

# 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 mils)
Theoretical spreading rate	13.9 m <sup>2</sup> /l for 18 µm (573 ft <sup>2</sup> /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:



# SIGMAWELD™ 199

- 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 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

# SIGMAWELD™ 199

## 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; other possibilities are indicated in brackets

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 Sa 2 ½ (SPSS-Pt3)	SPSS-Pt2
Burned	ISO 8501-3 grade P2 and cleanliness ISO Sa 2 ½ (SPSS-Pt3)	SPSS-Ss (SPSS-Pt2)
Damaged corroded	ISO 8501-3 grade P2 and cleanliness ISO Sa 2 ½ (SPSS-Pt3)	SPSS-Ss (SPSS-Pt2)
White rust	ISO 8501-3 grade P2 and cleanliness ISO Sa 2 ½ (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 plate 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



# SIGMAWELD™ 199

**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
-

# SIGMAWELD™ 199

## ADDITIONAL DATA

Curing time for DFT up to 18 µm (0.7 mils)		
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 4752). 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

## 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.ppgmc.com](http://www.ppgmc.com). The English text of this sheet shall prevail over any translation thereof.

The PPG logo, and all other PPG marks are property of the PPG group of companies. All other third-party marks are property of their respective owners.

