# AMERLOCK® 400 GF / SIGMASHIELD™ 400

## DESCRIPTION

Two-component, high solids glass flake reinforced polyamine cured epoxy coating

## PRINCIPAL CHARACTERISTICS

- Surface tolerant primer/coating for wide use in Marine and Protective Coatings
- Glass-flake reinforced for improved impact and abrasion resistance
- Excellent resistance to corrosion
- Long-term protection at areas subject to heavy wear and tear
- Very low water permeability, due to glass flake barrier
- Suitable for immersion service
- Compatible with cathodic protection systems
- Pass cryogenic cyclic test from -196°C (-321°F) to 200°C (392°F)
- Designed to prevent corrosion under insulation (CUI) of carbon steel and stainless steel

## COLOR AND GLOSS LEVEL

- Standard and custom colors
- Low sheen

Note:

- Epoxy coatings will chalk and fade with exposure to sunlight. Light colors are prone to ambering to some extent. Note that product tinted to custom colors are not recommended for immersion service. Only use factory grind batches for immersion.

## 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) |
| **Volume solids** | 87 ± 3% |
| **VOC (Supplied)** | EPA Method 24: 172.0 g/l (1.4 lb/US gal) |
| **Temperature resistance (Continuous)** | To 204°C (400°F) |
| **Temperature resistance (Intermittent)** | To 232°C (450°F) |
| **Recommended dry film thickness** | 125 - 750 µm (5.0 - 30.0 mils) depending on system |
| **Theoretical spreading rate** | 4.4 $m^2$/l for 200 µm (174 $ft^2$/US gal for 8.0 mils) |
| **Dry to touch** | 6 hours |
| **Overcoating Interval** | Minimum: 24 hours<br>Maximum: 3 months |
| **Full cure after** | 8 days |
| **Shelf life** | Base: at least 24 months when stored cool and dry |

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| Data for mixed product | |
|---|---|
| | Hardener: at least 36 months when stored cool and dry |

Notes:

- See ADDITIONAL DATA – Spreading rate and film thickness
- See ADDITIONAL DATA – Curing time
- See ADDITIONAL DATA – Overcoating intervals
- Intermittent temperature resistance should be less than 5% of the time, and maximum 24 hours
- Maximum temperature in table is for dry condition, please find "SYSTEM SPECIFICATION" for CUI condition
- U.S. and Canada consist of 3 components (Post-add AMERCOAT 880 Glassflake additive with Amerlock 400)

## RECOMMENDED SUBSTRATE CONDITIONS AND TEMPERATURES

- Coating performance is proportional to the degree of surface preparation. Remove all loose paint, mill scale, and rust. The surface to be coated must be dimensionally stable, dry, clean and free of grease, oil, and other foreign materials. When proper abrasive blast surface preparation is not practical, surfaces should be chipped clean and wire brushed to bare, clean material.

### Carbon steel

- For immersion service: steel; blast cleaned to ISO Sa2½ (SSPC SP10), blasting profile 40 – 75 µm (1.6 – 3.0 mils)
- For atmospheric service, abrasive blast to ISO Sa2½ or minimum SSPC SP6, power tool cleaned to ISO St3 (SSPC SP3) or hand tool cleaned to ISO St2 (SSPC SP2) or ultra high pressure water jet to SSPC SP WJ-2(L) / NACE WJ-2(L)

### Concrete / Masonry

- Remove grease, oil and other penetrating contaminants according to ASTM D4258
- Abrade the surface per ASTM D4259 to remove all chalk and surface glaze or laitance. Achieve surface profile - ICRI CSP 3 to 5.
- AMERCOAT 114 A may be used as a pit filler. Check with PPG Technical Service for alternative
- Maximum recommended moisture transmission rate is 3 lbs/1,000 ft2/24 hours by moisture transmission test (ASTM F1869, calcium chloride test or by ASTM D4263, plastic sheet test)
- Alternatively, ASTM D4944 (Calcium Carbide Gas method) can be used where moisture content should not exceed 4%

### Galvanized steel

- Remove oil or soap film with detergent or emulsion cleaner
- Lightly abrasive blast with a fine abrasive in accordance with SSPC SP16 guidelines to achieve a profile of 38 - 75 µm (1.5 - 3.0 mils). When light abrasive blasting is not possible, galvanizing can be treated with a suitable zinc phosphate conversion coating.
- Galvanizing that has had at least 24 months of exterior weathering may be coated after power washing to remove all contaminants and white rust

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**Non-ferrous metals and stainless steel**

- Remove all rust, dirt, moisture, grease or other contaminants from the surface
- Lightly abrasive blast with a fine abrasive in accordance with SSPC SP16 guidelines to achieve a profile of 40 - 100 µm (1.5 - 4.0 mils)

**Substrate temperature**

- Substrate temperature during application and curing should be above 10°C (50°F)
- Substrate temperature during application and curing should be at least 3°C (37°F) above dew point

## SYSTEM SPECIFICATION

**Insulated and non-insulated service: applied direct to carbon steel or stainless steel up to 204°C (400°F)**

- AMERLOCK 400 GF / SIGMASHIELD 400 : 250 µm (10.0 mils) DFT one coat system

Notes:

- For hot application from 66°C (150°F) to 150°C (300°F), please refer to "HOT APPLY EPOXIES" INFORMATION SHEET
- Can be applied with 2 times application if needed - 125 µm (5.0 mils) X 2 coats
- Do not exceed 400 µm (16.0 mils) total DFT
- Top coat may needs for sunlight directly exposed condition. Please contact your PPG representative for suitable top coats.
- For carbon steel surface treatment, ISO Sa2½ or min. SSPC SP6 is recommended. For maintenance and repair, minimum SSPC SP15 (St3 with minimum 25 µm surface profile) is recommended.

## INSTRUCTIONS FOR USE

**Mixing ratio by volume: base to hardener 1:1**

- 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
- Very good mechanical mixing of base and hardener is essential
- Thinner should be added after mixing the components
- Filters should be removed from spray equipment

**Pot life**

2 hours at 20°C (68°F)

Note:

- See ADDITIONAL DATA – Pot life

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**Air spray**

**Recommended thinner**

THINNER 21-06 or THINNER 91-92

**Volume of thinner**

6 - 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.)

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**Airless spray**

**Recommended thinner**

THINNER 21-06 or THINNER 91-92

**Volume of thinner**

0 – 5%

**Nozzle orifice**

Approx. 0.53 – 0.79 mm (0.021 – 0.031 in)

**Nozzle pressure**

19.0 - 22.5 MPa (approx. 190 - 225 bar; 2756 - 3264 p.s.i.)

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**Brush/roller**

- Use a high quality natural bristle brush. Ensure brush is well loaded to avoid air entrainment. Brush application is limited to small touch up areas of a few square inches.
- Due to thixotropy, it is difficult to obtain a smooth film by brush, although this does not affect performance

**Recommended thinner**

THINNER 21-06 or THINNER 91-92

Note:

- When larger areas need to be coated by roller for high temperature service, use 5 - 10% THINNER 21-06 or 91-92 to achieve 100 - 150 µm (4.0 - 6.0 mils) DFT per coat. Extra control on closed film and maximum allowed DFT is advised due to the irregular film build of this type of application. Application on hot substrate is not advisable by brush/roller.

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**Cleaning solvent**

- THINNER 90-53 or THINNER 90-58 (AMERCOAT 12)

## ADDITIONAL DATA

| Spreading rate and film thickness | |
|---|---|
| **DFT** | **Theoretical spreading rate** |
| 200 µm (8.0 mils) | 4.4 $m^2$/l (174 $ft^2$/US gal) |
| 750 µm (30.0 mils) | 1.2 $m^2$/l (47 $ft^2$/US gal) |

| Overcoating interval for DFT up to 300 µm (12.0 mils) | | | | | |
|---|---|---|---|---|---|
| **Overcoating with...** | **Interval** | **10°C (50°F)** | **20°C (68°F)** | **30°C (86°F)** | **40°C (104°F)** |
| polyurethanes | Minimum<br>Maximum | 36 hours<br>1 month | 16 hours<br>1 month | 10 hours<br>14 days | 8 hours<br>7 days |
| various two-component epoxy coatings | Minimum<br>Maximum | 36 hours<br>3 months | 16 hours<br>3 months | 10 hours<br>3 months | 8 hours<br>1 month |

Note:

- Surface should be dry and free from any contamination

| Curing time for DFT up to 300 µm (12.0 mils) | | | |
|---|---|---|---|
| **Substrate temperature** | **Dry to touch** | **Dry to handle** | **Full cure** |
| 10°C (50°F) | 24 hours | 48 hours | 21 days |
| 20°C (68°F) | 6 hours | 20 hours | 8 days |
| 30°C (86°F) | 4 hours | 12 hours | 4 days |

Note:

- Adequate ventilation must be maintained during application and curing

| Pot life (at application viscosity) | |
|---|---|
| **Mixed product temperature** | **Pot life** |
| 10°C (50°F) | 3 hours |
| 20°C (68°F) | 2 hours |
| 30°C (86°F) | 1 hour |

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## 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

It is always the aim of PPG Protective & 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

- Information sheet | Explanation of product data sheets

## 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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