# SIGMAZINC™ 158

## DESCRIPTION

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

## PRINCIPAL CHARACTERISTICS

- Certificate for ASTM A-490 class 'B' for slip coefficient
- Complies with the compositional requirements of SSPC-Paint 20, Level 2
- Anticorrosive primer for structural steel
- Suitable as a system primer in various paint systems based on unsaponifiable binders
- Galvanic action eliminates sub-film corrosion
- Can withstand substrate temperatures from –90°C (–130°F) up to 400°C (750°F), under normal atmospheric exposure conditions
- When suitably topcoated provides excellent corrosion protection for steel substrates up to 540°C (1000°F)
- Good low-temperature curing
- Good impact and abrasion resistance
- Must not be exposed to alkaline (more than pH 9) or acidic (less than pH 5.5) liquids

## COLOR AND GLOSS LEVEL

- Gray, greenish gray
- Flat

## BASIC DATA AT 20°C (68°F)

| Data for mixed product | |
|---|---|
| **Number of components** | Two |
| **Mass density** | 2.3 kg/l (19.2 lb/US gal) |
| **Volume solids** | 65 ± 2% |
| **VOC (Supplied)** | Directive 1999/13/EC, SED: max. 219.0 g/kg<br>max. 507.0 g/l (approx. 4.2 lb/US gal) |
| **Recommended dry film thickness** | 75 - 100 µm (3.0 - 4.0 mils) depending on system |
| **Theoretical spreading rate** | 8.7 $m^2$/l for 75 µm (348 $ft^2$/US gal for 3.0 mils) |
| **Dry to touch** | 30 minutes |
| **Overcoating Interval** | Minimum: 12 hours<br>Maximum: Unlimited |
| **Full cure after** | 12 hours |
| **Shelf life** | Binder: at least 9 months when stored cool and dry<br>Pigment: at least 24 months when stored pigment moisture free |

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

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## RECOMMENDED SUBSTRATE CONDITIONS AND TEMPERATURES

**Immersion exposure**

- Steel; blast cleaned to ISO-Sa2½, blasting profile 40 – 70 µm (1.6 – 2.8 mils)
- Steel with approved zinc silicate shop primer; sweep blasted to SPSS-Ss, welds, rusty and damaged areas blast cleaned to ISO-Sa2½

**Atmospheric exposure conditions**

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

**Substrate temperature and application conditions**

- 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 up to 50°C (122°F) is acceptable
- Substrate temperature during application and curing should be at least 3°C (5°F) above dew point
- Relative humidity during curing should be above 50%

## INSTRUCTIONS FOR USE

**Mixing ratio by volume: binder to zinc powder 81:19**

- Many of PPG's zinc silicates are supplied as two-pack materials consisting of a container with pigmented binder and a drum containing a bag of zinc powder.
- To ensure proper mixing of both components, the instructions given below must be followed
- To avoid lumps in the paint do not add the binder to the zinc powder
- [1] Take the bag with zinc powder out of the drum
- [2] Shake the binder in the jerrycan a few times to reach a certain degree of homogenization
- [3] Pour about 2/3 of the binder into the empty drum
- [4] With the jerrycan now reduced in weight and containing more free space, shake it vigorously to obtain a homogeneous mix with no deposits left on the bottom, and add this to the drum
- [5] Add the zinc powder gradually to the pigmented binder in the drum and, at the same time, continuously stir the mixture by using a mechanical mixer (keep the speed low)
- [6] Stir the zinc dust powder thoroughly through the binder (high speed) and keep stirring until a homogeneous mixture is obtained
- [7] Strain mixture through a 30 – 60 mesh screen
- [8] Agitate continuously during application (low speed). The use of a dedicated pump with a constant agitation for a zinc silicate coating is recommended

Note: At application temperature above 30°C (86°F) addition of max 10% by volume of THINNER 90-53 may be necessary

**Induction time**

None

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**Pot life**
12 hours at 20°C (68°F)

Note: See ADDITIONAL DATA – Pot life

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**Air spray**

**Recommended thinner**
THINNER 90-53

**Volume of thinner**
0 - 10%, depending on required thickness and application conditions

**Nozzle orifice**
2.0 mm (approx. 0.079 in)

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

Note: A dedicated pump for a zinc silicate coating with constant agitation must be used

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**Airless spray**

**Recommended thinner**
THINNER 90-53

**Volume of thinner**
0 - 10%, depending on required thickness and application conditions

**Nozzle orifice**
Approx. 0.48 – 0.64 mm (0.019 – 0.025 in)

**Nozzle pressure**
9.0 - 12.0 MPa (approx. 90 - 120 bar; 1306 - 1741 p.s.i.)

Note: A dedicated pump for a zinc silicate coating with constant agitation must be used

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**Brush/roller**
- Only for touch-up and spot repair
- Roller application is not recommended

**Recommended thinner**
THINNER 90-53

**Volume of thinner**
5 – 15%

Note: Apply a visible wet coat with a max. dft of 25 µm (1.0 mils)|same for subsequent coats in order to obtain the required dft

**Cleaning solvent**
THINNER 90-53

**Upgrading**
- This is only valid for spray application
- If the DFT is below specification and an extra coat of SIGMAZINC 158 has to be applied, SIGMAZINC 158 should be thinned down with 25 – 50% THINNER 90-53, in order to obtain a visible wet coat that remains wet for some time

## ADDITIONAL DATA

| Spreading rate and film thickness | |
|---|---|
| **DFT** | **Theoretical spreading rate** |
| 75 µm (3.0 mils) | 8.7 $m^2$/l (348 $ft^2$/US gal) |
| 100 µm (4.0 mils) | 6.5 $m^2$/l (261 $ft^2$/US gal) |

Notes:
- Maximum DFT when brushing: 35 µm (1.4 mils)
- Above 150 µm (6.0 mils) mudcracking can occur
- Average DFT 75 µm (3.0 mils) with a minimum of 60 µm (2.4 mils) on smooth non-pitted blast cleaned steel
- Average DFT 100 µm (4.0 mils) with a minimum of 75 µm (3.0 mils) on rough or pitted, blast cleaned steel

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| Overcoating interval for DFT up to 100 µm (4.0 mils) and 50% relative humidity | | | | | | | |
|---|---|---|---|---|---|---|---|
| **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)** |
| recommended topcoats | Minimum<br>Maximum | 24 hours<br>Unlimited | 24 hours<br>Unlimited | 18 hours<br>Unlimited | 12 hours<br>Unlimited | 6 hours<br>Unlimited | 4 hours<br>Unlimited |

Notes:

- For recoating with itself to take required dft, recommend to apply within 2 days before full cure. No minimum recoating interval limitation for itself.
- To confirm cure to topcoat, conduct a MEK rub test per ASTM D4752. A rating of 4 or higher is sufficient for topcoating
- For measuring of the curing, the MEK rub test according to ASTM 4752 is a suitable method: after 50 double rubs with a cloth soaked in MEK (or alternatively THINNER 90-53) no dissolving of the coating should be observed
- Curing/recoating time will be shortened by the increase of humidity, please contact regional technical service team for details
- A mist coat / full coating application technique is required when topcoating to prevent application bubbling. Ensure dry spray is removed from the surface
- SIGMAZINC 158 is a moisture curing zinc silicate, this means that it cures after sufficient exposure to moisture from the atmosphere during and after application; it is recommended that relative humidity and temperature are measured during the curing time
- When curing conditions are unfavorable or when reduced overcoat times are desired, curing can be accelerated 4 hours after application by: [1] Wetting or soaking with water, keeping the surface wet for the next 2 hours, followed by drying; [2] Wetting or soaking with a 0.5% ammonia solution, followed by drying
- Maximum interval is only unlimited when the surface is free from any contamination

| Curing time for DFT up to 100 µm (4.0 mils) and 50% relative humidity | | |
|---|---|---|
| **Substrate temperature** | **Dry to handle** | **Full cure** |
| -5°C (23°F) | 2 hours | 24 hours |
| 0°C (32°F) | 2 hours | 24 hours |
| 10°C (50°F) | 1 hour | 18 hours |
| 20°C (68°F) | 30 minutes | 12 hours |
| 30°C (86°F) | 30 minutes | 6 hours |
| 40°C (104°F) | 30 minutes | 4 hours |

Notes:

- SIGMAZINC 158 is a moisture curing zinc silicate, this means that it only cures after sufficient take up of water, (from the atmosphere) during and after application
- It is recommended that relative humidity and temperature are measured during the curing time
- Relative humidity during curing recommended to be above 50%
- Adequate ventilation must be maintained during application and curing (please refer to INFORMATION SHEETS 1433 and 1434)

| Pot life (at application viscosity) | |
|---|---|
| **Mixed product temperature** | **Pot life** |
| 0°C (32°F) | 24 hours |
| 10°C (50°F) | 16 hours |
| 20°C (68°F) | 12 hours |
| 30°C (86°F) | 6 hours |

# SIGMAZINC™ 158

## SAFETY PRECAUTIONS

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

## WORLDWIDE AVAILABILITY

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

## REFERENCES

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

## WARRANTY

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