Base Load Power Hub (BLPH)

ULTRASONIC FLOWMETER

PAINTING PROCEDURE - ULTRASONIC FLOWMETER

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BakerHughes

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Revision / Change Log

Rev.	Description
00	Issue for Review (IFR)
01	Accepted for Construction (AFC)
02	Accepted for Construction (AFC)

HOLDS LIST

No.	Description
1.	
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PROCEDURE FOR GRITBLASTING & PAINTING STAINLESS STEEL
CUSTOMER : A . C . VALVES LTD
PURCHASE ORDER No. : SAC0002677 (2 OFF VALVES)
COATING SPECIFICATION : NORSOK M-501 PRE-QUALIFIED SYSTEM 6A

Painting Procedure for Painting System 6A (Piping with Fluids <120°C)

1**. SCOPE**

The client's specification or purchase order instructions shall rule in any case where there is conflict between it and this procedure.

2. STANDARDS (All standards used for this order are current and up to date)

The following standards include provisions and guidelines which, through reference in this procedure, constitute provisions and guidelines in accordance with NORSOK M-501 PRE-QUALIFIED SYSTEM 6A

ISO 8501-1: Preparation of steel substrates before application of paints and related products – Visual assessment of surface cleanliness – Part 1: Rust grades and preparation grades of uncoated steel substrates and of steel substrates after overall removal of previous coatings.

ISO 8502-6: Preparation of steel substrates before application of paints and related products – Test for the assessment of surface cleanliness – Part 6: Extraction of soluble contaminants for analysis – The Bresle method.

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

ISO 8502-3: Preparation of steel substrate before application of paint and related products - Tests for the assessment of surface cleanliness - Part 3: Assessment of dust on steel surfaces prepared for painting (pressure-sensitive tape method).

ISO 8503-1: Preparation of steel substrate before application of paint and related products - Tests for the assessment of surface cleanliness - Part 1: Specifications and definitions for ISO surface profile comparators for the assessment of abrasive blast-cleaned surfaces.

ISO 19840: Paints and varnishes – Measurement of, and acceptance criteria for, the thickness of dry films on rough surfaces.

ISO 4624: Paints and varnishes - Pull-off test for adhesion.

SSPC-SP 1: Solvent Cleaning

ASTM 4285: Standard Test Method for Indicating Oil or Water in Compressed Air.

3. SURFACE PREPARATION

For adhesion testing purposes, one test panel / batch will accompany the part(s) through the below procedure.

NOTE: CUSTOMER SHALL SUPPLY TEST PANEL OF SAME BASE MATERIAL AS COMPONENT BEING PROCESSED FOR THE PURPOSES OF ADHESION TESTING. IF A TEST PANEL IS NOT SUPPLIED BY CUSTOMER, F . Allen & Son WILL UTILIZE THEIR STANDARD IN-HOUSE CARBON STEEL TEST PANEL *(100mm x 100mm x 5mm)*

3.1 Parts shall be visually checked for sharp edges, weld spatter, slivers, rust grade, etc as per ISO 8501-3 Grade 2
Anything which may appear to be unacceptable shall be reported to the Customer.

3.2 If present, heavy deposits of oil, grease, dirt etc shall be removed by solvent cleaning in accordance with SSPC-SP1.

3.3 Surface not to be coated shall be masked with a suitable material prior to abrasive blast cleaning.

3.4 Environmental conditions shall be taken and recorded. Blasting shall only take place if relative humidity is below 85%, steel temperature is more than 3°C above dew point and ambient temperatures above 5°C.

3.5 Compressed air shall be checked for oil, moisture or other contamination using the 'blotter test' as per ASTM D4285. Compressed air shall be dry and clean before processing.

3.6 Parts shall be blast cleaned before coating using aluminium oxide grit. Blast abrasives shall be dry, clean and free from contaminants that would be detrimental to the performance of the system. All coating surfaces of stainless-steel substrates shall be Sweep blasted finish with a roughness of Fine G. This is in accordance with ISO 8503-2.

3.7 Component will be blown clean using clean, dry filtered compressed air, to remove any residual abrasive blast material.

3.8 Surface impurities shall be measured using the Bresle sample method (ISO 8502-6) with the maximum concentration being 20mg/m_2 NaCl (ISO 8502-9).

3.9 The surface profile shall be measured and recorded using Testex Replica tape.

3.10 Transparent adhesion sensitive tape will be used to test the blast cleaned surface for dust prior to paint application. This will be in accordance with ISO 8502-3 and shall not exceed a dust quality and size rating of 2.

3.11 Between the blasting and coating processes, the parts will be protected and not touched with bare hands. Paint shall be applied within 4 hours of blasting. Coating surface which exhibits rust, oxidation, or discolouration shall be re-blasted prior to coating application and retested.

4. APPLICATION PRIMER.

Product: SIGMACOVER 280 (GREENISH/YELLOW)

4.1 Environmental conditions shall be taken and recorded. Painting shall only take place if relative humidity is below 85%, steel temperature is more than 3°C above dew point and substrate temperature is between 5-40°C.

4.2 Stripe coating is permissible in areas that are difficult to reach with a spray gun. Batch number of paint used to be recorded.

4.3 Paint will be spray applied uniformly over areas to be coated using a conventional spray gun. Skips, runs, sags or drips to be eliminated. Wet Film thickness shall be determined and recorded and should be such that a nominal dry film thickness of 50µm is achieved. Batch Numbers of paint used to be recorded.

4.4 The minimum over coating time(s) stated in the manufacturers technical data sheet must be observed prior to proceeding to next coat.

5. APPLICATION MIDCOAT
Product: SIGMACOVER 410 (MIO)

5.1 Previous coating to be inspected to ensure coating is free from surface defects to the application of the subsequent paint system. Surface defects to be repaired and cured as per specification requirements. Dry Film thickness to be determined and recorded to ensure compliance with customer requirements.

5.2 Environmental conditions shall be taken and recorded. Painting shall only take place if relative humidity is below 85%, steel temperature is more than 3°C above dew point and substrate temperature is between 5-40°C.

5.3 Stripe coating is permissible in areas that are difficult to reach with a spray gun. Batch number of paint used to be recorded.

5.4 Paint will be spray applied uniformly over areas to be coated using a conventional spray gun. Skips, runs, sags or drips to be eliminated. Wet Film thickness shall be determined and recorded and should be such that a nominal dry film thickness of 100µm is achieved. Batch Numbers of paint used to be recorded.

5.5 The minimum over coating time(s) stated in the manufacturers technical data sheet must be observed prior to proceeding to next coat.

6. APPLICATION TOPCOAT
Product: SIGMADUR 550 (RAL 9002)

6.1 Previous coating to be inspected to ensure coating is free from surface defects to the application of the subsequent paint system. Surface defects to be repaired and cured as per specification requirements. Dry Film thickness to be determined and recorded to ensure compliance with customer requirements.

6.2 Environmental conditions shall be taken and recorded. Painting shall only take place if relative humidity is below 85%, steel temperature is more than 3°C above dew point and substrate temperature is between 5-40°C.

6.3 Stripe coating is permissible in areas that are difficult to reach with a spray gun. Batch numbers and BS 4800 number of paints used to be recorded.

6.4 Paint will be spray applied uniformly over areas to be coated using a using a conventional spray gun. Skips, runs, sags or drips to be eliminated. Wet Film thickness should be determined and recorded and should be such that a nominal dry film thickness of 75µm is achieved. Batch Numbers of paint used to be recorded.

6.5 The minimum curing time(s) stated in the manufacturer's technical data sheet must be observed and adhered to.

7. FINAL INSPECTION

7.1 Topcoat to be visually inspected to ensure coating is free from runs, sags, inclusions, pinholes, blisters, holidays etc. Surface defects shall be repaired and cured as per manufacturer's recommendations.

7.2 Wet sponge holiday testing (67½V) shall be performed on coated surface area to ensure a "holiday free" coating condition. If a holiday is detected, the non-conforming area will be isolated and locally repaired.

7.3 Paint thickness shall be determined, using the Elcometer 345, and recorded. Thickness measurement will be performed in compliance with ISO 19840 methodology and shall be a nominal of 225µm. The minimum, maximum and average results shall be recorded.

7.4 Unless otherwise requested by the Customer, the adhesion test will be performed on the accompanying test panel using an Elcometer SG 2014 to ISO 4624 procedure. Three dollies shall be attached, all adhesion tests shall meet a minimum value of 5MPa with an average of 7MPa or better. Failure mechanism shall be dolly-glue cohesive failure, cohesive failure within the coating or intercoat failure and not adhesive failure at the substrate.

8. PACKAGING AND CERTIFICATE OF CONFORMITY

8.1 All parts are to be rewrapped or otherwise protected from damage after inspection and before shipping. The minimum packaging requirements shall be as per original customer delivery.

8.2 A certificate of conformity and coating report shall be supplied after completion.

9. HEALTH AND SAFETY

The appropriate PPE shall be supplied by F. ALLEN & SON to the operator(s) performing this procedure, for instance protective clothing, protective shoes, safety glasses and filter mask.

10. REPAIR PROCEDURE

Repairs shall be performed in accordance with Manufacturers specifications

11. QUALIFICATION OF PERSONNEL

Inspection shall be performed by Mark Allen or Mike Norman NACE Level III

Appendix A: Table 1: Inspection and Testing (for reference) **No.**	**Type**	**Method**	**Frequency**	**Acceptance Criteria**	**Consequence**
1.	**Environmental Conditions**	Ambient and steel temperature. RH%, dew point.	Before start of each shift. Minimum twice per shift.	RH% <85%, Temperature >3°C above the dew point.	No blasting or coating.
2.	**Visual Examination**	Visual for sharp edges, weld splatter, slivers, rust grade etc.	100% of all surfaces.	No defects.	Defects to be repaired.
3.	**Cleanliness**	a) ISO 8501-1 b) ISO 8502-3	a) 100% visual of all surfaces. b) Spot checks *See note 1*	a) Sa2½ b) Maximum quantity and size rating 2.	a) Reblast b) Reclean and retesting until acceptable.
4.	**Salt Test**	ISO 8502-6, ISO 8502-9	One component per batch processed	< 20mg/m_2 NaCl.	Reclean and retesting until acceptable.
5.	**Roughness**	Testex Tape (NACE RP0287)	Each component or once per 10m_2	50-75µm	Reblasting
6.	**Visual examination**	Visual examination to determine curing, contamination, solvent retention, pinholes/popping , sagging, surface defects.	100% of each surface after each coat.	No defects.	Repair of defects.
7.	**Thickness**	ISO 19840	Each component	nom. 225µm	Repair, additional coats or recoating as appropriate.
8.	**Adhesion**	ISO 4624 using equipment with a hydraulic pulling force and carried out when system is fully cured.	One test panel per batch.	Min. 5MPa Ave > 7MPa Cohesive failures only.	Recoating.

F . Allen & Son Coating specialist

CERTIFICATE FOR GRITBLASTING & PAINTING STAINLESS STEEL

SHOT BLAST EQUIPMENT :	HODGE CLEMCO (96086A)
ABRASIVE SUPPLIER :	HODGE CLEMCO
ABRASIVE TYPE :	ALUMINIUM OXIDE
STANDARD OF BLASTING :	SA 2.5
SURFACE PROFILE REQUIRED :	50-75 MICRONS
SURFACE PROFILE ACHIEVED :	50 MICRONS

SURFACE COATING DETAILS

METHOD OF APPLICATION :	CONVENTIONAL
PAINT SUPPLIER :	PPG
PRIMER COAT :	SIGMACOVER 280
SEALER COAT :	N/A
INTERMEDIATE COAT :	SIGMACOVER 410
INTERMEDIATE COAT :	N/A
TOP COAT :	SIGMADUR 550
TOTAL MIN D.F.T :	225 MICRONS
FINISH COLOUR :	RAL 9002

DATES & TIMES

	BLAST/PRIME	SEALER	INTERMEDIATE	INTERMEDIATE	TOP COAT
DATE:	18/11/2024	N/A	19/11/2024	N/A	20/11/2024
START TIME:	8.00	N/A	8.00	N/A	8.00
FINISH TIME:	10.45	N/A	9.15	N/A	9.05

ENVIROMENTAL CONDITIONS

AIR TEMP °C DRY BULB	18/18/19/18	18/19/19/18	18/18/19/18	18/19/19/18
AIR TEMP °C WET BULB	17	16	17	16
HUMIDITY %	53	53	53	53
DEW POINT °C	8	9	8	9
STEEL TEMP °C	14	14	14	14
DATE	18/11/2024	19/11/2024	20/11/2024	21/11/2024

PAINT AND BATCH NUMBERS

	PAINT ID	BASE	CATALYST	COLOUR	EXPIRY DATE
PRIMER COAT 1	SIGMACOVER 280	P229378184	2230379002	YELLOW/GREEN	23/08/2025
SEALER COAT 2	N/A	N/A	N/A	N/A	N/A
INTERMEDIATE COAT 3	SIGMACOVER 410	P236398582	2151272740	MIO	21/07/2025
INTERMEDIATE COAT 4	N/A	N/A	N/A	N/A	N/A
TOP COAT COAT 5	SIGMADUR 550	2302451878	P235395230	RAL 9002	06/02/2026

	REQUIRED PAINT D.F.T	RECORDED W.F.T	RECORDED PAINT D.F.T
PRIMER COAT	50 MICRONS	80 MICRONS	70 MICRONS
TIE/SEALER COAT	N/A	N/A	N/A
INTERMEDIATE COAT	100 MICRONS	130 MICRONS	110 MICRONS
INTERMEDIATE COAT	N/A	N/A	N/A
TOP COAT	75 MICRONS	95 MICRONS	80 MICRONS
TOTAL	225 MICRONS	N/A	260 MICRONS

TEST RESULTS

BLOTTER TEST	NO STAINS
SOLVENT CLEANING	NO GREASE OR OIL
SALT TEST (MAX 20mg/m2 NaCl)	7mg/m2 NaCl
DUST TEST (MAX GRADE 2)	GRADE 1
HOLIDAY TEST	NO HOLIDAYS DETECTED
PULL TEST	10MPa / 9MPa / 9MPa

INSPECTOR COMMENTS: PASS

DATE : 26/11/2024

SIGNED : *M. Allen* (M . Allen)

SIGMACOVER™ 410/SIGMACOVER™ 410 LT

DESCRIPTION

Two-component, high solids, high-build, polyamide cured epoxy coating

PRINCIPAL CHARACTERISTICS

- General-purpose epoxy buildcoat in protective coating systems, for steel and concrete structures exposed to atmospheric land or marine conditions
- Excellent durability
- Can be recoated with various two-component and conventional coatings, even after long weathering periods
- Easy application by airless spray
- Good drying- and curing properties at low substrate temperature (down to –5°C (23°F))

COLOR AND GLOSS LEVEL

- MIO and a selected range of colors
- Flat

Notes:

- Epoxy coatings will chalk and fade upon exposure to sunlight, elevated temperatures, or chemical exposure. Discoloration and normal chalking do not impact performance. Light colors will darken over time. Some batch-to-batch variation in color is to be expected. Color matches are approximate.
- The addition of a UV stable topcoat should be considered when using epoxy coatings in cosmetic areas

BASIC DATA AT 20°C (68°F)

Data for mixed product	
Number of components	Two
Mass density	1.5 kg/l (12.5 lb/US gal), depending on color MIO: 1.8 kg/l (15.0 lb/US gal)
Volume solids	80 ± 2%
VOC (Supplied)	Directive 2010/75/EU, SED: max. 126.0 g/kg UK PG 6/23(92) Appendix 3: max. 240.0 g/l (approx. 2.0 lb/US gal) China GB 30981-2020 (tested) 208.0 g/l (approx. 1.7 lb/gal)
Recommended dry film thickness	75 - 225 µm (3.0 - 9.0 mils) depending on system
Theoretical spreading rate	10.7 m^2/l for 75 µm (428 ft^2/US gal for 3.0 mils)
Overcoating Interval	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

SIGMACOVER™ 410/SIGMACOVER™ 410 LT

RECOMMENDED SUBSTRATE CONDITIONS AND TEMPERATURES

Substrate conditions

- Suitable primer must be dry and free from any contamination
- Surface of previous coat should be sufficiently roughened if necessary
- When applied to zinc silicate, a mist coat and full coat technique is required

Substrate temperature

- Substrate temperature during application and curing down to -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

INSTRUCTIONS FOR USE

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

- The temperature of the paint 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)

Note: See ADDITIONAL DATA – Pot life

Airless spray

Recommended thinner

THINNER 91-92

Volume of thinner

0 - 10%

Nozzle orifice

Approx. 0.46 – 0.53 mm (0.018 – 0.021 in)

Nozzle pressure

20.0 - 25.0 MPa (approx. 200 - 250 bar; 2901 - 3626 p.s.i.)

SIGMACOVER™ 410/SIGMACOVER™ 410 LT

Brush/roller

- Application by brush may show brush marking, due to the thixotropic nature of the paint and is most suitable to small areas, tight angle areas or for stripe coating or touch-up
- Application by roller will leave roller marking and is suitable for minimum DFT requirements only
- A roller suitable for epoxy application must be used

Recommended thinner

THINNER 91-92

Volume of thinner

0 – 5%

Cleaning solvent

THINNER 90-53

ADDITIONAL DATA

Spreading rate and film thickness	
DFT	**Theoretical spreading rate**
75 µm (3.0 mils)	10.7 m^2/l (428 ft^2/US gal)
150 µm (6.0 mils)	5.3 m^2/l (214 ft^2/US gal)
200 µm (8.0 mils)	4.0 m^2/l (160 ft^2/US gal)

Overcoating interval for DFT up to 200µm (8 mils) - SIGMACOVER 410						
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 and polyurethane coatings	Minimum Maximum	36 hours Extended	24 hours Extended	8 hours Extended	6 hours Extended	4 hours Extended

Overcoating interval for DFT up to 200µm (8 mils) -SIGMACOVER 410LT						
Overcoating with...	**Interval**	**-5°C (23°F)**	**0°C (32°F)**	**5°C (41°F)**	**10°C (50°F)**	**15°C (59°F)**
various two-pack epoxy and polyurethane coatings	Minimum Maximum	48 hours Extended	24 hours Extended	16 hours Extended	12 hours Extended	8 hours Extended

Notes:

- Actual maximum overcoating times will be influenced by local conditions
- To ensure optimal adhesion of the next coat, the surface must be dry and free from all contaminations (oil, grease, chalking, etc...) which would require cleaning and/or abrading
- The LT hardener is not available in all regions, please check this with your PPG representative

SIGMACOVER™ 410/SIGMACOVER™ 410 LT

Curing time for DFT up to 200µm (8 mils) - SIGMACOVER 410			
Substrate temperature	**Dry to touch**	**Dry to handle**	**Full cure**
5°C (41°F)	12 hours	30 hours	20 days
10°C (50°F)	6 hours	24 hours	14 days
15°C (59°F)	4 hours	10 hours	10 days
20°C (68°F)	3 hours	8 hours	7 days
30°C (86°F)	2 hours	6 hours	5 days
40°C (104°F)	1.5 hours	4 hours	3 days

Curing time for DFT up to 200µm (8 mils) - SIGMACOVER 410LT			
Substrate temperature	**Dry to touch**	**Dry to handle**	**Full cure**
-5°C (23°F)	16 hours	24 hours	20 days
0°C (32°F)	11 hours	16 hours	14 days
5°C (41°F)	6 hours	10 hours	10 days
10°C (50°F)	4 hours	8 hours	7 days
15°C (59°F)	3 hours	5 hours	5 days

Notes:
- Ambient temperature during application at -5°C (23°F) is acceptable; however curing to hardness takes longer and complete cure will be reached when the temperature increases
- Adequate ventilation must be maintained during application and curing
- The LT hardener is not available in all regions, please check this with your PPG representative

Pot life (at application viscosity)	
Mixed product temperature	**Pot life**
10°C (50°F)	12 hours
15°C (59°F)	8 hours
20°C (68°F)	6 hours
25°C (77°F)	4 hours
30°C (86°F)	3 hours
40°C (104°F)	2 hours

SAFETY PRECAUTIONS

- See Safety Data Sheet and product label for complete safety and precaution requirements
- 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

SIGMACOVER™ 410/SIGMACOVER™ 410 LT

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

• EXPLANATION TO PRODUCT DATA SHEETS	INFORMATION SHEET	1411

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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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

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.

SIGMADUR™ 550

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
• RELATIVE HUMIDITY – SUBSTRATE TEMPERATURE – AIR TEMPERATURE	INFORMATION SHEET	1650

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.

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SIGMACOVER™ 280

DESCRIPTION

Two-component, aluminum pigmented polyamide cured universal primer

PRINCIPAL CHARACTERISTICS

- General-purpose epoxy primer in protective coating systems for steel and non-ferrous metals
- Excellent adhesion to steel, shop primer, galvanized steel and non-ferrous metals
- Suitable as sealer or tie-coat at DFT 25 - 40 µm (1.0 - 1.6 mils)
- Suitable for immersion service
- Cures at temperatures down to 5°C (41°F)
- Suitable for touching up of weld seams and damages of epoxy coatings during construction
- Suitable on wet blast cleaned substrates (damp or dry)
- Compatible with well-designed cathodic protection systems
- ACQPA 24142-certified

COLOR AND GLOSS LEVEL

- Gray, yellow/green and redbrown
- Low sheen

Note:

- The addition of a UV stable topcoat should be considered when using epoxy coatings in cosmetic areas

BASIC DATA AT 20°C (68°F)

Data for mixed product	
Number of components	Two
Mass density	1.3 kg/l (11.0 lb/US gal)
Volume solids	57 ± 2%
VOC (Supplied)	Directive 2010/75/EU, SED: max. 327.0 g/kg UK PG 6/23(92) Appendix 3: max. 432.0 g/l (approx. 3.6 lb/US gal) China GB 30981-2020 (tested) 336.0 g/l (approx. 2.8 lb/gal)
Recommended dry film thickness	50 - 100 µm (2.0 - 4.0 mils) depending on system
Theoretical spreading rate	11.4 m^2/l for 50 µm (457 ft^2/US gal for 2.0 mils) 5.7 m^2/l for 100 µm (229 ft^2/US gal for 4.0 mils)
Dry to touch	2 hours
Overcoating Interval	Minimum: 2 hours
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:

SIGMACOVER™ 280

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

RECOMMENDED SUBSTRATE CONDITIONS AND TEMPERATURES

- Apply this product to the specified thickness as soon as possible after the surface is prepared

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

- The surface must be properly prepared, dry, clean and free of any contamination
- The surface should be sufficiently roughened by sweep blasting to achieve a uniform matt appearance
- Sweep blast in accordance with the SSPC-SP16 guidelines

Stainless steel

- The surface must be properly prepared, dry, clean and free of any contamination
- The surface should be sufficiently roughened by sweep blasting with inert non-metallic abrasives
- Sweep blast in accordance with the SSPC-SP16 guidelines

Thermal Sprayed Metallization (TSM)

- Surface must be dry and free from any contamination
- The mist coat / full coat technique is required. See mist coat thinning recommendation in the Instructions For Use part below

Concrete / Masonry

- Dried for at least 28 days in good ventilation conditions
- Moisture content should not exceed 4.5%
- Concrete must be sound, dry, free from laitance and any contamination
- Surface should be sufficiently roughened

SIGMACOVER™ 280

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
- Existing pipelines may have to be cleaned first by scraper pigs and solvents

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 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

Pot life

8 hours at 20°C (68°F)

Note:

- See ADDITIONAL DATA – Pot life

Air spray

Recommended thinner

THINNER 91-92

Volume of thinner

0 - 10%, 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.)

SIGMACOVER™ 280

Airless spray

Recommended thinner

THINNER 91-92

Volume of thinner

0 - 10%, depending on required thickness and application conditions

Nozzle orifice

Approx. 0.46 mm (0.018 in)

Nozzle pressure

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

Note:

- Volume of thinner up to 30% for sealer or tie-coat application at DFT range 25 - 40 µm (1.0 - 1.6 mils)

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	
DFT	**Theoretical spreading rate**
50 µm (2.0 mils)	11.4 m^2/l (457 ft^2/US gal)
75 µm (3.0 mils)	7.6 m^2/l (305 ft^2/US gal)
100 µm (4.0 mils)	5.7 m^2/l (229 ft^2/US gal)

Note:

- Maximum DFT when brushing: 50 µm (2.0 mils)

SIGMACOVER™ 280

Overcoating interval for DFT up to 100 µm (4.0 mils)						
Overcoating with...	**Interval**	**5°C (41°F)**	**10°C (50°F)**	**20°C (68°F)**	**30°C (86°F)**	**40°C (104°F)**
itself and various two-pack epoxy coatings	Minimum	12 hours	6 hours	2 hours	1 hour	30 minutes
	Maximum exposed to direct sunshine	3 months	3 months	3 months	2 months	2 months
	Maximum NOT exposed to direct sunshine	6 months	6 months	6 months	4 months	3 months
polyurethane topcoat	Minimum	36 hours	16 hours	6 hours	4 hours	3 hours
	Maximum exposed to direct sunshine	3 months	3 months	3 months	2 months	2 months
	Maximum NOT exposed to direct sunshine	6 months	6 months	6 months	4 months	3 months

Notes:

- Surface should be dry and free from any contamination
- Glossy finishes require a corresponding undercoat

Curing time for DFT up to 100 µm (4.0 mils)			
Substrate temperature	**Dry to touch**	**Dry to handle**	**Full cure**
5°C (41°F)	8 hours	13 hours	21 days
10°C (50°F)	4 hours	6 hours	14 days
20°C (68°F)	2 hours	2.5 hours	7 days
30°C (86°F)	1 hour	1.5 hours	5 days
40°C (104°F)	45 minutes	1 hour	4 days

Note:

- Adequate ventilation must be maintained during application and curing

SIGMACOVER™ 280

Pot life (at application viscosity)	
Mixed product temperature	**Pot life**
15°C (59°F)	10 hours
20°C (68°F)	8 hours
30°C (86°F)	5 hours
35°C (95°F)	4 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
- See Safety Data Sheet and product label for complete safety and precaution requirements

WORLDWIDE AVAILABILITY

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REFERENCES

- Information sheet | Explanation of product data sheets

WARRANTY

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Kilkishen Coatings	Work Instruction: 1706864	Rev: A
Title: Painting Procedure	Approved: AD	Date: 04/11/24

CUSTOMER NAME: Rosetti Marino

SYSTEM: NORSOK M 501 System 6A

1.0 Scope

This Painting Procedure covers the requirements for surface preparation and coating of:

Packing gland, exposed stainless steel material
Barrell flange, exposed stainless steel material

Applicable to Tag:
43-FT-001

2.0 Pre-Cleaning

Prior to abrasive blasting, all surfaces shall be checked for defects, such as, but not limited to “scabs”, weld spatter, sharp edges, sharp corners, cavities, weld slag, laminations, etc. These defects shall be repaired and “dressed” smooth providing a relatively smooth surface before abrasive blasting commences.

Oil and grease shall be removed by solvent washing in accordance with SSPC- SP1; by water washing (if contamination is water soluble) with an appropriate detergent or by steam cleaning followed by a freshwater wash.

The presence of oil shall be checked by rubbing with a clean white cloth, or by sprinkling water on the surface (if present, the water will not spread but will form “heads”).

Surfaces shall be checked for soluble salt contamination, and if present, shall be washed with clean potable water until soluble salt levels are in line with the limits detailed in Specification, and per ISO8501-3. Soluble salts levels should not exceed 40 mg/m2. Test Method will be Bresle test.

Dust level test shall be carried out as per ISO8502-3 with Level 2 maximum accepted.

All traces of dirt, grime and substances deleterious to good adhesion shall be removed by water washing using clean potable water.

4.0 Surface Preparation

All components shall be Brush-Off Blast Cleaned per SSPC SP16 light blast cleaning to achieve 25-40 microns.

The depth of profile shall be checked and verified using Testex Tape and Micrometer per ISO8503-5.

Surfaces shall be checked for soluble salt contamination, and if present, shall be washed with clean potable water until soluble salt levels are in line with the limits detailed in Specification, and per ISO8501-3. Soluble salts levels should not exceed 40 mg/m2. Test Method will be Bresle test.

5.0 Coating Application

Application will be by Air Spray.

The Primer shall be applied within 3 hours of completion of abrasive blast cleaning, to achieve a Dry Film Thickness of 50 DFT.

The Finish Coat shall be applied to achieve a Dry Film Thickness of 30 DFT microns.

Overall Total Dry Film Thickness shall be 60 DFT DFT Positector 6000 Dry Film Thickness Gage* (with SSPC-PA-2 as a guide, Acceptance levels as a guide: 80% Minimum, 120% Maximum).

The over-coating intervals shall comply with the paint coating manufacturer's details, located on the relevant Technical Data Sheets.

6.0 Coating System

The manufacturer of the applied coatings shall be Hempels

Primer: @ DFT 50 micron	Hempadur 15570 or 15590
Intermediate coat: @ DFT 100 micron	Hempaprime Multi 500
Topcoat: @ DFT 75 micron	Hempel's Pro Acrylic 55883

The finish coat COLOUR shall be White (RAL9002)

7.0 Packing of finished Components

All finished components shall be packed in Foam packaging.

8.0 Handling of Coated Components

Care shall be exercised when handling finish-coated components to ensure minimum damage to applied coatings.

9.0 Repairs to damaged paint coatings

A. Cover all coated areas near the defective area before commencing repair or patching up. Use heavy duty textile or fabric adhesive tape.
B. For areas less than 0.1 m2 grind to a rough metal surface using at least an 80 grit disc sander. Alternatively spot blast to bare steel Feather edge the coating to at least 25 mm beyond bare metal.
C. For areas greater than 0.1 m2, blast clean to obtain the metal surface pre-treatment originally specified. Feather edge the coating to at least 25 mm beyond bare metal.
D. Dust and debris shall be removed from the substrate prior to coating application.
E. Apply coating by brush for areas less than 0.1m2 and by spray for areas greater than 0.1m2 to the original specification except that the first coat of a multicoat system shall be thinned as recommended in the product datasheet
F. Test the coating for Holidays when it is cured. Any defects shall be repaired and re-tested for assurance.

10.0 Quality Control

All quality checks will be carried out as per the approved Inspection Test Plan.

A. Air quality shall be checked in accordance with ASTM D 4285.
B. Ambient temperature, Surface temperature, Humidity and Dew point are checked and recorded to ensure they are within the correct parameters.
C. Dust level shall be checked per ISO 8502-3. Max acceptable size Class 2.
D. Surface salt contamination shall be checked in accordance with ISO 8502-6 (Bresel method) Salt concentration on blast cleaned surface shall not exceed 20 mg/m2 as per Norsok M-501.
E. The Dry Film shall be free from any application related defects such as but not limited to runs, drips, dry spray or foreign matter.
F. Areas with blisters, cracks, porous or below required DFT will be repaired.
G. Adhesion strength of all coating systems shall not be less than 5MPa pass on coupon sample.
H. The dry film shall have a uniform appearance.

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INSPECTION REPORT

Report No:	
Client:	
Project Title:	
Project Reference:	
Specification:	
Contractor:	Kilkishen Coatings Shannon
Date of Inspection:	
Location of Inspection:	Kilkishen Coatings Shannon

ENVIRONMENTAL CONDITIONS				
Date	**Air Temp °C**	**Steel Temp °C**	**Dew Point °C**	**% Rel Humidity**

SURFACE PREPARATION		
Pre Surface Condition		
Painted Steel		NO
Type & Grade of Abrasive		
Surface Profile		
Abrasive Blasting Standard Achieved		SA 3
Cleaning		Solvent and Detergent wash
Imperfections		

PAINT APPLICATION		
Paint Mixing		Mechanical Agitation
Application		Spray

PAINT COATINGS

Coat No	Specification	Brand Name	Colour	Batch Number A	Batch Number B	Manufacturer
1						
2						
3						
4						

APPLICATION OF COATINGS

Coat No	Specification	Brand name	Specified DFT	Average Measured DFT	Tag No
1					
2					
3					
4					

COMMENTS/REMARKS:

Signed: Aidan Duggan

FOR
Kilkishen Coatings Ltd.

DATE:

Baker Hughes Confidential

Hempadur 15570

Product characteristics

Description
Hempadur 15570 is a two component, polyamide-adduct cured epoxy paint, which cures to a strong and highly corrosion resistant coating, at temperatures down to -10°C/14°F. The Micaceous Iron Oxide pigmented reddish grey 12430 shade is also well suited for application under humid conditions, on damp steel surfaces, and may be applied on moist surfaces. The greyish yellow 21780 and the grey 11320 shades contains zinc phosphate.
Complies with EU Directive 2004/42/EC, The Paints Directive on the limitation of volatile organic compounds: subcategory j.

Recommended use
As a maintenance and repair primer, intermediate, and/or finishing coat in Hempadur systems in severely corrosive environment. As a finishing coat where a cosmetic appearance is of less importance.
As a low temperature curing epoxy primer, intermediate, and/or finishing coat in paint systems according to specification. Well suited as a (blast) primer in epoxy systems.
Mist coat on Galvosil.

Service temperature:
- Maximum, dry exposure only: 140°C [284°F].

Certificates / Approvals
- EC-type examined as a low flame spread material when used as part of a predefined paint system. Please refer to “Declaration of Conformity” on hempel.com for further details.
- Reaction to fire tested (as part of a coating system with approved primer and topcoat) according to EN13501-1 B-s1, d0.

Product safety

Flash point 25°C [77°F]

VOC content mixed product

Legislation	Value
EU	412 g/L [3.44 lb/US gal]
US (coatings)	412 g/L [3.44 lb/US gal]
US (regulatory)	412 g/L [3.44 lb/US gal]
China	388 g/L [3.24 lb/US gal]

According to specific legislation, see details in the Explanatory Notes available at Hempel website, hempel.com or at your local Hempel website. VOC values may vary with shade, please consult the Safety Data Sheet, section 9. [a]EU Directive 2004/42/CE.

Handling
Handle with care. Before and during use, observe safety labels on packaging and paint containers and follow all local and national safety regulations. Always consult Hempel’s Safety Data Sheet for this product along with the Product Data Sheet.

For professional use only.

Product data

Product code
15570

Product components
Base 15579
Curing Agent 95570

Standard shade* / code
Brownish red 50630

Gloss
Flat

Volume solids
54 ± 2%

Specific gravity
1.3 kg/L [11 lb/US gal]

* Other shades are available, please contact your local Hempel representative.

Hempadur 15570

Reference dry film thickness
100 micron [4.0 mils]

Micaceous iron oxide (MIO) shade / code
Metallic grey 12430

Gloss
Flat

Volume solids
54 ± 2%

Specific gravity
1.4 kg/L [12 lb/US gal]

Reference dry film thickness
100 micron [4.0 mils]

Surface preparation

Cleanliness
- Remove oil, grease and other contaminants by suitable detergent cleaning.
- Remove salts, detergents and other contaminants by high pressure fresh water cleaning.
- All damage of shopprimer and contamination from storage and fabrication should be thoroughly mechanically/chemically cleaned prior to final painting.

New build:
- Abrasive blasting to min. Sa 2½ (ISO 8501-1) / SP 10 (SSPC).
- Stainless steel, aluminium and other non ferric metals and alloys: use non-metallic blast media (corundum, garnet, etc.). Sweep blasting to a uniform dense sharp profile, without blank spots.
- Remove dust, blast media and loose materials.

Maintenance and Repair
- Abrasive blasting to min. Sa 2 (ISO 8501-1) / SP 6 (SSPC).
- Water jetting to min. Wa 2 (ISO 8501-4).
- Flash rust degree of maximum FR M (ISO 8501-4).
- Minor areas can be cleaned by power tool to St 3 provided the surface is roughened and not polished.
- Stainless steel, aluminium and other non ferric metals and alloys: use non-metallic blast media (corundum, garnet, etc.). Sweep blasting to a uniform dense sharp profile, without blank spots.
- Remove dust, blast media and loose materials.

Roughness
- Surface profile Medium (G) (ISO 8503-2).

Consult Hempel's separate Surface Preparation Guidelines for more details.

Application

Mixing ratio
Base 15579 : Curing Agent 95570
(3 : 1 by volume)

Stir well before use.

Hempadur 15570

Thinner
Hempel's Thinner 08450

Cleaner
Hempel's Tool Cleaner 99610

Pot life

Product temperature	20°C [68°F]
Pot life	2 hours

Application method

Tool	Thinning max vol.	Application parameters
Airless spray	5%	Nozzle pressure: 175 bar [2500 psi] Nozzle orifice: 0.019-0.021"
Air spray	15%	Not Applicable.
Brush	5%	Not Applicable.

If brush or roller application is used, more coats will be necessary to achieve the specified dry film thickness. Spray data are indicative and subject to adjustment. Pressure is for a material temperature of 20°C [68°F].

Film thickness

Specification range	Low	High	Recommended
Dry film thickness	50 micron [2.0 mils]	125 micron [5.0 mils]	100 micron [4.0 mils]
Wet film thickness	93 micron [3.7 mils]	231 micron [9.3 mils]	185 micron [7.4 mils]
Theoretical spreading rate	11 m²/L [448 sq ft/US gal]	4.3 m²/L [175 sq ft/US gal]	5.4 m²/L [220 sq ft/US gal]

For best performance, avoid excessive film thickness. Product may be specified in another film thickness than indicated depending on purpose and area of use. This will alter spreading rate, drying and curing time and overcoating interval.

Application conditions
- To avoid condensation, apply on a clean and dry surface with a temperature that is at least 3°C [5°F] above the dew point.
- Surface temperature must be above -10°C [14°F] during application and curing.
- Beware of ice on the surface at low temperatures.
- Temperature of product must be above 15°C [59°F] during application.

Relative Humidity:
- Relative humidity must be below 85% during application.
- Relative humidity must be below 85% during curing.

Application remarks
- Metallised surfaces should be overcoated before exposure to open air conditions.
- Flash-coat technique is recommended when overcoating porous substrates.

Drying and overcoating

Product compatibility
- Previous coat: None or according to Hempel's specification.
- Subsequent coat: According to Hempel's Specification. Recommended products are: Hempadur, Hempathane, Hempatex

Drying time

Surface temperature		20°C [68°F]
Touch dry	min	60
Hard dry	hours	5
Fully cured	days	7

Determined for dry film thickness 100 micron [4.0 mils] at standard conditions, see Hempel's Explanatory Notes for details.

Hempadur 15570

Overcoating

Hempel's specification supersedes any guidelines indicated in the overcoating table

Quality name		0°C [32°F]	10°C [50°F]	20°C [68°F]	30°C [86°F]
Atmospheric medium					
Hempadur 15570	Min	18 h	8 h	4 h	3 h
	Max	Ext*	Ext*	Ext*	Ext*
Hempathane HS 55610	Min	18 h	8 h	4 h	3 h
	Max	Ext*	Ext*	Ext*	Ext*
Hempatex Enamel 56360	Min	9 h	4 h	2 h	90 min
	Max	36 h	16 h	8 h	6 h
Immersion					
Hempadur 15570	Min	36 h	16 h	8 h	6 h
	Max	Ext*	Ext*	Ext*	Ext*

Ext*: Depending on the actual exposure conditions, the coated surface is overcoatable for an extended period of time. Contact your local Hempel representative for advice.
Overcoating times are indicative for products of the same generic chemistry. Consult Hempel's specification for more information.

Drying conditions

- To obtain the drying time stated, it is important to maintain sufficient ventilation during application, drying and curing.

Overcoating details

- If the maximum overcoating interval is exceeded, roughening of the surface is necessary to ensure intercoat adhesion.
- The surface must be clean before overcoating.

Other remarks

- Epoxy coats have an inherent tendency of chalking in outdoor exposure. This does not affect the performance of the coating.
- Hempel's Specification supersedes any recommendations given in the Product Data Sheets.

Storage

Shelf life

Ambient temperature	25°C [77°F]
Base	36 months
Curing Agent	36 months

Shelf life from date of production, when stored in original, unopened containers. Thereafter, the product quality must be re-inspected. Storage at elevated temperatures may reduce shelf life. For advice, please consult Hempel.

Storage conditions

- Product must be stored according to local legislation, at maximum 40°C [104°F], without direct sunlight and protected from rain and snow.

Carbon Footprint

Dry film thickness	1 µm	1 mil
GWP (Global Warming Potential)	9.1 g CO_2e/m^2	0.047 lb CO_2e/ft^2

The carbon footprint is for 1 square meter / square foot of surface area with a dry film thickness of 1 micron / mil.

The scope includes raw materials, in-bound transport to the Hempel factory, Hempel manufacturing processes, and any Volatile Organic Compounds emitted during and after the application of the product.

It is calculated based on the standard shade defined in this PDS. Values may vary with shade.

Hempadur 15570

Additional documents

Additional information is available at the Hempel website
https://www.hempel.com/service-and-support/technical-guidelines
or at your local Hempel website:

- Explanatory Notes for Product Data Sheet.
- Application methods.
- General Application Guidelines

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Hempaprime Multi 500

Product characteristics

Description
Hempaprime Multi 500 is a fast drying, high solids epoxy paint. It provides hard wearing and long lasting barrier protection in coating systems for severe corrosive environments. The product meets the requirements of ISO 12944 Part 5, 2019 when used as part of a predefined paint system.

Recommended use
Hempaprime Multi 500 is recommended as a high-build, intermediate coat in high performance coating systems where fast handling and short overcoating times are required. Due to its fast drying, the product is excellent for projects where fast throughput is key. The product can also be used as a self-priming, surface tolerant coat and a finishing coat in heavy-duty coating systems. Suited for application down to 10°C [50°F].
The product is available in several MIO shades such as 18021 and 18061; both with 80% MIO content and with volume solids 82% ± 2. Other MIO shades like 12430, 16980 and non-MIO Grey 13600 are available, and complies with volume solids 85% ± 2.

Service temperature:
- Maximum, dry exposure only: 120°C [248°F].

Certificates / Approvals
- Meets requirements to ISO 12944 when used as part of a predefined paint system. Part 6, Im2; Part 9, CX.
- Meets requirements to NORSOK M-501 when used as part of a predefined paint system. Edition 6, System 1. Edition 7, System 1A, 1B.
- Complies with the requirements in EN1504-2 Products and systems for the protection and repair of concrete structures, meeting CE Mark performance qualification.

Features
- Fast overcoating.
- Crack resistant in high film thickness.
- Low VOC.
- Ready to use - optimised application properties.
- Surface tolerant.

Product safety

Flash point 25°C [77°F]

VOC content mixed product

Legislation	Value
EU	196 g/L [1.64 lb/US gal]
US (coatings)	196 g/L [1.64 lb/US gal]
US (regulatory)	196 g/L [1.64 lb/US gal]
China	196 g/L [1.64 lb/US gal]

According to specific legislation, see details in the Explanatory Notes available at Hempel website, hempel.com or at your local Hempel website. VOC values may vary with shade, please consult the Safety Data Sheet, section 9.

Handling
Handle with care. Before and during use, observe safety labels on packaging and paint containers and follow all local and national safety regulations. Always consult Hempel's Safety Data Sheet for this product along with the Product Data Sheet.

For professional use only.

Product data

Product code
45950

Product components
Base 45959
Curing Agent 95090

Standard shade / code
Brownish red 50630 *

Wide range of colours is available via Hempel's tinting system.

Gloss
Semi-gloss

* Slight discolouration may occur. This does not affect the performance of the coating.

Hempaprime Multi 500

Volume solids
85 ± 2%

Specific gravity
1.4 kg/L [12 lb/US gal]

Reference dry film thickness
150 micron [6.0 mils]

Aluminium shade / code
Aluminium grey 19002

Gloss
Please consult Hempel's Guideline on aluminium pigmented coatings.

Volume solids
78 ± 2%

Specific gravity
1.3 kg/L [11 lb/US gal]

Reference dry film thickness
150 micron [6.0 mils]

Surface preparation

Cleanliness
- Remove oil, grease and other contaminants by suitable detergent cleaning.
- Remove salts, detergents and other contaminants by high pressure fresh water cleaning.

New build:
- Abrasive blasting to min. Sa 2½ (ISO 8501-1) / SP 10 (SSPC).
- Stainless steel, aluminium and other non ferric metals and alloys: use non-metallic blast media (corundum, garnet, etc.). Sweep blasting to a uniform dense sharp profile, without blank spots.
- Remove dust, blast media and loose materials.

Maintenance and Repair
- Spot abrasive blasting to min. PSa 2 (ISO 8501-2) / SP 6 (SSPC).
- Minor areas may be hand or power tool cleaned instead of abrasive blasting.
- Water jetting to min. Wa 2 (ISO 8501-4).
- Flash rust degree of maximum FR M (ISO 8501-4).
- Stainless steel, aluminium and other non ferric metals and alloys: use non-metallic blast media (corundum, garnet, etc.). Sweep blasting to a uniform dense sharp profile, without blank spots.
- Feather edges to sound surrounding coating.
- Remove dust, blast media and loose materials.

Roughness
- Surface profile Medium (G) (ISO 8503-2).

Consult Hempel's separate Surface Preparation Guidelines for more details.

Application

Mixing ratio
Base 45959 : Curing Agent 95090
(4 : 1 by volume)

Stir well before use.

Thinner
Hempel's Thinner 08450

Hempaprime Multi 500

Cleaner
Hempel's Tool Cleaner 99610
Hempel's Thinner 08450

Pot life

Product temperature	10°C [50°F]	20°C [68°F]	30°C [86°F]	40°C [104°F]
Pot life	2½ hours	1 hour	¾ hours	½ hours
Pot life (brush)	-	90 min	-	-

Application method

Tool	Thinning max vol.	Application parameters
Airless spray	5%	Nozzle pressure: 225 bar [3300 psi] Nozzle orifice: 0.019-0.023"
Brush/Roller	5%	Not Applicable.

If brush or roller application is used, more coats will be necessary to achieve the specified dry film thickness. Spray data are indicative and subject to adjustment. Pressure is for a material temperature of 20°C [68°F].

Film thickness

Specification range	Low	High	Recommended
Dry film thickness	100 micron [4.0 mils]	250 micron [10 mils]	150 micron [6.0 mils]
Wet film thickness	118 micron [4.7 mils]	295 micron [12 mils]	177 micron [7.1 mils]
Theoretical spreading rate	8.5 m²/L [346 sq ft/US gal]	3.4 m²/L [139 sq ft/US gal]	5.6 m²/L [228 sq ft/US gal]

Product may be specified in another film thickness than indicated depending on purpose and area of use. This will alter spreading rate, drying and curing time and overcoating interval. For best performance, avoid excessive film thickness.

Application conditions
- Optimal paint temperature for proper mixing, pumping and spraying is: 20°C [68°F].
- To avoid condensation, apply on a clean and dry surface with a temperature that is at least 3°C [5°F] above the dew point.
- Surface temperature must be above 10°C [50°F] during application and curing.

Relative Humidity:
- Relative humidity must be below 85% during application.
- Relative humidity must be below 85% during curing.

Application remarks
- Product requires heavy duty spray equipment; spray hoses shall be as short as possible.
- Metallised surfaces should be overcoated before exposure to open air conditions.
- Flash-coat technique is recommended when overcoating porous substrates.

Drying and overcoating

Product compatibility
- Previous coat: None or according to Hempel's specification.
- Subsequent coat: None or according to Hempel's specification. Recommended products are: Hempadur, Hempaprime, Hempathane

Drying time

Surface temperature		10°C [50°F]	20°C [68°F]	30°C [86°F]	40°C [104°F]
Touch dry	hours	2½	1	⅔	⅓
Surface dry	hours	5½	2½	1	½
Hard dry	hours	8	3½	1½	¾
Fully cured	days	-	7	-	-

Determined for dry film thickness 150 micron [6.0 mils] at standard conditions, see Hempel's Explanatory Notes for details.

Hempaprime Multi 500

Overcoating

Hempel's specification supersedes any guidelines indicated in the overcoating table

Quality name		10°C [50°F]	20°C [68°F]	30°C [86°F]	40°C [104°F]
Atmospheric medium					
Hempaprime Multi 500	Min	7 h	3 h	2 h	90 min
	Max	Ext*	Ext	Ext	Ext
Hempathane HS 55610	Min	7 h	3 h	2 h	90 min
	Max	Ext*	Ext	Ext	Ext

Overcoating times are indicative for products of the same generic chemistry. Consult Hempel's specification for more information.

Drying conditions

- To obtain the drying time stated, it is important to maintain sufficient ventilation during application, drying and curing.
- According to Hempel's Specification.

Overcoating details

- If the maximum overcoating interval is exceeded, roughening of the surface is necessary to ensure intercoat adhesion.
- The surface must be dry and clean prior to application.

Other remarks

- Epoxy coats have an inherent tendency of chalking in outdoor exposure. This does not affect the performance of the coating.
- Hempel's Specification supersedes any recommendations given in the Product Data Sheets.

Storage

Shelf life

Ambient temperature	25°C [77°F]
Base	24 months
Curing Agent	24 months

Shelf life from date of production, when stored in original, unopened containers. Thereafter, the product quality must be re-inspected. Storage at elevated temperatures may reduce shelf life. For advice, please consult Hempel.

Storage conditions

- Product must be stored according to local legislation, at maximum 40°C [104°F], without direct sunlight and protected from rain and snow.

Carbon Footprint

Dry film thickness	1 µm	1 mil
GWP (Global Warming Potential)	5.5 g CO_2e/m^2	0.028 lb CO_2e/ft^2

The carbon footprint is for 1 square meter / square foot of surface area with a dry film thickness of 1 micron / mil.

The scope includes raw materials, in-bound transport to the Hempel factory, Hempel manufacturing processes, and any Volatile Organic Compounds emitted during and after the application of the product.

It is calculated based on the standard shade defined in this PDS. Values may vary with shade.

Hempaprime Multi 500

Additional documents

Additional information is available at the Hempel website https://www.hempel.com/service-and-support/technical-guidelines or at your local Hempel website:

- Explanatory Notes for Product Data Sheet.
- Application methods.
- Substrates.
- Surface Preparation.
- Application Instruction for this product.
- Repair & maintenance.
- Inspection & quality control.

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Hempel's Pro Acrylic

Product characteristics

Description
Hempel's Pro Acrylic 55883 is a two-component, isocyanate-free, acrylic finishing coat with good gloss and colour retention. It is resistant to water and spillage of aliphatic hydrocarbons.
Minimum curing temperature is 0°C/32°F.

Recommended use
Hempel's Pro Acrylic is recommended as a finishing coat for protection of structural steel in severely corrosive environment, where light-fastness and gloss retention are required.
The product may be specified as a one-coat direct-to-metal system in corrosive environments classified as C2 and C3.

Service temperature:
- Maximum, dry exposure only: 120°C [248°F].

Certificates / Approvals
- Meets requirements to NORSOK M-501 when used as part of a predefined paint system. Edition 6, System 1. Edition 7, System 1A, 1B.

Product safety

Flash point 32°C [90°F]

VOC content mixed product

Legislation	Value
EU	362 g/L [3.02 lb/US gal]
US (coatings)	362 g/L [3.02 lb/US gal]
US (regulatory)	362 g/L [3.02 lb/US gal]
China	362 g/L [3.02 lb/US gal]

According to specific legislation, see details in the Explanatory Notes available at Hempel website, hempel.com or at your local Hempel website. VOC values may vary with shade, please consult the Safety Data Sheet, section 9.

Handling
Handle with care. Before and during use, observe safety labels on packaging and paint containers and follow all local and national safety regulations. Always consult Hempel's Safety Data Sheet for this product along with the Product Data Sheet.

For professional use only.

Product data

Product code
55883

Product components
Base 55889
Curing Agent 97883

Standard shade / code
White 10000 *

Wide range of colours is available via Hempel's tinting system.

Gloss
Glossy

Volume solids
58 ± 2%

Specific gravity
1.3 kg/L [11 lb/US gal]

Reference dry film thickness
50 micron [2.0 mils]

Aluminium shade / code
Aluminium grey 19000 **

Gloss
Please consult Hempel's Guideline on aluminium pigmented coatings.

* Colour stability may be affected by exposure to chemicals, elevated temperatures, low light conditions and/ or inadequate ventilation.
** Appearance of the aluminium pigmented coats will depend on application method, drying conditions, handling etc. Please see the Guideline on Aluminium pigmented coatings at hempel.com or at your local Hempel website.

Hempel's Pro Acrylic

Volume solids
57 ± 2%

Specific gravity
1.2 kg/L [10 lb/US gal]

Reference dry film thickness
50 micron [2.0 mils]

Surface preparation

Cleanliness
- According to Hempel's Specification.

Consult Hempel's separate Surface Preparation Guidelines for more details.

Application

Mixing ratio
Base 55889 : Curing Agent 97883
(7 : 1 by volume)

Stir well before use.

Thinner
Hempel's Thinner 08450

Cleaner
Hempel's Thinner 08450

Pot life

Product temperature	20°C [68°F]
Pot life	4 hours

Application method

Tool	Thinning max vol.	Application parameters
Airless spray	5%	Nozzle pressure: 150 bar [2200 psi] Nozzle orifice: 0.017-0.019"

If brush or roller application is used, more coats will be necessary to achieve the specified dry film thickness. Spray data are indicative and subject to adjustment. Pressure is for a material temperature of 20°C [68°F].

Film thickness

Specification range	Low	High	Recommended
Dry film thickness	50 micron [2.0 mils]	120 micron [4.8 mils]	50 micron [2.0 mils]
Wet film thickness	86 micron [3.4 mils]	207 micron [8.3 mils]	86 micron [3.4 mils]
Theoretical spreading rate	12 m²/L [489 sq ft/US gal]	4.8 m²/L [196 sq ft/US gal]	12 m²/L [489 sq ft/US gal]

For best performance, avoid excessive film thickness.

Application conditions
- To avoid condensation, apply on a clean and dry surface with a temperature that is at least 3°C [5°F] above the dew point.
- Surface temperature must be above 0°C [32°F] during application and curing.

Relative Humidity:
- Relative humidity must be below 85% during application.
- Relative humidity must be below 85% during curing.

Application remarks
- Two coats of the topcoat may be necessary to obtain full hiding power.

Hempel's Pro Acrylic

Drying and overcoating

Product compatibility

- Previous coat: According to Hempel's Specification. Recommended products are: Hempadur Mastic 4588W, Hempadur 45141/45143
- Subsequent coat: None.

Drying time

Surface temperature		**20°C** [68°F]
Surface dry	hours	4½
Hard dry	hours	10
Fully cured	days	7

Determined for dry film thickness 50 micron [2.0 mils] at standard conditions, see Hempel's Explanatory Notes for details.

Overcoating

Hempel's specification supersedes any guidelines indicated in the overcoating table

Quality name		**0°C** [32°F]	**10°C** [50°F]	**20°C** [68°F]
Atmospheric medium				
Hempel's Pro Acrylic	Min	18 h	9 h	6 h
	Max	Ext*	Ext	Ext

Overcoating times are indicative for products of the same generic chemistry. Consult Hempel's specification for more information.

Drying conditions

- To obtain the drying time stated, it is important to maintain sufficient ventilation during application, drying and curing.
- Condensation on the freshly applied coating should be avoided.

Overcoating details

- The surface must be dry and clean prior to application.

Other remarks

- Hempel's Specification supersedes any recommendations given in the Product Data Sheets.

Storage

Shelf life

Ambient temperature	**25°C** [77°F]
Base	36 months
Curing Agent	18 months

Shelf life from date of production, when stored in original, unopened containers. Thereafter, the product quality must be re-inspected. Storage at elevated temperatures may reduce shelf life. For advice, please consult Hempel.

Storage conditions

- The curing agent is sensitive to moisture. Store in a dry place and keep the can tightly closed until use.

Carbon Footprint

Dry film thickness	**1 µm**	**1 mil**
GWP (Global Warming Potential)	11.4 g CO_2e/m^2	0.059 lb CO_2e/ft^2

The carbon footprint is for 1 square meter / square foot of surface area with a dry film thickness of 1 micron / mil.

The scope includes raw materials, in-bound transport to the Hempel factory, Hempel manufacturing processes, and any Volatile Organic Compounds emitted during and after the application of the product.

It is calculated based on the standard shade defined in this PDS. Values may vary with shade.

Hempel's Pro Acrylic

Additional documents

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