isocyanate vapors and other irritating, highly toxic gases may be generated by thermal decomposition or combustion.
Special Remarks on Fire Hazards	Vapor may travel considerable distance to source of ignition and flash back. When heated to decomposition it emits highly toxic fumes.
Special Remarks on Explosion Hazards	Container explosion may occur under fire conditions or when heated (due to pressure build-up). Vapor forms explosive mixture with air between upper and lower flammable limits.



Section 6. Accidental Release Measures

Small Spill	Absorb with an inert material and place in an appropriate waste disposal container. Treat with a neutralizing solution (5% ammonia water, or 5-10 % sodium carbonate in water). Wear suitable protective clothing and respirator.
Large Spill	Poisonous, flammable liquid, insoluble or very slightly soluble in water. Ventilate. Eliminate all sources of ignition. Wear suitable protective clothing, gloves and eye/face protection. A self-contained breathing apparatus should be used to avoid inhalation of the product. Warn personnel to move away. Stop leak if without risk. DO NOT touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Cover with WET earth, sand or other non-combustible material, or with DRY absorbent wetted with a neutralizing solution (5% ammonia water, or 5-10% sodium carbonate in water). After 15 minutes transfer it to waste container, or put in open drums - fill the drums half way. Do not seal - evolution of CO2 can cause pressure build-up. Keep drums (not sealed) outside, or in safe ventilated area for a few days. After clean-up monitor the vapors concentration. Use the neutralizing solution to decontaminate the surface and the tools. The spilled material, clean-up residues, and spent decontamination solution are hazardous wastes. Call for assistance on disposal.

Material Safety Data Sheet

Product Name: **MC-Luster 100 White**

Section 7. Handling and Storage

Precautions

Keep locked up and out of reach of children. Manipulate in a well ventilated area. In case of insufficient ventilation, wear suitable respiratory equipment. Do not breathe gas/fumes/vapor/spray. Avoid contact with skin and eyes. Contact lenses should not be worn. Keep away from foodstuff, drinks and tobacco. Eating, drinking and smoking should be prohibited in area where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Ensure that eyewash station and safety shower are proximal to the work-station location. In case of accident or if you feel unwell, seek medical advice immediately (show the label when possible). Individuals with respiratory problems (asthma, chronic bronchitis), or allergic to isocyanates or solvents, should avoid any contact with this product. ATTENTION: Isocyanate vapors cannot be smelled until concentrations are well above the safe exposure limit! Ground all equipment containing material (during handling, mixing and spraying).

Storage

Flammable materials should be stored in a separate safety storage cabinet or room. Keep away from heat. Keep away from sources of ignition. Keep container tightly closed and in a well-ventilated place. Contains moisture sensitive material; store in a dry place. Keep away from incompatibles. A refrigerated room would be preferable for materials with a flash point lower than 37.8 C(100 F).

Section 8. Exposure Controls/Personal Protection

Engineering Controls

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash station and safety shower are proximal to the work-station location. Do air monitoring if possible.

Personal Protection

During mixing, handling and application: Splash goggles. Full protective clothing. Gloves (impervious). Suitable respiratory equipment. When air concentrations are not known or above the TLV.
Refer to OSHA Respiratory Protection Standard (29 CFR 1910.134). When welding, refer to OSHA Standard (29 CFR 1926.354): Welding, Cutting and Heating in Way of Preservative Coatings.
ATTN: Air-purifying (cartridge type) respirators are not approved for protection against isocyanates due to their low warning properties.

Personal Protection in Case of a Large Spill

Splash goggles. Full suit. Boots. Gloves (impervious). Self-contained breathing apparatus (for above TLV, or unknown vapor concentrations), must be used to avoid inhalation af the product. NOTE: Air-purifying (cartridge type) respirators are not approved for protection against isocyanates.

Section 9. Physical and Chemical Properties

Odor	Aromatic.
Taste	Not available.
Color	White.

Physical state and appearance	Liquid.		
Molecular Weight	Not applicable.		
pH (1% soln/water)	Not applicable.		
Boiling Point	The lowest known value is 144°C (291.2°F). Weighted average: 185.82°C (366.5°F)	**Odor Threshold**	ATTENTION: ISOCYANATE VAPORS CANNOT BE SMELLED UNTIL CONCENTRATIONS ARE WELL ABOVE THE SAFE EXPOSURE LIMIT!
Melting Point	May start to solidify at -2°C (28.4°F). Weighted average: -24.78°C (-12.6°F)	**Evaporation rate**	0.42 (Light aromatic solvent naphtha (petroleum)).compared to Butyl acetate.
Critical Temperature	Not available.	**Viscosity**	Not available.
Specific Gravity	1.4 (Water = 1)	**Water/Oil Dist. Coeff.**	0
Vapor Pressure	The highest known value is 34 mm of Hg (@ 20°C) (Tert Butyl Acetate). Weighted average: 19.95 mm of Hg (@ 20°C)	**Ionicity (in Water)**	Not available.
Vapor Density	The highest known value is 16 (Air = 1) (Di(2-ethylhexyl) phthalate). Weighted average: 7.61 (Air = 1)	**Dispersion Properties**	Is not dispersed in water.
Volatility	36% (v/v). 22% (w/w).	**Solubility**	Insoluble in water.

Section 10. Stability and Reactivity Data

Stability

The product is stable.

Instability Temperature

Not available.

Conditions of Instability

Not available.

Incompatibility with various substances

Incompatible with water, strong oxidizing agents, amines, strong bases, strong acids, alcohols. Absorbs moisture from the air. Reacts slowly with water to liberate CO2 gas.

Corrosivity

Not considered to be corrosive for glass and metals according to our data base.

Special Remarks on Reactivity

React slowly with water to liberate CO2 gas. (Homopolymer of HDI)

Section 11. Toxicological Information

Routes of Entry	Inhalation. Skin contact (absorption). Eye contact. Ingestion.
Toxicity to Animals	See: Section 2
Chronic Effects on Humans	The substance is toxic to mucous membranes, upper respiratory tract, lungs, blood, kidney, liver. Exposure may cause asthma, decrease of lung capacity, dermatitis and pulmonary oedema; effects may be delayed. Sensitive individuals may develop eczema and/or asthma on inhalation of this material. However, in light of good industrial hygiene, exposure to any chemical should be kept to a minimum.
Other Toxic Effects on Humans	See: Section 3
Special Remarks on Toxicity to Animals	ACGIH states that confirmed animal carcinogen with unknown relevance to humans (Di(2-ethylhexyl) phthalate). IARC Group 2B carcinogen - possibly carcinogenic to humans (Titanium dioxide).
Special Remarks on Chronic Effects on Humans	Isocyanates are not known to cause cancer in humans, but may cause skin and respiratory sensitization in humans. Sensitive individuals may develop eczema and/or asthma on inhalation of this material. Exposure may cause asthma, dermatitis and pulmonary oedema; effects may be delayed. Reports have associated repeated and prolonged occupational exposure to solvents with permanent brain and nervous system damage, and other systemic effects. Intentional misuse by deliberately concentrating and inhaling vapors may be harmful or fatal.
Special Remarks on other Toxic Effects on Humans	Exposure can cause nausea, headache and vomiting. Over-exposure can cause lung irritation, chest pain and oedema which may be fatal. Sensitizer - skin and inhalation. Medical supervision of all employees who come in contact with this product is recommended (preemployment and periodic medical examinations).

Section 12. Ecological Information

Ecotoxicity	Not available.
BOD5 and COD	Not available.
Products of Biodegradation	Not available.
Toxicity of the Products of Biodegradation	Not available.
Special Remarks on the Products of Biodegradation	No additional remarks.

Section 13. Disposal Considerations

Waste Disposal	In accordance with municipal, state, and federal regulations. Consult your local or regional authorities. Empty containers must be handled with care due to product residue. Do not heat or cut empty containers with electric or gas torch.

Section 14. Transport Information

DOT Classification	DOT CLASS 3: Flammable liquid with a flash point lower than 23℃ (73.4℉). PG: II
DOT Identification number	UN1263 Paint
Special Provisions for Transport	No specific remarks.
DOT (Pictograms)	

Material Safety Data Sheet

Product Name: MC-Luster 100 White

Section 15. Other Regulatory Information and Pictograms

Other Regulations

TSCA (Toxic Substance Control Act): All components of this product are either reported in EPA TSCA Inventory, or exempt. OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications

WHMIS (Canada)

DSCL (EEC)

Hazardous Material Information System (U.S.A.)

Health Hazard	3
Fire Hazard	3
Reactivity	0
Personal Protection	x

National Fire Protection Association (U.S.A.)

Health

Fire Hazard

Reactivity

Specific hazard

WHMIS (Canada) (Pictograms)

DSCL (Europe) (Pictograms)

TDG (Canada) (Pictograms)

ADR (Europe) (Pictograms)

Protective Clothing (Pictograms)

Section 16. Other Information

References

Manufacturer's MSDS, RTESC, NIOSH, CCOHS.

Other Special Considerations

Individuals with respiratory problems (asthma, chronic bronchitis) should avoid any contact with this product. Medical supervision of all employees who come in contact with this product is recommended (pre-employment and periodic medical examination).

Validated by Heidi Brown on 28/05/2009.

Verified by Heidi Brown.

Printed 28/05/2009.

EMERGENCY PHONE NUMBERS:
USA and Canada: 1-800 424-9300
International: 1-703 527-3887

Notice to Reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Material Safety Data Sheet

Date Originated: 03/06/2009

NFPA	HCS Risk Phrases	Protective Clothing
	**HCS CLASS: Toxic.** **HCS CLASS: Irritating substance.** **HCS CLASS: Sensitizing substance.** **HCS CLASS: Target organ effects.** **HCS CLASS: Flammable liquid having a flash point lower than 37.8℃ (100℉).**	

Section 1. Chemical Product and Company Identification

Product Name

MC-Miomastic 100 Light Grey

Synonym

W131.0347

Manufacturer

SUPPLIER:
Wasser Corporation
4118 B PL NW, Suite B
Auburn, WA 98001, US
Phone# 253-850-2967

Chemical Family

Not applicable. (Paint)

In case of Emergency

EMERGENCY PHONE NUMBERS:
USA and Canada: 1-800 424-9300
International: 1-703 527-3887

Section 2. Composition and Information on Ingredients

Name	CAS #	% by Weight	TLV/PEL	LC_{50}/LD_{50}
Zinc	7440-66-6	30-60	TWA: 10 (mg/m^3) from ACGIH (TLV)	Not available.
Ferric oxide	1309-37-1	10-30	TWA: 5 (mg/m^3) from ACGIH (TLV)	ORAL (LD50): Acute: 10000 mg/kg [Rat].
Modified MDI	Not disclosed	5-10	Not available.	Not available.
Hydrous calcium magnesium silicate mix	14807-96-6	5-10	TWA: 2 (mg/m^3) from ACGIH (TLV)	Not available.
Tert Butyl Acetate	540-88-5	5-10	TWA: 200 (ppm) from ACGIH (TLV) TWA: 200 (ppm) from OSHA	ORAL (LD50): Acute: 4100 mg/kg [Rat]. DERMAL (LD50): Acute: 2000 mg/kg [Rabbit].
Titanium oxide	13463-67-7	3-7	TWA: 10 (mg/m^3) from ACGIH INHALATION	ORAL (LD50): Acute: 24000 mg/kg [Rat]. DERMAL (LD50): Acute: 10000 mg/kg [Rabbit].
Isocyanic acid, polymethylene polyphenylene ester	9016-87-9	1-5	TWA: 0.005 CEIL: 0.02 (ppm) from ACGIH (TLV)	ORAL (LD50): Acute: 10000 mg/kg [Rat].
Xylenes	1330-20-7	1-5	TWA: 100 STEL: 150 (ppm) from OSHA (PEL)	ORAL (LD50): Acute: 4300 mg/kg [Rat]. DERMAL (LD50): Acute: 2000 mg/kg [Rabbit]. VAPOR (LC50): Acute: 6700 ppm 4 hour(s) [Rat].
Diphenylmethane-4,4'-diisocyanate	101-68-8	0-1	TWA: 0.005 (ppm)	ORAL (LD50): Acute: 10000 mg/kg [Rat].

Section 3. Hazards Identification

Routes of Entry: Inhalation. Skin contact (absorption). Eye contact. Ingestion.

Potential Acute Health Effects

Eyes: Liquid or spray mist may severely irritate eyes. Inflammation of the eye is characterized by redness, watering, and itching.

Skin: This product may irritate skin upon contact. Harmful if absorbed through the skin. May cause skin sensitization. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Ingestion: Harmful if swallowed. May cause nausea, vomiting and diarrhea. Irritation or chemical burns of the mouth, pharynx, esophagus and stomach can develop following ingestion of this product. Even small amounts of liquid aspirated into lungs during ingestion or from vomiting may cause mild to severe pulmonary injury and possibly death.

Inhalation: Harmful if inhaled (irritant, sensitizer). May cause headaches, nausea and vomiting. Over-exposure by inhalation of the vapors/spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. May cause sensitization by inhalation.

Potential Chronic Health Effects

Eyes: Repeated or prolonged contact with spray mist may produce chronic eye irritation.

Skin: Repeated skin exposure can produce local skin destruction, or dermatitis, possibly sensitization.

Ingestion: May be fatal if swallowed.

Inhalation: Repeated or prolonged inhalation of vapors/spray mist may lead to chronic respiratory irritation. May cause sensitization by inhalation.

Other chronic effects on Humans Sensitive individuals may develop eczema and/or asthma on inhalation of this material. However, in light of good industrial hygiene, exposure to any chemical should be kept to a minimum.

Section 4. First Aid Measures

Eye Contact Check for and remove any contact lenses. IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. DO NOT use an eye ointment. Seek medical attention.

Skin Contact Wash gently and thoroughly the contaminated skin with running water and non-abrasive soap. Rinse with plenty of running water (15-30 minutes). If irritation persists, seek medical attention.

Hazardous Skin Contact If the product gets onto the clothed portion of the body, remove the contaminated clothes as quickly as possible, protecting your own hands and body. Place the person under shower. Wash gently and thoroughly the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Rinse with plenty of running water (15-30 minutes). Seek medical attention. Wash contaminated clothing before reusing.

Inhalation Allow the person to rest in a well ventilated area. Loosen tight clothing around the person's neck and waist. If symptoms persist, seek medical advice immediately (show the label when possible).

Hazardous Inhalation Evacuate the person to a safe area as soon as possible. Loosen tight clothing around the person's neck and waist. If the person is not breathing, administer mouth-to-mouth resuscitation. Warning: It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation if the inhaled material is toxic, infectious or corrosive. Oxygen may be administered if breathing is difficult. Seek medical attention.

Ingestion DO NOT induce vomiting. Have conscious person drink several glasses of water or milk. Seek immediate medical attention.

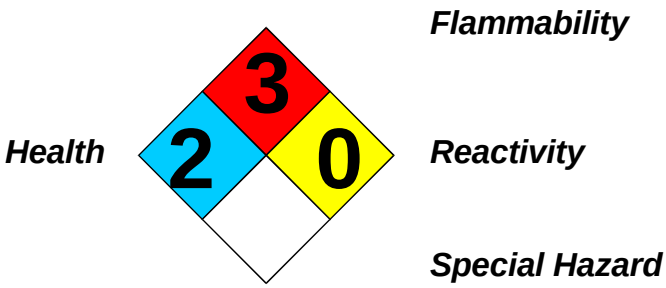
Hazardous Ingestion DO NOT induce vomiting. Have conscious person drink several glasses of water or milk. Never give an unconscious person anything to ingest. Even small amounts of liquid aspirated into lungs during ingestion or from vomiting may cause mild to severe pulmonary injury and possibly death. If breathing is difficult, administer oxygen. If the person is not breathing, administer mouth-to-mouth resuscitation. WARNING: It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation when the material is toxic, infectious or corrosive. Avoid mouth-to-mouth contact by using mouth guards or shields. Seek immediate medical attention.

Material Safety Data Sheet

Product Name: **MC-Miomastic 100 Light Grey**

Section 5. Fire and Explosion Data

Flammability of the Product	Flammable.
Auto-Ignition Temperature	Not available.
Flash Points	The lowest known value is CLOSED CUP: 4.4℃ (39.9℉). (Tert Butyl Acetate)
Flammable Limits	The greatest known range is LOWER: 1.1% UPPER: 7% (Xylenes)
Products of Combustion	Carbon oxides (CO, CO2), and other toxic compounds (nitrogen oxides, isocyanate vapors and traces of hydrogen cyanide).
Fire Hazards in Presence of Various Substances	Flammable in presence of open flames and sparks.
Explosion Hazards in Presence of Various Substances	Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: YES.
Fire Fighting Media and Instructions	Flammable liquid, insoluble in water. SMALL FIRE: Use DRY chemicals, CO2, soda ash or lime. LARGE FIRE: Use water spray or fog. Never direct a water jet in the container in order to prevent any splashing of the product which could cause spreading of the fire. Cool the containers with water spray or fog in order to prevent pressure build-up, autoignition or explosion. Firefighters should be equipped with self-contained breathing apparatus to protect against toxic and irritating fumes. During a fire, isocyanate vapors and other irritating, highly toxic gases may be generated by thermal decomposition or combustion.
Special Remarks on Fire Hazards	Vapor may travel considerable distance to source of ignition and flash back. When heated to decomposition it emits highly toxic fumes.
Special Remarks on Explosion Hazards	Container explosion may occur under fire conditions or when heated (due to pressure build-up). Vapor forms explosive mixture with air between upper and lower flammable limits.



Section 6. Accidental Release Measures

Small Spill	Absorb with an inert material and place in an appropriate waste disposal container. Treat with a neutralizing solution (5% ammonia water, or 5-10 % sodium carbonate in water). Wear suitable protective clothing and respirator.
Large Spill	Poisonous, flammable liquid, insoluble or very slightly soluble in water. Ventilate. Eliminate all sources of ignition. Wear suitable protective clothing, gloves and eye/face protection. A self-contained breathing apparatus should be used to avoid inhalation of the product. Warn personnel to move away. Stop leak if without risk. DO NOT touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Cover with WET earth, sand or other non-combustible material, or with DRY absorbent wetted with a neutralizing solution (5 % ammonia water, or 5 % - 10 % sodium carbonate in water). After 15 minutes transfer it to waste container, or put in open drums - fill the drums half way. Do not seal - evolution of CO2 can cause pressure build-up. Keep drums (not sealed) outside, or in safe ventilated area for a few days. After clean-up, monitor the vapors concentration. Use the neutralizing solution to decontaminate the surface and the tools. The spilled material, clean-up residues, and spent decontamination solution are hazardous wastes. Call for assistance on disposal.

Material Safety Data Sheet

Product Name: **MC-Miomastic 100 Light Grey**

Section 7. Handling and Storage

Precautions

Keep locked up and out of reach of children. Manipulate in a well ventilated area. In case of insufficient ventilation, wear suitable respiratory equipment. Do not breathe gas/fumes/vapor/spray. Avoid contact with skin and eyes. Contact lenses should not be worn. Keep away from foodstuff, drinks and tobacco. Eating, drinking and smoking should be prohibited in area where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Ensure that eyewash station and safety shower are proximal to the work-station location. In case of accident or if you feel unwell, seek medical advice immediately (show the label when possible). Individuals with respiratory problems (asthma, chronic bronchitis), or allergic to isocyanates or solvents, should avoid any contact with this product. ATTENTION: Isocyanate vapors cannot be smelled until concentrations are well above the safe exposure limit! Ground all equipment containing material (during handling, mixing and spraying).

Storage

Keep away from heat. Keep away from sources of ignition. Keep container tightly closed and in a well-ventilated place. Contains moisture sensitive material; store in a dry place. Keep away from incompatibles.

Section 8. Exposure Controls/Personal Protection

Engineering Controls

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash station and safety shower are proximal to the work-station location. Do air monitoring if possible.

Personal Protection

During mixing, handling and application: Splash goggles. Full protective clothing. Gloves (impervious). Suitable respiratory equipment. When air concentrations are not known or above the TLV, an air-supplied respirator, or SCBA - self-contained breathing apparatus is required.
Refer to OSHA Respiratory Protection Standard (29 CFR 1910.134).
ATTN: Air-purifying (cartridge type) respirators are not approved for protection against diisocyanates due to their low warning properties.

Personal Protection in Case of a Large Spill

Splash goggles. Full suit. Boots. Gloves (impervious). Self-contained breathing apparatus (for above TLV, or unknown vapor concentrations), must be used to avoid inhalation af the product.

Section 9. Physical and Chemical Properties

Odor	Aromatic.
Taste	Not available.
Color	Grey.

Physical state and appearance	Liquid.		
Molecular Weight	Not applicable.		
pH (1% soln/water)	Not applicable.		
Boiling Point	The lowest known value is 138.5°C (281.3°F) (Xylenes). Weighted average: 168.34°C (335°F)	**Odor Threshold**	ATTENTION: ISOCYANATE VAPORS CANNOT BE SMELLED UNTIL CONCENTRATIONS ARE WELL ABOVE THE SAFE EXPOSURE LIMIT!
Melting Point	May start to solidify at -2°C (28.4°F). Weighted average: -8.1°C (17.4°F)	**Evaporation rate**	0.72 (Xylenes).compared to Butyl acetate.
Critical Temperature	Not available.	**Viscosity**	Not available.
Specific Gravity	2.2 (Water = 1)	**Water/Oil Dist. Coeff.**	The product is more soluble in oil.
Vapor Pressure	The highest known value is 34 mm of Hg (@ 20°C) (Tert Butyl Acetate). Weighted average: 23.58 mm of Hg (@ 20°C)	**Ionicity (in Water)**	Not available.
Vapor Density	The highest known value is 3.7 (Air = 1) (Xylenes). Weighted average: 3.7 (Air = 1)	**Dispersion Properties**	Is not dispersed in water.
Volatility	36% (v/v). 15% (w/w).	**Solubility**	Insoluble in water.

Section 10. Stability and Reactivity Data

Stability

The product is stable.

Instability Temperature

Not available.

Conditions of Instability

Not available.

Incompatibility with various substances

Incompatible with water, strong oxidizing agents, amines, strong bases, strong acids, alcohols. Absorbs moisture from the air. Reacts slowly with water to liberate CO2 gas.

Corrosivity

Not considered to be corrosive for glass and metals according to our data base.

Special Remarks on Reactivity

No additional remarks.

Section 11. Toxicological Information

Routes of Entry	Inhalation. Skin contact (absorption). Eye contact. Ingestion.
Toxicity to Animals	See: Section 2
Chronic Effects on Humans	Sensitive individuals may develop eczema and/or asthma on inhalation of this material. However, in light of good industrial hygiene, exposure to any chemical should be kept to a minimum.
Other Toxic Effects on Humans	See: Section 3
Special Remarks on Toxicity to Animals	Embryofetotoxic in animal studies. (Xylene) IARC Group 2B carcinogen - possibly carcinogenic to humans (Titanium dioxide).
Special Remarks on Chronic Effects on Humans	Isocyanates are not known to cause cancer in humans, but may cause skin and respiratory sensitization in humans. Sensitive individuals may develop eczema and/or asthma on inhalation of this material. Exposure may cause asthma, dermatitis and pulmonary oedema; effects may be delayed. Reports have associated repeated and prolonged occupational exposure to solvents with permanent brain and nervous system damage, and other systemic effects. Intentional misuse by deliberately concentrating and inhaling vapors may be harmful or fatal.
Special Remarks on other Toxic Effects on Humans	Exposure can cause nausea, headaches and vomiting. Over-exposure can cause lung irritation, chest pain and oedema which may be fatal. Sensitizer - skin and lungs. Medical supervision of all employees who come in contact with this product is recommended (preemployment and periodic medical examinations).

Section 12. Ecological Information

Ecotoxicity	Not available.
BOD5 and COD	Not available.
Products of Biodegradation	Not available.
Toxicity of the Products of Biodegradation	Not available.
Special Remarks on the Products of Biodegradation	No additional remarks.

Section 13. Disposal Considerations

Waste Disposal	In accordance with municipal, state, and federal regulations. Consult your local or regional authorities. Empty containers must be handled with care due to product residue. Do not heat or cut empty containers with electric or gas torch.

Section 14. Transport Information

DOT Classification	DOT CLASS 3: Flammable liquid with a flash point greater than 37.8℃ (100℉). P.G.: II
DOT Identification number	PIN: UN1263 - Paint.
Special Provisions for Transport	No specific remarks.
DOT (Pictograms)	

Material Safety Data Sheet

Product Name: MC-Miomastic 100 Light Grey

Section 15. Other Regulatory Information and Pictograms

Other Regulations TSCA (Toxic Substance Control Act): All components of this product are either reported in EPA TSCA Inventory, or exempt. OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

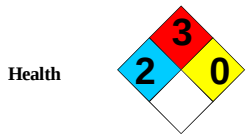
Other Classifications **WHMIS (Canada)**

DSCL (EEC)

Hazardous Material Information System (U.S.A.)

Health Hazard	2
Fire Hazard	3
Reactivity	0
Personal Protection	x

National Fire Protection Association (U.S.A.)



Health — Fire Hazard — Reactivity — Specific hazard

WHMIS (Canada) (Pictograms)

DSCL (Europe) (Pictograms)

TDG (Canada) (Pictograms)

ADR (Europe) (Pictograms)

Protective Clothing (Pictograms)

Section 16. Other Information

References Manufacturer's MSDS, RTESC, NIOSH, CCOHS.

Other Special Considerations Medical supervision of all employees who come in contact with this product is recommended (pre-employment and periodic medical examination). Individuals with respiratory problems (asthma, chronic bronchitis), or allergic to isocyanates or solvents, should avoid any contact with this product.

Validated by Heidi Brown on 03/06/2009.

Verified by Heidi Brown.

Printed 03/06/2009.

EMERGENCY PHONE NUMBERS:
USA and Canada: 1-800 424-9300
International: 1-703 527-3887

Notice to Reader

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MC-Miomastic 100

Product Description

Wasser's premium, surface-tolerant, intermediate coating, MC-Miomastic 100 utilizes a premium blend of micaceous iron oxide (MIO) and corrosion inhibiting pigments and resins designed for application over most any generic primer/coating system. The plate-like structure of MIO provides maximum surface tolerance by its ability to overlap most conventional coatings without compromising the existing adhesion characteristics to the substrate. The resin system ensures excellent cohesive bond to its substrate.

Area of Use

Substrates

Over properly prepared:
Ferrous Metal
Galvanized Metal
Aluminium/Non-Ferrous Metal
Ductile Iron
Previously Existing Coatings

Possible Uses

Water and Wastewater Treatment Facilities
Food Processing
Pulp and Paper Mills
Tank Exteriors
Pipes
Hydropower Facilities
Marine/Port Facilities
Offshore Platforms
Sound Walls
Chemical Processing Facilities
Refineries
Floors
Structural Steel
Work Boats
Bridges

Ready Reference Information

Resin Type: Urethane

Pigment type: Micaceous Iron Oxide and proprietary blend

Sheen: Flat

Colors: Light Grey, Red Oxide

Volume Solids: 62.0% ± 2.0

VOC: < 0.8 lb/gal (100 g/l)
(Volatile Organic Content)

Theoretical Coverage: At 1 mil DFT: 994 ft^2/gal
At 25 µm DFT: 24.4 m^2/l

Recommended Film Thickness:
Wet: 4.8-8.0 mils (122-203 microns)
Dry: 3.0-5.0 mils (76-127 microns)

Recommended Coverage Per Coat:
199 ft^2/gal at 5.0 mils DFT - 331 ft^2/gal at 3.0 mils DFT
(4.9 m^2/l at 127 microns DFT – 8.1 m^2/l at 76 microns DFT)

Thinning: MC-Thinner, MC-Thinner 100, MC-Thinner XMT
Clean Up: MC-Thinner, MC-Thinner 100, MC-Thinner XMT

Drying Times and Temperatures

*At 50% Humidity	50°F/10°C		75°F/24°C		95°F/35°C	
	Without *PURQuik*®	With *PURQuik*®	Without *PURQuik*®	With *PURQuik*®	Without *PURQuik*®	With *PURQuik*®
Tack Free	4 hour	--	2 hours	--	1 hour	--
Recoat Minimum[1]	8 hours	1 hour	6 hours	30 minutes	4 hours	20 minutes
Full Cure	10 Days	7 days	7 days	5 days	5 days	4 days

*Humidity, temperature and coating thickness will affect recoat and curing times
[1]No outer recoat window on clean surfaces
Refer to Wasser's PURQuik® Accelerator Product Data for additional information

Product Features

- Designed for use over most existing coatings including MCU, epoxy, vinyl, alkyd, acrylic, phenolic and red lead
- Maintains build on edges, threads and weld seams
- Single component Moisture Cure Urethane
- Easy to apply by brush, roller or spray methods
- No mixing errors – no pot life
- VOC compliant at less than 100 g/l
- Can be applied at 99% relative humidity (substrate must be visibly dry)
- Can be applied in below freezing temperatures (no ice or frost)
- No dew point restrictions (substrate must be visibly dry)
- No outer recoat window on clean surfaces
- Compatible with PURQuik® Accelerator for faster recoat and cure times

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Recommended Systems

Ferrous Metals (Overcoat):

1st Coat: MC-Miozinc 100	3.0-5.0 mils DFT
Or MC-Miozinc 100 (Spot Prime)	
2nd Coat: MC-Miomastic 100	3.0-5.0 mils DFT
3rd Coat: Polyflex 102 Rapid Thane	6.0-10.0 mils DFT
Total System DFT:	12.0-20.0 mils DFT

Ferrous Metals (Full Removal):

1st Coat: MC-Zinc 100	3.0-5.0 mils DFT
2nd Coat: MC-Miomastic 100	3.0-5.0 mils DFT
3rd Coat: MC-Ferrox A 100	2.0-4.0 mils DFT
Or MC-Luster 100	
Total System DFT:	8.0-14.0 mils DFT

1st Coat: MC-Miozinc 100	3.0-5.0 mils DFT
2nd Coat: MC-Miomastic 100	3.0-5.0 mils DFT
3rd Coat: MC-Ferrox A 100	2.0-4.0 mils DFT
Or MC-Luster 100	
Total System DFT:	8.0-14.0 mils DFT

Galvanized Metal:

1st Coat: MC-Miomastic 100	3.0-5.0 mils DFT
2nd Coat: Polyflex 102 Rapid Thane	6.0-10.0 milsDFT
Total System DFT:	9.0-15.0 mils DFT

1st Coat: MC-Miomastic 100	3.0-5.0 mils DFT
2nd Coat: MC-Ferrox A 100	2.0-4.0 mils DFT
Or MC-Luster 100	
Total System DFT:	5.0-9.0 mils DFT

***Other Systems are available. Contact your Wasser Representative to answer any questions.**

Performance Testing Data

*Contact Wasser Corporation for detailed testing of this product

Compatable Coatings

Primer:
MC-Zinc 100
MC-Miozinc 100
MC-Ferroclad 100
MC-Prepbond 100
MC-Ultra Build DTM 100

Topcoats:
MC-Ferrox A 100
MC-Luster 100
MC-Shieldcoat 100
Polyflex 102 Rapid Thane

Coating Accelerator:
PURQuik® Coating Accelerator

Surface Preparation

Ferrous Metal

Apply to clean, dry, Wasser recommended primers. Refer to the primer Product Data for additional information.

Aluminum/Galvanized/Non-Ferrous Metals

Prepare surfaces using SSPC-SP1 Solvent Cleaning and SSPC-SP12/NACE No. 5 Low Pressure Water Cleaning methods to remove surface contamination. Supplement weathered galvanized surface preparation with SSPC-SP2 and SSPC-SP3 Hand and Power Tool cleaning to remove excessive corrosion and impart surface profile on bare metal. Spot prime clean, bare metal with Wasser recommended primer. Supplement new galvanized surface cleaning with mechanical abrasion to impart surface profile and support mechanical adhesion.

Previously Existing Coatings

Prepare surfaces using SSPC-SP12/NACE No. 5 Low Pressure Water Cleaning methods to remove surface contamination. Supplement SSPC-SP 12 LPWC with SSPC-SP1 Solvent Cleaning and SSPC-SP2 and SSPC-SP3 Hand and Power Tool clean areas of corrosion and loose or flaking paint (feather edges of sound, existing paint back to a firm edge). Spot prime clean, bare metal with Wasser recommended primer. Sand glossy surfaces to provide profile. Apply a test sample to a small area to determine coating compatibility.

Good Practices

MC-Miomastic 100 is designed for application to tightly adhering, previously existing coatings. Apply a test sample to a small area to determine coating compatibility. Spot prime any areas cleaned to bare metal with a Wasser recommended primer.

New or weathered galvanized surfaces will accept MC-Miomastic as a prime coat when surfaces are properly prepared.

The surface to be coated must be dry, clean, dull, and free from dirt, grease, oil, heavy rust, salts or any other surface contaminants that interfere with adhesion.

Ensure welds, repair areas, joints, and surface defects exposed by surface preparation are properly cleaned and treated prior to coating application.

When surfaces are cleaned to bare metal, areas of oxidation after surface preparation and prior to coating application, should be prepared to specified standard prior to applying the Wasser recommended primer.

Consult the referenced standards, SSPC-PA1 and your Wasser Representative for additional information or recommendations.

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MC-Miomastic 100

Application Information

MC-Miomastic 100 can be applied by brush, roll, airless spray and conventional spray methods. Follow proper mixing instructions before applying.

Mixing:

Material temperature must be 5° F above the dew point before opening and agitating.
Power mix thoroughly prior to application.
Do not keep under constant agitation.
Apply a 2 – 4 oz solvent float over material to prevent moisture intrusion and cover pail.

Brush/Roller:

Brush:	Natural fiber
Roller:	Natural or synthetic fiber cover
Nap:	¼" to ⅜"
Core:	Phenolic

Reduction: Typically not required. If necessary, reduce with MC-Thinner 100, or MC-Thinner XMT.

Airless Spray:

Pump Ratio:	28 - 40:1
Pressure:	2100 - 2800psi
Hose:	¼" to ⅜"
Tip Size:	.013 - .019
Filter Size:	60 mesh (250 μm)

Reduction: Typically not required. If necessary, reduce with MC-Thinner or MC-Thinner 100.

Conventional Spray: (DeVilbis MBC, JGA or equivalent)

Fluid Nozzle:	E Fluid Tip
Air Cap:	704 or 765
Atomizing Air:	45 - 75 lbs.
Fluid Pressure:	15 - 20 lbs.
Hose:	½" ID; 50' Max

Reduction: Typically not required. If necessary, reduce with MC-Thinner or MC-Thinner 100.

Reducer: MC-Thinner, MC-Thinner 100, or MC-Thinner XMT.
Reduction is typically not required. If desired, thin up to 8% with MC-Thinner or MC-Thinner 100. Thin in accordance with local and federal regulatory standards.

Clean up: MC-Thinner, MC-Thinner 100
If Wasser thinners are not available, use MEK, MIBK, Xylene, a 50:50 blend of Xylene and MEK or MIBK, or acetone for clean up only. Do not add unauthorized solvents to a Wasser coating.

Application Conditions

Temperature: 20° - 120°F (-8° - 49°C)
This temperature range should be achieved for ambient, surface and material temperature. Substrate must be visibly dry. MC-Thinner 100 is recommended for spray application in temperatures above 90°F.

Relative Humidity: 6% - 99%

Coating Accelerator: PURQuik® Accelerator.
See Wasser's PURQuik® Accelerator Product Data for information.

Storage: Store off the ground in a dry, protected area in temperature between 40 - 100°F (4 - 38°C). MCU containers must be kept sealed when not in use. Use a solvent float to reseal partial containers.

Certifications and Qualifications

VOC Compliant (National Standards – Industrial Maintenance Coating) SCAQMD Rule 1113 IM Coating
VOC ≤0.8 lbs/gal (100gr/ltr)

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MC-Miomastic 100

Ordering Information

Product Numbers: **W131.0437** **Light Grey**
W131.35 **Red Oxide**

Package Size: 1 gallon and 3 gallon pails

Shelf Life: **12 months from date of shipment** when stored unopened at 75°F (24°C)

Shipping Information

Flash Point:	107°F (42°C)
Weight/gallon:	18.8 ± 1.0 lbs. (2.25 ± .11 kg/l)
DOT HAZARD CLASS	3
DOT PACKAGING GROUP	III
DOT LABEL	FLAMMABLE LIQUID
DOT SHIPPING NAME	PAINT
DOT PLACARD	FLAMMABLE LIQUID
UN/NA NUMBER	1263

Safety Precautions

DANGER!

VAPOR AND SPRAY MIST HARMFUL. OVEREXPOSURE MAY CAUSE LUNG DAMAGE. MAY CAUSE ALLERGIC SKIN AND RESPIRATORY REACTION, EFFECTS MAY BE PERMANENT, MAY AFFECT THE BRAIN OR NERVOUS SYSTEM CAUSING DIZZINESS HEADACHE OR NAUSEA. CAUSES EYE, SKIN, NOSE AND THROAT IRRITATION. FLAMMABLE LIQUID AND VAPOR.

CONTAINS: Petroleum Distillates, Xylene, Ethylbenzene, Modified MDI, Modified Polymeric MDI, 4,4'-Diphenylmethane Diisocyanate

NOTICE: Reports have associated repeated and prolonged occupational over-exposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling contents may be harmful or fatal. INDIVIDUALS WITH LUNG OR BREATHING PROBLEMS OR PRIOR REACTION TO ISOCYANATES MUST NOT BE EXPOSED TO VAPOR OR SPRAY MIST. **Use Only With Adequate Ventilation**. Do not breathe dust, vapors or spray mist. Ensure fresh air entry during application and drying. If you experience eye watering, headache or dizziness or if air monitoring demonstrates vapor/mist levels are above applicable limits, wear an appropriate, properly fitted respirator (NIOSH approved) during and after application. Follow respirator manufacturer's directions for respirator use. Do not get in eyes, on skin or on clothing. Wash thoroughly after handling. Keep away from heat, sparks and flame. Vapor may cause flash fire.

KEEP OUT OF REACH OF CHILDREN

FIRST AID: If affected by inhalation of vapor or spray mist, remove to fresh air. If breathing difficulty persists or occurs later, consult a physician and have label information available. In case of eye contact, flush immediately with plenty of water for at least 15 minutes and get medical attention; for skin, wash thoroughly with soap and water. If swallowed, get medical attention immediately. If swallowed, do not induce vomiting. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean or destroy contaminated shoes. Keep container closed when not in use. If spilled, contain spilled material and remove with inert absorbent. Dispose of contaminated absorbent, container and unused contents in accordance with local, state and federal regulations.

WARNING: This product contains a chemical known to the state of California to cause cancer and birth defects, or other reproductive harm.

Obtain and Read the Material Safety Data Sheet Before Using.

INTENDED FOR PROFESSIONAL USE ONLY.

Note: Ingredients and VOC/VOS may vary for products with catalysts, tint bases, and other colors

Wasser Corporation's liability on any claim of any kind, including claims based upon Wasser Corporation's negligence or strict liability, for any loss or damage arising out of, connected with or resulting from the use of the products, shall in no case exceed the purchase price allowable for the products or part thereof that give rise to the claim. In no event shall Wasser Corporation be liable for consequential or incidental damages. Published Product Data Sheets are subject to change without notice. Contact your Wasser Representative for current Product Data Sheets.

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MC-Zinc 100

Product Description

Wasser's proven, high-performance, single-component, moisture-cure urethane, organic zinc-rich primer is now formulated to meet the strict VOC requirements for industrial maintenance coatings. 83% zinc in the dry film makes MC-Zinc 100 the optimum, zinc-rich primer for maximum resistance to rust and corrosion undercutting on steel structures.

Area of Use

Substrates
Over properly prepared:
Ferrous Metal
Galvanized Metal

Possible Uses
Bridges
Refineries
Water Treatment Facilities
Wastewater Treatment Facilities
Marine/Port Facilities Structural Steel
Offshore Platforms
Tank Exteriors
Food Processing Facilities
Material Handling Equipment
Pulp and Paper Mills
Marine/Port Facilities
Chemical Processing Facilities
Pipes
Work Boats
Hydropower Facilities

Ready Reference Information

Resin Type: Urethane

Pigment type: 83% Zinc in the dry film

Sheen: Flat

Colors: Standard Grey

Volume Solids: 62.0% ± 2.0

VOC: < 0.8 lb/gal (100g/l)
(Volatile Organic Content)

Theoretical Coverage: At 1 mil DFT: 994 ft^2/gal
At 25 µm DFT: 24.4 m^2/l

Recommended Film Thickness:
Wet: 4.8-8.0 mils (104-173 microns)
Dry: 3.0-5.0 mils (76-127 microns)

Recommended Coverage Per Coat:
199 ft^2/gal at 5.0 mils DFT - 331 ft^2/gal at 3.0 mils DFT
(4.9 m^2/l at 127 microns DFT – 8.1 m^2/l at 76 microns DFT)

Thinning: MC-Thinner, MC-Thinner 100, MC-Thinner XMT
Clean Up: MC-Thinner, MC-Thinner 100, MC-Thinner XMT

Drying Times and Temperatures

*At 50% Humidity	50°F/10°C		75°F/24°C		95°F/35°C	
	Without *PURQuik®*	With *PURQuik®*	Without *PURQuik®*	With *PURQuik®*	Without *PURQuik®*	With *PURQuik®*
Tack Free	3 hours	--	1.5 hours	--	1 hour	--
Recoat Minimum[1]	6 hours	1 hour	4 hours	30 minutes	3 hours	20 minutes
Full Cure	10 Days	7 days	7 days	5 days	5 days	4 days

*Humidity, temperature and coating thickness will affect recoat and curing times
[1]No outer recoat window on clean surfaces
Refer to Wasser's PURQuik® Accelerator Product Data for additional information

Product Features

- Single component Moisture Cure Urethane
- No mixing errors – no pot life
- Zinc stays in solution – no need for continuous agitation
- Easy to apply by brush, roller or spray methods
- VOC Compliant at less than 100 g/l
- Various service applications
- Impact resistant
- Abrasion resistant
- No dew point restrictions (substrate must be visibly dry)
- Can be applied at 99% relative humidity (substrate must be visibly dry)
- Can be applied in below freezing temperatures (no ice or frost)
- Compatible with PURQuik® Accelerator for faster recoat and cure times

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Recommended Systems

Ferrous Metals (Overcoat):

1st Coat: MC-Zinc 100 (Spot Prime)	3.0-5.0 mils DFT
2nd Coat: MC-Miomastic	3.0-5.0 mils DFT
3rd Coat: MC-Ferrox A	2.0-4.0 mils DFT
Or MC-Luster	
Or Polyflex 102 Rapid Thane	6.0-10.0 mils DFT
Total System DFT:	14.0-24.0 mils DFT

Ferrous Metals (Full Removal):

1st Coat: MC-Zinc 100	3.0-5.0 mils DFT
2nd Coat: MC-Ferrox B	3.0-5.0 mils DFT
3rd Coat: MC-Ferrox A	2.0-4.0 mils DFT
Or MC-Luster	
Total System DFT:	8.0-14.0 mils DFT

Ferrous Metals (Immersion/Severe Service):

1st Coat: MC-Zinc 100	3.0-5.0 mils DFT
2nd Coat: Polyflex 201 PW	30.0-100 mils DFT
Total System DFT:	33.0-105.0 mils DFT
1st Coat: MC-Zinc 100	3.0-5.0 mils DFT
2nd Coat: MC-Tar	5.0-7.0 mils DFT
3rd Coat: MC-Tar	5.0-7.0 mils DFT
Total System DFT:	13.0-19.0 mils DFT

Ferrous Metals (Immersion/Light Color Topcoat):

1st Coat: MC-Zinc 100	3.0-5.0 mils DFT
2nd Coat: MC-Ballastcoat	3.0-4.0 mils DFT
3rd Coat: MC-Ballastcoat	3.0-4.0 mils DFT
Total System DFT:	9.0-13.0 mils DFT

Galvanized Metal:

1st Coat: MC-Zinc 100 (Spot Repair)	3.0-5.0 mils DFT
2nd Coat: Miomastic	3.0-5.0 mils DFT
3rd Coat: MC-Ferrox A	2.0-4.0 mils DFT
Or MC-Luster	
Total System DFT:	8.0-14.0 mils DFT

Two-Coat System Option

1st Coat: MC-Zinc 100 (Spot Repair)	3.0-5.0 mils DFT
2nd Coat: MC-Ferrox A	2.0-4.0 mils DFT
Or MC-Luster	
Or Polyflex 102	6.0-10.0 mils DFT
Total System DFT:	9.0-15.0 mils DFT

***Other Systems are available. Contact your Wasser Representative to answer any questions.**

Performance Testing Data

*Contact Wasser Corporation for detailed testing of this product

Compatable Coatings

Primers
MC-Miozinc 100
MC-Ferroclad 100
MC-Ultra Build DTM 100

Intermediates:
MC-Miomastic 100
MC-Ferrox B 100
MC-CR 100
MC-Tar 100

Topcoats:
MC-Ferrox A 100
MC-Luster 100
MC-Shieldcoat 100
MC-Tar 100
MC-Ballastcoat 100

Polyflex 102 Rapid Thane
Polyflex 201 PW NSF
Polyflex 202 High Chem
Polyflex 401 Polar Serve

Coating Accelerator
PURQuik® Accelerator

*Only use with a Wasser recommended intermediate

Surface Preparation

Ferrous Metal

Use SSPC-SP1 solvent cleaning to remove oil, grease and other contaminants prior to employing surface preparation methods.

Blast Clean surfaces for severe service projects to SSPC-SP10/NACE No. 2 Near White Metal finish.

Prepare surfaces for atmospheric service projects to SSPC-SP6/NACE No. 3 Commercial Blast Clean finish. For minimum surface preparation, use conscientious power tool cleaning methods in accordance with SSPC-SP3 to remove corrosion and loose or failing paint (feather edges of sound, existing paint back to a firm edge).

Blast cleaning methods should produce an angular surface profile of 1.0 - 2.0 mils (25-50 microns).

Galvanized Metal

Prepare surfaces using SSPC-SP1 Solvent Cleaning and SSPC-SP12/NACE No. 5 Low Pressure Water Cleaning methods to remove surface contamination. Supplement weathered galvanized surface preparation with SSPC-SP2 and SSPC-SP3 Hand and Power Tool cleaning to remove excessive corrosion and impart surface profile on bare metal. Supplement new

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galvanized surface cleaning with mechanical abrasion to impart surface profile and support mechanical adhesion.

Good Practices

The surface to be coated must be dry, clean, dull, and free from dirt, grease, oil, rust, mill scale, salts or any other surface contaminants that interfere with adhesion.

Ensure welds, repair areas, joints, and surface defects exposed by surface preparation, are properly cleaned and treated prior to coating application.

Areas of oxidation, after surface preparation and prior to coating application, should be prepared to specified standard

Consult the referenced standards, SSPC-PA1 and your Wasser Representative for additional information or recommendations.

Application Information

MC-Zinc 100 can be applied by brush, roll, airless spray and conventional spray application. Follow proper mixing instructions before applying.

Mixing:

Material temperature must be 5° F above the dew point before opening and agitating.
Power mix thoroughly prior to application.
Do not keep under constant agitation.
Apply a 2-4 oz solvent float over material to prevent moisture intrusion and cover pail.

Brush/Roller:

Brush:	Natural Fiber
Roller:	Natural or synthetic fiber cover
Nap:	¼" to ⅜"
Core:	Phenolic

Reduction: Typically not required. If necessary, reduce with MC-Thinner 100 or MC-Thinner XMT.

Airless Spray:

Pump Ratio:	28 - 40:1
Pressure:	2400 - 2800 psi
Hose:	¼" to ⅜"
Tip Size:	.013 - .019
Filter Size:	60 mesh (250 μm)

Reduction: Typically not required. If necessary, reduce with MC-Thinner, MC-Thinner 100, or MC-Thinner XMT.

Conventional Spray: (DeVilbis MBC, JGA or equivalent)

Fluid Nozzle:	E Fluid Tip
Air Cap:	704 or 765
Atomizing Air:	45 - 75 lbs.
Fluid Pressure:	15 - 20 lbs.
Hose:	½" ID; 50' Max

Reduction: Typically not required. If necessary, reduce with MC-Thinner, MC-Thinner 100, or MC-Thinner XMT.

Reducer: MC-Thinner, MC-Thinner 100, or MC-Thinner XMT.
Reduction is typically not required. If desired, thin up to 8% with MC-Thinner or MC-Thinner 100. MC-Thinner XMT is an exempt solvent specially formulated for Series 100 MCU. Thin in accordance with local and federal regulatory standards.

Clean up: MC-Thinner or MC-Thinner 100
If Wasser thinners are not available, use MEK, MIBK, Xylene, a 50:50 blend of Xylene and MEK or MIBK, or acetone for clean up only. Do not add unauthorized solvents to a Wasser coating.

Application Conditions

Temperature: 20° - 120°F (-8° - 49°C)
This temperature range should be achieved for ambient, surface and material temperature. Substrate must be visibly dry. MC-Thinner 100 is recommended for spray application in temperatures above 90°F.

Relative Humidity: 6% - 99%

Coating Accelerator: PURQuik® Accelerator.
See Wasser's PURQuik® Accelerator Product Data for information.

Storage: Store containers off the ground in a dry, protected area, in temperature between 40 - 100°F (4 - 38°C). MCU containers must be kept sealed when not in use. Use a solvent float to reseal partial containers

Certifications and Qualifications

VOC Compliant ≤0.8 lbs/gal (100 gr/ltr) (National Standards for Industrial Maintenance Coating, and SCAQMD Rule 1113 IM Coating, Zinc Rich IM Primer)

Cal Trans – Qualified Product – "Organic Zinc-Rich Primer" List

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MC-Zinc 100

Ordering Information

Product Numbers:	**W011.6**	**Standard Grey**
	W011.0080	**Pink**
Package Size:	1 gallon and 3 gallon pails	
Shelf Life:	**12 months from date of shipment** when stored unopened at 75°F (24°C)	

Shipping Information

Flash Point:	80°F (27°C)
Weight/gallon:	26.7 ± 1.0 lbs. (3.2 ± .12 kg/l)
DOT HAZARD CLASS	3
DOT PACKAGING GROUP	III
DOT LABEL	FLAMMABLE LIQUID
DOT SHIPPING NAME	PAINT
DOT PLACARD	FLAMMABLE LIQUID
UN/NA NUMBER	1263

Safety Precautions

DANGER!

VAPOR AND SPRAY MIST HARMFUL. OVEREXPOSURE MAY CAUSE LUNG DAMAGE. MAY CAUSE ALLERGIC SKIN AND RESPIRATORY REACTION, EFFECTS MAY BE PERMANENT, MAY AFFECT THE BRAIN OR NERVOUS SYSTEM CAUSING DIZZINESS HEADACHE OR NAUSEA. CAUSES EYE, SKIN, NOSE AND THROAT IRRITATION. FLAMMABLE LIQUID AND VAPOR.

CONTAINS: Petroleum Distillates, Methyl-n-Amyl Ketone, Isophorone Diisocyanate, Homopolymer HDI

NOTICE: Reports have associated repeated and prolonged occupational over-exposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling contents may be harmful or fatal. INDIVIDUALS WITH LUNG OR BREATHING PROBLEMS OR PRIOR REACTION TO ISOCYANATES MUST NOT BE EXPOSED TO VAPOR OR SPRAY MIST. **Use Only With Adequate Ventilation**. Do not breathe dust, vapors or spray mist. Ensure fresh air entry during application and drying. If you experience eye watering, headache or dizziness or if air monitoring demonstrates vapor/mist levels are above applicable limits, wear an appropriate, properly fitted respirator (NIOSH approved) during and after application. Follow respirator manufacturer's directions for respirator use. Do not get in eyes, on skin or on clothing. Wash thoroughly after handling. Keep away from heat, sparks and flame. Vapor may cause flash fire.

KEEP OUT OF REACH OF CHILDREN

FIRST AID: If affected by inhalation of vapor or spray mist, remove to fresh air. If breathing difficulty persists or occurs later, consult a physician and have label information available. In case of eye contact, flush immediately with plenty of water for at least 15 minutes and get medical attention; for skin, wash thoroughly with soap and water. If swallowed, get medical attention immediately. If swallowed, do not induce vomiting. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean or destroy contaminated shoes.
Keep container closed when not in use. If spilled, contain spilled material and remove with inert absorbent. Dispose of contaminated absorbent, container and unused contents in accordance with local, state and federal regulations.

WARNING: This product contains a chemical known to the state of California to cause cancer and birth defects, or other reproductive harm.

Obtain and Read the Material Safety Data Sheet Before Using.
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Material Safety Data Sheet

Date Originated: 03/06/2009

NFPA	HCS Risk Phrases	Protective Clothing
	**HCS CLASS: Toxic.** **HCS CLASS: Irritating substance.** **HCS CLASS: Sensitizing substance.** **HCS CLASS: Target organ effects.** **HCS CLASS: Flammable liquid having a flash point lower than 37.8℃ (100℉).**	

Section 1. Chemical Product and Company Identification

Product Name

MC-Zinc 100 Standard Grey

Synonym

W011.6

Manufacturer

SUPPLIER:
Wasser Corporation
4118 B PL NW, Suite B
Auburn, WA 98001, US
Phone# 253-850-2967

Chemical Family

Not applicable. (Paint)

In case of Emergency

EMERGENCY PHONE NUMBERS:
USA and Canada: 1-800 424-9300
International: 1-703 527-3887

Section 2. Composition and Information on Ingredients

Name	CAS #	% by Weight	TLV/PEL	LC_{50}/LD_{50}
Zinc	7440-66-6	60-100	TWA: 10 (mg/m^3) from ACGIH (TLV)	Not available.
Modified MDI	Not disclosed	5-10	Not available.	Not available.
Tert Butyl Acetate	540-88-5	5-10	TWA: 200 (ppm) from ACGIH (TLV) TWA: 200 (ppm) from OSHA	ORAL (LD50): Acute: 4100 mg/kg [Rat]. DERMAL (LD50): Acute: 2000 mg/kg [Rabbit].
Hydrous calcium magnesium silicate mix	14807-96-6	1-5	TWA: 2 (mg/m^3) from ACGIH (TLV)	Not available.
Light aromatic solvent naphtha (petroleum)	64742-95-6	1-5	TWA: 50 (ppm) from ACGIH (TLV)	ORAL (LD50): Acute: 5000 mg/kg [Rat]. DERMAL (LD50): Acute: 14000 mg/kg [Rabbit]. VAPOR (LC50): Acute: 3670 ppm 4 hour(s) [Rat].
Isocyanic acid, polymethylene polyphenylene ester	9016-87-9	1-5	TWA: 0.005 CEIL: 0.02 (ppm) from ACGIH (TLV) TWA: 0.051 (mg/m^3) from ACGIH (TLV)	ORAL (LD50): Acute: 10000 mg/kg [Rat]. DERMAL (LD50): Acute: 6000 mg/kg [Rabbit]. VAPOR (LC50): Acute: 103 ppm 4 hour(s) [Rat].
Diphenylmethane-4,4'-diisocyanate	101-68-8	0-1	TWA: 0.005 (ppm)	ORAL (LD50): Acute: 10000 mg/kg [Rat]. DERMAL (LD50): Acute: 10000 mg/kg [Rabbit]. VAPOR (LC50): Acute: 36 ppm 4 hour(s) [Rat].

Material Safety Data Sheet

Product Name: **MC-Zinc 100 Standard Grey**

Section 3. Hazards Identification

Routes of Entry: Inhalation. Skin contact (absorption). Eye contact. Ingestion.

Potential Acute Health Effects

Eyes: Liquid or spray mist may severely rritate eyes. Inflammation of the eye is characterized by redness, watering, and itching.

Skin: This product may irritate skin upon contact. Harmful if absorbed through the skin. May cause skin sensitization. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Ingestion: Harmful if swallowed. Irritation or chemical burns of the mouth, pharynx, esophagus and stomach can develop following ingestion of this product. May cause headaches, weakness, nausea, vomiting and diarrhea. Even small amounts of liquid aspirated into lungs during ingestion or from vomiting may cause mild to severe pulmonary injury and possibly death.

Inhalation: Harmful if inhaled (irritant, sensitizer). Over-exposure by inhalation of the vapors/spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. May cause nausea, vomiting and headaches. May cause sensitization by inhalation. Severe overexposure may cause unconciousness and death.

Potential Chronic Health Effects

Eyes: Repeated or prolonged contact with spray mist may produce chronic eye irritation.

Skin: Repeated skin exposure can produce local skin destruction, or dermatitis, possibly sensitization.

Ingestion: May be fatal if swallowed.

Inhalation: Repeated or prolonged inhalation of vapors/spray mist may lead to chronic respiratory irritation. May cause sensitization by inhalation.

Other chronic effects on Humans The substance is toxic to mucous membranes, upper respiratory tract, lungs, blood, kidney, liver. Exposure may cause asthma, dermatitis and pulmonary oedema; effects may be delayed. Sensitive individuals may develop eczema and/or asthma on inhalation of this material. However, in light of good industrial hygiene, exposure to any chemical should be kept to a minimum.

Section 4. First Aid Measures

Eye Contact Check for and remove any contact lenses. IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. DO NOT use an eye ointment. Seek medical attention.

Skin Contact Wash gently and thoroughly the contaminated skin with running water and non-abrasive soap. Rinse with plenty of running water (15-30 minutes). If irritation persists, seek medical attention.

Hazardous Skin Contact If the product gets onto the clothed portion of the body, remove the contaminated clothes as quickly as possible, protecting your own hands and body. Place the person under shower. Wash gently and thoroughly the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Rinse with plenty of running water (15-30 minutes). Seek medical attention. Wash contaminated clothing before reusing.

Inhalation Allow the person to rest in a well ventilated area. Loosen tight clothing around the person's neck and waist. If symptoms persist, seek medical advice immediately (show the label when possible).

Hazardous Inhalation Evacuate the person to a safe area as soon as possible. Loosen tight clothing around the person's neck and waist. If the person is not breathing, administer mouth-to-mouth resuscitation. Warning: It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation if the inhaled material is toxic, infectious or corrosive. Oxygen may be administered if breathing is difficult. Seek medical attention.

Ingestion DO NOT induce vomiting. Have conscious person drink several glasses of water or milk. Seek immediate medical attention.

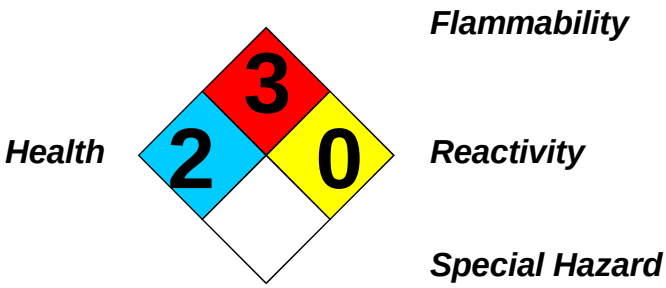
Hazardous Ingestion DO NOT induce vomiting. Have conscious person drink several glasses of water or milk. Never give an unconscious person anything to ingest. Even small amounts of liquid aspirated into lungs during ingestion or from vomiting may cause mild to severe pulmonary injury and possibly death. If breathing is difficult, administer oxygen. If the person is not breathing, administer mouth-to-mouth resuscitation. WARNING: It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation when the material is toxic, infectious or corrosive. Avoid mouth-to-mouth contact by using mouth guards or shields. Seek immediate medical attention.

Material Safety Data Sheet

Product Name: **MC-Zinc 100 Standard Grey**

Section 5. Fire and Explosion Data

Flammability of the Product	Flammable.
Auto-Ignition Temperature	Not available.
Flash Points	The lowest known value is CLOSED CUP: 4.4℃ (39.9℉). (Tert Butyl Acetate)
Flammable Limits	The greatest known range is LOWER: 0.9% UPPER: 6% (Light aromatic solvent naphtha (petroleum))
Products of Combustion	Carbon oxides (CO, CO2), and other toxic compounds (nitrogen oxides, isocyanate vapors and traces of hydrogen cyanide).
Fire Hazards in Presence of Various Substances	Flammable in presence of open flames and sparks.
Explosion Hazards in Presence of Various Substances	Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Yes
Fire Fighting Media and Instructions	Flammable liquid, insoluble in water. SMALL FIRE: Use DRY chemicals, CO2, soda ash, lime. LARGE FIRE: Use DRY chemicals, CO2, soda ash, lime and water spray or fog. Never direct a water jet in the container in order to prevent any splashing of the product which could cause spreading of the fire. Cool the containers with water spray or fog in order to prevent pressure build-up, autoignition or explosion. Firefighters should be equipped with self-contained breathing apparatus to protect against toxic and irritating fumes. During a fire, isocyanate vapors and other irritating, highly toxic gases may be generated by thermal decomposition or combustion.
Special Remarks on Fire Hazards	Vapor may travel considerable distance to source of ignition and flash back. When heated to decomposition it emits highly toxic fumes.
Special Remarks on Explosion Hazards	Container explosion may occur under fire conditions or when heated (due to pressure build-up). Vapor forms explosive mixture with air between upper and lower flammable limits.



Section 6. Accidental Release Measures

Small Spill	Absorb with an inert material and place in an appropriate waste disposal container. Treat with a neutralizing solution (5% ammonia water, or 5-10 % sodium carbonate in water). Wear suitable protective clothing and respirator.
Large Spill	Flammable, poisonous liquid, insoluble or very slightly soluble in water. Ventilate. Eliminate all sources of ignition. Wear suitable protective clothing, gloves and eye/face protection. A self-contained breathing apparatus should be used to avoid inhalation of the product. Warn personnel to move away. Stop leak if without risk. DO NOT touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Cover with WET earth, sand or other non-combustible material, or with DRY absorbent wetted with a neutralizing solution (5% ammonia water, or 5-10% sodium carbonate in water). After 15 minutes transfer it to waste container, or put in open drums - fill the drums half way. Do not seal - evolution of CO2 can cause pressure build-up. Keep drums (not sealed) outside, or in safe ventilated area for a few days. After clean-up monitor the vapors concentration. Use the neutralizing solution to decontaminate the surface and the tools. The spilled material, clean-up residues, and spent decontamination solution are hazardous wastes. Call for assistance on disposal.

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Product Name: **MC-Zinc 100 Standard Grey**

Section 7. Handling and Storage

Precautions

Keep locked up and out of reach of children. Manipulate in a well ventilated area. In case of insufficient ventilation, wear suitable respiratory equipment. Do not breathe gas/fumes/vapor/spray. Avoid contact with skin and eyes. Contact lenses should not be worn. Keep away from foodstuff, drinks and tobacco. Eating, drinking and smoking should be prohibited in area where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Ensure that eyewash station and safety shower are proximal to the work-station location. In case of accident or if you feel unwell, seek medical advice immediately (show the label when possible). Individuals with respiratory problems (asthma, chronic bronchitis), or allergic to isocyanates or solvents, should avoid any contact with this product. ATTENTION: Isocyanate vapors cannot be smelled until concentrations are well above the safe exposure limit! Ground all equipment containing material (during handling, mixing, and spraying).

Storage

Keep away from heat. Keep away from sources of ignition. Keep container tightly closed and in a well-ventilated place. Contains moisture sensitive material; store in a dry place. Keep away from incompatibles.

Section 8. Exposure Controls/Personal Protection

Engineering Controls

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash station and safety shower are proximal to the work-station location. Do air monitoring if possible.

Personal Protection

During mixing, handling and application: Splash goggles. Full protective clothing. Gloves (impervious). Suitable respiratory equipment. When air concentrations are not known or above the TLV, an air-supplied respirator, or self-contained breathing apparatus is required.
Refer to OSHA Respiratory Protection Standard (29 CFR 1910.134). When welding, refer to OSHA Standard (29 CFR 1926.354): Welding, Cutting and Heating in Way of Preservative Coatings. ATTN: Air-purifying (cartridge type) respirators are not approved for protection against isocyanates due to their low warning properties.

Personal Protection in Case of a Large Spill

Splash goggles. Full suit. Boots. Gloves (impervious). Self-contained breathing apparatus (for above TLV, or unknown vapor concentrations), must be used to avoid inhalation af the product. NOTE: Air-purifying (cartridge type) respirators are not approved for protection against isocyanates.

Section 9. Physical and Chemical Properties

Odor	Aromatic.
Taste	Not available.
Color	Grey.

Physical state and appearance	Liquid.		
Molecular Weight	Not applicable.		
pH (1% soln/water)	Neutral.		
Boiling Point	The lowest known value is 154°C (309.2°F) (Light aromatic solvent naphtha (petroleum)). Weighted average: 178.65°C (353.6°F)	**Odor Threshold**	ATTENTION: ISOCYANATE VAPORS CANNOT BE SMELLED UNTIL CONCENTRATIONS ARE WELL ABOVE THE SAFE EXPOSURE LIMIT!
Melting Point	May start to solidify at -10°C (14°F) based on data for: Isocyanic acid, polymethylene polyphenylene ester.	**Evaporation rate**	0.42 (Light aromatic solvent naphtha (petroleum)).compared to Butyl acetate.
Critical Temperature	Not available.	**Viscosity**	Not available.
Specific Gravity	2.9 (Water = 1)	**Water/Oil Dist. Coeff.**	Not available.
Vapor Pressure	The highest known value is 34 mm of Hg (@ 20°C) (Tert Butyl Acetate). Weighted average: 24.52 mm of Hg (@ 20°C)	**Ionicity (in Water)**	Not available.
Vapor Density	The highest known value is 4.3 (Air = 1) (Light aromatic solvent naphtha (petroleum)). Weighted average: 4.3 (Air = 1)	**Dispersion Properties**	Is not dispersed water.
Volatility	37% (v/v). 11% (w/w).	**Solubility**	Insoluble in water.

Section 10. Stability and Reactivity Data

Stability

The product is stable.

Instability Temperature

Not available.

Conditions of Instability

Not available.

Incompatibility with various substances

Incompatible with water, strong oxidizing agents, amines, strong bases, strong acids, alcohols. Absorbs moisture from the air. Reacts slowly with water to liberate CO2 gas.

Corrosivity

Not considered to be corrosive for glass and metals according to our data base.

Special Remarks on Reactivity

No additional remarks.

Section 11. Toxicological Information

Routes of Entry	Inhalation. Skin contact (absorption). Eye contact. Ingestion.
Toxicity to Animals	See: Section 2
Chronic Effects on Humans	The substance is toxic to mucous membranes, upper respiratory tract, lungs, blood, kidney, liver. Exposure may cause asthma, dermatitis and pulmonary oedema; effects may be delayed. Sensitive individuals may develop eczema and/or asthma on inhalation of this material. However, in light of good industrial hygiene, exposure to any chemical should be kept to a minimum.
Other Toxic Effects on Humans	No additional remarks
Special Remarks on Toxicity to Animals	No additional remark.
Special Remarks on Chronic Effects on Humans	Isocyanates are not known to cause cancer in humans, but may cause skin and respiratory sensitization in humans. Sensitive individuals may develop eczema and/or asthma on inhalation of this material. Exposure may cause asthma, dermatitis and pulmonary oedema; effects may be delayed. Reports have associated repeated and prolonged occupational exposure to solvents with permanent brain and nervous system damage, and other systemic effects. Intentional misuse by deliberately concentrating and inhaling vapors may be harmful or fatal.
Special Remarks on other Toxic Effects on Humans	Exposure can cause nausea, headache and vomiting. Over-exposure can cause lung irritation, chest pain and oedema which may be fatal. Sensitizer - skin and inhalation. Medical supervision of all employees who come in contact with this product is recommended (preemployment and periodic medical examinations).

Section 12. Ecological Information

Ecotoxicity	Not available.
BOD5 and COD	Not available.
Products of Biodegradation	Not available.
Toxicity of the Products of Biodegradation	Not available.
Special Remarks on the Products of Biodegradation	No additional remarks.

Section 13. Disposal Considerations

Waste Disposal	In accordance with municipal, state, and federal regulations. Consult your local or regional authorities. Empty containers must be handled with care due to product residue. Do not heat or cut empty containers with electric or gas torch.

Section 14. Transport Information

DOT Classification	DOT CLASS 3: Flammable liquid PG: II
DOT Identification number	PIN: UN1263 - Paint.
Special Provisions for Transport	No specific remarks.
DOT (Pictograms)	

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Product Name: MC-Zinc 100 Standard Grey

Section 15. Other Regulatory Information and Pictograms

Other Regulations TSCA (Toxic Substance Control Act): All components of this product are either reported in EPA TSCA Inventory, or exempt. OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

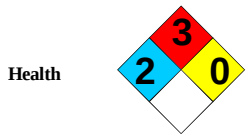
Other Classifications **WHMIS (Canada)**

DSCL (EEC)

Hazardous Material Information System (U.S.A.)

Health Hazard	3
Fire Hazard	2
Reactivity	0
Personal Protection	x

National Fire Protection Association (U.S.A.)



Health — Fire Hazard — Reactivity — Specific hazard

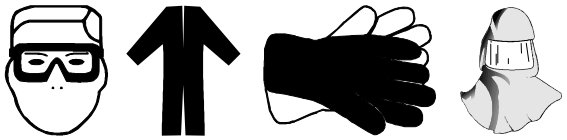
WHMIS (Canada) (Pictograms)

DSCL (Europe) (Pictograms)

TDG (Canada) (Pictograms)

ADR (Europe) (Pictograms)

Protective Clothing (Pictograms)



Section 16. Other Information

References Manufacturer's MSDS, RTESC, NIOSH, CCOHS.

Other Special Considerations Medical supervision of all employees who come in contact with this product is recommended (pre-employment and periodic medical examination). Individuals with respiratory problems (asthma, chronic bronchitis), or allergic to isocyanates or solvents, should avoid any contact with this product.

Validated by Heidi Brown on 03/06/2009.

Verified by Heidi Brown.

Printed 03/06/2009.

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REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. REPORT DATE (DD-MM-YYYY)	2. REPORT TYPE	3. DATES COVERED (From - To)
December 2011	Final	

4. TITLE AND SUBTITLE
Evaluation of Moisture-Cure Urethene Coatings for Compliance with Industry Specifications

5a. CONTRACT NUMBER

5b. GRANT NUMBER

5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)
Alfred D. Beitelman and Jeffrey P. Ryan

5d. PROJECT NUMBER
CO W74RDV82058922

5e. TASK NUMBER
SC80014

5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
U.S. Army Engineer Research and Development Center
Construction Engineering Research Laboratory
PO Box 9005
Champaign, IL 61826-9005

8. PERFORMING ORGANIZATION REPORT NUMBER
ERDC/CERL TR-11-45

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)
Headquarters, U.S. Army Corps of Engineers
Directorate of Civil Works (CECW)
441 G Street NW
Washington, DC 20314-1000

10. SPONSOR/MONITOR'S ACRONYM(S)
HQUSACE

11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION / AVAILABILITY STATEMENT
Approved for public release; distribution is unlimited.

13. SUPPLEMENTARY NOTES

14. ABSTRACT

The Army Corps of Engineers has observed the performance of commercially available moisture-cure coatings on various hydraulic structures over the years, but has had no generic specifications—government or private industry—for reference in specifying the products. The Society for Protective Coatings (SSPC) recently published specifications for several moisture-cure urethane coatings. However, it cannot be assumed that other commercially available moisture-cure urethanes meet those specifications without confirmation through formal testing. In this project, commercially available products were obtained and tested against the requirements of the SSPC specifications. As a result of this work, new coating systems employing moisture-cure urethane paints were added to the Corps of Engineers Guide Specification UFGS 099702, Painting: Hydraulic Structures.

15. SUBJECT TERMS
paints and coatings, moisture-cure urethane, guide specifications, testing, hydraulic structures, Civil Works

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			19b. TELEPHONE NUMBER (include area code)
Unclassified	Unclassified	Unclassified		113	