PPG SIGMAWELD™ 199

DESCRIPTION

Two-component, moisture-curing low zinc (ethyl) silicate prefabrication primer

PRINCIPAL CHARACTERISTICS

- Suitable for automatic application on shot blasted steel plates
- Fast drying properties
- Good cutting and excellent welding properties, including MIG/MAG welding in various positions (either automatic or manual welding)
- Provides regular, smooth weld seams
- Low fume release during welding and cutting
- No adherence of weldspatter at surrounding primed surface
- Excellent thermal stability minimizes heat damage during hot work procedures
- Can be used as a first coat in various paint systems
- Suitable for sea water immersion in combination with controlled cathodic protection systems
- Approved by major classification societies like Lloyd's Register and DNV-GL for use as a prefabrication primer

COLOR AND GLOSS LEVEL

- Redbrown, green and gray
- Flat

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	25 ± 2%
VOC (Supplied)	Directive 2010/75/EU, SED: max. 521.0 g/kg max. 676.0 g/l (approx. 5.6 lb/US gal)
Recommended dry film thickness	18 µm (0.7 mil)
Theoretical spreading rate	13.9 m^2/l for 18 µm (573 ft^2/US gal for 0.7 mils)
Dry to handle	6 minutes
Overcoating Interval	Minimum: 3 days Maximum: 6 months
Full cure after	3 days
Shelf life	Binder: at least 9 months when stored cool and dry Paste: at least 12 months when stored cool and dry

Notes:

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- See ADDITIONAL DATA – Curing time
- Longer overcoating intervals can be permitted when the primer is still in sound condition
- Full cure time for Relative Humidity (RH) of >50%
- Processing of coated steel plates (bending, welding, etc.) and overcoating is only recommended when the shopprimer is fully cured
- More detailed information on application, handling and storage of steel plates is presented in the SIGMAWELD 199 Working Procedure

RECOMMENDED SUBSTRATE CONDITIONS AND TEMPERATURES

Substrate conditions

- Steel; shot blast cleaned to ISO Sa2½, blasting profile 30 – 75 µm (1.2 – 3.0 mils)
- On steel blasted to above profile, the recommended DFT of 18 µm (0.7 mil), corresponds to 22 µm (0.9 mil) as measured on a smooth test panel
- Minimum thickness for a closed film is 15 µm (0.6 mil) measured on a smooth test panel
- 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.

Substrate temperature and application conditions

- Substrate temperature during automatic application should be between 25°C (77°F) and 35°C (95°F)
- Substrate temperature during application and curing should be at least 3°C (5°F) above dew point
- Ambient temperature during application should be at least 5°C (41°F)

Note:

- Substrate temperatures of >35°C (95°F) during application increases the risk of dry spray, and is therefore not recommended

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SECONDARY SURFACE PREPARATION

- During storage and construction, contamination of the prefabrication primer should be limited
- After fabrication, surface defects should be treated according to the scheme hereafter
- Where two possible surface treatments are indicated, the choice of treatment is dependent on the location and on the system to be applied (see below table)
- The preferred pre-treatment for optimal results is shown below

SECONDARY SURFACE PREPARATION		
Area	**Immersed exposure conditions**	**Atmospheric exposure conditions**
Contamination	To be removed	To be removed
Weldseams	ISO 8501-3 grade P2 and cleanliness ISO Sa2½ (SPSS-Pt3)	SPSS-Pt2
Burned	ISO 8501-3 grade P2 and cleanliness ISO Sa2½ (SPSS-Pt3)	SPSS-Ss (SPSS-Pt2)
Damaged corroded	ISO 8501-3 grade P2 and cleanliness ISO Sa2½ (SPSS-Pt3)	SPSS-Ss (SPSS-Pt2)
White rust	ISO 8501-3 grade P2 and cleanliness ISO Sa2½ (SPSS-Pt3)	SPSS-ID Pt1 (SCAP)

Notes:

- Burned through areas may be present (this happens especially when welding thin steel) and these should then be treated as per 'burned areas' above
- Cleaning by silicon carbide impregnated abrasive pad
- Dust quantity rating "1" for dust size class "3", "4" or "5", lower dust size classes to be removed if visible on the surface to be coated without magnification (ISO 8502-3)
- The back of welded plate may show discoloration (especially on plates where fillets have been welded on). This is not to be confused with burned areas and does not require special treatment.

INSTRUCTIONS FOR USE

Mixing ratio by volume: binder to paste 2:1

- The temperature of the mixture of binder and paste should preferably be above 15°C (59°F)
- Stir the paste thoroughly before adding the binder
- Gradually add one-third of the binder to the pigment paste
- Stir thoroughly until homogeneous
- Add remaining binder and continue stirring until the mixture is homogeneous
- Strain mixture through a 30 – 60 mesh screen
- Mixed paint is ready for use
- Some addition of thinner (THINNER 90-53) might be necessary depending on routing, line speed and steel temperature
- Agitate continuously during application

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Pot life

24 hours at 20°C (68°F)

Air spray

Recommended thinner

THINNER 90-53

Volume of thinner

0 – 5%

Nozzle orifice

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

Nozzle pressure

0.3 MPa (approx. 3 Bar; 44 p.s.i.)

Airless spray

Recommended thinner

THINNER 90-53

Volume of thinner

0 – 5%

Nozzle orifice

Approx. 0.43 – 0.53 mm (0.017 – 0.021 in)

Nozzle pressure

8.0 - 12.0 MPa (approx. 80 - 120 bar; 1161 - 1741 p.s.i.)

Cleaning solvent

- THINNER 90-53

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ADDITIONAL DATA

Curing time for DFT up to 18 µm (0.7 mil)		
Substrate temperature	**Dry to handle**	**Full cure**
20°C (68°F)	6 minutes	3 days
30°C (86°F)	4 minutes	48 hours

Notes:

- Curing times valid for a Relative Humidity (RH) of >50%
- Relative humidity of <50% will reduce curing speed and increase time to full cure
- At temperatures below 5°C (41°F) curing will be limited and time to full cure will increase
- Longer drying times may be necessary at higher DFT and under unfavorable atmospheric conditions
- Processing (bending, welding, etc.) and overcoating of coated steel plates is only recommended when SIGMAWELD 199 is fully cured. Degree of curing can be checked by MEK-rub test (ASTM D4752). Full cure is achieved when the coating surface is not affected by the solvent.

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

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

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