

APPENDIX IV. – SSPC: SURFACE PREPARATION:

Specification No. 2 – Hand Tool Cleaning
Standard No. 3 – Power Tool Cleaning

SSPC: The Society for Protective Coatings

SURFACE PREPARATION SPECIFICATION NO. 2

Hand Tool Cleaning

1. Scope

1.1 This standard covers the requirements for hand tool cleaning steel surfaces.

2. Definitions

2.1 Hand tool cleaning is a method of preparing steel surfaces by the use of non-power hand tools.

2.2 Hand tool cleaning removes all loose mill scale, loose rust, loose paint, and other loose detrimental foreign matter. It is not intended that adherent mill scale, rust, and paint be removed by this process. Mill scale, rust, and paint are considered adherent if they cannot be removed by lifting with a dull putty knife.

2.3 SSPC-VIS 3 or other visual standard of surface preparation agreed upon by the contracting parties may be used to further define the surface (see Note 8.1).

3. Referenced Standards

3.1 The latest issue, revision, or amendment of the referenced standards in effect on the date of invitation to bid shall govern, unless otherwise specified. Standards marked with an asterisk (*) are referenced only in the Notes, which are not requirements of this standard.

3.2 If there is a conflict between the requirements of any of the cited reference standards and this standard, the requirements of this standard shall prevail.

3.3 SSPC SPECIFICATIONS:

SP 1	Solvent Cleaning
*SP 3	Power Tool Cleaning
*SP 11	Power Tool Cleaning to Bare Metal
*SP 15	Commercial Grade Power Tool Cleaning
VIS 3	Guide and Reference Photographs for Steel Surfaces Prepared by for Power- and Hand-Tool Cleaning

3.4 INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO):

* 8501-1	Preparation of steel substrates before application of paints and related products: Visual assessment of surface cleanliness—Part I.
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4. Surface Preparation Before and After Hand Tool Cleaning

4.1 Before hand tool cleaning, visible deposits of oil, grease, or other materials that may interfere with coating adhesion shall be removed in accordance with SSPC-SP 1 or other agreed-upon methods. Nonvisible surface contaminants such as soluble salts shall be treated to the extent specified by the procurement documents [project specifications] (see Note 8.2).

4.2 After hand tool cleaning and prior to painting, reclean the surface if it does not conform to this standard.

4.3 After hand tool cleaning and prior to painting, remove dirt, dust, or similar contaminants from the surface. Acceptable methods include brushing, blow off with clean, dry air, or vacuum cleaning.

5. Methods of Hand Tool Cleaning

5.1 Use impact hand tools to remove stratified rust (rust scale).

5.2 Use impact hand tools to remove all weld slag.

5.3 Use hand wire brushing, hand abrading, hand scraping, or other similar non-impact methods to remove all loose mill scale, all loose or non-adherent rust, and all loose paint.

5.4 Regardless of the method used for cleaning, if specified in the procurement documents, feather the edges of remaining old paint so that the repainted surface can have a reasonably smooth appearance.

5.5 If approved by the owner, use power tools or blast cleaning as a substitute cleaning method for this standard.

6. Inspection

6.1 Unless otherwise specified in the procurement documents, the contractor or material supplier is responsible for quality control to assure that the requirements of this document are met. Work and materials supplied under this standard are also subject to inspection by the purchaser or an authorized representative. Materials and work areas shall be accessible to the inspector.

6.2 Conditions not complying with this standard shall be corrected. In the case of a dispute, an arbitration or settlement procedure established in the procurement documents (project specification) shall be followed. If no arbitration or settlement procedure is established, then a procedure mutually agreeable to purchaser and material supplier (or contractor) shall be used.

7. Disclaimer

7.1 While every precaution is taken to ensure that all information furnished in SSPC standards and specifications is as accurate, complete, and useful as possible, SSPC cannot assume responsibility nor incur any obligation resulting from the use of any materials, coatings, or methods specified herein, or of the specification or standard itself.

7.2 This standard does not attempt to address problems concerning safety associated with its use. The user of this standard, as well as the user of all products or practices described

herein, is responsible for instituting appropriate health and safety practices and for ensuring compliance with all governmental regulations.

8. Notes

Notes are not requirements of this standard.

8.1 Note that the use of visual standards in conjunction with this standard is required only when they are specified in the procurement documents (project specification) covering the work. It is recommended, however, that the use of visual standards be made mandatory in the procurement documents.

SSPC-VIS 3 provides a suitable comparative visual standard for SSPC-SP 2, SSPC-SP 3, SSPC-SP 11, and SSPC-SP 15. ISO 8501-1 may also serve as a visual standard.

8.2 The SSPC Surface Preparation Commentary (SSPC-SP COM) contains additional information and data relevant to this specification. The Commentary is non-mandatory and is not part of this specification. The table below lists the subjects discussed relevant to hand tool cleaning and the appropriate Commentary Section.

Subject	Commentary Section
Film Thickness	10
Maintenance Painting.....	4.2
Rust, Stratified Rust, Pack Rust, and Rust Scale	4.3.1
Visual Standards	11
Weld Spatter.....	4.4.1

SSPC: The Society for Protective Coatings

SURFACE PREPARATION SPECIFICATION NO. 3

Power Tool Cleaning

1. Scope

1.1 This standard covers the requirements for power tool cleaning of steel surfaces.

2. Definition

2.1 Power tool cleaning is a method of preparing steel surfaces by the use of power assisted hand tools.

2.2 Power tool cleaning removes all loose mill scale, loose rust, loose paint, and other loose detrimental foreign matter. It is not intended that adherent mill scale, rust, and paint be removed by this process. Mill scale, rust, and paint are considered adherent if they cannot be removed by lifting with a dull putty knife.

2.3 SSPC-VIS 3 or other visual standard of surface preparation agreed upon by the contracting parties may be used to further define the surface (see Note 8.1).

3. Referenced Standards

3.1 The latest issue, revision, or amendment of the referenced standards in effect on the date of invitation to bid shall govern, unless otherwise specified. Standards marked with an asterisk (*) are referenced only in the Notes, which are not requirements of this standard.

3.2 If there is a conflict between the requirements of any of the cited reference standards and this standard, the requirements of this standard shall prevail.

3.3 SSPC STANDARDS:

SP 1	Solvent Cleaning
*SP 2	Hand Tool Cleaning
*SP 11	Power Tool Cleaning to Bare Metal
*SP 15	Commercial Grade Power Tool Cleaning
VIS 3	Guide and Reference Photographs for Steel Surfaces Prepared by Hand and Power Tool Cleaning

3.4 INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO):

*8501-1	Preparation of steel substrates before application of paints and related products: visual assessment of surface cleanliness, Part I
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4. Surface Preparation Before and After Power Tool Cleaning

4.1 Before power tool cleaning, visible deposits of oil, grease, or other materials that may interfere with coating adhesion shall be removed in accordance with SSPC-SP 1 or other agreed-upon methods. Nonvisible surface contaminants such as soluble salts shall be treated to the extent specified by the procurement documents [project specifications] (see Note 8.2).

4.2 After power tool cleaning and prior to painting, reclean the surface if it does not conform to this standard.

4.3 After power tool cleaning and prior to painting, remove dirt, dust, or similar contaminants from the surface. Acceptable methods include brushing, blow off with clean, dry air, or vacuum cleaning.

5. Methods of Power Tool Cleaning

5.1 Use rotary or impact power tools to remove stratified rust (rust scale).

5.2 Use rotary or impact power tools to remove all weld slag.

5.3 Use power wire brushing, power abrading, power impact, or other power rotary tools to remove all loose mill scale, all loose or non-adherent rust, and all loose paint. Do not burnish the surface.

5.4 Operate power tools in a manner that prevents the formation of burrs, sharp ridges, and sharp cuts.

5.5 Regardless of the method used for cleaning, if specified in the procurement documents, feather the edges of remaining old paint so that the repainted surface can have a reasonably smooth appearance.

5.6 If approved by the owner, use blast cleaning as a substitute cleaning method for this standard.

6. Inspection

6.1 Unless otherwise specified in the procurement documents, the contractor or material supplier is responsible for timely quality control to assure that the requirements of this document are met. Work and materials supplied under this standard are also subject to inspection by the purchaser or an authorized representative. Materials and work areas shall be accessible to the inspector.

6.2 Conditions not complying with this standard shall be corrected. In the case of a dispute, an arbitration or settlement procedure established in the procurement documents (project specification) shall be followed. If no arbitration or settlement procedure is established, then a procedure mutually agreeable to purchaser and material supplier (or contractor) shall be used.

7. Disclaimer

7.1 While every precaution is taken to ensure that all information furnished in SSPC standards and specifications is as accurate, complete, and useful as possible, SSPC cannot assume responsibility nor incur any obligation resulting from the use of any materials, coatings, or methods specified herein, or of the specification or standard itself.

7.2 This standard does not attempt to address problems concerning safety associated with its use. The user of this standard, as well as the user of all products or practices described

herein, is responsible for instituting appropriate health and safety practices and for ensuring compliance with all governmental regulations.

8. Notes

Notes are not requirements of this standard.

8.1 Note that the use of visual standards in conjunction with this standard is required only when they are specified in the procurement documents (project specification) covering the work. It is recommended, however, that the use of visual standards be made mandatory in the procurement documents.

SSPC-VIS 3 provides a suitable comparative visual standard for SSPC-SP 2, SSPC-SP 3, SSPC-SP 11, and SSPC-SP 15. ISO 8501-1 may also serve as a visual standard.

8.2 The Surface Preparation Commentary, SSPC-SP COM, contains additional information and data relevant to this specification. The Commentary is non-mandatory and is not a part of this specification. The table below lists the subjects discussed relevant to power tool cleaning and the appropriate Commentary Section.

Subject	Commentary Section
Film Thickness	10
Rust Back	4.5
Rust, Stratified Rust, Pack Rust, and Rust Scale	4.3.1
Visual Standards	11
Weld Spatter.....	4.4.1

Interplus 356

Surface tolerant epoxy

Interplus® 356 is a low VOC, two component, internally flexibilised, high build, low temperature curing epoxy primer. Formulated for surface tolerance to allow application over wet abrasive and ultra high pressure water blasted substrates where dry abrasive blasting is not possible. Interplus® 356 contains lamellar aluminium and micaceous iron oxide pigmentation for improved corrosion resistance.

- High solids, low VOC maintenance epoxy
- Perfect for spray, brush and roller application
- Designed for low temperature cure (down to -5°C [41°F])
- Suitable for rapid overcoating
- Compatible with a wide range of primers, intermediates and topcoats



Interplus 356 is a high performance maintenance coating for use on a wide variety of surfaces including hand or power tool cleaned rusty steel



Typical structures

Interplus 356 is particularly useful in the maintenance of offshore structures and other aggressive environments such as refineries, chemical plants, coastal structures, pulp and paper mills and bridges.



Intended applications

As a touch-up brush applied primer for hand or power tool cleaned steel, where the fast curing properties allow both cure at low temperatures, and rapid overcoating, thus extending the maintenance painting window and reducing downtime.

Technical information

Colour	Aluminium grey		
Volume solids	70%		
Film thickness	75-125µm (3-5 mils) dry		
Mix ratio	3:1 by volume		
Temperature	Touch Dry	Hard Dry	Min Recoat
5°C (41°F)	8 hours	18 hours	10 hours
15°C (59°F)	2 hours	10 hours	6 hours
25°C (77°F)	90 minutes	6 hours	4 hours
40°C (104°F)	45 minutes	3 hours	2 hours
VOC's	305 g/l UK PG6/23 (92), Appendix 3 2.55 lb/gal (305 g/l) US EPA24		

Test data

TEST METHOD	REFERENCE	SPECIFICATION DETAILS	TYPICAL RESULT
Condensation	ISO6270 - "Resistance to continuous condensation @ 35°C (95°F)"	1 x 125µm (5 mils) dft applied directly to Sa2.5 blasted steel (topcoated with Interthane 870)	No film defects following 3000 hours exposure
Cyclic corrosion	Norsok M-501 Revision 2 "Norsok Cyclic Test"	1 x 300µm (11.8 mils) dft applied directly over UHP HB2.5 M-H prepared steel (topcoated with Interfine 629HS)	No blistering, rusting, cracking etc and typically <5mm (%a) rust creep at scribe following 4200hrs exposure
Salt spray	ISO 7253 "Resistance to neutral salt spray (fog) @ 35°C (95°F)"	1 x 250µm (9.8 mils) dft applied directly to Sa2.5 blasted steel (topcoated with Interfine 629HS)	No blistering, rusting, cracking etc and typically <5mm (%a) rust creep at scribe following 6000hrs exposure
Adhesion and immersion	ISO 4624 - "Pull-off test for adhesion" using portable adhesion testers.	1 x 200µm (7.8 mils) dft applied directly to Sa2.5 blasted steel	Not less than 5MPa (725psi) when using a PAT Model GM01 hydraulic adhesion tester on 5mm (%a) thick steel

The above performance data has been compiled based on present experience of this new product performance and typical performance data obtained under laboratory test conditions. Actual performance of the product will depend upon the conditions in which the product is used.

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PRODUCT DESCRIPTION

A low VOC, two component, internally flexibilized, high build, low temperature curing (down to 23°F, -5°C), surface tolerant epoxy primer. Metallic pigmented, with aluminium and lamellar micaceous iron oxide, for increased corrosion resistance.

INTENDED USES

A high performance maintenance coating for use on a wide variety of surfaces including hand or power tool cleaned rusty steel.
 Specifically designed for use at low temperatures or where rapid overcoating is essential.
 Ideal for use in conjunction with wet abrasive blasting and ultra high pressure water blasting.
 Interplus 356 is particularly useful in the maintenance of offshore structures and other aggressive environments such as refineries, chemical plants, coastal structures, pulp and paper mills and bridges when dry abrasive blasting is not possible.

PRACTICAL INFORMATION FOR INTERPLUS 356

Color	Aluminum Gray
Gloss Level	Matte
Volume Solids	70%
Typical Thickness	3-5 mils (75-125 microns) dry equivalent to 4.3-7.2 mils (107-179 microns) wet
Theoretical Coverage	225 sq.ft/US gallon at 5 mils d.f.t and stated volume solids 5.60 m ² /liter at 125 microns d.f.t and stated volume solids
Practical Coverage	Allow appropriate loss factors
Method of Application	Airless Spray, Air Spray - blasted steel Brush, Roller - hand or power tool prepared steel

Drying Time

Temperature	Touch Dry	Hard Dry	Overcoating Interval with recommended topcoats	
			Minimum	Maximum
41°F (5°C)	8 hours	18 hours	10 hours	Extended ¹
59°F (15°C)	2 hours	10 hours	6 hours	Extended ¹
77°F (25°C)	90 minutes	6 hours	4 hours	Extended ¹
104°F (40°C)	45 minutes	3 hours	2 hours	Extended ¹

¹ See International Protective Coatings Definitions & Abbreviations

REGULATORY DATA

Flash Point	Part A 111°F (44°C); Part B 81°F (27°C); Mixed 104°F (40°C)	
Product Weight	12.6 lb/gal (1.51 kg/l)	
VOC	2.54 lb/gal (305 g/l) 198 g/kg	EPA Method 24 EU Solvent Emissions Directive (Council Directive 1999/13/EC)

See Product Characteristics section for further details

SURFACE PREPARATION

The performance of this product will depend upon the degree of surface preparation. The surface to be coated should be clean, dry and free from contamination. Prior to paint application, all surfaces should be assessed and treated in accordance with ISO 8504:2000.

Accumulated dirt and soluble salts must be removed. Dry bristle brushing will normally be adequate for accumulated dirt. Soluble salts should be removed by fresh water washing.

Abrasive Blast Cleaning

Interplus 356 may be applied to a surface abrasive blast cleaned to a minimum Sa1 (ISO 8501-1:2007) C or D grade rusting, or SSPC SP7.

Hand or Power Tool Preparation

Hand or power tool clean to a minimum St2 (ISO 8501-1:2007) or SSPC-SP2.

Note, all scale must be removed and areas which cannot be prepared adequately by chipping or needle gun should be spot blasted to a minimum standard of Sa2 (ISO 8501-1:2007) or SSPC-SP6 Typically this would apply to C or D grade rusting in this standard.

On steel surfaces operating at in-service temperatures up to 212°F (100°C) cleaning to a minimum St3 (ISO 8501-1:2007) or SSPC-SP3 is required for optimum performance.

Ultra High Pressure Hydroblasting/Abrasive Wet Blasting

May be applied to surfaces prepared to Sa2½ (ISO 8501-1:2007) or SSPC-SP6 which have flash rusted to no worse than Grade HB2½M (refer to International Hydroblasting Standards) or Grade SB2½M (refer to International Slurry Blasting Standards). It is also possible to apply to damp surfaces in some circumstances. Further information is available from International Protective Coatings.

Aged Coatings

Interplus 356 is suitable for overlap onto most aged coating systems. Loose or flaking coatings should be removed back to a firm edge. Glossy epoxies and polyurethanes may require abrasion.

APPLICATION

Mixing	Material is supplied in two containers as a unit. Always mix a complete unit in the proportions supplied. Once the unit has been mixed, it must be used within the working pot life specified.			
	(1) Agitate Base (Part A) with a power agitator.			
	(2) Combine entire contents of Curing Agent (Part B) with Base (Part A) and mix thoroughly with power agitator.			
Mix Ratio	3 part(s) : 1 part(s) by volume			
Working Pot Life	41°F (5°C)	59°F (15°C)	77°F (25°C)	104°F (40°C)
	8 hours	4 hours	2 hours	45 minutes
Airless Spray	Recommended	Tip Range 19-23 thou (0.48-0.58 mm) Total output fluid pressure at spray tip not less than 3000 psi (211 kg/cm ²)		
Air Spray (Pressure Pot)	Recommended	Gun	DeVilbiss MBC or JGA	
		Air Cap	704 or 765	
		Fluid Tip	E	
Brush	Recommended	Typically 3.0-4.0 mils (75-100 microns) can be achieved		
Roller	Recommended	Typically 2.0-3.0 mils (50-75 microns) can be achieved		
Thinner	International GTA220 (or International GTA415)	May be necessary at low temperatures, see Product Characteristics. Do not thin more than allowed by local environmental legislation		
Cleaner	International GTA822 (or International GTA415)			
Work Stoppages	Do not allow material to remain in hoses, gun or spray equipment. Thoroughly flush all equipment with International GTA822. Once units of paint have been mixed they should not be resealed and it is advised that after prolonged stoppages work recommences with freshly mixed units.			
Clean Up	Clean all equipment immediately after use with International GTA822. It is good working practice to periodically flush out spray equipment during the course of the working day. Frequency of cleaning will depend upon amount sprayed, temperature and elapsed time, including any delays.			
	All surplus materials and empty containers should be disposed of in accordance with appropriate regional regulations/legislation			

PRODUCT CHARACTERISTICS

In order to ensure good anti-corrosive performance, it is important to achieve a minimum system dry film thickness of 8 mils (200 microns) by application of multi-coats over hand prepared steel.

When applying Interplus 356 by brush or roller, it may be necessary to apply multiple coats to achieve the total specified system dry film thickness.

Wet Blasted (Damp Surfaces)

If salt water is used in the wet blast process, the resulting surface must be thoroughly washed with fresh water before application of Interplus 356. With freshly blasted surfaces a slight degree of flash rusting is allowable, and is preferable to the surface being too wet. Puddles, ponding and accumulations of water must be removed.

To ensure good aged overcoating of Interplus 356 by other materials the surface must be clean, dry and free from contamination, particularly if the surface profile is rough due to the presence of micaceous iron oxide.

Low Temperature Curing

Interplus 356 is capable of curing at temperatures below 32°F (0°C). However, this product should not be applied at temperatures below 32°F(0°C) where there is a possibility of ice formation on the substrate.

Temperature	Touch Dry	Hard Dry	Minimum overcoating interval with recommended topcoats	
			<i>Minimum</i>	<i>Maximum</i>
23°F (-5°C)	24 hours	60 hours	60 hours	Extended*
32°F (0°C)	16 hours	36 hours	36 hours	Extended*

*See International Protective Coatings Definitions & Abbreviations

Touch dry times shown above are actual drying times due to chemical cure, rather than physical set due to solidification of the coating film at temperatures below 32°F (0°C).

At low temperatures, it may be necessary to thin Interplus 356 to enable airless spray application to be performed. Normally 5% thinning (by volume) with International GTA220 will be satisfactory for this purpose.

Interplus 356 is suitable for protection of steel operating at continuous dry temperatures of up to 302°F (150°C), with intermittent surges up to 392°F (200°C).

Interplus 356 is not designed for continuous water immersion.

Note: VOC values are typical and are provided for guidance purpose only. These may be subject to variation depending on factors such as differences in color and normal manufacturing tolerances.

SYSTEMS COMPATIBILITY

Interplus 356 will generally be applied to bare steel but is fully compatible for overlap onto most aged coatings, in addition to touch up repair of the following primers:

Intercure 200	Interzinc 12
Intergard 251	Interzinc 22
Intergard 269	Interzinc 42
InterH2O 280	Interzinc 52
Interseal 670HS	Interzinc 315

Recommended topcoats/intermediates are:

Intercure 420	Interplus 356
Interfine 629HS	Interplus 770
Interfine 878	Interplus 880
Interfine 979	Interseal 670HS
Interfine 1080	Interthane 990
Intergard 475HS	Interzone 505
Intergard 740	Interzone 954

It should be noted that Interplus 356 is not suitable for overcoating with thin films of alkyd, chlorinated rubber, vinyl or acrylic finishes.

For other suitable topcoats/intermediates consult International Protective Coatings.

ADDITIONAL INFORMATION

Further information regarding industry standards, terms and abbreviations used in this data sheet can be found in the following documents available at www.international-pc.com:

- Definitions & Abbreviations
- Surface Preparation
- Paint Application
- Theoretical & Practical Coverage

Individual copies of these information sections are available upon request.

SAFETY PRECAUTIONS

This product is intended for use only by professional applicators in industrial situations in accordance with the advice given on this sheet, the Material Safety Data Sheet and the container(s), and should not be used without reference to the Material Safety Data Sheet (MSDS) which International Protective Coatings has provided to its customers.

All work involving the application and use of this product should be performed in compliance with all relevant national, Health, Safety & Environmental standards and regulations.

In the event welding or flame cutting is performed on metal coated with this product, dust and fumes will be emitted which will require the use of appropriate personal protective equipment and adequate local exhaust ventilation.

If in doubt regarding the suitability of use of this product, consult International Protective Coatings for further advice.

PACK SIZE

Unit Size	Part A		Part B	
	Vol	Pack	Vol	Pack
20 liter	15 liter	20 liter	5 liter	5 liter
5 US gal	3 US gal	5 US gal	1 US gal	1 US gal

For availability of other pack sizes contact International Protective Coatings

SHIPPING WEIGHT

Unit Size	Part A	Part B
20 liter	27.7 kg	5.3 kg
5 US gal	56.2 lb	8.8 lb

STORAGE

Shelf Life 12 months minimum at 77°F (25°C). Subject to re-inspection thereafter. Store in dry, shaded conditions away from sources of heat and ignition.

Disclaimer

The information in this data sheet is not intended to be exhaustive; any person using the product for any purpose other than that specifically recommended in this data sheet without first obtaining written confirmation from us as to the suitability of the product for the intended purpose does so at their own risk. All advice given or statements made about the product (whether in this data sheet or otherwise) is correct to the best of our knowledge but we have no control over the quality or the condition of the substrate or the many factors affecting the use and application of the product. Therefore, unless we specifically agree in writing to do so, we do not accept any liability at all for the performance of the product or for (subject to the maximum extent permitted by law) any loss or damage arising out of the use of the product. We hereby disclaim any warranties or representations, express or implied, by operation of law or otherwise, including, without limitation, any implied warranty of merchantability or fitness for a particular purpose. All products supplied and technical advice given are subject to our Conditions of Sale. You should request a copy of this document and review it carefully. The information contained in this data sheet is liable to modification from time to time in the light of experience and our policy of continuous development. It is the user's responsibility to check with their local International Paint representative that this data sheet is current prior to using the product.

This Technical Data Sheet is available on our website at www.international-marine.com or www.international-pc.com, and should be the same as this document. Should there be any discrepancies between this document and the version of the Technical Data Sheet that appears on the website, then the version on the website will take precedence.

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<u>Test Type</u>	<u>Test Method</u>	<u>Specification Details</u>	<u>Typical Results</u>
Adhesion	ISO 4624 - "Pull-off test for adhesion" using portable adhesion testers	1 x 150µm dft applied directly to Sa2½ blasted steel.	Not less than 10MPa (1450psi) when using a PAT Model GM01 hydraulic adhesion tester on 5mm thick steel.
Adhesion	ISO 4624 - "Pull-off test for adhesion" using portable adhesion testers	1 x 150µm applied directly over UHP HB2½ M-H prepared steel	Not less than 8MPa (1160psi) when using a PAT Model GM01 hydraulic adhesion tester on 5mm thick steel.
Condensation	ISO 6270 - "Resistance to continuous condensation @ 35°C"	1 x 125µm dft applied directly to Sa2½ blasted steel. (Topcoated with Interthane 870)	No film defects following 3000 hours exposure.
Cyclic Corrosion	Norsok M-501 Revision 2 "Norsok Cyclic Test"	1 x 300µm applied directly over UHP HB2½ M-H prepared steel. (Topcoated with Interfine 629HS)	No blistering, rusting, cracking etc and typically <5mm rust creep at the scribe following 4200hrs exposure.
Flexibility	ASTM D522 - "Mandrel Bend Test of Attached Organic Coatings" , - Conical Mandrel Test	1 x 125µm dft applied directly over abraded steel plate.	8% Elongation
Impact	ASTM D2794 - "Resistance to the Effects of Rapid Deformation (Impact)"	1 x 125µm dft applied directly to Sa2½ blasted steel.	Direct Impact Resistance - 3.5 Joules.
Salt Spray	BS 3900 Part F4 - "Resistance to continuous salt spray @ 20°C"	1 x 125µm dft applied directly to Sa2½ blasted steel. (Topcoated with Interthane 870)	No blistering, rusting, cracking etc and typically <2mm rust creep at the scribe following 3000hrs exposure.
Salt Spray	ASTM G85, Annex A5 - "Modified salt spray or Prohesion test"	1 x 250µm dft applied directly to Sa2½ blasted steel. (Topcoated with Interfine 629HS)	No blistering, rusting, cracking etc and typically <4mm rust creep at the scribe following 4000hrs exposure.
Salt Spray	ISO 9227 - "Corrosion tests in artificial atmospheres -- Salt spray tests"	1 x 200µm dft applied directly to Sa2½ blasted steel	Typically <5mm rust creep at the scribe following 3000 hours exposure.

Test Performance Results were obtained in a controlled laboratory environment, as specified in the Test Method. International Protective Coatings makes no representation that the exhibited published test results, or any other tests, actually represent results found in all field environments

PRODUCT DESCRIPTION

A low VOC, high build, semi-gloss urethane finish with excellent gloss and color retention on exterior exposure, for use over correctly prepared and primed surfaces.

The VOC is below 250 g/l to conform to local VOC regulations.

INTENDED USES

Suitable for use both in new construction and as an industrial maintenance finish, Interthane 870UHS can be used in a wide variety of environments including steel infrastructure such as stadia and airports, offshore structures, petrochemical facilities, bridges, pulp and paper mills and in the power industry.

Particularly designed for use in areas where a semi-gloss finish is the preferred option.

Provides a versatile option where overcoating of intermediates in one coat is not possible using conventional thin film polyurethane finishes.

PRACTICAL INFORMATION FOR INTERTHANE 870UHS

Color	Wide range via the Chromascan® system
Gloss Level	Semi Gloss
Volume Solids	68% ± 3% (depends on color)
Typical Thickness	3-5 mils (75-125 microns) dry equivalent to 4.4-7.4 mils (110-184 microns) wet
Theoretical Coverage	218 sq.ft/US gallon at 5 mils d.f.t and stated volume solids 5.40 m ² /liter at 125 microns d.f.t and stated volume solids
Practical Coverage	Allow appropriate loss factors
Method of Application	Airless Spray, Air Spray, Brush, Roller

Drying Time

Temperature	Touch Dry	Hard Dry	Overcoating Interval with recommended topcoats	
			Minimum	Maximum
32°F (0°C)	16 hours	30 hours	30 hours	Extended ¹
41°F (5°C)	6 hours	20 hours	20 hours	Extended ¹
77°F (25°C)	1.5 hours	6 hours	6 hours	Extended ¹
104°F (40°C)	1 hour	4 hours	4 hours	Extended ¹

¹ See International Protective Coatings Definitions & Abbreviations

REGULATORY DATA

Flash Point	Part A 100°F (38°C); Part B 122°F (50°C); Mixed 100°F (38°C)	
Product Weight	12.1 lb/gal (1.45 kg/l)	
VOC	1.91 lb/gal (230 g/l)	EPA Method 24

See Product Characteristics section for further details

SURFACE PREPARATION

All surfaces to be coated should be clean, dry and free from contamination. Prior to paint application, all surfaces should be assessed and treated in accordance with ISO 8504:2000.

Primed Surfaces

Interthane 870UHS should always be applied over a recommended anti-corrosive coating scheme. The primer surface should be dry and free from all contamination, and Interthane 870UHS must be applied within the overcoating intervals specified (consult the relevant product data sheet).

Areas of breakdown, damage etc., should be prepared to the specified standard (e.g. SSPC-SP6 or Sa2½ (ISO 8501-1:2007), Abrasive Blasting, or SSPC-SP11, Power Tool Cleaning) and patch primed prior to the application of Interthane 870UHS.

APPLICATION

Mixing	Material is supplied in two containers as a unit. Always mix a complete unit in the proportions supplied. Once the unit has been mixed it must be used within the working pot life specified.			
	(1) Agitate Base (Part A) with a power agitator.			
	(2) Combine entire contents of Curing Agent (Part B) with Base (Part A) and mix thoroughly with power agitator.			
Mix Ratio	7 part(s) : 1 part(s) by volume			
Working Pot Life	32°F (0°C) 7 hours	41°F (5°C) 7 hours	77°F (25°C) 1.5 hours	104°F (40°C) 30 minutes
Airless Spray	Recommended	Tip Range 15-21 thou (0.38-0.53 mm) Total output fluid pressure at spray tip not less than 2503 psi (176 kg/cm ²)		
Air Spray (Pressure Pot)	Recommended	Gun Air Cap Fluid Tip	DeVilbiss MBC or JGA 704 or 765 E	
Air Spray (Conventional)	Suitable	Use suitable proprietary equipment.		
Brush	Suitable	Typically 2.0-3.0 mils (50-75 microns) can be achieved		
Roller	Suitable	Typically 2.0-3.0 mils (50-75 microns) can be achieved		
Thinner	International GTA056 (or International GTA713)	Do not thin more than allowed by local environmental legislation		
Cleaner	International GTA056 (or International GTA713)			
Work Stoppages	Do not allow material to remain in hoses, gun or spray equipment. Thoroughly flush all equipment with International GTA056. Once units of paint have been mixed they should not be resealed and it is advised that after prolonged stoppages work recommences with freshly mixed units			
Clean Up	Clean all equipment immediately after use with International GTA056. It is good working practice to periodically flush out spray equipment during the course of the working day. Frequency of cleaning will depend upon amount sprayed, temperature and elapsed time, including any delays.			
	All surplus materials and empty containers should be disposed of in accordance with appropriate regional regulations/legislation			

PRODUCT CHARACTERISTICS

Level of sheen and surface finish is dependent on application method. Avoid using a mixture of application methods whenever possible.

Maximum film build in one coat is best attained by airless spray. When applying by methods other than airless spray, the required film build is unlikely to be achieved. Application by air spray may require a multiple cross spray pattern to attain maximum film build. Lower or high temperatures may require specific application techniques to achieve maximum film build.

If application in one coat using brush and roller is desired then the undercoat shade should be chosen to match the final coat shades. Dark colored and MIO undercoats will typically require 2 coats of Interthane 870UHS.

When applying Interthane 870UHS by brush or roller, it may be necessary to apply multiple coats to achieve the total specified system dry film thickness.

Applicators should be aware that the ability to apply Interthane 870UHS in one coat will be affected by the temperature of the substrate. At higher steel temperatures, lower film builds and thinner coats are likely to be achieved.

This product must only be thinned using the recommended International thinners. The use of alternative thinners, particularly those containing alcohols, can severely inhibit the curing mechanism of the coating.

When applying Interthane 870UHS in confined spaces, ensure adequate ventilation.

When overcoating after weathering, or aging, ensure the coating is fully cleaned to remove all surface contamination such as oil, grease, salt crystals and traffic fumes, before application of a further coat of Interthane 870UHS.

Do not apply at steel temperatures below 41°F (5°C).

Surface temperature must always be a minimum of 5°F (3°C) above dew point.

It is recommended that relative humidity should not exceed 85% during application and cure.

Condensation occurring during or immediately after application may result in a matte finish and an inferior film.

Premature exposure to ponding water will cause color change, especially in dark colors and at low temperatures.

Absolute measured adhesion of topcoats to aged Interthane 870UHS is less than that to fresh material, however, it is adequate for the specified end use.

This product is not recommended for use in immersion conditions. When severe chemical or solvent splashing is likely to occur, contact International Protective Coatings for information regarding suitability.

Note: VOC values are typical and are provided for guidance purpose only. These may be subject to variation depending on factors such as differences in color and normal manufacturing tolerances.

Low molecular weight reactive additives, which will form part of the film during normal ambient cure conditions, will also affect VOC values determined using EPA Method 24.

SYSTEMS COMPATIBILITY

The following primers/intermediates are recommended for Interthane 870UHS:

Intercure 200HS	Interzinc 315
Intergard 251	Interzinc 52
Intergard 475HS	Interzinc 52HS
Interplus 256	Interzone 1000
Interplus 356	Interzone 505
Interseal 670HS	Interzone 954

For other suitable primer/intermediates, consult International Protective Coatings.

Interthane 870UHS is designed to be topcoated with itself.

**ADDITIONAL
INFORMATION**

Further information regarding industry standards, terms and abbreviations used in this data sheet can be found in the following documents available at www.international-pc.com:

- Definitions & Abbreviations
- Surface Preparation
- Paint Application
- Theoretical & Practical Coverage

Individual copies of these information sections are available upon request.

**SAFETY
PRECAUTIONS**

Warning: Contains isocyanate. Wear air-fed hood for spray application.

This product is intended for use only by professional applicators in industrial situations in accordance with the advice given on this sheet, the Material Safety Data Sheet and the container(s), and should not be used without reference to the Material Safety Data Sheet (MSDS) which International Protective Coatings has provided to its customers.

All work involving the application and use of this product should be performed in compliance with all relevant national, Health, Safety & Environmental standards and regulations.

In the event welding or flame cutting is performed on metal coated with this product, dust and fumes will be emitted which will require the use of appropriate personal protective equipment and adequate local exhaust ventilation.

If in doubt regarding the suitability of use of this product, consult International Protective Coatings for further advice.

PACK SIZE

Unit Size	Part A		Part B	
	Vol	Pack	Vol	Pack
5 US gal	4.38 US gal	5 US gal	0.63 US gal	1 US gal

For availability of other pack sizes contact International Protective Coatings

SHIPPING WEIGHT

Unit Size	Part A	Part B
5 US gal	57.5 lb	6.4 lb

STORAGE

Shelf Life 12 months minimum at 77°F (25°C). Subject to re-inspection thereafter. Store in dry, shaded conditions away from sources of heat and ignition.

Important Note

The information in this data sheet is not intended to be exhaustive; any person using the product for any purpose other than that specifically recommended in this data sheet without first obtaining written confirmation from us as to the suitability of the product for the intended purpose does so at their own risk. All advice given or statements made about the product (whether in this data sheet or otherwise) is correct to the best of our knowledge but we have no control over the quality or the condition of the substrate or the many factors affecting the use and application of the product. Therefore, unless we specifically agree in writing to do so, we do not accept any liability at all for the performance of the product or for (subject to law) any loss or damage arising out of the use of the product. All products supplied and technical advice given are subject to our Conditions of Sale. You should request a copy of this document and review it carefully. The information contained in this data sheet is liable to modification from time to time in the light of experience and our policy of continuous development. It is the user's responsibility to check with their local International Paint representative that this data sheet is current prior to using the product.

Issue date: 9/18/2009

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www.international-pc.com

QTA044_A2

Material Safety Data Sheet
 INTERTHANE 870UHS BASE ULTRA DEEP PART A

Sales
 Order: {SalesOrd}
 QTA044
 05/13/2011
 A2-3

Bulk Sales Reference No.:
 MSDS Revision Date:
 MSDS Revision Number:



1. Identification of the preparation and company

Product Identity INTERTHANE 870UHS BASE ULTRA DEEP PART A
 Bulk Sales Reference No. QTA044
 Company Name International Paint LLC
 6001 Antoine Drive
 Houston Texas 77091

Emergency
 CHEMTREC (USA) (800) 424-9300
 International Paint (713) 682-1711
 Poison Control Center (800) 854-6813
 Customer Service
 International Paint (800) 589-1267
 Fax No. (800) 631-7481

2. Hazard identification of the product



Danger

GHS Classification;

Item	Category	Hazard
Flammability	3	Flammable liquid and vapor
Acute Toxicity (mouth)	Not classified	Not applicable
Acute Toxicity (skin)	Not classified	Not applicable
Acute Toxicity (inhalation)	Not classified	Not applicable
Acute Toxicity (ingestion)	Not classified	Not applicable
Skin corrosion/irritation	Not classified	Not applicable
Eye damage/irritation	Not classified	Not applicable
Sensitization (respiratory)	Not classified	Not applicable
Sensitization (skin)	Not classified	Not applicable
Germ toxicity	Not classified	Not applicable
Specific target organ systemic toxicity (single exposure)	1	central nerve system
	2	Not applicable
	3	narcotic effects, respiratory tract irritation
Specific target organ systemic Toxicity (repeated exposure)	1	Not applicable
	2	Not applicable
Aspiration hazard	Not classified	Not applicable
Harmfulness to aquatic Environment (acute)	Not classified	Not applicable
	Not classified	Not applicable

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Harmfulness to aquatic Environment (long term effect)		
Carcinogenicity	1A	May cause cancer
Reproductive Toxicity	Not classified	Not applicable
Organic Peroxide	Not classified	Not applicable

Safety Phrases: Not Applicable

Overview	NOTICE: Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal. Avoid contact with eyes, skin and clothing.
Inhalation	Harmful if inhaled. Causes nose and throat irritation. Vapors may affect the brain or nervous system causing dizziness, headache or nausea.
Eyes	Causes severe eye irritation. Avoid contact with eyes.
Skin	Causes skin irritation. May be harmful if absorbed through the skin.
Ingestion	Harmful if swallowed. May cause abdominal pain, nausea, vomiting, diarrhea, or drowsiness.
Chronic effects	Cancer hazard. Contains an ingredient which can cause cancer (See Section 2 and Section 15 for each ingredient). Risk of cancer depends on duration and level of exposure.
HMIS Rating	Health: 2 Flammability: 2 Reactivity: 0 PPE: X

3. Composition/information on ingredients

Ingredient	CAS No.	Percent
p-Chloro-a,a,a-trifluorotoluene	0000098-56-6	1.0 - 10
Methyl n-amyl ketone	0000110-43-0	1.0 - 10
BUTYL ACETATE	0000123-86-4	1.0 - 10
Ethyl 3-ethoxypropionate	0000763-69-9	1.0 - 10
Limestone	0001317-65-3	25 - 50
ZEOLITE	0001318-02-1	1.0 - 10
Silica, amorphous	0007631-86-9	1.0 - 10
Talc (*non-asbestiform)	14807-96-6*	1.0 - 10

4. First aid measures

General	Remove contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean or destroy contaminated shoes.
Inhalation	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.
Eyes	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately.
Skin	In case of contact, immediately flush skin with soap and plenty of water. Get medical attention immediately.
Ingestion	If swallowed, immediately contact Poison Control Center at 1-800-854-6813. DO NOT induce vomiting unless instructed to do so by medical personnel. Never give anything by mouth to an unconscious person.

5. Fire-fighting measures

Flash Point	F: 100 C: 38
Lower Explosive Limit (LEL)	.9 (%vol in air) at Normal Atmospheric Temp and Pressure
ERG Guide No.	128

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6. Accidental release measures

Spill Response Procedures ELIMINATE ALL IGNITION SOURCES (no smoking, flares, sparks or flames in immediate area). Use only non-sparking equipment to handle spilled material and absorbent. Do not touch or walk through spilled material. Stop leak if you can do so without risk. Prevent entry into waterways, sewers, basements or confined areas. A vapor suppressing foam may be used to reduce vapors. Absorb or cover with dry earth, sand, or other non-combustible material and transfer to containers. Use non-sparking tools to collect absorbed material.

Public Safety CALL CHEMTREC at (800)-424-9300 for emergency response. Isolate spill or leak area immediately for at least 50 meters (150 feet) in all directions. Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate closed spaces before entering. LARGE SPILLS: Consider initial downwind evacuation for at least 300 meters (1000 feet).

ERG Guide No. 128

7. Handling and storage

Storage Temperature Store between 40-100F (4-38C).

Handling and Storage Precautions Keep away from heat, sparks and flame. Do not smoke. Extinguish all flames and pilot lights, and turn off stoves, heaters, electric motors and other sources of ignition during use and until all vapors are gone. Vapors may cause flash fire or ignite explosively. Prevent build-up of vapors by opening all windows and doors to achieve cross-ventilation. Avoid contact with eyes and clothing. Avoid prolonged or repeated contact with skin. Close container after each use. Wash thoroughly after handling.

8. Exposure controls and personal protection

CAS No.	Ingredient	Exposure	
		Source	Value
0000098-56-6	p-Chloro-a,a,a-trifluorotoluene	OSHA	No Established Limit
		ACGIH	No Established Limit
		NIOSH	No Established Limit
		Supplier	No Established Limit
		OHSA, CAN	No Established Limit
		Mexico	No Established Limit
		Brazil	No Established Limit
0000110-43-0	Methyl n-amyl ketone	OSHA	100 ppm TWA; 465 mg/m3 TWA
		ACGIH	50 ppm TWA
		NIOSH	100 ppm TWA; 465 mg/m3 TWA800 ppm IDLH
		Supplier	No Established Limit
		OHSA, CAN	25 ppm TWA; 115 mg/m3 TWA
		Mexico	50 ppm TWA; 235 mg/m3 TWA100 ppm STEL; 465 mg/m3 STEL
		Brazil	No Established Limit
0000123-86-4	BUTYL ACETATE	OSHA	150 ppm TWA; 710 mg/m3 TWA200 ppm STEL; 950 mg/m3 STEL
		ACGIH	150 ppm TWA200 ppm STEL
		NIOSH	150 ppm TWA; 710 mg/m3 TWA200 ppm STEL; 950 mg/m3 STEL1700 ppm IDLH (10% LEL)
		Supplier	No Established Limit
		OHSA, CAN	150 ppm TWA200 ppm STEL
		Mexico	150 ppm TWA; 710 mg/m3 TWA200 ppm STEL; 950 mg/m3 STEL
		Brazil	No Established Limit
0000763-69-9	Ethyl 3-ethoxypropionate	OSHA	No Established Limit
		ACGIH	No Established Limit
		NIOSH	No Established Limit

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		Supplier	No Established Limit
		OHSA, CAN	50 ppm TWA; 300 mg/m3 TWA
		Mexico	No Established Limit
		Brazil	No Established Limit
0001317-65-3	Limestone	OSHA	15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)
		ACGIH	No Established Limit
		NIOSH	10 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable dust)
		Supplier	No Established Limit
		OHSA, CAN	No Established Limit
		Mexico	10 mg/m3 TWA 20 mg/m3 STEL
		Brazil	No Established Limit
0001318-02-1	ZEOLITE	OSHA	No Established Limit
		ACGIH	No Established Limit
		NIOSH	No Established Limit
		Supplier	No Established Limit
		OHSA, CAN	No Established Limit
		Mexico	No Established Limit
		Brazil	No Established Limit
0007631-86-9	Silica, amorphous	OSHA	No Established Limit
		ACGIH	No Established Limit
		NIOSH	6 mg/m3 TWA 3000 mg/m3 IDLH
		Supplier	No Established Limit
		OHSA, CAN	No Established Limit
		Mexico	No Established Limit
		Brazil	No Established Limit
14807-96-6*	Talc (*non-asbestiform)	OSHA	No Established Limit
		ACGIH	No Established Limit
		NIOSH	No Established Limit
		Supplier	No Established Limit
		OHSA, CAN	No Established Limit
		Mexico	No Established Limit
		Brazil	No Established Limit

Health Data

CAS No.	Ingredient	Source	Value
0000098-56-6	p-Chloro-a,a,a-trifluorotoluene	NIOSH	No Established Limit
0000110-43-0	Methyl n-amyl ketone	NIOSH	Irritation; liver kidney
0000123-86-4	BUTYL ACETATE	NIOSH	Mucous membrane and eye irritation; high concentrations cause nervous system effects in animals
0000763-69-9	Ethyl 3-ethoxypropionate	NIOSH	No Established Limit
0001317-65-3	Limestone	NIOSH	Eye and skin irritation Physical irritation
0001318-02-1	ZEOLITE	NIOSH	No Established Limit
0007631-86-9	Silica, amorphous	NIOSH	No Established Limit
14807-96-6*	Talc (*non-asbestiform)	NIOSH	No Established Limit

Carcinogen Data

CAS No.	Ingredient	Source	Value
0000098-56-6	p-Chloro-a,a,a-trifluorotoluene	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;

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0000110-43-0	Methyl n-amyl ketone	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0000123-86-4	BUTYL ACETATE	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0000763-69-9	Ethyl 3-ethoxypropionate	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0001317-65-3	Limestone	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0001318-02-1	ZEOLITE	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: Yes; Group 4: No;
0007631-86-9	Silica, amorphous	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: Yes; Group 4: No;
14807-96-6*	Talc (*non-asbestiform)	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;

Respiratory	Select equipment to provide protection from the ingredients listed in Section 3 of this document. Ensure fresh air entry during application and drying. If you experience eye watering, headache or dizziness or if air monitoring demonstrates dust, vapor, or 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. FOR USERS OF 3M RESPIRATORY PROTECTION ONLY: For information and assistance on 3M occupational health and safety products, call OH&ESD Technical Service toll free in U.S.A. 1-800-243-4630, in Canada call 1-800-267-4414. Please do not contact these numbers regarding other manufacturer's respiratory protection products. 3M does not endorse the accuracy of the information contained in this Material Safety Data Sheet.
Eyes	Avoid contact with eyes. Protective equipment should be selected to provide protection from exposure to the chemicals listed in Section 3 of this document. Depending on the site-specific conditions of use, safety glasses, chemical goggles, and/or head and face protection may be required to prevent contact. The equipment must be thoroughly cleaned, or discarded after each use.
Skin	Protective equipment should be selected to provide protection from exposure to the chemicals listed in Section 3 of this document. Depending on the site-specific conditions of use, protective gloves, apron, boots, head and face protection may be required to prevent contact. The equipment must be thoroughly cleaned, or discarded after each use.
Engineering Controls	Prevent build-up of vapors by opening all windows and doors to achieve cross-ventilation.
Other Work Practices	Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Use good personal hygiene practices. Wash hands before eating, drinking, using toilet facilities, etc. Promptly remove soiled clothing and wash clothing thoroughly before reuse. Shower after work using plenty of soap and water.

9. Physical and chemical properties

Physical State	Liquid Coloured
pH	No Established Limit
Specific Gravity	1.36

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Boiling Point F 140
 Vapor Density Heavier than air
 VOC % Refer to the Technical Data Sheet or label where information is available.
 Evaporation Rate Slower than ether

10. Stability and reactivity

General This product is stable and hazardous polymerization will not occur. Not sensitive to mechanical impact. Excessive heat and fumes generation can occur if improperly handled.
 Incompatible Materials Strong oxidizing agents.
 Hazardous Decomposition May produce hazardous fumes when heated to decomposition as in welding. Fumes may produce Carbon Dioxide and Carbon Monoxide.

11. Toxicological information

Ingredient	Oral LD50, mg/kg	Skin LD50, mg/kg	Inhalation Vapor LD50, mg/L/4hr
p-Chloro-a,a,a-trifluorotoluene – (0000098-56-6)	13,000.00, Rat – Category: NA	2,700.00, Rabbit – Category: 5	33.00, Rat – Category: NA
Methyl n-amyyl ketone – (0000110-43-0)	1,670.00, Rat – Category: 4	-----	-----
BUTYL ACETATE – (0000123-86-4)	10,768.00, Rat – Category: NA	17,600.00, Rabbit – Category: NA	-----
Ethyl 3-ethoxypropionate – (0000763-69-9)	3,200.00, Rat – Category: 5	-----	-----
Limestone – (0001317-65-3)	-----	-----	-----
ZEOLITE – (0001318-02-1)	-----	2,000.00, Rabbit – Category: 4	-----
Silica, amorphous – (0007631-86-9)	5,000.00, Rat – Category: 5	2,000.00, Rabbit – Category: 4	-----
Talc (*non-asbestiform) – (14807-96-6*)	-----	-----	-----

General NOTICE: Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal. No additional information provided for this product. See Sections 8 and 11 for chemical specific data.

12. Ecological information

No additional information provided for this product. See Sections 8 and 11 for chemical specific data.

13. Disposal considerations

Dispose of in accordance with local, state and federal regulations. (Also reference RCRA information in Section 15 if listed).

14. Transport information

DOT (Domestic Surface Transportation)		IMO / IMDG (Ocean Transportation)	
DOT Proper Shipping Name	PAINT	IMDG Proper Shipping Name	PAINT
DOT Hazard Class	3	IMDG Hazard Class	3 – Flammable and Combustible liquid
UN / NA Number	UN 1263	UN / NA Number	UN 1263
DOT Packing Group	III	IMDG Packing Group	III
CERCLA/DOT RQ	5427 gal. / 61488 lbs.	System Reference Code	2

15. Regulatory information

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Regulatory Overview The regulatory data in Section 15 is not intended to be all-inclusive, only selected regulations are represented. All ingredients of this product are listed on the TSCA (Toxic Substance Control Act) Inventory or are not required to be listed on the TSCA Inventory.

WHMIS Classification B3:D2B

DOT Marine Pollutants (10%):
 (No Product Ingredients Listed)

DOT Severe Marine Pollutants (1%):
 (No Product Ingredients Listed)

EPCRA 311/312 Chemicals and RQs (>.1%) :

 BUTYL ACETATE (5000 lb final RQ; 2270 kg final RQ)

EPCRA 302 Extremely Hazardous (>.1%) :

 (No Product Ingredients Listed)

EPCRA 313 Toxic Chemicals (>.1%) :

 (No Product Ingredients Listed)

Mass RTK Substances (>1%) :

 Limestone

 Methyl n-amyyl ketone

 BUTYL ACETATE

 Silica, amorphous

Mass Extraordinarily Haz Sub (>.01%) :

 Quartz

 Silica, cristobalite

Penn RTK Substances (>1%) :

 Limestone

 Methyl n-amyyl ketone

 BUTYL ACETATE

 Silica, amorphous

Penn Special Hazardous Substances (>.01%) :

 (No Product Ingredients Listed)

Rhode Island Hazardous Substances (>.1%) :

 Limestone

 Methyl n-amyyl ketone

 BUTYL ACETATE

 Stoddard solvent

RCRA Status:
 (No Product Ingredients Listed)

N.J. RTK Substances (>1%) :

 Limestone

 Methyl n-amyyl ketone

 BUTYL ACETATE

N.J. Special Hazardous Substances (>.01%) :

 Benzene, ethyl-

 Isobutyl alcohol

 BUTYL ACETATE

 Quartz

 Silica, cristobalite

 Xylenes (o-, m-, p- isomers)

N.J. Env. Hazardous Substances (>.1%) :

 (No Product Ingredients Listed)

Proposition 65 – Carcinogens (>0%):

 Benzene, ethyl-

 Formaldehyde

 Quartz

Proposition 65 – Female Repro Toxins (>0%):

 (No Product Ingredients Listed)

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Proposition 65 – Male Repro Toxins (>0%):
(No Product Ingredients Listed)

Proposition 65 – Developmental Toxins (>0%):
(No Product Ingredients Listed)

Risk Phrases:

R45: May cause cancer.

16. Other information

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects which may be caused by exposure to our products. Customers/users of this product must comply with all applicable health and safety laws, regulations, and orders.

QGA046_A0

MATERIAL SAFETY DATA SHEET
 INTERTHANE 870/870UHS PART B

Sales Order: (SalesOrd)

MSDS Revision No: A0 -9
 MSDS Revision Date: 07/28/2006



International Paint LLC
 6001 Antoine Drive
 Houston, Texas 77091

EMERGENCY NUMBERS:
 (800) 424-9300 CHEMTREC (USA)
 (703) 527-3887 CHEMTREC (Int'l)
 (800) 854-6813 Poison Control Center
 CUSTOMER SERVICE: (Non-Emergency)
 (800) 589-1267 International Paint
 (800) 631-7481 Interlux

1. GENERAL INFORMATION

Product Identity: INTERTHANE 870/870UHS PART B

Bulk Sales Reference No: QGA046

IMPORTANT: Read this MSDS before handling or disposing of this product, and provide this information to the employee, customers, and users of this product. PLEASE NOTE THE MSDS REVISION NUMBER AT THE TOP OF THIS PAGE. If the MSDS Revision Number posted at the top of this page does not match the MSDS Revision Number on the product label, please contact Customer Service at the phone number included above for the correct MSDS. This product is covered by the OSHA Hazard Communication Standard and this document has been prepared in accordance with requirements of this standard.

NOTICE: OSHA hazardous chemicals are listed in Section 2 if present at 1% or more. Carcinogens and extraordinarily/special hazardous chemicals are listed in Section 2 if present at .1% or more. Additional regulatory information for specific chemical categories is included in Section 15.

2. HAZARDOUS INGREDIENT INFORMATION

CAS No.	Ingredient Name & %	Source	Exposure Data
000095-63-6	Pseudocumene 1.0 - 10% by Weight	OSHA:	No Established Limit
		ACGIH:	No Established Limit
		NIOSH:	25 ppm TWA; 125 mg/m3 TWA
		Supplier:	No Established Limit
		OHSA, CAN:	No Established Limit
		Mexico:	No Established Limit
		Brazil:	No Established Limit
		Source	Health Data
		NIOSH:	No Established Limit
		Source	Carcinogen Data
OSHA:	Select Carcinogen: No		
NTP:	Known Carcinogen: No; Suspected Carcinogen: No		
IARC:	Group 1: No; Group 2A: No; Group 2b: No; Group 3: No; Group 4: No		

CAS No.	Ingredient Name & %	Source	Exposure Data
000108-67-8	TRIMETHYLBENZENE 1.0 - 10% by Weight	OSHA:	No Established Limit
		ACGIH:	No Established Limit
		NIOSH:	25 ppm TWA; 125 mg/m3 TWA
		Supplier:	No Established Limit
		OHSA, CAN:	No Established Limit
		Mexico:	No Established Limit
		Brazil:	No Established Limit
		Source	Health Data
		NIOSH:	No Established Limit
		Source	Carcinogen Data
OSHA:	Select Carcinogen: No		
NTP:	Known Carcinogen: No; Suspected Carcinogen: No		
IARC:	Group 1: No; Group 2A: No; Group 2b: No; Group 3: No; Group 4: No		

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CAS No.	Ingredient Name & %	Source	Exposure Data
028182-81-2	Hexamethylene diisocyanate homopolymer 50 – 75% by Weight	OSHA:	No Established Limit
		ACGIH:	No Established Limit
		NIOSH:	No Established Limit
		Supplier:	No Established Limit
		OHSA, CAN:	No Established Limit
		Mexico:	No Established Limit
		Brazil:	No Established Limit
		Source	Health Data
		NIOSH:	No Established Limit
		Source	Carcinogen Data
		OSHA:	Select Carcinogen: No
		NTP:	Known Carcinogen: No; Suspected Carcinogen: No
IARC:	Group 1: No; Group 2A: No; Group 2b: No; Group 3: No; Group 4: No		

CAS No.	Ingredient Name & %	Source	Exposure Data
064742-95-6	Petroleum naphtha, light aromatic 10 – 25% by Weight	OSHA:	No Established Limit
		ACGIH:	No Established Limit
		NIOSH:	No Established Limit
		Supplier:	No Established Limit
		OHSA, CAN:	No Established Limit
		Mexico:	No Established Limit
		Brazil:	No Established Limit
		Source	Health Data
		NIOSH:	No Established Limit
		Source	Carcinogen Data
		OSHA:	Select Carcinogen: No
		NTP:	Known Carcinogen: No; Suspected Carcinogen: No
IARC:	Group 1: No; Group 2A: No; Group 2b: No; Group 3: No; Group 4: No		

3. HAZARD IDENTIFICATION

Overview:	NOTICE: Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal. Avoid contact with eyes, skin and clothing. Contains 1,2,4-Trimethylbenzene which can cause central nervous system depression, anemia and bronchitis.		
Inhalation:	May be harmful or fatal if inhaled. May cause lung injury. Causes nose and throat irritation. Vapors may affect the brain or nervous system causing dizziness, headache or nausea.		
Eyes:	Causes severe eye irritation. Avoid contact with eyes.		
Skin:	Causes skin irritation. May cause allergic skin reaction. May be harmful if absorbed through the skin.		
Ingestion:	Harmful if swallowed. May cause abdominal pain, nausea, vomiting, diarrhea, or drowsiness.		
Chronic Effects:	Contains an ingredient which can cause organ damage (See Section 2 and Section 15 for each ingredient). Cancer hazard. Contains an ingredient which can cause cancer (See Section 2 and Section 15 for each ingredient). Risk of cancer depends on duration and level of exposure.		
HMIS Rating:	Health: 2	Flammability: 2	Reactivity: 0

4. FIRST AID MEASURES

General:	Remove contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean or destroy contaminated shoes.
Inhalation:	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.
Eyes:	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately.
Skin:	In case of contact, immediately flush skin with soap and plenty of water. Get medical attention immediately.

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Ingestion: If swallowed, immediately contact Poison Control Center at 1-800-854-6813. DO NOT induce vomiting unless instructed to do so by medical personnel. Never give anything by mouth to an unconscious person.

5. PROTECTIVE EQUIPMENT AND CONTROL MEASURES

Respiratory: Select equipment to provide protection from the ingredients listed in Section 2 of this document. Ensure fresh air entry during application and drying. If you experience eye watering, headache or dizziness or if air monitoring demonstrates dust, vapor, or 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. FOR USERS OF 3M RESPIRATORY PROTECTION ONLY: For information and assistance on 3M occupational health and safety products, call OH&ESD Technical Service toll free in U.S.A. 1-800-243-4630, in Canada call 1-800-267-4414. Please do not contact these numbers regarding other manufacturer's respiratory protection products. 3M does not endorse the accuracy of the information contained in this Material Safety Data Sheet. INDIVIDUALS WITH LUNG OR BREATHING PROBLEMS OR PRIOR REACTION TO ISOCYANATES MUST NOT BE EXPOSED TO VAPOR OR SPRAY MIST. Do not breathe the vapor or spray mist. Wear an appropriate, properly fitted respirator (NIOSH approved) during and after application unless air monitoring demonstrates vapor/mist levels are below applicable limits. A supplied air respirator (either positive pressure or continuous flow type) is required. Follow manufacturer's directions for respirator use and observe requirements specified in 29 CFR 1910.134.

Eyes: Avoid contact with eyes. Protective equipment should be selected to provide protection from exposure to the chemicals listed in Section 2 of this document. Depending on the site-specific conditions of use, safety glasses, chemical goggles, and/or head and face protection may be required to prevent contact. The equipment must be thoroughly cleaned, or discarded after each use.

Skin/Hand: Protective equipment should be selected to provide protection from exposure to the chemicals listed in Section 2 of this document. Depending on the site-specific conditions of use, protective gloves, apron, boots, head and face protection may be required to prevent contact. The equipment must be thoroughly cleaned, or discarded after each use.

Engineering Controls: Prevent build-up of vapors by opening all windows and doors to achieve cross-ventilation.

Other Work Practices: Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Use good personal hygiene practices. Wash hands before eating, drinking, using toilet facilities, etc. Promptly remove soiled clothing and wash clothing thoroughly before reuse. Shower after work using plenty of soap and water.

6. FIRE AND EXPLOSION INFORMATION

Flash Point: F: 122
C: 50

Lower Explosive Limit (LEL): 1 (%vol in air) at Normal Atmospheric Temp and Pressure

Fire and Explosion Hazards: Combustible liquid and vapor. FLAMMABLE/COMBUSTIBLE MATERIALS: Will be easily ignited by heat, sparks or flames. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks) creating a vapor explosion hazard. Runoff to sewers may create fire or explosion hazard. Containers may explode when heated.

Fire Fighting Procedures: CAUTION: This product has a very low flashpoint. Use of water spray when fighting fire may be inefficient. SMALL FIRES: Use dry chemical, CO₂, water spray or alcohol-resistant foam. LARGE FIRES: Use water spray, fog, or alcohol-resistant foam. Do not use straight streams. Move containers from fire area if you can do so without risk. Runoff from fire control may cause pollution. Dike fire control water for later disposal. Do not scatter the material.
Also Reference Emergency Response Guide Number: 127

7. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid

pH: No Established Limit

Specific Gravity: 1.064985

Boiling Point (F): 300

Vapor Density: Heavier than air

VOC Content (lbs): Refer to the Technical Data Sheet for this product.

Evaporation Rate: Slower than ether

8. STABILITY AND REACTIVITY DATA

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General: This product is stable and hazardous polymerization will not occur.
Incompatible Materials: Strong oxidizing agents.
Hazardous Decomposition: May produce hazardous fumes when heated to decomposition as in welding. Fumes may produce Carbon Dioxide and Carbon Monoxide.

9. HANDLING AND STORAGE

Storage Temperature: Store between 32 and 120 F
Keep away from heat, sparks and flame. Do not smoke. Extinguish all flames and pilot lights, and turn off stoves, heaters, electric motors and other sources of ignition during use and until all vapors are gone. Vapors may cause flash fire or ignite explosively. Prevent build-up of vapors by opening all windows and doors to achieve cross-ventilation. Avoid contact with eyes, skin and clothing. Close container after each use. Wash thoroughly after handling.

Handling and Storage Precautions:

10. TOXICOLOGICAL DATA

General: NOTICE: Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal. No additional information provided for this product. See Section 2 for chemical specific data.

11. ECOLOGICAL DATA

General: No additional information provided for this product. See Section 2 for chemical specific data.

12. ACCIDENTAL RELEASE MEASURES

Spill Response Procedures: ELIMINATE ALL IGNITION SOURCES (no smoking, flares, sparks or flames in immediate area). Use only non-sparking equipment to handle spilled material and absorbent. Do not touch or walk through spilled material. Stop leak if you can do so without risk. Prevent entry into waterways, sewers, basements or confined areas. A vapor suppressing foam may be used to reduce vapors. Absorb or cover with dry earth, sand, or other non-combustible material and transfer to containers. Use non-sparking tools to collect absorbed material. CALL CHEMTREC at (800)-424-9300 for emergency response. Isolate spill or leak area immediately for at least 25 to 50 meters (80 to 160 feet) in all directions. Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate closed spaces before entering. LARGE SPILLS: Consider initial downwind evacuation for at least 300 meters (1000 feet).
Public Safety: Also, Reference Emergency Response Guide Number: 127

13. DISPOSAL CONSIDERATION

Waste Disposal: Dispose of in accordance with local, state and federal regulations. (Also reference RCRA information in Section 15 if listed).

14. TRANSPORTATION INFORMATION

DOT (Domestic Surface Transportation)		IMO / IMDG (Ocean Transportation)	
DOT Proper Shipping Name:	PAINT	IMDG Proper Shipping Name:	PAINT
DOT Hazard Class:	3	IMDG Hazard Class:	3.3 – High flashpoint flammable liquids
UN / NA Number:	UN 1263	UN Number:	UN 1263
DOT Packing Group:	III	IMDG Packing Group:	III
CERCLA/DOT RQ:	1366 gal. / 12121 lbs.	System Reference Code:	2

15. REGULATORY INFORMATION

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The regulatory data in Section 15 is not intended to be all-inclusive, only selected regulations are represented. All ingredients of this product are listed on the TSCA (Toxic Substance Control Act) Inventory or are not required to be listed on the TSCA Inventory.

Note: Any chemical ingredients listed in Section 15, that do not also appear in Section 2, are contained in the product at a concentration below the applicable OSHA threshold level of 1% or 0.1%.

Regulatory Overview:

WHMIS Classification: B3; D1B; D2B

Regulatory List Product Ingredients on List

DOT Marine Pollutants (10%)

DOT Severe Marine Pollutants (1%):
(No Product Ingredients Listed)

EPCRA 311/312 Chemicals and RQs (>.1%):
(No Product Ingredients Listed)

EPCRA 302 Extremely Hazardous (>.1%):
(No Product Ingredients Listed)

EPCRA 313 Toxic Chemicals (>.1%):

000098-82-8	Cumene
000095-63-6	Pseudocumene
001330-20-7	Xylenes (o-, m-, p- isomers)

Mass RTK Substances (>1%):

000095-63-6	Pseudocumene
000108-67-8	TRIMETHYLBENZENE

Mass Extraordinarily Haz Sub (>.01%):
(No Product Ingredients Listed)

Penn RTK Substances (>1%):

000095-63-6	Pseudocumene
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Penn Special Hazardous Substances (>.01%):
(No Product Ingredients Listed)

Rhode Island Hazardous Substances (>.1%):
(No Product Ingredients Listed)

RCRA Status (>.01%):
(No Product Ingredients Listed)

N.J. RTK Substances (>1%):
(No Product Ingredients Listed)

N.J. Special Hazardous Substances (>.01%):

000098-82-8	Cumene
001330-20-7	Xylenes (o-, m-, p- isomers)

N.J. Env. Hazardous Substances (>.1%):

000098-82-8	Cumene
000095-63-6	Pseudocumene
001330-20-7	Xylenes (o-, m-, p- isomers)

Proposition 65 - Carcinogens (>0%):
(No Product Ingredients Listed)

Proposition 65 - Female Repro Toxins (>0%):
(No Product Ingredients Listed)

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Proposition 65 – Male Repro

Toxins (>0%):

(No Product Ingredients
Listed)

Proposition 65 – Developmental

Toxins (>0%):

(No Product Ingredients
Listed)

16. OTHER INFORMATION

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects which may be caused by exposure to our products. Customers/users of this product must comply with all applicable health and safety laws, regulations, and orders.

End Of Document



SSPC: The Society for Protective Coatings

SURFACE PREPARATION STANDARD NO. 3

Power Tool Cleaning

1. Scope

1.1 This standard contains the requirements for power tool cleaning to remove loose detrimental foreign matter from steel substrates.

1.2 This standard differs from SSPC-SP 2 Hand Tool Cleaning, in that SSPC-SP 2 requires use of hand-held tools without supplemental power.

1.3 This standard differs from SSPC-SP 15, Commercial Grade Power Tool Cleaning, in that SP 15 uses power tools to remove all visible oil, grease, dirt, rust, coating, metallic oxides, mill scale, corrosion products, and other foreign matter from the surface, with the exception of trace amounts of coating, staining and corrosion in pit bottoms.

1.4 **Units of Measure:** This standard makes use of both the IEEE/ASTM SI 10⁽¹⁾ International System Units (SI) units and U.S. Customary units. The measurements are not exact equivalents; therefore, each system must be used independently of the other without combining in any way. This standard uses SI units with the U.S. Customary conversions shown in parentheses.

2. Definition

2.1 Power tool cleaning is a method of preparing steel surfaces by the use of power-assisted hand tools. It does not include the use of laser and heat-induction technologies.

2.2 A power tool cleaned surface, when viewed without magnification, shall be free of visible deposits of oil and grease and shall be free of all loose mill scale, loose rust, loose paint, and other loose detrimental foreign matter. It is not intended that adherent mill scale, rust, and paint be removed by this process. Mill scale, rust, and paint are considered adherent if they cannot be removed by lifting with a dull putty knife as described in Section 6.3 (see Notes 8.1 and 8.2).

2.3 **DULL PUTTY KNIFE (for use as an inspection tool):** A commercially manufactured, straight, flexible metal blade capable of returning to its original shape without permanent distortion after being bent by hand around a 28 to 33-cm (11 to 13-in) diameter mandrel (or pipe or other

curved surface). The blade shall also have the following characteristics: length of approximately 75 to 125 mm (3 to 5 inches); thickness of approximately 760 to 1270 μm (30 to 50 mils); and a straight working edge approximately 40 to 75 mm (1.5 to 3 in) in width. The putty knife is acceptable for use if the thickness at the working edge of the blade is not less than 635 μm (25 mils) or 75% of its original thickness, whichever is greater.⁽²⁾

NOTE: Some commercially manufactured, straight, flexible metal blades are between 500 and 760 μm (20 and 30 mils) in thickness. New blade thicknesses between 500 and 760 μm (20 and 30 mils) are permitted, provided the coating being tested is 20 mils or less in thickness, and the thickness of the blade is not worn to less than 20 mils.

2.4 Reference photographs of power tool cleaned surfaces found in SSPC-VIS 3 are often used to supplement the written definition. In any dispute, the written definition set forth in this standard shall take precedence over reference photographs (see Note 8.3).

3. Referenced Standards

3.1 The latest issue, revision, or amendment of the referenced standards in effect on the date of publication of this standard shall govern unless otherwise specified. Standards marked with an asterisk (*) are not requirements of this standard.

3.2 If there is a conflict between the requirements of any of the cited reference standards and this standard, the requirements of this standard shall prevail.

3.3 ASTM INTERNATIONAL STANDARDS

ASTM D4285 Standard Test Method for Indicating Oil or Water in Compressed Air

3.4 SSPC STANDARDS AND JOINT STANDARDS

SSPC-SP 1	Solvent Cleaning
* SSPC-SP 2	Hand Tool Cleaning
* SSPC-SP 7/ NACE No. 4	Brush-Off Blast Cleaning
* SSPC-SP 11	Power Tool Cleaning to Bare Metal
* SSPC-SP 15	Commercial Grade Power Tool Cleaning

⁽¹⁾ ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959. For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For Annual Book of ASTM Standards volume information, refer to the standard's Document Summary page on the ASTM website.

⁽²⁾ Exact dimensions of equipment manufactured using S.I. units may vary slightly from the S.I. values provided.

- SSPC-VIS 3 Guide and Reference Photographs for Steel Surfaces Prepared by Power- and Hand-Tool Cleaning

4. Tools and Methods for Power Tool Cleaning

4.1 POWER TOOLS: Any hand-held motorized tool on which the media described in Sections 4.1.1 and 4.1.2 are capable of being mounted in accordance with manufacturer's instructions and which will produce a steel surface meeting the requirements of Sections 2.1 and 2.2 is acceptable (see Notes 8.4, 8.5 and 8.6). Sections 4.1.1 and 4.1.2 describe the two main categories of power tools. It is possible for power tools to alter an existing surface profile.

4.1.1 Grinding Tools: Grinding tools use media containing bonded abrasive grains to cut through corroded surfaces and include, but are not limited to, discs or wheels as described in Note 8.7.1.

4.1.2 Impact Tools: Impact tools use media that repeatedly collide with the target surface and include, but are not limited to, various rotary and reciprocating devices as described in Note 8.7.2.

4.2. The use of several different power tools meeting the requirements of Section 4.1 is sometimes necessary to achieve power tool cleaned surface meeting the requirements of Sections 2.1 and 2.2 (see Note 8.4 and subsections).

5. Procedures Prior to Power Tool Cleaning

5.1 Prior to power tool cleaning, visible deposits of oil, grease, or other materials that interfere with coating adhesion shall be removed in accordance with SSPC-SP 1 or other methods as specified.

5.2 Surface imperfections such as slivers and laminations, sharp edges, weld spatter, or burning slag shall be removed from the surface to the extent specified by the procurement documents [project specifications] (see Notes 8.8 and 8.9).

5.3 When air-driven tools are used, cleanliness of the compressed air shall be verified in accordance with the procedure described in ASTM D4285.

6. Procedures Following Power Tool Cleaning and Immediately Prior to Coating

6.1 Visible deposits of oil, grease, or other materials that interfere with coating adhesion shall be removed in accordance with SSPC-SP 1 or as specified.

6.2 Dust and loose residues shall be removed from power tool cleaned surfaces by brushing; blowing off with

clean, dry air per Section 5.3; vacuum cleaning; or other methods.

6.3 When using a dull flexible putty knife to test paint, mill scale, or rust remaining on the surface after cleaning, the straight working edge of the blade shall be held flat against the surface at a maximum of 45 degrees to the surface and pushed with light to moderate pressure so that the end of the blade remains in flat contact with the surface. The corners of the blade shall not be used to dig at the residues.

A putty knife shall not be used as an inspection tool if the working edge of the blade is nicked or gouged, or if dry paint or other material is present along the working edge that would prevent the blade from making intimate contact with the surface.

6.4 After power tool cleaning, any remaining surface imperfections (e.g., laminations, sharp edges, weld spatter, burning slag, scabs, slivers) shall be removed to the extent required by the procurement documents (project specification) (see Note 8.9).

6.5 Immediately prior to coating application, the entire surface to be coated shall comply with the requirements of Section 2.2 (see Note 8.10).

7. Disclaimer

7.1 While every precaution is taken to ensure that all information furnished in SSPC standards and specifications is as accurate, complete, and as useful as possible, SSPC cannot assume responsibility nor incur any obligation resulting from the use of any materials, coatings, or methods specified herein, or of the specification or standard itself.

7.2 This standard does not attempt to address problems concerning safety associated with its use. The user of this standard, as well as the user of all products or practices described herein, is responsible for instituting appropriate health and safety practices and for ensuring compliance with all applicable governmental regulations.

8. Notes

Notes are not requirements of this standard.

8.1 FUNCTION: The type of power tool surface preparation described in this standard removes loosely adherent foreign matter. This standard is suitable where removal of loosely adherent foreign matter is required, but where the effort to remove all tightly adherent rust, mill scale, old coatings, and other tightly adherent foreign matter is not necessary. The surfaces prepared according to this standard should not be compared to surfaces cleaned by brush-off abrasive blast cleaning. Although this method produces surfaces that resemble SSPC-SP 7 (brush-off blast cleaned surfaces), they are not necessarily equivalent

to those surfaces produced by abrasive blast cleaning. The contracting parties should agree on the appropriateness of the finished surface to accept the specified coating system. Selection of power tools and cleaning media should be based on (1) the condition of the surface prior to surface preparation; (2) the extent of cleaning that is required.

The SSPC Surface Preparation Commentary (SSPC-SP COM) provides additional information on subjects related to power tool cleaning. The recommendations contained in SSPC-SP COM are believed to represent good practice, but are not to be considered requirements of this standard.

8.2 STRATIFIED RUST, PACK RUST AND RUST SCALE: As noted in Section 4.3.1 of SSPC-COM, Surface Preparation Commentary for Steel and Concrete Substrates, stratified rust, pack rust or rust scale can adhere so tightly to the base metal that a power wire brush will not remove it. Even though it is considered "tightly adherent" because it cannot be lifted with a dull flexible putty knife, it provides a very poor surface to paint over. Specifiers should consider providing additional instructions in the project specification regarding the acceptable methods for, and the acceptable level of, removal of these types of rust.

8.3 VISUAL GUIDES AND COMPARATORS: Note that the use of visual guides or comparators in conjunction with this standard is required only when they are specified in the procurement documents (project specification) covering the work. It is recommended, however, that the use of visual guides or comparators be made mandatory in the procurement documents. SSPC-VIS 3 provides a suitable comparative visual guide for SSPC-SP 2, SSPC-SP 3, SSPC-SP 11, and SSPC-SP 15. However, visual comparators for blast-cleaned steel (e.g., SSPC-VIS 1) are not suitable for assessing power tool cleaned surfaces. Because power tool cleaning is time- and labor-intensive, it is advisable to prepare a test area of 1 x 1 m (3 x 3 ft) for large areas or 30 x 30 cm (12 x 12 in) for spot cleaning to an acceptable level agreed upon by the contracting parties. A 30 x 30 cm (12 x 12 in) steel test plate can also be power tool cleaned to an acceptable level and photographed or retained to serve as a project standard.

8.4 SELECTION OF TOOLS AND MEDIA

8.4.1 Selection of Tools: Power tools should be selected on the basis of the size and speed rating of the media. These requirements may differ from one type of medium to another and should be taken into consideration if more than one type of medium will be used in the surface preparation process. Power tools should be selected that will produce enough power to perform the cleaning operation efficiently. Operator fatigue should be considered in the selection of power tools.

8.4.2 Selection of Media: When power tool cleaning rusted surfaces, it is important to avoid embedding rust into the substrate. These factors may require employing more

than one type of medium in order to obtain the desired end result.

Power wire brushes or sanding discs when used alone may remove or degrade an existing profile to an unacceptable level. After removal of excessive corrosion, a structural inspection may be warranted to ascertain if the metal thickness remains in compliance with the governing requirements, including applicable codes (e.g. ASME codes for pressure vessels).

8.5 CAUTION: Improper use of power tools can result in damage to the surface being cleaned. Excessive pressure or an overly long dwell time on a surface being cleaned using impact tools can result in formation of burrs and gouges. Rotary or grinding tools that remain over a specific location too long can bend the peaks of an existing profile and damage the anchor pattern. In extreme cases, burnishing of the surface may result. Improper use of tools with embedded abrasive media, including, but not limited to discs, wheels, pads, and flappers, may result in partial melting and smearing of the matrix on the surface. A review of the manufacturer's literature or a discussion with the technical representative about the tool, its use and the intended substrate should be undertaken if in doubt or if the operator has little or no experience with the tool.

8.6 CLEANING LIMITED ACCESS AREAS: SSPC defines a "limited access area" as a location in which the configuration of a structure or surface or the characteristics of a tool restrict the use or performance of that tool at that location. Alternative methods should be considered for limited access areas.

8.7 SUITABLE TOOLS AND MEDIA: The tools/media in the text of this standard are intended solely to guide the user to typical types of equipment and media that are available to meet the specification. The tools/media cited in this document do not include all of the tools, devices, or products available, nor does their mention constitute an endorsement by SSPC. The presence of hazardous material in the coatings, cleaning media, or in the work area itself, can place restrictions on the methods of cleaning permitted.

8.7.1 Grinding tools/media: Any rotary or reciprocating tool that uses bonded abrasives as the cutting media for generating surfaces described in Section 2. These include, but are not limited to, wire brushes, reciprocating sanders, orbital sanders, or any grinding device, whether right angle or straight shaft, that utilizes abrasive cloths, discs, wheels, or flaps.

8.7.2 Impact tools/media: Any rotary or reciprocating tool that uses repetitious impact for generating surfaces described in Section 2. This includes, but is not limited to: rotary flap, cutter bundle, needle gun, bristle impact, and hammer flail assemblies.

8.8 MAINTENANCE AND REPAIR PAINTING: When this standard is used in maintenance painting, specific instructions should be given on the extent of surface to be power tool cleaned, including any additional requirements for retaining old paint, removing unsound paint, feathering and spot cleaning. If the procurement documents require power tool cleaning to prepare surfaces for subsequent coating, the edges of remaining intact coatings should be feathered to improve the appearance of the repaired coating.

8.9 SURFACE IMPERFECTIONS: Surface imperfections can cause premature failure when the environment is severe. Generally, coatings tend to pull away from sharp edges and projections, leaving little or no coating to protect the underlying steel. Other features that are difficult for a coating to properly cover and protect include crevices, weld porosity, laminations, etc. Poorly adherent contaminants, such as weld slag residues, loose weld spatter, and some minor surface laminations, should be removed during power tool cleaning. Other surface defects

may not be evident until the surface preparation has been completed. Therefore, proper planning for such repair work is essential, since the timing of the repairs may occur before, during, or after power tool cleaning operations.

8.10 DEW POINT: Moisture condenses on any surface that is colder than the dew point of the surrounding air. It is recommended that the temperature of the steel surface be at least 3 °C (5 °F) above the dew point during power tool cleaning. It is advisable to visually inspect for moisture and periodically check the surface temperature and dew point during cleaning. It is equally important to continue to monitor the surface temperature/dew-point relationship until the coating is applied in order to avoid painting over a damp surface, unless the selected coating is specifically intended for application on damp substrates.

This revision replaces the version dated November 1, 1982 (Editorial Revisions November 2004). Content has been reorganized to parallel construction of SSPC-SP 11 and SSPC-SP 15, and definition of a dull putty knife has been added. A redline version is available from SSPC upon request.

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