أدنـــوك
ADNOC

SK engineering & construction

P.O No. 17137D-IN-PO-NB610-01

Contractor Project No. 17127D

EPC FOR M PROJECT
Custody Metering System

External Painting Procedure – Structural

☐	1	**REJECTED** Revise and resubmit.
☐	2	**COMMENTS AS NOTED** Work may proceed subject to compliance with and incorporation of comment.
☒	3	**NO COMMENTS** Work may proceed.
☐	4	**INFORMATION ONLY** Accepted for information only.

This approval does not relieve the vendor of his responsibility to meet purchase order conditions relating to duty, specifications, materials, design, construction and delivery requirements.

APPR'D	Caley Han	DATE	13.May.2020

REV.	DATE	ORIGINATOR	REVIEWED	APPROVED	DESCRIPTION
1	10/05/2020	Sub-Vendor	SN	SM	ISSUED FOR FINAL
E	14/11/2019	Sub-Vendor	SN	BM	RE-ISSUED FOR REVIEW
D	06/10/2019	Sub-Vendor	SN	BM	RE-ISSUED FOR REVIEW
C	28/08/2019	Sub-Vendor	SN	BM	RE-ISSUED FOR REVIEW
B	28/05/2019	Sub-Vendor	SN	BM	RE-ISSUED FOR REVIEW
A	17/03/2019	Sub-Vendor	SN	BM	ISSUED FOR REVIEW

THIS DOCUMENT IS INTENDED FOR USE BY ADNOC AND ITS NOMINATED CONSULTANTS, CONTRACTORS, MANUFACTURERS AND SUPPLIERS.

VENDOR

Alderley

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Hidayath Heavy Industry-Dubai Industrial Park– UAE

Scope of Work-Fabrication of Structural for Prover Skids

HIDAYATH HEAVY INDUSTRY LLC

BLASTING & PAINTING PROCEDURE OF STRUCTURAL CARBON STEEL EXTERNAL SURFACE

DOCUMENT NO: HHIL-1276-001-BPP-001

CLIENT: ALDERLEY.

PROJECT: 27136/202- STRUCTURAL FABRICATION

EQUIPMENT DESCRIPTION : STRUCTURAL STEEL

05	25.09.2019	Client Comment Incorporated	Mohammed Jalaluddin	Abdul Fahim
04	27.08.2019	Handrails, Ladder, Walkway and Platforms paint system added	Mohammed Jalaluddin	Abdul Fahim
03	21.08.2019	Client Comments Incorporated	Mohammed Jalaluddin	Abdul Fahim
02	22.05.2019	Paint System added for Mainline & Small bore supports	Mohammed Jalaluddin	Abdul Fahim
01	03.04.2019	Painting System Revised as per the Supplier Shell / Adnoc Approved System	Mohammed Jalaluddin	Abdul Fahim
00	23.02.2019	Blasting and Painting procedure issued for approval	Mohammed Jalaluddin	Abdul Fahim
Rev.	Date	Description	Prepared by	Reviewed & Approved by

HIDAYATH GROUP

40 YEARS

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1. SCOPE.

The scope of this document applies to Abrasive blasting & painting works to be carried out on " Structural Carbon Steel External Surface" at Hidayath Heavy Industry-Dubai Industrial Park – UAE

2. REFERENCE DOCUMENTS.

2.1. Painting Specification: DEP 30.48.00.31-Gen, System: LC1-N.

2.2. Paint Manufacturer Technical Data Sheet.

3. DEFINITION.

3.1. Vendor : Hidayath Heavy Industry LLC.

3.2. Client : Alderley.

3.3. ITP : Inspection And Test Plan

3.4. QC : Quality Controller

4. RESPONSIBILITIES.

4.1. All operators shall have aware & experienced about the surface preparation equipment and as well as airless spray equipment before beginning the activity.

4.2. Site supervisor shall be responsible for executing all acttivities related of blasting and painting.

4.3. The designated coating inspector shall be individually certified like NACE-2, SSPC-2 or BGAS-2.

4.4. The designated QC is responsible to verify that the quality blasting and painting work and all related work have been completed and accepted to the satisfaction of (Client) and the concerned designated parities. Verification of inspection equipment calibration validity for all related instruments shall be carried out before beginning painting activity.

4.5. The designated QC is responsible for witnessing the items being tested. Also arrange for witness of the concerned designated parities(Client). The raw materials Shall be inspected such as Garnet, Paints, and Thinners for their conformity of quality aspects.

4.6. Record & monitor the ambient conditions.

4.7. Prepare all QC related documents and final test pack upon the completion of the painting work.

5. HEALTH, SAFETY AND ENVIROMENTAL RESPONSIBILTIES.

5.1. The Application of Coating System Shall be undrtaken by Supplier in accordance with all local relevant Health and Safety requirements taking into consideration the welfare personnel.

5.2. This Responsibilty shall ensure that clean & tidy worksite is maintianed and that waste products and emty paint container are properly disposed off at the end of any particualar job.

6. CONTROL MEASURES.

6.1. Project specification and approved procedure available in Shop / Site.

6.2. Relevant product technical data sheet and batch certificates available in Shop / Site.

6.3. Check all valid calibration certificates of test equipment's are in place.

6.4. Ensure proper storage facility and shades during mixing of coating materials as per manufacturers instructions.

6.5. The compressed air and abrasive should be free of contaminants such as water soluble salts, dirt, clay, oil and grease. Adequate separators and traps (after cooler) shall be provided, installed in the coolest part of the system.

6.6. All welding and fabrication activity shall be done prior to painting operations.

6.7. The Vessels shall be hydrostatically tested before commencing the painting activity.

7. ABRASIVES FOR USE IN ABRASIVE BLAST CLEANING.

7.1. ***The abrasives - Garnet used for blasting cleaning of carbon and low alloy steels as per specified in ISO-8504-2***

7.2. All new and re-used abrasives for blast cleaning shall be free from oil, grease, moisture and salts.

7.3. Abrasive shall not be rusted, worn or dull when compared with fresh materail.

7.4. Sand shall not be used as blasting medium.

7.5. Surface finish grades shall be in accordance with ISO 8501-1.

- **MONITORING ENVIROMENTAL CONDITION DURING SURFACE PREPARATION AND PAINTING.**

  - Steel temperature Above 5 °C. But max 45 °C.
  - Air temperature Above 10 °C.
  - Dew point Steel temperature shall be at least 3 deg^0 C above Dew point.
  - Relative Humidity Shall be less than 80%
  - Reading shall be taken 4 times in a day.
  - Dry blast cleaning operations shall not be conducted on surfaces that will be wet after blasting and before painting.

8. SURFACE PREPARATION.

8.1. During Blasting & Coating Process Proper PPE's shall be used such as hard hat, safety shoes, coverall, safety glass, noise protection, respiratory protection, hand protection gloves and blasting airline respirator with positive pressure blasting helmet.

8.2. If any visible defect on the surface such as weld spatter, rough under cuts, slag's, sharp or rough edges, burns, surface lamination, those defects shall be removed with suitable hand tool or power tool equipment prior to commencement of the surface preparation.

8.3. Name plates, Machined surfaces ,gaskets area and factory coated items shall be protected before beginning blasting activity.

8.4. Dry abrasive blast cleaning shall be carried out with suitable "Silica free" abrasive such as mineral

Garnet the abrsive material shall be free soluble salt and impurities.

8.5. Compressed air Shall be Used for abrasive blasting cleaning shall be dry and free from oil. Accumulations of oil shall be removed from the air Receiver by regular purging.

8.6. Blasting Nozzle shall be replaced when wear reaches 50%.Air compressed shall not deliver air at a temperature in excess of 110˚C.

8.7. Cloth shall not to be used on blasted surfaces for cleaning.

8.8. All traces of blast debris and dust to be removed from surface including all pockets and coner by vacuum cleaning, blowing with Air blow with clean and dry compressed air or brushing with a clean brush made from hair, bristle or fibre.

8.9. After the surface preparation if any visible oil, grease, dust or foreign contamination those shall be cleaned prior to paint application.

8.10. If rust occured after completion of surface preparation, those surface shall be re blasted until getting the specified cleanliness in accordance with the specified method.

8.11. Do not leave blasted steel uncoated overnight, In case of contamination,perform Spot blast if needed and shall be cleaned to specified degree of cleanliness prior to coating .

8.12. Chloride test shall be performed on blasted surface as per ISO-8502-1, ISO-8502-2 & ISO-8502-3,Test result should be less than ***25mg/m^2 for carbon steel and 20mg/m^2 for stainless steel***

8.13. ***Visual Inspection after blast cleaning (Sa 2 -1/2)***

8.14. ***Surface Profile : 40µm to 70µm for carbon steel and 20µm to 30µm for stainless steel.***

8.15. The dust level test shall be done on the blast-cleaned surface before application of paint. External Surface ***Dust Level Test level shall not exceed Rating 2*** in accordance with ISO 8502-3.

- **MIXING OF PAINTS AND APPLICATION.**

  - Mixing of all 2-pack paints shall be done as per the mixing ratio and the procedures described in the technical data sheets of individual products. Pneumatic high speed stirrer (Agitator) shall be used for mixing paints.
  - All full coat applications shall be by airless spray only at the required pressure and at specified WFT, monitored with WFT gauges and DFT measurements shall be by using calibrated electronic DFT gauges.

9. PAINT APPLICATION.

9.1. ***Paint system shall be selected from shell approved material list of the selected brand***

9.2. Painting materials shall be stored in accordance with the instructions of the paint manufacturer data sheet

9.3. Paint shall not be applied under the folloing Condition.s :

- When the Temperature of the Substrate is less than 3˚C above the Dew point of the surrounding air and subratate temperature is below 5˚C
- When the Relative Humidity of the surrounding is greater then 85%
- When more thaan four hour has elapsed after completion of the surface perpartion or when rust bloom has formed on the prepared surface.
- When painting is carryout in the ope if there is likehood of the weather conditions becoming unfavourable within two hours after complition of coating e.g. rain, sandstrom etc.

9.4. Painting activity shall be commence within four hours after surface preparation.

9.5. First coat shall be applied as quickly as possible after the surface preparation has taken placed, and before any re-rusting or contamination occurs.

9.6. Before the application of each coat of paint, the perivous coat of paint shall be allowed to fully cure in line with the time and temperature condtion given by paint manfucturer.

9.7. Apply the paint as soon as possible after surface preparation to prevent any contamination.

9.8. All welding joints, edges shall be applied touch up by suitable brush or roller to ensure adequate thickness.

9.9. All runs, sags & wrinkles shall be brushed out immediately or the paint shall be removed and the surface shall repainted.

9.10. Coated surface shall be in proper state of cure or dryness before the application of overcoat or touchup work and overcoating interval shall be followed as per paint manufacturer instruction.

9.11. For Areas where paint application may result in thin coatings, extra coats of paint shall be normally applied by firstlt painting stripe coats.

9.12. Before Sparing each coat all coners, welds, edges , small brackets, bolts, nuts and interstices shall be precoated by brush to ensure that in this areas mimmium DFT is achieved.

9.13. Each Coat shall be uniformly applied over the entire surface.

9.14. Brsuh Application may only used if the area cannot be sprayed adequately or touchup of damage areas.

9.15. All brush shall be in good quality to enable the proprer application of the paint.

9.16. Paint shall be brushed on in a smooth even coat, deep brush marks should be avoided.

9.17. The finished coating shall be uniform in color, it shall be free of dust, dry spray, sags, wrinkles, pin holes, and excessive roller marks. If appear above defect on painted surface, those shall be rectified before inspection.

Paint System :- System: LC1-N (STRUCTURAL CARBON STEEL) – EXTERNAL SURAFCE

SURFACE PREPRATION	ITEM	Primer	Intermediate Coat	Top Coat	Final DFT.
SA 2.5 Anchor Profile 40-65µm	***Structural Carbon Steel***	***SIGMAZINC 109 HS 60 Microns***	***SIGMAPRIME 200 180 Microns***	***SIGMADUR 550 60 Microns (RAL # 7010)***	***300 Microns***
SA 2.5 Anchor Profile 40-65µm	***Mainline & Small bore supports (Fire Proof)***	***SIGMAZINC 109 HS 60 Microns***	***SIGMAPRIME 200 180 Microns***	***--***	***240 Microns***
SA 2.5 Anchor Profile 40-65µm	***Walkway and Platforms*** Except Note-2	***SIGMAZINC 109 HS 60 Microns***	***SIGMAPRIME 200 180 Microns***	***SIGMADUR 550 60 Microns (RAL # 7010)***	***300 Microns***
Paint System :- System: LO1-N (STRUCTURAL HDG CARBON STEEL) – EXTERNAL SURAFCE Note-2					
SA 2.5 on Carbon Steel Surface & SA 1 (Sweep Blast) on HDG Surface	***Handrails***	***Hot Dip Galvanized (Min. 100 µm)***	***SIGMAPRIME 200 150 Microns***	***SIGMADUR 550 50 Microns (RAL # 1004) Yellow***	***350 Microns***
SA 2.5 on Carbon Steel Surface & SA 1 (Sweep Blast) on HDG Surface	***Ladder***	***Hot Dip Galvanized (Min. 100 µm)***	***SIGMAPRIME 200 180 Microns***	***SIGMADUR 550 50 Microns (RAL # 7010)***	***350 Microns***

Notes:

1. ***Top Coat shall not be applied to steel structure which is to be fireproofed.***
2. Stair grating tread nosing shall be HDG and painted with safety yellow.

10. REPAIR OF DAMAGED PAINT SURFACE.

10.1. Where shop paint has been damaged in handling, those damage to bare metal surface to spot blast and apply full system and loosely adhering paint shall be removed and the surface thoroughly cleaned. Surrounding edges shall be feathered and total number of coats shall be applied to achieve the specified DFT.

10.2. Damage area shall be thoroughly degreased and the surfaces suiatably abraded / Spot blasted and touch up generally as follows :

- Remove paint and correct defects or damaged areas, Inculding areas damaged by welding and in in areas that do not comply with the requirement of the specification.
- Corected Defects and damaged area using the same paint as orginally applied.
- Retexture the steel to near white blast coating and achieve the profile as required in painting system specified
- Measure the profile immedeatly before applying the prime coat to ensure the profile is not destoryed during the feathering procedure.

10.3. During the Re-application of the paint, apply paint as follow :

- Apply the prime coat only to the surface of bare steel and the exciting prime coat exposed to feathering. Do not Apply the prime coat to the adjaicent Intermediate coat.
- Apply the intermidate coat to only to the new Prime coat and existing intermediate coat exposed by feathering. Do not apply the intermidiate coat to the adjacent finish coat.
- Apply the finish coat only to the new intermediate coat and exciting finish coat that was feathered or
- lightly sanded. Do not apply the finish coat beyond the areas that are feathered or lightly sanded.

11. INSPECTION.

11.1. Surface roughness (profile) shall be checked with dial guage (suface profile guage) after blasting activity.

11.2. Chloride test shall be performed on blasted surface as per ISO-8502-1, ISO-8502-2 & ISO-8502-3,Test result should be less than ***25mg/m2 for carbon steel and 20mg/m2 for stainless steel***

11.3. ***Visual Inspection after blast cleaning (Sa 2 -1/2)***

11.4. ***Surface Profile : 40µm to 70µm for carbon steel and 20µm to 30µm for stainless steel.***

11.5. After the surface preparation if any visible oil, grease, dust or foreign contamination those shall be cleaned prior to paint application. The dust level test shall be done on the blast-cleaned surface before application of paint. External Surface ***Dust Level Test level shall not exceed Rating 2*** in accordance with ISO 8502-3.

11.6. Wet film thickness shall be checked during the paint application for required dry film thickness as per ISO-2808, Method No.7B.

11.7. DFT measurement shall be by calibrated Electronic DFT gauges.

11.8. In case minimum dry film thickness are not achieved as specified in this specification due to whatever reasons, the number of coats will be increased accordingly to achieve the specified DFT.

11.9. All coated surface visually examined after coating such as defect e.g. Blisters, runs, voids, bubble, orange peel, dust inclusions, pinholes, sags, dry spray, wrinkling shall be repaired and the painted surface shall have a good appearance after the completion.

11.10. ***Pull off / Adhesion test shall be performed as per ASTM_D4541 on coated Test panel surface, and acceptance result shall be Min 5 and 7 Mpa.for zinc primed and non zinc primed paint systems respectively***.

11.11. Inspection of final DFT.

11.12. Final Visual Inspection

11.13. Repairs if any and re- inspection.

12. QC INSTRUMENTS.

12.1. Whirling Hygrometer / Dew Point Meter.

12.2. Surface Temperature Gauge.

12.3. Dew Point calculator.

12.4. Surface Profile

12.5. Testex Tape.

12.6. Dry film thickness gauge.

- Note: Test Instrument Shall Be Calibrated on Routine Bases (Depending on Frequency of Use) and maintained in good working Condition all The Times.

13. RECORD AND DOCUMENTS.

13.1. Inspection Report.

13.2. Paint Batch Certificates.

13.3. Inspection Equipment Calibration certificates.

14. ATTACHMENTS.

14.1. Painting Inspection report

14.2. Technical data Sheets of Coating Materials

HIDAYATH GROUP

40 YEARS

HIDAYATH GROUP	HIDAYATH HEAVY INDUSTRY LLC
	DAILY PAINTING INSPECTION REPORT

CONTRACT No:		Report No: Date :
CLIENT JOB No:	TAG No:	CLIENT:
HHIL JOB No:	PROJECT TITLE:	
CLIENT SPECIFICATION NO:		PAINTING PROCEDURE NO :
WORK ORDER TITLE:		

AMBIENT CONDITION	SURFACE PREPARATION/PAINTING EXTERNAL						
Date	Time	Dry Bulb	Wet Bulb	Dew Point	RH%	Metal Temp	PRESS O FILM

SURFACE PREPARATION		
METHOD:	TYPE AND SIZE OF ABRASIVE USED:	DISCHARGE PRESSURE AT BLASTING NOZZLE:
SURFACE FINISH ACHIEVED: ISO 8501: 1:2001	AVERAGE SURFACE PROFILE: ASTM-D-4417,Method C	TYPE OF SURFACE (METAL):

PAINT APPLICATION

Paint Name & Manufacturer:	Method of application:

Coat No	Date	Manufacturer's Code No		Batch No.		Colour/ Ral No	WFT	Total DFT	
		Base	Curing Agent	Base	Curing Agent		Microns	REQ	Avg Microns
1									
2									
3									

DFT Reading in each coat:	Primer Coat			Intermediate coat			Top coat		
Thinner trade mark:									
Paint Pot Life:									

Minimum DFT Achieved:	Maximum DFT Achieved:	Average final DFT Achieved:

Brief Description of Work Done:

Remarks:

HIDAYATH HEAVY INDUSTRY	TPI	CLIENT/OWNER REP
NAME:	NAME:	NAME:
SIGNATURE:	SIGNATURE:	SIGNATURE:
DATE:	DATE:	DATE:

DUBAI INDUSTRIAL CITY -DUBAI U.A.E- P.O Box NO:13650,Tel No:+971-4-8856979

SIGMAZINC™ 109 HS

DESCRIPTION

Two-component, high solids polyamide adduct cured zinc rich epoxy primer

PRINCIPAL CHARACTERISTICS

- Designed as a system primer for various paint systems
- Excellent anticorrosive properties
- Quick-drying, can be overcoated after a short interval
- Can serve as a holding primer for various maintenance systems for a total repair
- Very good primer for systems with high solids epoxy buildcoats
- Complies with SSPC-Paint 20 level 2 and ISO 12944.5

COLOR AND GLOSS LEVEL

- Gray, reddish gray
- Flat

BASIC DATA AT 20°C (68°F)

Data for mixed product	
Number of components	Two
Mass density	2.8 kg/l (23.4 lb/US gal)
Volume solids	66 ± 2%
VOC (Supplied)	Directive 1999/13/EC, SED: max. 106.0 g/kg max. 299.0 g/l (approx. 2.5 lb/US gal)
Recommended dry film thickness	50 - 150 µm (2.0 - 6.0 mils) depending on system
Theoretical spreading rate	11.0 m^2/l for 60 µm (441 ft^2/US gal for 2.4 mils)
Dry to touch	2.5 hours
Overcoating Interval	Minimum: 4 hours See overcoating tables
Full cure after	7 days
Shelf life	Base: at least 24 months when stored cool and dry Hardener: at least 24 months when stored cool and dry

Notes:
- See ADDITIONAL DATA – Spreading rate and film thickness
- See ADDITIONAL DATA – Overcoating intervals
- See ADDITIONAL DATA – Curing time

SIGMAZINC™ 109 HS

RECOMMENDED SUBSTRATE CONDITIONS AND TEMPERATURES

Immersion exposure

- Steel; blast cleaned to ISO-Sa2½, blasting profile 40 – 70 µm (1.6 – 2.8 mils)
- Steel with approved zinc silicate shop primer; pretreated according to SPSS-Ss

Atmospheric exposure conditions

- Steel; blast cleaned to ISO-Sa2½, blasting profile 40 – 70 µm (1.6 – 2.8 mils)
- Steel with approved zinc silicate shop primer pretreated according to SPSS or power tool cleaned to SPSS-Pt3

Substrate temperature

- Substrate temperature during application and curing down to 0°C (32°F) is acceptable; provided the substrate is free from ice and dry
- Substrate temperature during application and curing should be at least 3°C (5°F) above dew point

INSTRUCTIONS FOR USE

Mixing ratio by volume: base to hardener 80:20 (4:1)

- The temperature of the mixed base and hardener should preferably be above 15°C (59°F), otherwise extra thinner may be required to obtain application viscosity
- Adding too much thinner results in reduced sag resistance and slower cure
- Thinner should be added after mixing the components

Induction time

None

Pot life

6 hours at 20°C (68°F)

Air spray

Recommended thinner

THINNER 91-92

Volume of thinner

0 - 15%, depending on required thickness and application conditions

Nozzle orifice

1.8 – 2.2 mm (approx. 0.070 – 0.087 in)

Nozzle pressure

0.3 - 0.6 MPa (approx. 3 - 6 bar; 44 - 87 p.s.i.)

SIGMAZINC™ 109 HS

Airless spray

Recommended thinner
THINNER 91-92

Volume of thinner
0 - 15%, depending on required thickness and application conditions

Nozzle orifice
Approx. 0.43 – 0.48 mm (0.017 – 0.019 in)

Nozzle pressure
15.0 MPa (approx. 150 bar; 2176 p.s.i.)

Brush/roller

Recommended thinner
THINNER 91-92

Volume of thinner
0 – 10%

Cleaning solvent
THINNER 90-53

ADDITIONAL DATA

Spreading rate and film thickness	
DFT	**Theoretical spreading rate**
60 µm (2.4 mils)	11.0 m^2/l (441 ft^2/US gal)
75 µm (3.0 mils)	8.8 m^2/l (353 ft^2/US gal)
100 µm (4.0 mils)	6.6 m^2/l (265 ft^2/US gal)
150 µm (6.0 mils)	4.4 m^2/l (176 ft^2/US gal)

Overcoating interval for DFT up to 100 µm (4.0 mils)						
Overcoating with...	**Interval**	**0°C (32°F)**	**10°C (50°F)**	**20°C (68°F)**	**30°C (86°F)**	**40°C (104°F)**
subsequent coating	Minimum	24 hours	8 hours	4 hours	3 hours	2 hours
	Maximum	3 months	3 months	3 months	3 months	3 months

Notes:
- Zinc rich primers can form zinc salts on the surface; preferably they should not be weathered for long periods before overcoating
- Before overcoating visible surface contamination must be removed by high-pressure water cleaning, sweep blasting or mechanical cleaning

SIGMAZINC™ 109 HS

Curing time for DFT up to 100 µm (4.0 mils)			
Substrate temperature	**Dry to touch**	**Dry to handle**	**Full cure**
0°C (32°F)	12 hours	20 hours	30 days
10°C (50°F)	5 hours	6 hours	20 days
15°C (59°F)	3 hours	4 hours	10 days
20°C (68°F)	2.5 hours	3 hours	7 days
30°C (86°F)	1 hour	1.5 hours	5 days

Notes:
- Adequate ventilation must be maintained during application and curing
- In case of application at air or surface temperature below 5°C (41°F), the temperature of the mixed paint is recommended to be higher than 10°C (50°F)

Pot life (at application viscosity)	
Mixed product temperature	**Pot life**
10°C (50°F)	12 hours
20°C (68°F)	6 hours
30°C (86°F)	4.5 hours
40°C (104°F)	3 hours

SAFETY PRECAUTIONS

- This is a solvent-borne paint and care should be taken to avoid inhalation of spray mist or vapor, as well as contact between the wet paint and exposed skin or eyes

WORLDWIDE AVAILABILITY

It is always the aim of PPG Protective and Marine Coatings to supply the same product on a worldwide basis. However, slight modification of the product is sometimes necessary to comply with local or national rules/circumstances. Under these circumstances an alternative product data sheet is used.

REFERENCES

• CONVERSION TABLES	INFORMATION SHEET	1410
• EXPLANATION TO PRODUCT DATA SHEETS	INFORMATION SHEET	1411
• SAFETY INDICATIONS	INFORMATION SHEET	1430
• SAFETY IN CONFINED SPACES AND HEALTH SAFETY, EXPLOSION HAZARD – TOXIC HAZARD	INFORMATION SHEET	1431
• SAFE WORKING IN CONFINED SPACES	INFORMATION SHEET	1433
• DIRECTIVES FOR VENTILATION PRACTICE	INFORMATION SHEET	1434
• CLEANING OF STEEL AND REMOVAL OF RUST	INFORMATION SHEET	1490
• SPECIFICATION FOR MINERAL ABRASIVES	INFORMATION SHEET	1491
• RELATIVE HUMIDITY – SUBSTRATE TEMPERATURE – AIR TEMPERATURE	INFORMATION SHEET	1650

SIGMAZINC™ 109 HS

WARRANTY

PPG warrants (i) its title to the product, (ii) that the quality of the product conforms to PPG's specifications for such product in effect at the time of manufacture and (iii) that the product shall be delivered free of the rightful claim of any third person for infringement of any U.S. patent covering the product. THESE ARE THE ONLY WARRANTIES THAT PPG MAKES AND ALL OTHER EXPRESS OR IMPLIED WARRANTIES, UNDER STATUTE OR ARISING OTHERWISE IN LAW, FROM A COURSE OF DEALING OR USAGE OF TRADE, INCLUDING WITHOUT LIMITATION, ANY OTHER WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE OR USE, ARE DISCLAIMED BY PPG. Any claim under this warranty must be made by Buyer to PPG in writing within five (5) days of Buyer's discovery of the claimed defect, but in no event later than the expiration of the applicable shelf life of the product, or one year from the date of the delivery of the product to the Buyer, whichever is earlier. Buyer's failure to notify PPG of such non-conformance as required herein shall bar Buyer from recovery under this warranty.

LIMITATIONS OF LIABILITY

IN NO EVENT WILL PPG BE LIABLE UNDER ANY THEORY OF RECOVERY (WHETHER BASED ON NEGLIGENCE OF ANY KIND, STRICT LIABILITY OR TORT) FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES IN ANY WAY RELATED TO, ARISING FROM, OR RESULTING FROM ANY USE MADE OF THE PRODUCT. The information in this sheet is intended for guidance only and is based upon laboratory tests that PPG believes to be reliable. PPG may modify the information contained herein at any time as a result of practical experience and continuous product development. All recommendations or suggestions relating to the use of the PPG product, whether in technical documentation, or in response to a specific inquiry, or otherwise, are based on data, which to the best of PPG's knowledge, is reliable. The product and related information is designed for users having the requisite knowledge and industrial skills in the industry and it is the end-user's responsibility to determine the suitability of the product for its own particular use and it shall be deemed that Buyer has done so, as its sole discretion and risk. PPG has no control over either the quality or condition of the substrate, or the many factors affecting the use and application of the product. Therefore, PPG does not accept any liability arising from any loss, injury or damage resulting from such use or the contents of this information (unless there are written agreements stating otherwise). Variations in the application environment, changes in procedures of use, or extrapolation of data may cause unsatisfactory results. This sheet supersedes all previous versions and it is the Buyer's responsibility to ensure that this information is current prior to using the product. Current sheets for all PPG Protective & Marine Coatings Products are maintained at www.ppgpmc.com. The English text of this sheet shall prevail over any translation thereof.

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SIGMAPRIME® 200 SERIES

DESCRIPTION

Universal epoxy anticorrosive primer, based upon pure epoxy technology

PRINCIPAL CHARACTERISTICS

- Universal epoxy primer system suitable for ballast tanks, deck, topside, superstructure, hull, cargo oil tanks and cargo holds
- Excellent anticorrosive properties and water resistance
- Surface tolerant primer
- Good chemical resistance
- Good abrasion resistance for dedicated areas of application
- Excellent adhesion to steel, shop primer, galvanized steel and non-ferrous metals
- Excellent recoatability
- Suitable for application and curing in a wide range of climatic conditions
- Suitable for bulk supply and twin feed application
- Suitable on wet blast cleaned substrates (damp or dry)

COLOR AND GLOSS LEVEL

- Gray, yellow/green and redbrown
- Eggshell

BASIC DATA AT 20°C (68°F)

Data for mixed product	
Number of components	Two
Mass density	SIGMAPRIME 200: 1.3 kg/l (10.8 lb/US gal) SIGMAPRIME 200 K: 1.4 kg/l (11.7 lb/US gal)
Volume solids	SIGMAPRIME 200: 57 ± 2% SIGMAPRIME 200 K: 60 ± 2%
VOC (Supplied)	Directive 1999/13/EC, SED: max. 326 g/kg (SIGMAPRIME 200) max. 430.0 g/l (approx. 3.6 lb/gal) (SIGMAPRIME 200) Directive 1999/13/EC, SED: max. 287 g/kg (SIGMAPRIME 200 K) max. 392.0 g/l (approx. 3.3 lb/gal) (SIGMAPRIME 200 K)
Recommended dry film thickness	See spreading rate tables
Theoretical spreading rate	SIGMAPRIME 200: 3.8 m^2/l for 150 µm (152 ft^2/US gal for 6.0 mils) SIGMAPRIME 200 K: 6.0 m^2/l for 100 µm (241 ft^2/US gal for 4.0 mils)
Dry to touch	1.5 hours
Overcoating Interval	See overcoating tables
Full cure after	7 days

SIGMAPRIME® 200 SERIES

Data for mixed product	
Shelf life	Base: at least 24 months when stored cool and dry Hardener: at least 24 months when stored cool and dry

Notes:
- See ADDITIONAL DATA – Spreading rate and film thickness
- See ADDITIONAL DATA – Overcoating intervals
- See ADDITIONAL DATA – Curing time

RECOMMENDED SUBSTRATE CONDITIONS AND TEMPERATURES

Immersion exposure

- Steel or steel with not approved zinc silicate shop primer; blast cleaned (dry or wet) to ISO-Sa2½, blasting profile 30 - 75 µm (1.2 – 3.0 mils)
- Steel with approved zinc silicate shop primer; weld seams and areas of damaged shop primer or breakdown should be blast cleaned to ISO-Sa2½, blasting profile 30 - 75 µm (1.2 – 3.0 mils) or power tool cleaned to SPSS-Pt3
- Coated steel; hydrojetted to VIS WJ2L (blasting profile 30 – 75 µm (1.2 – 3.0 mils))
- Primed steel or previous coat must be dry and free from any contamination

IMO-MSC.215(82) Requirements for Water Ballast Tanks and IMO-MSC.288(87) for Cargo tanks of Crude Oil Tankers (specified areas only)

- Steel; ISO 8501-3:2006 grade P2, with all edges treated to a rounded radius of minimum 2 mm (0.079 in) or subject to three pass grinding or at least equivalent process before painting
- Steel or steel with not approved zinc silicate shop primer; blast cleaned to ISO-Sa2½, blasting profile 30 - 75 µm (1.2 – 3.0 mils)
- Steel with approved zinc silicate shop primer; weld seams and areas of shop primer damage or break down should be blast cleaned to Iso-Sa 2½ blasting profile 30 – 75 µm (1.2 – 3.0 mils): [1] For shop primer with IMO type approval; no additional requirements; [2] For shop primer without IMO type approval; blast cleaned to ISO-Sa2 removing at least 70% of intact shop primer, blasting profile 30 – 75 µm (1.2 – 3.0 mils)
- Dust quantity on the surface to be coated must not exceed rating "1" for dust size class "3", "4" or "5" (ISO 8502-3-2017). Lower dust size classes (“1” and/or “2”) to be removed if visible without magnification.
- Primed steel or previous coat must be dry and free from any contamination

Atmospheric exposure conditions

- Steel; blast cleaned to ISO-Sa2½, blasting profile 30 - 75 µm (1.2 – 3.0 mils) or according to ISO-St3
- Shop primed steel; pretreated to SPSS-Pt3
- Galvanized steel must be free from grease, salts and any contamination
- Galvanized steel must be cleaned by solvent or roughened by sandpaper
- Coated steel; hydrojetted to VIS WJ2L (blasting profile 30 – 75 µm (1.2 – 3.0 mils))
- Primed steel or previous coat must be dry and free from any contamination

SIGMAPRIME® 200 SERIES

Substrate temperature and application conditions

- Substrate temperature during application and curing should be above 5°C (41°F)
- Substrate temperature during application and curing should be at least 3°C (5°F) above dew point
- Relative humidity during application and curing should not exceed 85%

INSTRUCTIONS FOR USE

Mixing ratio by volume: base to hardener 80:20 (4:1)

- The temperature of the mixed base and hardener should preferably be above 15°C (59°F), otherwise extra thinner may be required to obtain application viscosity
- Adding too much thinner results in reduced sag resistance and slower cure
- Thinner should be added after mixing the components

Induction time

None

Pot life

7 hours at 20°C (68°F)

Note: See ADDITIONAL DATA – Pot life

Air spray

Recommended thinner

THINNER 91-92

Volume of thinner

0 - 15%, depending on required thickness and application conditions

Nozzle orifice

1.5 – 2.0 mm (approx. 0.060 – 0.079 in)

Nozzle pressure

0.3 - 0.4 MPa (approx. 3 - 4 bar; 44 - 58 p.s.i.)

SIGMAPRIME® 200 SERIES

Airless spray

Recommended thinner
THINNER 91-92

Volume of thinner
0 - 15%, depending on required thickness and application conditions

Nozzle orifice
Approx. 0.53 – 0.74 mm (0.021 – 0.029 in)

Nozzle pressure
15.0 MPa (approx. 150 bar; 2176 p.s.i.)

Brush/roller

Recommended thinner
No extra thinner is necessary

Volume of thinner
Up to 5% THINNER 91-92 can be added if desired

Cleaning solvent
THINNER 90-53

ADDITIONAL DATA

Spreading rate and film thickness – SIGMAPRIME 200	
DFT	**Theoretical spreading rate**
75 µm (3.0 mils)	7.6 m^2/l (305 ft^2/US gal)
125 µm (5.0 mils)	4.6 m^2/l (183 ft^2/US gal)
160 µm (6.3 mils)	3.6 m^2/l (145 ft^2/US gal)
200 µm (8.0 mils)	2.9 m^2/l (114 ft^2/US gal)

Note: Max. dft: Dry Film Thickness of 2000 µm (80.0 mils) may occur occasionally (minor areas) where multiple overlapping is unavoidable (i.e. around scallops, corners, erection joint lines etc.). PPG must be consulted in case of DFT readings fall outside this recommendation.

SIGMAPRIME® 200 SERIES

Spreading rate and film thickness – SIGMAPRIME 200 K	
DFT	**Theoretical spreading rate**
100 µm (4.0 mils)	6.0 m^2/l (241 ft^2/US gal)
125 µm (5.0 mils)	4.8 m^2/l (193 ft^2/US gal)
160 µm (6.3 mils)	3.8 m^2/l (153 ft^2/US gal)
200 µm (8.0 mils)	3.0 m^2/l (120 ft^2/US gal)

Note: Max. dft: Dry Film Thickness of 2000 µm (80.0 mils) may occur occasionally (minor areas) where multiple overlapping is unavoidable (i.e. around scallops, corners, erection joint lines etc.). PPG must be consulted in case of DFT readings fall outside this recommendation.

Overcoating interval for DFT up to 160 µm (6.3 mils)						
Overcoating with...	**Interval**	**5°C (41°F)**	**10°C (50°F)**	**20°C (68°F)**	**30°C (86°F)**	**40°C (104°F)**
various two-pack epoxy coatings	Minimum	13 hours	6 hours	2.5 hours	1.5 hours	1 hour
	Maximum exposed to direct sunshine	3 months	3 months	3 months	3 months	3 months
	Maximum NOT exposed to direct sunshine	6 months	6 months	6 months	6 months	6 months

Note: Surface should be dry and free from any contamination

Curing time for DFT up to 160 µm (6.3 mils)			
Substrate temperature	**Dry to touch**	**Dry to handle**	**Full cure**
5°C (41°F)	5 hours	14 hours	21 days
10°C (50°F)	3 hours	8 hours	14 days
20°C (68°F)	1.5 hours	4 hours	7 days
30°C (86°F)	45 minutes	2.5 hours	5 days
40°C (104°F)	30 minutes	1.5 hours	4 days

Note: Adequate ventilation must be maintained during application and curing (please refer to INFORMATION SHEETS 1433 and 1434)

Pot life (at application viscosity)	
Mixed product temperature	**Pot life**
15°C (59°F)	10 hours
20°C (68°F)	7 hours
30°C (86°F)	4 hours

SIGMAPRIME® 200 SERIES

SAFETY PRECAUTIONS

- For paint and recommended thinners see INFORMATION SHEETS 1430, 1431 and relevant Material Safety Data Sheets
- This is a solvent-borne paint and care should be taken to avoid inhalation of spray mist or vapor, as well as contact between the wet paint and exposed skin or eyes

WORLDWIDE AVAILABILITY

It is always the aim of PPG Protective and Marine Coatings to supply the same product on a worldwide basis. However, slight modification of the product is sometimes necessary to comply with local or national rules/circumstances. Under these circumstances an alternative product data sheet is used.

REFERENCES

• CONVERSION TABLES	INFORMATION SHEET	1410
• EXPLANATION TO PRODUCT DATA SHEETS	INFORMATION SHEET	1411
• SAFETY INDICATIONS	INFORMATION SHEET	1430
• SAFETY IN CONFINED SPACES AND HEALTH SAFETY, EXPLOSION HAZARD – TOXIC HAZARD	INFORMATION SHEET	1431
• SAFE WORKING IN CONFINED SPACES	INFORMATION SHEET	1433
• DIRECTIVES FOR VENTILATION PRACTICE	INFORMATION SHEET	1434
• CLEANING OF STEEL AND REMOVAL OF RUST	INFORMATION SHEET	1490
• SPECIFICATION FOR MINERAL ABRASIVES	INFORMATION SHEET	1491
• RELATIVE HUMIDITY – SUBSTRATE TEMPERATURE – AIR TEMPERATURE	INFORMATION SHEET	1650
• PPG PROTECTIVE & MARINE COATINGS' BALLAST TANK WORKING PROCEDURES NEW-BUILDING		

WARRANTY

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SIGMAPRIME® 200 SERIES

Depending on specific country of application the following versions are available:

Article code	Color	Reference
202391	SIGMAPRIME 200: yellow/green	4009002200 (202390 base, 202389 hardener)
211291	SIGMAPRIME 200: grey	9515052200 (211282 base, 202389 hardener)
244820	SIGMAPRIME 200 K: grey	9515052150 (243529 base, 240992 hardener)
244832	SIGMAPRIME 200 K: redbrown	2008002150 (243540 base, 240992 hardener)
330749	SIGMAPRIME 200 K: alu light	9000002150 (330748 base, 240992 hardener)
330752	SIGMAPRIME 200 K: alu yellow	9300002150 (330751 base, 240992 hardener)

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SIGMADUR™ 550

DESCRIPTION

Two-component, aliphatic acrylic polyurethane finish

PRINCIPAL CHARACTERISTICS

- Unlimited recoatable
- Excellent resistance to atmospheric exposure conditions
- Excellent color and gloss retention
- Non-chalking, non-yellowing
- Cures at temperatures down to -5°C (23°F)
- Resistant to splash of mineral and vegetable oils, paraffins, aliphatic petroleum products and mild chemicals
- Can be recoated even after long atmospheric exposure
- Good application properties

COLOR AND GLOSS LEVEL

- White and various other colors (see also SIGMACARE shade card)
- Gloss

BASIC DATA AT 20°C (68°F)

Data for mixed product	
Number of components	Two
Mass density	1.3 kg/l (10.8 lb/US gal)
Volume solids	55 ± 2%
VOC (Supplied)	Directive 1999/13/EC, SED: max. 334.0 g/kg max. 430.0 g/l (approx. 3.6 lb/US gal) EUR Directive: 2004/42/IIA(j)(500) 459 g/l)
Recommended dry film thickness	50 - 60 µm (2.0 - 2.4 mils) depending on system
Theoretical spreading rate	11.0 m^2/l for 50 µm (441 ft^2/US gal for 2.0 mils)
Dry to touch	1 hour
Overcoating Interval	Minimum: 6 hours Maximum: Unlimited
Full cure after	4 days
Shelf life	Base: at least 36 months when stored cool and dry Hardener: at least 24 months when stored cool and dry

Notes:
- See ADDITIONAL DATA – Spreading rate and film thickness
- See ADDITIONAL DATA – Overcoating intervals
- See ADDITIONAL DATA – Curing time

SIGMADUR™ 550

RECOMMENDED SUBSTRATE CONDITIONS AND TEMPERATURES

Substrate conditions

- Previous coat (epoxy or polyurethane) must be dry and free from any contamination
- Previous coat: surface should be sufficiently roughened if necessary

Substrate temperature and application conditions

- Substrate temperature during application at -5°C (23°F) is acceptable; provided the substrate is free from ice and dry
- Substrate temperature during application and curing should be at least 3°C (5°F) above dew point
- Relative humidity during application and curing should not exceed 85%
- Should condensation on the surface occur during, or soon after application, this could result in color and gloss change

INSTRUCTIONS FOR USE

Mixing ratio by volume: base to hardener 88:12

- The temperature of the mixed base and hardener should be above 10°C (50°F), otherwise extra thinner may be required to obtain application viscosity
- Thinner should be added after mixing the components
- Adding too much thinner results in reduced sag resistance

Induction time

None

Pot life

5 hours at 20°C (68°F)

Note: See ADDITIONAL DATA – Pot life

Air spray

Recommended thinner

THINNER 21-06

Volume of thinner

3 - 5%, depending on required thickness and application conditions

Nozzle orifice

1.0 - 1.5 mm (approx. 0.040 - 0.060 in)

Nozzle pressure

0.3 - 0.4 MPa (approx. 3 - 4 bar; 44 - 58 p.s.i.)

SIGMADUR™ 550

Airless spray

Recommended thinner
THINNER 21-06

Volume of thinner
3 - 5%, depending on required thickness and application conditions

Nozzle orifice
Approx. 0.43 – 0.48 mm (0.017 – 0.019 in)

Nozzle pressure
20.0 MPa (approx. 200 bar; 2901 p.s.i.)

Brush/roller

Recommended thinner
THINNER 21-06

Volume of thinner
0 – 5%

Cleaning solvent
THINNER 90-53

ADDITIONAL DATA

Spreading rate and film thickness	
DFT	**Theoretical spreading rate**
50 µm (2.0 mils)	11.0 m^2/l (441 ft^2/US gal)
60 µm (2.4 mils)	9.2 m^2/l (368 ft^2/US gal)

Overcoating interval for DFT up to 50 µm (2.0 mils)							
Overcoating with...	**Interval**	**-5°C (23°F)**	**0°C (32°F)**	**10°C (50°F)**	**20°C (68°F)**	**30°C (86°F)**	**40°C (104°F)**
itself	Minimum	24 hours	16 hours	8 hours	6 hours	5 hours	3 hours
	Maximum	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited

Note: Surface should be dry and free from any contamination

SIGMADUR™ 550

Curing time for DFT up to 60 µm (2.4 mils)		
Substrate temperature	**Dry to handle**	**Full cure**
-5°C (23°F)	24 hours	15 days
0°C (32°F)	16 hours	11 days
10°C (50°F)	8 hours	6 days
20°C (68°F)	6 hours	4 days
30°C (86°F)	5 hours	3 days
40°C (104°F)	3 hours	48 hours

Notes:
- Adequate ventilation must be maintained during application and curing (please refer to INFORMATION SHEETS 1433 and 1434)
- Premature exposure to early condensation and rain may cause color and gloss change

Pot life (at application viscosity)	
Mixed product temperature	**Pot life**
10°C (50°F)	7 hours
20°C (68°F)	5 hours
30°C (86°F)	3 hours
40°C (104°F)	2 hours

SAFETY PRECAUTIONS

- For paint and recommended thinners see INFORMATION SHEETS 1430, 1431 and relevant Material Safety Data Sheets
- This is a solvent-borne paint and care should be taken to avoid inhalation of spray mist or vapor, as well as contact between the wet paint and exposed skin or eyes
- Contains a toxic polyisocyanate curing agent
- Avoid at all times inhalation of aerosol spray mist

WORLDWIDE AVAILABILITY

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SIGMADUR™ 550

REFERENCES

• CONVERSION TABLES	INFORMATION SHEET	1410
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• RELATIVE HUMIDITY – SUBSTRATE TEMPERATURE – AIR TEMPERATURE	INFORMATION SHEET	1650

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Tiger Steel Engineering LLC – Sharjah/ Abu Dhabi - UAE

Scope of Work – Fabrication of Structural for Metering Skids

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A Reputation Built in Steel

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Document Title	:	**Surface Preparation and Painting Procedure**
Project	:	**Flow Metering Systems for M Project**
Location	:	**Abu Dhabi**
Client	:	**ADNOC**
EPC Contractor	:	**Alderley FZE**
Tiger Steel Project No	:	**PR 21902**
TSE Doc.No	:	**TSE-WI-302**

3	30-09-19	Javad Thaikandy	G. Jayakumar	Vinaya	Fourth Issue
2	30-07-19	Javad Thaikandy	G. Jayakumar	Vinaya	Third Issue
1	27-05-19	Javad Thaikandy	G. Jayakumar	Vishal	Second Issue
0	13-03-19	Javad Thaikandy	G. Jayakumar	Vishal	First Issue
Rev	Date	Prepared by	Checked by	Approved by	Comments

REVIEW CODES
(A) – Approved ; (B) – Approved as noted ; (C) – Revise and resubmit ; (D) - Rejected

SURFACE PREPARATION AND PAINTING PROCEDURE

TSE Doc.No. TSE-WI-302

3	Forth Issue	30-09-19	Javad Thaikandy	G. Jayakumar	Vinaya
2	Third Issue	30-07-19	Javad Thaikandy	G. Jayakumar	Vinaya
1	Second Issue	13-03-19	Javad Thaikandy	G. Jayakumar	Vishal
0	First Issue	13-03-19	Javad Thaikandy	G. Jayakumar	Vishal
Rev	Comments	Date	Prepared By	Checked By	Approved by

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1 0. SCOPE

This procedure outlines the requirements for the method of surface preparation and paint treatments for corrosion protection of structural steel for ADNOC Flow Metering Systems for M Project.

2.0 PURPOSE

To define the method of workmanship, responsibilities and documentation for controlling the surface preparation and painting activities.

3.0 DEFINITIONS

WFT	Wet Film Thickness
DFT	Dry Film Thickness
TSE	Tiger Steel Engineering LLC.
BS	British Standard
ADCO	Abu Dhabi Company for Onshore Oil Operations

4.0 REFERENCE

Doc No -30.99.37.0013.Rev02 – Painting and Coating of new equipment.

Manufacturer's Technical Information for the products to be used.

ISO 9001:2015 -Quality Management system Requirements

Doc No.27136M-202-PS_Rev.0 - Purchase Specification for structural steel.

Shell DEP-30.48.00.31 Gen. (2015) – Protective Coating for Onshore and Offshore Facilities.

Inspection &Test Plan

ISO-8501-1, 3-Preparation of steel substrates before application of paints and related products. Visual Assessment of surface cleanliness.

ISO-8502-3- Preparation of steel substrates before application of paints and related Products. Test for the assessment of surface cleanliness by Test papers.

ISO-8502-6- Preparation of steel substrates before application of paints and related Products. Test for the assessment of surface cleanliness –Extraction of Soluble contaminants for Analysis.

ISO-8502-9- Preparation of steel substrates before application of paints and related Products. Test for the assessment of surface cleanliness –Field Method for the conductometric determination of water soluble salts.

ISO 8503-5- Preparation of steel substrates before application of paints and related Products. Surface Roughness Characteristics of Blast Cleaned steel Substrates-Replica Tape method for determination of Surface Profile.

ISO 8503-5- Preparation of steel substrates before application of paints and related Products. Surface Roughness Methods-Abrasive Blast Cleaning.

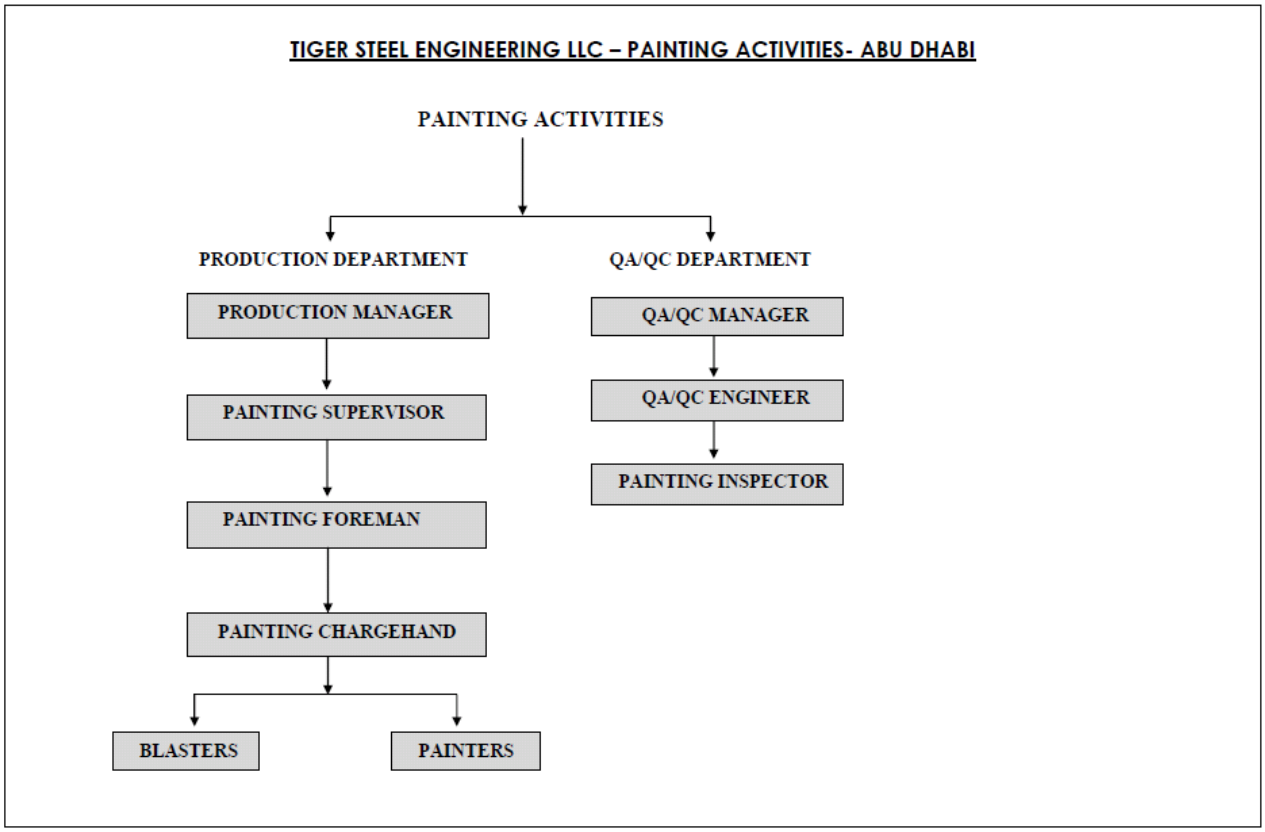
ISO 19840-Paints & Varnishes-Corrosion Protection of Steel Structures by protective paint systems-Measurement of, and acceptance criteria for, the thickness of dry films on rough surfaces.
ISO 11124-3 - Preparation of steel substrates before application of paints and related products. Specifications for metallic blast-cleaning abrasives. High-carbon cast-steel shot and grit

ISO-2808-Paints and varnishes-Determination of film thickness (DFT&WFT)

ISO 4624-Standard Test Method for pull of Strength of Coating Using portable adhesion testers.

ISO 2409-Crosscut test for adhesion.

5.0 RESPONSIBILITIES.



5.1 QUALITY ASSURANCE MANAGER

To develop, implement and manage the Quality Painting Procedures that will govern the standard of quality on TSE contracts.

5.2 QUALITY CONTROL ENGINEER

To ensure that all QC Inspection personnel are fully aware of and implement the relevant approved procedures for all TSE Contracts.

5.3 GOODS INWARDS INSPECTOR

To ensure that all materials used by TSE is inspected on Receipt, documented with the necessary certification.

5.4 PAINTING INSPECTOR

To ensure that all painting and associated activities are performed in accordance with the approved standard/ contract procedures and to notify the QC Engineer for any nonconformance. The minimum qualification of Inspectors in this job will be B-Gas Gr.2 or NACE Level 2.

5.5 PAINTING SUPERVISOR

To ensure that adequate supervision is given to all stages of painting and blasting, and that they are performed as defined in the procedures and manufactures instructions. He is also responsible for ensuring that the Safety requirements as stated in the Manufacturers Safety Data Sheet are being adhered to, and that all equipment is "Fit for Intended Purpose"

6.0 ACTIVITY

6.1 RECEIPTS OF RAW MATERIALS

All paint materials will be checked by Goods Inward Inspector on receipt and will ensure to get the certificate and will check the manufacturing date for ascertaining the expiry. Paints will be kept in air conditioned room to maintain below 23^0C or as per Manufacturer's recommendations and will be used as first come first out basis. Similarly steel shots & grits and garnet will be checked for conformity and will be kept in dry places.

6.2 ENVIRONMENTAL CONDITION

Ensure surface preparation, application and curing shall be under taken when the steel temperature is maintained at 3^0C above the dew point and maximum 40°C.
Ensure relative humidity shall not be more than 85%. Temperature of air shall be in the 10-40^0C range.

6.3 SURFACE PREPARATION

The surface preparation on steel structure is a must before applying protective coatings for better adhesion. The selection of surface preparation grade for painting shall be in accordance with Project Specification 30.99.37.0013 Rev.2: Painting and Coating of new equipment.

6.3.1 STEEL PREPARATION

Acceptance criteria for different type of defects are mentioned in 8501-3.All edges shall be rounded with minimum radius of 2mm.Grade P3 is required for Weld spatters, Edges made by punching, shearing and sawing, thermally cut edges. For other defects mentioned in 8501-3 grade P2 is acceptable. For flanges rolled edges P2 is acceptable. But if it due to mechanical damage during handling become sharp, it should be removed by grinding.

6.3.2 DEGREASING

The first stage in any method of surface preparation is to ensure that the surface shall be free from contamination and rust scale shall be removed.

All bolt holes shall be prepared as per SSPC-SP1 by solvent cleaning before the commencement of blast cleaning.

We will ensure the absence of oil and grease content of the steel surface visually or by solvent with whatsman or blotter paper. If it is present, contaminants shall be removed by organic solvents (thinner) before blast cleaning as per SSPC SP-1.

In the case of too high salt contaminants presence on the surface shall be washed with fresh water before abrasive blasting. Maximum acceptance level of total salt after blasting is 25mg/m2.

In case no oil contamination is noticed on steel structure, it is to be sending directly to blast cleaning system.

When rectification has been necessary on the blast cleaned surfaces, the dressed areas shall be pre-cleaned as initially specified and reblasted to the initially specified surface cleanliness and roughness.

6.3.3 BLAST CLEANING

To prevent dust and abrasive contamination, blasting shall not be carried near the painting area or wet painted surfaces.
Minimum lighting requirement for blasting is 500lux and shall be measured by Light Meter.
Blast Cleaned area shall not be touched by bare hands. Coated area need to protect properly before the blasting of adjacent areas.
The surface roughness profile for carbon steel and low alloy steel to be coated shall be as per Manufacturer recommendation other wise 40µm-70µm for coating up to 500 µm.

Two types of blast cleaning system are followed at T.S.E'S based on

1. Complexity of the Structure to go through automatic blasting machine

2. Manual blasting for large items or for pocket areas.

A) AUTOMATIC BLAST CLEANING (Air less Blast)

In this type of cleaning system, Abrasive particles are directed at high Velocity against the surface by centrifugal force from the impeller wheel of the turbine.

Abrasive Grade	: WS 330 & GT 18
Type of abrasive	: Round Steel shot & Grit (67:33)
Size of abrasive	: 0.5 mm-1.2 mm
Machine Velocity range	: 0.35- 1.0 m/mt

Note: Travel Speed of the conveyer is selected on basis of surface rust condition.

B) MANUAL BLAST CLEANING (Air Blast)

In this type of cleaning, the abrasive is driven by compressed air from a nozzle held in a hand.

Type of Abrasive	:	Garnet
Size	:	30-60 mesh

Type of Nozzle	:	Venturi
Size of Nozzle	:	½”
Air Pressure	:	80-100 PSI
Distance from Surface	:	12-18 Inch

Manual blasting shall be carried out in the pocket areas and areas difficult to blast by automatic blast cleaning. After manual blasting pocket areas, it shall be passed through the automatic blasting machine to achieve the desired profile for entire surfaces. Garnet abrasive is used for manual blasting and it shall be reused after recycling. For ensuring the quality of the abrasive, conductivity test shall be conduct on each week.

Surface preparation of galvanized steel using metallic abrasive can damage the galvanizing layer. So for galvanized steel, blast cleaning shall be carried out by sweep blasting using fine garnet to get surface roughness of 20-30 µm ensuring galvanizing thickness as per ISO 1461 with minimum value of 85µm after sweep blasting.

6.3.4 AFTER BLAST CLEANING

Once the blasting process is over, the dust, residues and debris shall be removed from the steel surface using clean dry compressed air and dry brush.

Notes:-

1. Abrasives shall be kept dry and free of contaminations.
2. The surface preparation shall be carried out in line with client’s specification- 30.99.37.0013 Rev.2.
3. The steel structure after blast cleaning shall be primer Coated within 4 hrs. Of the completion of surface Preparation and before any flash rusting occur.

6.4 INSPECTION (Stage-I)

All inspections and testing shall meet the requirements of spec 30.99.37.0013 Rev.2.

6.4.1 DEGREE OF CLEANLINESS (VISUAL)

After the cleaning operation, the painting Inspector shall inspect the surface visually to ensure that dust or dirt has been removed properly from the surface and Visual comparison of the surface with the photographic standards in accordance to ISO 8501-1 Sa2 1/2 standard.

6.4.2 SURFACE PROFILE

This surface profile is measured by sticking a Testex film on the surface as per ISO 8503-5.The profile of the surface is indented on the film. Remove the film and measure the thickness of the film by using Dial Gauges. It is to be followed one time otherwise reading will not be an accurate. The surface profile will be in between 40-70 microns or as recommended by the PDS.

6.4.3 TESTING

Visual comparison of the surface with the photographic standards in accordance to Sa 2 ½ is finished (ISO 8501-1), Followed by Surface dust Inspection and acceptance criteria as per ISO 8502-3 rating 2(max).After the dust Inspection Salt contamination shall be checked on the blasting surface according to ISO 8502-6 and ISO 8502-9 .Testing frequency shall be as per approved Inspection and Test Plan. Maximum allowable limit for carbon and low alloy steel is 0-25 mg/m2.

When rectification has been necessary on the blast cleaned surfaces, the dressed areas shall be pre-cleaned as initially specified and reblasted to the initially specified surface cleanliness and roughness.

6.4.4 All the above inspection checks shall be recorded in the form: TSE-QAF-009-Rev.2.

6.4.5 ENVIRONMENTAL CONDITION DURING SURFACE PREPARATION APPLICATION AND CURING

Surface preparation, application and curing shall be under taken when the steel temperature is Maintained at 3^0C above dew point and with surface temp. of maximum 40°C.

Ensure relative humidity shall not be more than 85%. Temperature of air shall be in the 10-40^0C range.

6.5 INSPECTION (Stage -II)

All inspections and testing shall meet the requirements of spec 30.99.37.0013 Rev.02 and as per ITP.
Painting foreman / Inspector shall check periodically (i.e. 4 times in a day shift) the dew point temperature using hygrometer and record in the form TSE-QAF-017-Rev.1.
Ensure the temperature of the steel structure which is to be coated shall be measured by using Thermometer and record in the form TSE-QAF-017-Rev.1. Steel temperature shall not be more than maximum limit prescribed by paint manufacturer.

6.6 PAINT APPLICATION

Application shall be carried out in accordance with PDS and recommendation. Paints shall be thinned according to PDS.The mixing shall be accurate and carried out by mechanical mixer. The Paint shall be used within the limits of pot life and shall be discharged before the pot life has expired. The pot life of all paint is mentioned on PDS.
Different brand or types of paint shall not be intermixed and thinner shall be recommended by Paint Manufacturer.
The Primer Application shall be performed before any visible rusting occurs and within 4hrs from the surface preparation. If any contamination or flash rusting the surface shall be restored before application.
Painting shall be carried out only when environmental conditions are satisfactory.
Each coat shall have different color from the previous one, to prevent unpainted areas and to facilitate inspection.
The over coating time indicated in PDS shall be used establish the time schedule.

TSE follows two methods of paint application.

6.6.1 AIR LESS SPRAY

Generally TSE use this method for painting application on all steel Structures.

Inlet Air pressure to Motor: (80-100 PSI)

Coat	**Tips # to be used**
Primer	Compliance with PDS
Intermediate	Compliance with PDS
Final coat	Compliance with PDS

6.6.2 ROLLER

Roller Application is not acceptable.

6.6.3 BRUSH

This method is used as a preliminary stripe coat before full coat application and used welded areas, pocket areas and areas including bolt holes.

6.7 PAINT SYSTEM

Painting system shall be as per the requirements of spec 30.99.37.0013 Rev.2 & DEP 30.48.00.31 Gen.February 2015. Primer coat, Intermediate coat, Final coat for painting shall be as per client's specification as follows.

Paint System#1

Paint System		30.99.37.0013 Rev.2: Painting and Coating of new equipment. & DEP 30.48.00.31 Gen.February 2015: Protective Coating for Onshore and Offshore Facilities. Paint System Code:LC1-N		
Paint Manufacturer		International		
Item Description	Surface Preparation	PAINTING		
		PRIMER COAT	INTERMEDIATE	TOP COAT
Skid Frames, Walkways and Pipe supports	SSPC-SP 10 (Sa 2 ½ Near white metal blast cleaning) 40-70 µm	Inorganic Zinc rich Silicate Primer (Interzinc 2280) DFT-60 µm	High Build Epoxy (Intergard 475HS) DFT-180 µm	Polyurethane topcoat (Interthane 990) RAL-7010 Colour: Grey, DFT-60 µm TOTAL–300µm

Paint System#2

Paint System		30.99.37.0013 Rev.2: Painting and Coating of new equipment. & DEP 30.48.00.31 Gen.February 2015: Protective Coating for Onshore and Offshore Facilities. Paint System Code:LO1-N		
Paint Manufacturer		International		
Item Description	Surface Preparation		PAINTING	
		Hot Dip Galvanization	PRIMER	TOP COAT
Handrails & Ladders	SSPC-SP 16 (Sweep Blasting after Galvanization) 20-30 µm	Hot Dip galvanizing thickness Min DFT-85 µm.	High Build Epoxy (Interseal 670HS) DFT-150 µm.	Polyurethane topcoat (Interthane 990) DFT–50 µm <u>For handrails</u> RAL-1004 Colour: Yellow <u>For Ladders</u> RAL-7010 Colour: Grey TOTAL–285µm

Note. Stair grating tread nosing shall be HDG and painted with safety yellow.

Paint System#3

Paint System		Fire proof steel surface Paint system as per 24-84-76-9702: Typical details of fire proofing on structural steel members.		
Paint Manufacturer		International		
Item Description	Surface Preparation		PAINTING	
		PRIMER COAT	INTERMEDIATE	FINISH COAT
Mainline & Small bore supports	SSPC-SP 10 (Sa 2 ½ Near white metal blast cleaning) 40-70 µm	Inorganic Zinc rich Silicate Primer (Interzinc 2280) DFT-60 µm	High Build Epoxy (Intergard 475HS) DFT-180 µm TOTAL–240µm	N/A

6.8 INSPECTION (Stage III)

All inspections and testing shall meet the requirements of spec 30.99.37.0013 Rev.2 and as per ITP.

Following checks are carried out after each stages of painting such as primer coat, Intermediate coat and final coat using calibrated measuring equipment.

- Measuring of wet film thickness using wet film thickness Gauge in order to ensure the correct thickness of painting shall be attained after drying.
- Solvent rub test using MEK in accordance with ASTM D 4752 shall be carried out to ensure inorganic zinc primers are fully cured before over-coating .The rating shall be 4 to 5.
- Measuring of Dry film thickness using DFT digital Gauge and ensure the Dry film thickness is as per specification and coating ITP.
- Visually Inspect the painting surfaces at each stage in order to ensure there is no dirt Contamination, runs, sags, Blistering, Bubbling or cracking and Peeling, Fish Eye ,Orange peel etc.
- Dolly pull off test shall be carried out in accordance with ISO 4624 on panels at start of painting works. Minimum acceptance for pull off force will be 5Mpa for zinc primed systems or 7Mpa for non-zinc primed coating system
- DFT at each stage of painting is recorded in the surface preparation and painting Inspection report form: TSE-QAF-009-Rev.2

6.9 PAINTING/COATING REPAIR PROCEDURE

Paints and coating, whether applied to new construction or to existing installation, may require repair and maintenance in areas of damage.

- Attaching painting repair procedure provided by PPG Paints for attending localized repairs.
- The surface preparation method for repair will depend upon the size of areas to be coated and the repair coating material required .The order for surface preparation shall be Dry blast cleaning , power tool cleaning to St.2 standard or Hand tool cleaning using emery paper.

- Surface preparation at defects or damaged areas shall be extended over the surrounding sound coating for a minimum overlap shall be 50 mm on all sides. The edges shall be feathered.
- Surfaces to be coated which become contaminated with Oil, Grease, and Salts etc. shall be cleaned with solvents (thinner).
- Large areas of repair will be attended by manual blasting the area and follow same painting system.
- Repair coatings shall be applied so that the final coat overlaps the surrounding sound coating for a minimum of 50 mm. For color coding, it may be necessary to extend the topcoat over a larger surrounding area.
- Repairing procedure depends on kind of coating and type of damage as per below paragraphs 6.91, 6.92 and Paint Manufacturer recommendations.

6.9.1 MECHANICAL DAMAGE: SUPERFICIAL (NOT EXPOSING SUBSTRATE)

This is a minor damage. Typically the affected area shall be abraded and last coats reapplied in accordance with this specification. Repairing method shall not be inferior to Paint Manufacturers recommendation.

6.9.2 MECHANICAL DAMAGE: SUBSRATE EXPOSED

Damage under this category, repairing shall be carried out starting from surface preparation. Large areas shall be typically spot blasted, adjacent areas feathered and initially specified coating system re-applied. Limited areas (<30cm2) shall be repaired as per ISO 8501-1 St3.Repaired area shall not appear as polished.

6.9.3 PRODUCT NOT CONFORMING TO SPECIFICATION

If the DFT exceeds the maximum requirement as per Manufacturer recommendation, the coating shall be removed and the surface shall be reblasted and recoated with the initially specified coating system.
If the DFT inferior to the minimum requirement, application of additional coats might be proposed provided acceptability by the paint Manufacturer.
If the coating defects are related to improper coating application or improper curing, the entire effect area shall be rectified to meet the requirement mentioned in the specification.

6.9.4 REPAIR OF HOTDIP GALVANIZED STEEL

Surface required to be repaired shall be clean and free from oil, grease and other corrosion related products. For critical areas, surface is blast cleaned to Sa.3and for less critical areas, surface is blast cleaned to St.2.5. Grinders may use for cleaning, where the circumstances are not allowing the blast cleaning. If the area to be reconditioned includes weld, flux residues and weld spatter, cleaning by using mechanical means (chipping etc.).To ensure the smooth reconditioned coating the area of preparation will extended on surrounded undamaged coating area.

The coating is applied to a clean and dry surface using zinc rich primer. The sprayed coating is applied immediately after surface preparation and before deterioration of surface occurs (Conforming to ISO 1461).Sufficient coating is applied to ensure that the coating thickness on the renovated area is more than 30µm from the local areas. The surface of repaired areas shall be visually inspected and check the following:-Uniformity of Texture, free of lumps, coarse areas and loosely adherent particles. Thickness of the repaired area shall have 85 µm as minimum specified for the hot dip galvanized surface.

6.10 PAINT HANDLING STORAGE AND PREPARATION.

6.10.1 The date of manufacture and batch number shall be clearly marked on each paint container. Paints

that have exceeded their shelf life shall be quarantined.

6.10.2 Paints that show sign of leakage or that have gelled shall be safely discarded. For any paints that have formed skins, these skins shall be removed prior to any application.

6.10.3 All paints shall be thoroughly mixed before application, quantities over 5 liters shall be mixed using a power mixer. If the paint cannot be mixed uniformly (thick sediments at the bottom of the can it shall be rejected and removed from site. Paints shall be stored to the temperature recommended by the manufacturer.

6.10.4 All paints that require thinning or mixing together (2 pack paints) shall be mixed to a homogeneous State, prior to mixing in accordance with the manufacturer's or Client's specification.

6.10.5 All thinners to be used shall be approved by the paint manufacturer for use with their products.

6.11 SAFETY

6.11.1 All Safety precautions as stated in the manufactures safety data sheets shall be adhered to at all times:-

- The paint will be stored in a recommended temperature to avoid the build of fumes.
- All painting will be conducted in a well ventilated area to avoid the build of fumes.
- Appropriate P.P.E. (i.e. Gloves, Goggles, Dust Masks, Overalls, Protective Footwear) shall be issued to all operators involved in Painting / Blasting operations and the issue is recorded by the Personnel Department.
- All "Hot Work" is prohibited in the Painting Area.
- Paint shall not be stored after mixing beyond "Pot Life" in sealed containers.

6.11.2 The Painting Foreman shall obtain Safety Data Sheets for the products to be used from the paint Manufacturer and observe the precautions outlined therein.

6.11.3 The Painting Foreman shall take the responsibility for the periodic inspection on the painting Equipment and the working condition.

7.0 ATTACHMENTS

- 1. Surface Preparation & Painting Report.
- 2. Paint Product Data Sheets

Quality Assurance	Surface Preparation and Painting Inspection Report	TSE-QAF-009 Rev 2 Report No:
Project No:-21902	Project Title: Flow Metering Systems for M Project	Page 1 of 2

		Environmental Checks									
Surface Finish (Sa)	Sa 2½	Date									
Surface Profile		Time									
Abrasive Grade	S.330 /G 18	Dry Bulb Temp °C									
Abrasive Size	0.5mm to 1.2mm	Wet Bulb Temp °C									
Paint Application Method	Airless Spray	Metal Temp °C									
Painting Work Instruction		Dew Point °C									
		Rel Humidity %									

Item Mark	PRIMER (D.F.T)			2nd COAT (D.F.T)			3rd COAT (D.F.T)		
Product Name									
Paint Batch No.									
Required DFT (Cumulative)									
Application	Date			Date			Date		
	Time			Time			Time		

QC/PAINTING INSPECTOR	THIRD PARY / CLIENT
Name	Name
Signature	Signature

Quality Assurance	Surface Preparation and Painting Report (CONTINUATION SHEET)	TSE-QAF-009 Rev 2 Report No:
Project No:-21902	Project Title: Flow Metering Systems for M Project	Page 2 of 2

NOTE : The items below were checked and the Dry Film Thickness (D.F.T) readings were found to be in accordance with the contract requirements

ITEM MARK	QTY	ITEM MARK	QTY	ITEM MARK	QTY

QC/PAINTING INSPECTOR	THIRD PARY / CLIENT
Name	Name
Signature	Signature

PRODUCT DESCRIPTION

Part of the Interzinc 22 series of products.

A two component, rapid recoat, fast curing solvent based inorganic zinc rich ethyl silicate primer. Conforms to SSPC Paint 20 Level 2 requirements.

Available in ASTM D520, Type II zinc dust version as standard

INTENDED USES

A zinc rich primer suitable for use with a wide range of high performance systems and topcoats in both maintenance and new construction of bridges, tanks, pipework, offshore structures and structural steelwork.

Provides excellent corrosion protection for correctly prepared steel substrates, up to temperatures of 540°C (1004°F) when suitably topcoated.

Fast drying primer capable of application in a wide range of climatic conditions.

PRACTICAL INFORMATION FOR INTERZINC 2280

Colour	Green Grey
Gloss Level	Matt
Volume Solids	65%
Typical Thickness	50-75 microns (2-3 mils) dry equivalent to 77-115 microns (3.1-4.6 mils) wet
Theoretical Coverage	8.70 m²/litre at 75 microns d.f.t and stated volume solids 348 sq.ft/US gallon at 3 mils d.f.t and stated volume solids
Practical Coverage	Allow appropriate loss factors
Method of Application	Airless Spray, Air Spray

Drying Time

			Overcoating Interval with recommended topcoats	
Temperature	**Touch Dry**	**Hard Dry**	*Minimum*	*Maximum*
5°C (41°F)	30 minutes	3 hours	18 hours	Extended[1]
15°C (59°F)	20 minutes	1.5 hours	9 hours	Extended[1]
25°C (77°F)	10 minutes	1 hour	4.5 hours	Extended[1]
40°C (104°F)	5 minutes	30 minutes	1.5 hours	Extended[1]

[1] See International Protective Coatings Definitions and Abbreviations

The drying times quoted have been determined at the quoted temperature and 55% relative humidity. The 5°C (41°F) time was determined at 60% relative humidity. Prior to overcoating, verify a value of 4 via ASTM D4752 MEK rub test. See Product Characteristics section for more details on overcoating.

REGULATORY DATA

Flash Point	Part A 13°C (55°F); Mixed 13°C (55°F)	
Product Weight	2.4 kg/l (20.0 lb/gal)	
VOC	3.83 lb/gal (460 g/lt)	EPA Method 24
	221 g/kg	EU Solvent Emissions Directive (Council Directive 1999/13/EC)

See Product Characteristics section for further details

SURFACE PREPARATION

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

Oil or grease should be removed in accordance with SSPC-SP1 solvent cleaning.

Abrasive Blast Cleaning

Abrasive blast clean to Sa2½ (ISO 8501-1:2007) or SSPC-SP6 (or SSPC-SP10 for optimum performance). If oxidation has occurred between blasting and application of Interzinc 2280 , the surface should be reblasted to the specified visual standard.

Surface defects revealed by the blast cleaning process should be ground, filled, or treated in the appropriate manner.

A surface profile of 40-75 microns (1.5-3.0 mils) is recommended.

Shop Primed Steelwork

Interzinc 2280 is suitable for application to unweathered steelwork freshly coated with zinc silicate shop primers.

If the zinc shop primer shows extensive or widely scattered breakdown, or excessive zinc corrosion products, overall sweep blasting will be necessary. Other types of shop primer are not suitable for overcoating and will require complete removal by abrasive blast cleaning.

Weld seams and damaged areas should be blast cleaned to Sa2½ (ISO 8501-1:2007) or SSPC-SP6.

Damaged / Repair Areas

All damaged areas should ideally be blast cleaned to Sa2½ (ISO 8501-1:2007) or SSPC-SP6. However, it is acceptable that small areas can be power tool cleaned to Pt3 (JSRA SPSS:1984) or SSPC-SP11, provided the area is not polished. Repair of the damaged area can then be carried out using a recommended zinc epoxy primer - consult International Protective Coatings for specific advice.

APPLICATION

Mixing

Interzinc 2280 is supplied in two parts, a liquid Binder base component (Part A) and a Powder component (Part B). The Powder (Part B) should be slowly added to the liquid Binder (Part A) whilst stirring with a mechanical agitator. DO NOT ADD LIQUID TO POWDER. Material should be filtered prior to application and should be constantly agitated in the pot during spraying. Once the unit has been mixed it should be used within the working pot life specified.

Mix Ratio

3.55 part(s) : 1 part(s) by volume

Working Pot Life

5°C (41°F)	15°C (59°F)	25°C (77°F)	40°C (104°F)
12 hours	8 hours	4 hours	2 hours

Airless Spray	Recommended	Tip Range 0.38-0.53 mm (15-21 thou) Total output fluid pressure at spray tip not less than 112 kg/cm² (1593 p.s.i.)
Air Spray (Pressure Pot)	Recommended	Gun DeVilbiss MBC or JGA Air Cap 704 or 765 Fluid Tip E
Brush	Suitable - small areas only	Typically 25-50 microns (1.0-2.0 mils) can be achieved
Roller	Not recommended	
Thinner	International GTA803 (or International GTA415)	Do not thin more than allowed by local environmental legislation
Cleaner	International GTA803 or International GTA415	

Work Stoppages

Do not allow material to remain in hoses, gun or spray equipment. Thoroughly flush all equipment with International GTA803. 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 GTA803. 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

Prior to overcoating, Interzinc 2280 must be clean, dry and free from both soluble salts and excessive zinc corrosion products.

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

When applying Interzinc 2280 in confined spaces ensure adequate ventilation.

If thinning is required to assist spray application in warmer climates, (typically >28°C (82°F)), it is recommended that International GTA803 thinners are used

It is recommended that prior to overcoating a solvent rub test to ASTM D4752 should be undertaken. A value of 4 indicates a satisfactory degree of cure for overcoating purposes.

At relative humidities below 55%, curing will be retarded and humidity may need to be increased by steam or water spraying.

Excessive film thickness and/or over-application of Interzinc 2280 can lead to mudcracking, which will require complete removal of the affected areas by abrasive blasting and re-application in accordance with the original specification.

Care should be exercised to avoid application of dry film thickness in excess of 125 microns (5 mils).

For high temperature systems the thickness of Interzinc 2280 should be restricted to 50 microns (2 mils) d.f.t. Continuous dry temperature resistance of Interzinc 2280 is 400°C (752°F) if left untopcoated, however, if this product is used as a primer for Intertherm 50, the dry temperature resistance will be 540° C (1004°F).

Untopcoated Interzinc 2280 is not suitable for exposure in acid or alkaline conditions or 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 colour 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

When it is necessary for Interzinc 2280 to be overcoated by itself due to low dry film thickness, the coating surface must be fresh and unweathered. A minimum of 50 microns (2 mils) d.f.t of any subsequent coat of Interzinc 2280 is needed to ensure good film formation.

Before overcoating with recommended topcoats ensure the Interzinc 2280 is fully cured (see above) and if weathering has occurred all zinc salts should be removed from the surface by fresh water washing, and if necessary scrubbing with bristle brushes.

Typical topcoats and intermediates are:

Intercure 200	Intergard 475HS
Intercure 420	Interseal 670HS
Intergard 251	Intergard 269
Intertherm 50	Interplus 356

In some cases it may be necessary to apply a mist coat of suitable viscosity to minimise bubbling. This will depend upon the age of the Interzinc 2280 , surface roughness and ambient conditions during curing and application. Alternatively, an epoxy sealer coat, such as Intergard 269, can be used to reduce bubbling problems.

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
- Interzinc 2280 Application Guidelines

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
	15.3 litre	11.93 litre	15 litre	3.36 litre	20 litre
	For availability of other pack sizes, contact International Protective Coatings.				

SHIPPING WEIGHT	Unit Size	Part A	Part B
	15.3 litre	14.5 kg	25.6 kg

STORAGE	Shelf Life	Part A: 6 months minimum at 25°C (77°F). Part B: 12 months minimum at 25°C (77°F). 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 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.

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www.international-pc.com

Intergard® 475HS

International®

Epoxy

PRODUCT DESCRIPTION

A low VOC, high solids, high build, two component epoxy coating. Available with conventional pigmentation, or alternatively can be pigmented with micaceous iron oxide to provide enhanced overcoating properties.

INTENDED USES

For use as a high build epoxy coating to improve barrier protection for a range of anti-corrosive coating systems in a wide range of environments including offshore structures, petrochemical plants, pulp and paper mills and bridges.

Suitable for use in both maintenance and new construction situations as part of an anti-corrosive coating system.

The micaceous iron oxide variant improves long term overcoating properties, better facilitating application in the fabrication shop, prior to shipping, with final overcoating on site.

PRACTICAL INFORMATION FOR INTERGARD 475HS

Colour	Light Grey MIO and a selected range of colours
Gloss Level	Matt
Volume Solids	80%
Typical Thickness	100-200 microns (4-8 mils) dry equivalent to 125-250 microns (5-10 mils) wet
Theoretical Coverage	6.40 m²/litre at 125 microns d.f.t and stated volume solids 257 sq.ft/US gallon at 5 mils d.f.t and stated volume solids
Practical Coverage	Allow appropriate loss factors
Method of Application	Airless Spray, Air Spray, Brush, Roller

Drying Time

			Overcoating Interval with recommended topcoats	
Temperature	**Touch Dry**	**Hard Dry**	*Minimum*	*Maximum*
-5°C (23°F)	150 minutes	48 hours	48 hours	Extended[1]
5°C (41°F)	90 minutes	16 hours	16 hours	Extended[1]
10°C (50°F)	80 minutes	14 hours	13 hours	Extended[1]
15°C (59°F)	75 minutes	10 hours	10 hours	Extended[1]
25°C (77°F)	60 minutes	5 hours	5 hours	Extended[1]

[1] See International Protective Coatings Definitions and Abbreviations

Maximum overcoating intervals are shorter when using polysiloxane topcoats. Consult International Protective Coatings for further details.

For curing at elevated temperatures an alternative curing agent is available. See Product Characteristics for details.

REGULATORY DATA

Flash Point (Typical)	Part A 34°C (93°F); Part B 31°C (88°F); Mixed 33°C (91°F)	
Product Weight	2.1 kg/l (17.5 lb/gal)	
VOC	1.72 lb/gal (207 g/lt)	EPA Method 24
	92 g/kg	EU Solvent Emissions Directive (Council Directive 1999/13/EC)
	159 g/lt	Chinese National Standard GB23985

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

Intergard 475HS should always be applied over a recommended anti-corrosive coating scheme. The primer surface should be dry and free from all contamination and Intergard 475HS 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. Sa2½ (ISO 8501-1:2007) or SSPC-SP6, Abrasive Blasting, or SSPC-SP11, Power Tool Cleaning) and patch primed prior to the application of Intergard 475HS.

Metallic Zinc Primed Surfaces

Ensure that the surface of the primer is clean, dry and free from contamination and zinc salts before application of Intergard 475HS. Ensure zinc primers are fully cured before overcoating.

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

-5°C (23°F)	5°C (41°F)	15°C (59°F)	25°C (77°F)
3 hours	3 hours	2.5 hours	2 hours

Airless Spray	Recommended	Tip Range 0.53-0.63 mm (21-25 thou) Total output fluid pressure at spray tip not less than 190 kg/cm² (2702 p.s.i.)	
Air Spray (Pressure Pot)	Recommended	Gun Air Cap Fluid Tip	DeVilbiss MBC or JGA 704 or 765 E
Brush	Suitable	Typically 75 microns (3.0 mils) can be achieved	
Roller	Suitable	Typically 75 microns (3.0 mils) can be achieved	
Thinner	International GTA007	Thinning is not normally required. Consult the local representative for advice during application in extreme conditions. 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

Intergard 475HS is primarily designed for use as a high build barrier coat to impart barrier protection to a coating system. It is recommended that it should be overcoated with a durable finish from the Interfine or Interthane range when appearance is important.

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. Low or high temperatures may require specific application techniques to achieve maximum film build.

When applying Intergard 475HS by brush or roller, it may be necessary to apply multiple coats to achieve the total specified system dry film thickness.

Surface temperature must always be a minimum of 3°C above dew point. When applying Intergard 475HS in confined spaces ensure adequate ventilation. Exposure to unacceptably low temperatures and/or high humidities during or immediately after application may result in incomplete cure and surface contamination that could jeopardise subsequent intercoat adhesion.

Elevated Temperature Curing

An alternative curing agent is available for applications at temperatures greater than 25°C (77°F).

Temperature	Touch Dry	Hard Dry	Overcoating Interval with recommended topcoats *Minimum*	*Maximum*
25°C (77°F)	90 minutes	6 hours	6 hours	Extended *
40°C (104°F)	60 minutes	2 hours	2 hours	Extended *

* See International Protective Coatings Definitions and Abbreviations

Interchanging standard and elevated temperature curing agents during application to a specific structure will give rise to an observable colour change due to the difference in the yellowing/discolouration process common to all epoxies on exposure to UV light. In common with all epoxies Intergard 475HS will chalk and discolour on exterior exposure. However, these phenomena are not detrimental to anti-corrosive performance.

Intergard 475HS is not designed for continuous water immersion.

The micaceous iron oxide variant of this product is frequently used as a 'travel coat' prior to final overcoating on site. To ensure best extended overcoating properties ensure over-application does not occur and that the surface is fully cleaned of any contamination which may be present in the surface texture due to the coarse nature of the micaceous iron oxide pigmentation.

When applying Intergard 475HS at temperatures less than 15°C (59°F) or wet film thicknesses of 150 microns (6 mils) or less, addition of around 5% International GTA007 thinners will improve film appearance, sprayability and aid film thickness control.

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 colour 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

Intergard 475HS is designed for use over correctly primed steel. Suitable primers are:

Intercure 200
Intergard 251
Intergard 269
Interzinc 22 * (mist coat or tie coat may be required)
Interzinc 315
Interzinc 52
Interzinc 2280* (mist coat or tie coat may be required)

Suitable topcoats are:

Intergard 740
Interthane 990
Interfine 629HS
Intergard 475HS

For alternative primers and finishes, consult International Protective Coatings.

See relevant product data sheet for details.

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 litre	15 litre	20 litre	5 litre	5 litre
	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 (TYPICAL)	Unit Size	Part A	Part B
	20 litre	29.3 kg	9.3 kg
	5 US gal	57.1 lb	8.4 lb

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

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 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 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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www.international-pc.com

Interthane 990

International

Polyurethane Finish

PRODUCT DESCRIPTION

A two pack, acrylic polyurethane finish giving excellent durability and long term recoatability.

INTENDED USES

As a cosmetic finish on above water areas. Suitable for use on topsides, external superstructure, external decks and boottops.
For use at Newbuilding, Maintenance & Repair or On Board Maintenance.

PRODUCT INFORMATION

Colour	PHB000-White, PHY999-Black ; and a wide range of colours.
Finish/Sheen	High Gloss
Part B (Curing Agent)	PHA046
Volume Solids	57% ±3% (ISO 3233:1998)
Mix Ratio	6.00 volume(s) Part A to 1 volume(s) Part B
Typical Film Thickness	50 microns dry (88 microns wet)
Theoretical Coverage	11.4 m²/litre at 50 microns dft, allow appropriate loss factors
Method of Application	Airless Spray, Brush, Conventional Spray, Roller
Flash Point (Typical)	Part A 34°C; Part B 49°C; Mixed 35°C
Induction Period	Not required

Drying Information	-5°C	5°C	25°C	35°C
Touch Dry [ISO 9117/3:2010]	8 hrs	5 hrs	1.5 hrs	60 mins
Hard Dry [ISO 9117-1:2009]	60 hrs	24 hrs	6 hrs	4 hrs
Pot Life	26 hrs	12 hrs	2 hrs	60 mins

Overcoating Data - see limitations	**Substrate Temperature**							
	-5°C		5°C		25°C		35°C	
Overcoated By	Min	Max	Min	Max	Min	Max	Min	Max
Interthane 990	60 hrs	ext	24 hrs	ext	6 hrs	ext	4 hrs	ext

Note Drying and overcoating times quoted are measured at 50 microns dry, at higher film thickness times will be increased.

REGULATORY DATA

VOC

420 g/lt as supplied (EPA Method 24)
341 g/kg of liquid paint as supplied. EU Solvent Emissions Directive (Council Directive 1999/13/EC)
379 g/lt Chinese National Standard GB23985

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

CERTIFICATION

When used as part of an approved scheme, this material has the following certification:

- Fire Resistance - Surface Spread of Flame (Exova Warringtonfire)
- Fire Resistance - Smoke & Toxicity (Exova Warringtonfire)
- NORSOK M-501, Rev 4, system no.1 (NITN)
- Fire Resistance - Marine Equipment Directive compliant

Consult your International Paint representative for details.

SYSTEMS AND COMPATIBILITY

Interthane 990 must be applied over a recommended primer system, which will vary depending upon the vessel area. Direct application is acceptable over the following marine anticorrosives:

Intergard 264 (USA)
Intergard 400
Intergard 5600
Intergard 5620
Intergard 7600
Intershield 300
Intershield 803

A tiecoat of Intergard 263, Intergard 267 or Intergard 269 may be required if Interthane 990 is to be applied over other epoxy primers and may also be used to extend the maximum overcoating interval when Interthane 990 is to be applied over those primers listed above.

Interprime 198 may also be used as a primer for Interthane 990.

Consult your International Paint representative for the system best suited for the surfaces to be protected.

SURFACE PREPARATIONS

Use in accordance with the standard Worldwide Marine Specifications.
All surfaces to be coated should be clean, dry and free from contamination.
High pressure fresh water wash or fresh water wash, as appropriate, and remove all oil or grease, soluble contaminants and other foreign matter in accordance with SSPC-SP1 solvent cleaning.

NEWBUILDING/MAJOR REFURBISHMENT

Interthane 990 should always be applied over a recommended primer coating scheme. The primer surface should be dry and free from all contamination, and Interthane 990 must be applied within the overcoating intervals specified (consult the relevant product data sheet). For boottop areas the overcoating intervals for primers are reduced. Consult International Paint.
Areas of breakdown, damage etc. should be prepared to the specified standard (eg. Sa2½ (ISO 8501-1:2007)) and primed prior to the application of Interthane 990.

REPAIR/OBM

Interthane 990 should always be applied over a recommended primer coating scheme. The primer surface should be dry and free from all contamination, and Interthane 990 must be applied within the overcoating intervals specified (consult the relevant product data sheet). For boottop areas the overcoating intervals for primers are reduced. Consult International Paint.
Areas of breakdown, damage etc. should be prepared to the specified standard (eg. Sa2½ (ISO 8501-1:2007)) and primed prior to the application of Interthane 990.
Interthane 990 may be applied directly over aged Interthane 990 following thorough fresh water washing and degreasing provided the coating to be overcoated is in an intact and tightly adherent condition. Loose or flaking coatings should be removed back to a firm edge and Interthane 990 or an appropriate primer should be used to repair the area before application of the full coat.
This product may be applied directly over most generic types of paint that have been aged for at least 3 months. It is advisable that a small trial be carried out before applying a full coat.

Consult your International Paint representative for specific recommendations.

NOTE

For use in Marine situations in North America, the following surface preparation standards can be used: SSPC-SP10 in place of Sa2½ (ISO 8501-1:2007)

APPLICATION

Mixing	Material is supplied in 2 containers as a unit. Always mix a complete unit in the proportions supplied. (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.
Thinner	Thinning is not normally required. Consult the local representative for advice during application in extreme conditions. Do not thin more than allowed by local environmental legislation.
Airless Spray	Recommended Tip Range 0.33-0.45 mm (13-18 thou) Total output fluid pressure at spray tip not less than 155 kg/cm² (2200 p.s.i.)
Conventional Spray	Use suitable proprietary equipment. Thinning may be required.
Brush	Suitable.
Roller	Suitable.
Cleaner	International GTA056/GTA713/GTA733
Work Stoppages and Cleanup	Do not allow material to remain in hoses, gun or spray equipment. Thoroughly flush all equipment with International GTA056/GTA713/GTA733. 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 all equipment immediately after use with International GTA056/GTA713/GTA733. 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. Do not exceed pot life limitations. All surplus materials and empty containers should be disposed of in accordance with appropriate regional regulations/legislation.
Welding	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. In North America do so in accordance with instruction in ANSI/ASC Z49.1 "Safety in Welding and Cutting."

SAFETY

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.

Prior to use, obtain, consult and follow the Material Safety Data Sheet for this product concerning health and safety information. Read and follow all precautionary notices on the Material Safety Data Sheet and container labels. If you do not fully understand these warnings and instructions or if you can not strictly comply with them, do not use this product. Proper ventilation and protective measures must be provided during application and drying to keep solvent vapour concentrations within safe limits and to protect against toxic or oxygen deficient hazards. Take precautions to avoid skin and eye contact (ie. gloves, goggles, face masks, barrier creams etc.) Actual safety measures are dependant on application methods and work environment.
EMERGENCY CONTACT NUMBERS:
USA/Canada - Medical Advisory Number 1-800-854-6813
Europe - Contact (44) 191 4696111. For advice to Doctors & Hospitals only contact (44) 207 6359191
China – Contact (86) 532 83889090
R.O.W. - Contact Regional Office

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

LIMITATIONS

This product is not recommended for use in permanantly immersed conditions.
Interthane 990 may be used on boottop areas at reduced overcoating intervals over appropriate primers. Consult International Paint.
For brush and roller application, and in some colours, two coats of Interthane 990 may be required to give uniform coverage, especially when applying Interthane 990 over dark undercoats and when using certain lead-free bright finish colours such as yellows and oranges. Best practice is to use a colour compatible intermediate or anticorrosive coating under Interthane 990.
Interthane 990 may be applied at substrate temperatures down to -15°C. Before applications are made below -5°C consult your local IP representative for further detail of application procedure.
Low temperature, high relative humidity and condensation occurring during or immediately after application may result in a matt finish and an inferior film. Premature exposure to ponding water will cause colour change, especially in dark colours and at low temperatures.
Overcoating information is given for guidance only and is subject to regional variation depending upon local climate and environmental conditions. Consult your local International Paint representative for specific recommendations.
Apply in good weather. Temperature of the surface to be coated must be at least 3°C above the dew point. For optimum application properties bring the material to 21-27°C, unless specifically instructed otherwise, prior to mixing and application. Unmixed material (in closed containers) should be maintained in protected storage in accordance with information given in the STORAGE Section of this data sheet. Technical and application data herein is for the purpose of establishing a general guideline of the coating application procedures. Test performance results were obtained in a controlled laboratory environment and International Paint makes no claim that the exhibited published test results, or any other tests, accurately represent results found in all field environments. As application, environmental and design factors can vary significantly, due care should be exercised in the selection, verification of performance and use of the coating.
In the overcoating data section 'ext' = extended overcoating period. Please refer to our Marine Painting Guide - Definitions and Abbreviations available on our website.

UNIT SIZE

Unit Size	Part A		Part B	
	Vol	Pack	Vol	Pack
20 lt	17.14 lt	20 lt	2.86 lt	5 lt
5 US gal	5 US gal	5 US gal	1 US gal	1 US gal
1 US gal	1 US gal	1 US gal	1 US quart	1 US quart

Note : US containers are short filled
For availability of other unit sizes consult International Paint

UNIT SHIPPING WEIGHT (TYPICAL)

Unit Size	Unit Weight
1 US gal	13.7 lb
20 lt	26.59 Kg
5 US gal	54.7 lb

STORAGE

Shelf Life: Part A - 24 months minimum at 25°C.
Part B - 12 months minimum at 25°C
Subject to reinspection thereafter. Store in dry, shaded conditions away from sources of heat and ignition.

WORLDWIDE AVAILABILITY

Consult International Paint.

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 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 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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Interseal® 670HS

Surface Tolerant Epoxy

International

PRODUCT DESCRIPTION

A low VOC, two component high build, high solids surface tolerant epoxy maintenance coating.

INTENDED USES

For application to a wide variety of substrates including hand prepared rusty steel, abrasive blast cleaned and hydroblasted steel, and a wide range of intact, aged coatings.
Provides excellent anti-corrosive protection in industrial, coastal structures, pulp and paper plants, bridges and offshore environments in both atmospheric exposure and immersion service.

NSF Certification is for tanks greater than 100 gallons (378.5 litres).

NSF®

Certified to NSF/ANSI 61

PRACTICAL INFORMATION FOR INTERSEAL 670HS

Colour	Available in a wide range of colours including Aluminium
Gloss Level	Semi-gloss (Aluminium is eggshell)
Volume Solids	82% ± 3% (depends on colour)
Typical Thickness	100-250 microns (4-10 mils) dry equivalent to 122-305 microns (4.9-12.2 mils) wet
Theoretical Coverage	6.56 m^2/litre at 125 microns d.f.t and stated volume solids 263 sq.ft/US gallon at 5 mils d.f.t and stated volume solids
Practical Coverage	Allow appropriate loss factors
Method of Application	Airless spray, Air spray, Brush, Roller

Drying Time ▲

			Overcoating Interval Interseal 670HS with Self			Overcoating Interval with recommended topcoats		
Temperature	**Touch Dry**	**Hard Dry**	*Min*	*Max* ●	*Max* †	*Min*	*Max* ●	*Max* †#
10ºC (50ºF)	8 hours	32 hours	32 hours	6 weeks	Extended*	20 hours	21 days	12 weeks
15ºC (59ºF)	7 hours	26 hours	26 hours	4 weeks	Extended*	14 hours	14 days	8 weeks
25ºC (77ºF)	5 hours	18 hours	18 hours	14 days	Extended*	10 hours	7 days	4 weeks
40ºC (104ºF)	2 hours	6 hours	6 hours	7 days	Extended*	4 hours	3 days	2 weeks

▲ For curing at low temperatures, an alternative curing agent is available. See Product Characteristics for details.
● Refers to situations where immersion is likely to occur
† Refer to atmospheric service only
* See International Protective Coatings Definitions & Abbreviations
\# Maximum overcoating intervals are shorter when using polysiloxane topcoats.
Consult International Protective Coatings for further details.

REGULATORY DATA

Flash Point (Typical)	Base (Part A) 36°C (97°F)	Curing Agent (Part B) 56°C (133°F)	Mixed 33°C (91°F)
Product Weight	1.6 kg/l (13.3 lb/gal)		
VOC	114 g/kg	EU Solvent Emissions Directive (Council Directive 1999/13/EC)	
	2.00 lb/gal (240 g/lt)	EPA Method 24	
	151 g/lt	Chinese National Standard GB23985	

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

For immersion service, Interseal 670HS must be applied to surfaces blast cleaned to Sa2.5 (ISO 8501-1:2007) or SSPC-SP10. However, for atmospheric exposure best performance will be achieved when Interseal 670HS is applied to surfaces prepared to a minimum of Sa2.5 (ISO 8501-1:2007) or SSPC-SP6.

Surface defects revealed by the blast cleaning process, should be ground, filled, or treated in the appropriate manner.

A surface profile of 50-75 microns (2-3 mils) is recommended.

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.

Ultra High Pressure Hydroblasting/Abrasive Wet Blasting

May be applied to surfaces prepared to Sa2.5 (ISO 8501-1:2007) or SSPC-SP6 which have flash rusted to no worse than Grade HB2.5M (refer to International Hydroblasting Standards) or Grade SB2.5M (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

Interseal 670HS is suitable for overcoating a limited range of intact, tightly adherent aged coatings. Loose or flaking coatings should be removed back to a firm edge. Glossy finishes may require light abrasion to provide a physical 'key'. See Product Characteristics section for further information.

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

5.67 parts : 1.00 part by volume

Working Pot Life

10°C (50°F)	15°C (59°F)	25°C (77°F)	40°C (104°F)
5 hours	3 hours	2 hours	1 hour

Airless Spray

Recommended — Tip range 0.45-0.58 mm (18-23 thou)
Total output fluid pressure at spray tip not less than 176 kg/cm^2 (2,500 p.s.i.)

Air Spray (Pressure Pot)

Recommended

Gun	DeVilbiss MBC or JGA
Air Cap	704 or 765
Fluid Tip	E

Brush

Recommended — Typically 100-125 microns (4-5 mils) can be achieved

Roller

Recommended — Typically 75-100 microns (3-4 mils) can be achieved

Thinner

International GTA220 (or GTA415)

Thinning is not normally required. Consult the local representative for advice during application in extreme conditions. Do not thin more than allowed by local environmental legislation.

Cleaner

International GTA822 (or 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

For water immersion service, surface preparation to a minimum of Sa2.5 (ISO 8501-1:2007) or SSPC-SP10 followed by application of multi-coats of Interseal 670HS to a total minimum dry film thickness of 250 microns (10 mils) is required.

Colours derived from chromascan bases as the first coat of a specification for immersion service is not recommended.

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. Low or high temperatures may require specific application techniques to achieve maximum film build.

If salt water is used in the wet blast process the resulting surface must be thoroughly washed with fresh water before application of Interseal 670HS. 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.

Interseal 670HS may be applied to suitably sealed or primed concrete; contact International Protective Coatings for further advice on specification and primers.

Interseal 670HS is suitable for overcoating intact, aged alkyd, epoxy and polyurethane systems. However, this product is not recommended where thermoplastic coatings such as chlorinated rubbers and vinyls have previously been used. Please consult International Protective Coatings for alternative recommendations.

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

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

In common with all epoxies Interseal 670HS will chalk and discolour on exterior exposure. However, these phenomena are not detrimental to anti-corrosive performance.

Premature exposure to ponding water will cause a colour change, especially in dark colours.

Interseal 670HS can be used as a non-skid deck system by modification with addition of GMA132 (crushed flint) aggregate. Application should then be to a suitably primed surface. Typical thicknesses will be between 500-1,000 microns (20-40 mils). Preferred application is by a suitable large tip hopper gun (e.g. Sagola 429 or Air texture gun fitted with a 5-10 mm nozzle). Trowel or roller can be used for small areas. Alternatively, a broadcast method of application can be used. Consult International Protective Coatings for further details.

Interseal 670HS is certified to NSF/ANSI Standard 61 (selected colours only). Consult International Protective Coatings for further details. Certification is for tanks greater than 100 gallons (378.5 litres), for pipes which are 6 inches (15 cm) in diameter or greater and for valves which are 2 inches (5 cm) in diameter or greater.

Low Temperature Curing

A winter grade curing agent is also available to enable more rapid cure at temperatures less than 10°C (50°F), however this curing agent will give an initial shade variation and more rapid discoloration on weathering.

Interseal 670HS is capable of curing at temperatures below 0°C (32°F). However, this product should not be applied at temperatures below 0°C (32°F) where there is a possibility of ice formation on the substrate.

			Overcoating Interval Interseal 670HS with Self			Overcoating Interval with recommended topcoats		
Temperature	**Touch Dry**	**Hard Dry**	*Min*	*Max* ●	*Max* †	*Min*	*Max* ●	*Max* †
-5ºC (23ºF)	24 hours	72 hours	72 hours	12 weeks	Extended*	72 hours	84 hours	12 weeks
0ºC (32ºF)	16 hours	56 hours	56 hours	10 weeks	Extended*	42 hours	54 hours	10 weeks
5ºC (41ºF)	9 hours	36 hours	36 hours	8 weeks	Extended*	36 hours	48 hours	8 weeks
10ºC (50ºF)	5 hours	24 hours	24 hours	6 weeks	Extended*	16 hours	24 hours	6 weeks

● Refers to situations where immersion is likely to occur

† Refer to atmospheric service only

* 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 0°C (32°F).

Note: VOC values quoted are based on maximum possible for the product taking into account variations due to colour differences 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

Interseal 670HS will normally be applied to correctly prepared steel substrates. However, it can be used over suitably primed surfaces. Suitable primers are:

- Intercure 200
- Interplus 356
- Intergard 269
- Interzinc 315
- Interplus 256

Where a cosmetically acceptable topcoat is required the following products are recommended:

- Intercryl 530
- Intergard 740
- Interfine 629HS
- Interthane 870
- Interfine 878
- Interthane 990
- Interfine 979

Other suitable primers/topcoats are available. 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 litre	17 litre	20 litre	3 litre	3.7 litre
	5 US gal	4.25 US Gal	5 US Gal	0.75 US Gal	1 US gal
	For availability of other pack sizes, contact International Protective Coatings				

SHIPPING WEIGHT (TYPICAL)	Unit Size	Part A	Part B
	20 litre	30.8 kg	3.5 kg
	5 US gal	64.9 lb	6.8 lb

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

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 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 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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www.international-pc.com

Interzinc® 22

International®

Inorganic Zinc-Rich Silicate

PRODUCT DESCRIPTION

Part of the Interzinc 22 Series of products.

A two component, rapid recoat, fast curing solvent based inorganic zinc rich ethyl silicate primer, containing 85% zinc by weight in the dry film. Conforms to SSPC Paint 20 Level 1.

Available in ASTM D520, Type II (low lead) zinc dust version as standard

INTENDED USES

A zinc rich primer suitable for use with a wide range of high performance systems and topcoats in both maintenance and new construction of bridges, tanks, pipework, offshore structures and structural steelwork. Interzinc 22 can also be used as tank coating suitable for the carriage of different chemical cargoes (e.g. styrene) according to International Paint's chemical resistance guide.

Provides excellent corrosion protection for correctly prepared steel substrates, up to temperatures of 1004°F (540°C) when suitably topcoated.

Fast curing primer capable of application in a wide range of climatic conditions.

PRACTICAL INFORMATION FOR INTERZINC 22

Color	Green Gray
Gloss Level	Matte
Volume Solids	63%
Typical Thickness	2-3 mils (50-75 microns) dry equivalent to 3.2-4.8 mils (79-119 microns) wet
Theoretical Coverage	337 sq.ft/US gallon at 3 mils d.f.t and stated volume solids 8.40 m²/liter at 75 microns d.f.t and stated volume solids
Practical Coverage	Allow appropriate loss factors
Method of Application	Airless Spray, Air Spray

Drying Time

			Overcoating Interval with recommended topcoats	
Temperature	**Touch Dry**	**Hard Dry**	*Minimum*	*Maximum*
41°F (5°C)	30 minutes	3 hours	18 hours	Extended[1]
59°F (15°C)	20 minutes	90 minutes	9 hours	Extended[1]
77°F (25°C)	10 minutes	1 hour	4.5 hours	Extended[1]
104°F (40°C)	5 minutes	30 minutes	1.5 hours	Extended[1]

[1] See International Protective Coatings Definitions & Abbreviations

The drying times quoted have been determined at the quoted temperature and 55% relative humidity. The 41°F (5°C) time was determined at 60% relative humidity. Prior to overcoating, verify a value of 4 via ASTM D4752 MEK rub test. See Product Characteristics section for more details on overcoating.

REGULATORY DATA

Flash Point (Typical)	Part A 66°F (19°C); Mixed 66°F (19°C)	
Product Weight	20.4 lb/gal (2.44 kg/l)	
VOC	3.92 lb/gal (470 g/lt)	EPA Method 24
	216 g/kg	EU Solvent Emissions Directive (Council Directive 1999/13/EC)

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. Oil or grease should be removed in accordance with SSPC-SP1 solvent cleaning.

Abrasive Blast Cleaning
Abrasive blast clean to a minimum of SSPC-SP6 or Sa2½ (ISO 8501-1:2007), (or SSPC-SP10 for optimum performance). If oxidation has occurred between blasting and application of Interzinc 22, the surface should be reblasted to the specified visual standard.

Surface defects revealed by the blast cleaning process, should be ground, filled, or treated in the appropriate manner.

A surface profile of 1.6-3.0 mils (40-75 microns) is recommended.

Shop Primed Steelwork
Interzinc 22 is suitable for application to unweathered steelwork freshly coated with zinc silicate shop primers. If the zinc shop primer shows extensive or widely scattered breakdown, or excessive zinc corrosion products, overall sweep blasting will be necessary. Other types of shop primer are not suitable for overcoating and will require complete removal by abrasive blast cleaning.

Weld seams and damaged areas should be blast cleaned to SSPC-SP6 or Sa2½ (ISO 8501-1:2007).

Damaged/Repair Areas
All damaged areas should ideally be blast cleaned to SSPC SP6 or Sa2½ (ISO 8501:2007). However, it is acceptable that small areas can be power tool cleaned to SSPC SP11 or Pt3 (JSRA SPSS:1984), provided the area is not polished. Repair of the damaged area can then be carried out using a recommended zinc epoxy primer - consult International Protective Coatings for specific advice.

APPLICATION

Mixing

Interzinc 22 is supplied in two parts, a liquid Binder base component QHA285 (Part A) and a Powder component (Part B). The Powder (Part B) should be slowly added to the liquid Binder (Part A) whilst stirring with a mechanical agitator. DO NOT ADD LIQUID TO POWDER. Material should be filtered prior to application and should be constantly agitated in the pot during spraying. Once the unit has been mixed it should be used within the working pot life specified.

Mix Ratio

3.1 part(s) : 1 part(s) by volume
Mix ratio is given for advice; **always mix the product in the proportions supplied**.

Working Pot Life

41°F (5°C)	59°F (15°C)	77°F (25°C)	104°F (40°C)
12 hours	8 hours	4 hours	2 hours

Airless Spray

Recommended

Tip Range 15-21 thou (0.38-0.53 mm)
Total output fluid pressure at spray tip not less than 1593 psi (112 kg/cm²)

Air Spray (Pressure Pot)

Recommended

Typical pump	Graco X-Treme 40:1 or similar
Gun	DeVilbiss MBC-510/JGA-510 (Binks 2100)
Air Cap	704 or 765 (Binks 66SD or 68PB)
Fluid Tip	E (1.8mm or D (2.2mm) or Binks 66,67

Brush

Suitable - Small areas only

Typically 1.0-2.0 mils (25-50 microns) can be achieved

Roller

Not recommended

Thinner

International GTA803, International GTA415 or International GTA138

As regionally available. Do not thin more than allowed by local environmental legislation

Cleaner

International GTA803, International GTA138 or International GTA415

As regionally available.

Work Stoppages

Do not allow material to remain in hoses, guns or spray equipment. Thoroughly flush all equipment with International GTA803/International GTA415 /International GTA138. 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 GTA803/International GTA415/International GTA138. 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

Prior to overcoating, Interzinc 22 must be clean, dry and free from both soluble salts and excessive zinc corrosion products.

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

When applying Interzinc 22 in confined spaces, ensure adequate ventilation.

The minimum overcoating interval is dependent upon the relative humidity during cure.

If thinning is required to assist spray application in warmer climates, (typically >82°F (28°C)), it is recommended that International GTA803 thinners are used.

It is recommended that prior to overcoating a solvent rub test to ASTM D4752 should be undertaken. A value of 4 indicates a satisfactory degree of cure for overcoating purposes.

At relative humidities below 55%, curing will be retarded. Humidity may be increased by the use of steam or water spraying. However, cure at relative humidities below 55% is more effectively achieved by incorporating the Low Humidity Cure Accelerator*; some example overcoating times at 59ºF (15ºC) are detailed below;

Relative Humidity (%)	20	30	40
Minimum Overcoating Interval	24 hours	10 hours	10 hours

The Interzinc 22 Application Guidelines contain further information on expected cure times at lower relative humidities.

Excessive film thickness and/or over-application of Interzinc 22 can lead to mudcracking, which will require complete removal of the affected areas by abrasive blasting and re-application in accordance with the original specification.

Care should be exercised to avoid the application of dry film thicknesses in excess of 5.0 mils (125 microns).

For high temperature systems the thickness of Interzinc 22 should be restricted to 2 mils (50 microns) d.f.t. Continuous dry temperature resistance of Interzinc 22 is 752°F (400°C) if left untopcoated, however, if this product is used as a primer for Intertherm 50, the dry temperature resistance will be 1004°F (540°C).

Untopcoated Interzinc 22 is not suitable for exposure in acid or alkaline conditions or continuous water immersion.

This product has the following specification approvals:
- AISC Specification 348-04 Research Council for Structural Connections Class B Coating
- UNE 48293 (Spain)

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.

*Only available in Europe, China, Middle East, Africa and Russia.

SYSTEMS COMPATIBILITY

When it is necessary for Interzinc 22 is to be overcoated by itself due to low dry film thickness the coating surface must be fresh and unweathered. A minimum of 2 mils (50 microns) d.f.t. of any subsequent coat of Interzinc 22 is needed to ensure good film formation.

Before overcoating with recommended topcoats ensure the Interzinc 22 is fully cured (see above) and if weathering has occurred all zinc salts should be removed from the surface by fresh water washing, and if necessary scrubbing with bristle brushes.

Typical topcoats and intermediates are:

Intercure 200	Intergard 475HS
Intercure 420	Intertherm 50
Intergard 251	Interseal 670HS
Intergard 269	Intertherm 715
Intergard 345	

In some cases it may be necessary to apply a mist coat of suitable viscosity to minimize bubbling. This will depend upon the age of the Interzinc 22, surface roughness and ambient conditions during curing and application. Alternatively, an epoxy sealer coat, such as Intergard 269, can be used to reduce bubbling problems.

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

ADDITIONAL INFORMATION

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- Interzinc 22 Application Guidelines

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SAFETY PRECAUTIONS

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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 Vol	Part A Pack	Part B Vol	Part B Pack
13.78 liter	10.42 liter	15 liter	3.36 liter	20 liter
5 US gal	3.78 US gal	5 US gal	1.22 US gal	5 US gal

For availability of other pack sizes contact International Protective Coatings

SHIPPING WEIGHT (TYPICAL)

Unit Size	Part A	Part B
13.78 liter	11.6 kg	25.8 kg
5 US gal	34.4 lb	72.4 lb

STORAGE

Shelf Life	Part A 6 months minimum at 77°F (25°C). Part B 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 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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