SIGMA PHENGUARD 930  
(SIGMA PHENGUARD PRIMER)

DESCRIPTION  
two component high build amine adduct cured phenolic epoxy primer

PRINCIPAL CHARACTERISTICS  
– primer coat in the Sigma Phenguard tank coating system  
– excellent resistance to a wide range of organic acids, alcohols, edible oils, fats (regardless of free fatty acid content) and solvents  
– maximum cargo flexibility  
– low cargo absorption  
– good resistance to hot water  
– Recognized corrosion control coating (Lloyd’s register), see sheet 1886  
– good application properties, resulting in a smooth surface

COLORS AND GLOSS  
off-white - eggshell

BASIC DATA AT 68°F  
(8.25 lb/US gal = 1 g/cm³; 40.7 ft²/US gal = 1 m²/l)  
(data for mixed product)

Mass density 14.19 lbs/gal (1.7 g/cm³)  
Solids content 66 ± 2%  
VOC (supplied - EPA 24) max. 191 g/kg (Directive 1999/13/EC, SED) max. 2.5 lb/gal (approx. 300 g/l)  
Recommended dry film thickness 4 mils (100 µm) *  
Theoretical spreading rate 268 ft²/gal (6.6 m²/l) for 4 mils (100 µm) *  
Touch dry after 2 hours  
Overcoating interval min. 36 hours * max. 21 days *  
Curing time see curing table *  

Shelf life (cool and dry place) at least 12 months  
Flash point base 77°F (25°C), hardener 90°F (32°C)  
* see additional data

RECOMMENDED SUBSTRATE CONDITIONS AND TEMPERATURES  
– steel; blast cleaned in situ to at least SSPC SP10/NACE 2 (ISO-Sa2½) and free from rust, scale, shop primer and any other contamination  
– blasting profile; (R₂) 2 - 4 mils (50 - 100 µm)  
– the substrate must be perfectly dry before and during application of Sigma Phenguard 930  
– substrate temperature must be above 50°F (10°C) and at least 5°F (3°C) above dew point during application and curing
**SIGMA PHENGUARD 930**
(SIGMA PHENGUARD PRIMER)

**SYSTEM SPECIFICATION**
- marine
- tank coatings
- system sheet 3141
- system sheet 3322

**INSTRUCTIONS FOR USE**
- mixing ratio by volume: base to hardener 88 : 12
  - the temperature of the mixed base and hardener should preferably be above 59°F (15°C), otherwise extra solvent may be required to obtain application viscosity
  - too much solvent results in reduced sag resistance and slower cure
  - thinner should be added after mixing the components

<table>
<thead>
<tr>
<th>Induction time</th>
<th>59°F (15°C) - 20 min.</th>
</tr>
</thead>
<tbody>
<tr>
<td>68°F (20°C)</td>
<td>15 min.</td>
</tr>
<tr>
<td>77°F (25°C)</td>
<td>10 min.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pot life</th>
<th>4 hours at 68°F (20°C) *</th>
</tr>
</thead>
<tbody>
<tr>
<td>*</td>
<td>see additional data</td>
</tr>
</tbody>
</table>

**AIRLESS SPRAY**
- Recommended thinner: Sigma thinner 91-92
- Volume of thinner: 5 - 10%, depending on required thickness and application conditions
- Nozzle orifice: approx. 0.018" - 0.021" inch (= 0.46 - 0.53 mm)
- Nozzle pressure: 2130 p.s.i. (= approx. 15 MPa; 150 bar)

**CONVENTIONAL SPRAY**
- Recommended thinner: Sigma thinner 91-92
- Volume of thinner: 5 - 10%, depending on required thickness and application conditions
- Nozzle orifice: 0.078" inch (2 mm)
- Nozzle pressure: 43 p.s.i. (= approx. 0.3 MPa or 3 bar)

**BRUSH/Roller**
- only for spot repair and stripe coating
- Recommended thinner: Sigma thinner 91-92
- Volume of thinner: 0 - 5%

**CLEANING SOLVENT**
- Sigma thinner 90-53
SAFETY PRECAUTIONS

for paint and recommended thinners see safety sheets 1430, 1431 and relevant material safety data sheets

this is a solvent based 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

ADDITIONAL DATA

Film thickness and spreading rate

| theoretical spreading rate ft²/gal (m²/l) | 268 (6.6) | 215 (5.3) |
| dft in mil | 4 (100) | 5 (125) |

max. dft when brushing: 2 mils (50 µm)

Overcoating table for Sigma Phenguard 935 and SigmaGuard 790

<table>
<thead>
<tr>
<th>substrate temperature</th>
<th>50°F</th>
<th>59°F</th>
<th>68°F</th>
<th>86°F</th>
<th>104°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>(10°C)</td>
<td>(15°C)</td>
<td>(20°C)</td>
<td>(30°C)</td>
<td>(40°C)</td>
<td></td>
</tr>
<tr>
<td>minimum interval</td>
<td>60 hours</td>
<td>48 hours</td>
<td>36 hours</td>
<td>24 hours</td>
<td>16 hours</td>
</tr>
<tr>
<td>maximum interval</td>
<td>28 days</td>
<td>25 days</td>
<td>21 days</td>
<td>14 days</td>
<td>7 days</td>
</tr>
</tbody>
</table>

- surface should be dry and free from any contamination
Curing table

<table>
<thead>
<tr>
<th>Substrate Temperature</th>
<th>Min. Curing Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>50°F (10°C)</td>
<td>14 days</td>
</tr>
<tr>
<td>59°F (15°C)</td>
<td>14 days</td>
</tr>
<tr>
<td>68°F (20°C)</td>
<td>10 days</td>
</tr>
<tr>
<td>86°F (30°C)</td>
<td>7 days</td>
</tr>
<tr>
<td>104°F (40°C)</td>
<td>5 days</td>
</tr>
</tbody>
</table>

- Minimum curing time of Sigma Phenguard tank coating system before transport of cargoes without note 4, 7, 8 or 11 and ballast water and tank test with seawater
- for detailed information on resistance and resistance notes, please refer to the latest issue of the Cargo Resistance List
- for transport of methanol and vinyl acetate monomer, a hot cargo cure is required which cannot be substituted by a service period of 3 months with non-aggressive cargoes
- adequate ventilation must be maintained during application and curing (please refer to sheet 1433 and 1434)
- the performance of the applied system strongly depends on the curing degree of the first coat at time of recoating. Therefore overcoating time between 1st and 2nd coat is extended in comparison between 2nd and 3rd coat (see overcoating details)
- when used as a primer under solvent free tank-linings the dft must be limited to a maximum of 4 mils (100 µm)

Pot life (at application viscosity)

<table>
<thead>
<tr>
<th>Substrate Temperature</th>
<th>Pot Life</th>
</tr>
</thead>
<tbody>
<tr>
<td>50°F (10°C)</td>
<td>6 hours</td>
</tr>
<tr>
<td>68°F (20°C)</td>
<td>4 hours</td>
</tr>
<tr>
<td>86°F (30°C)</td>
<td>1.5 hours</td>
</tr>
</tbody>
</table>

Worldwide availability

Whilst it is always the aim of SigmaKalon Marine & Protective Coatings to supply the same product on a worldwide basis, 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: see information sheet 1411
- Safety indications: see information sheet 1430
- Safety in confined spaces and health safety: see information sheet 1430
- Explosion hazard - toxic hazard: see information sheet 1431
- Safe working in confined spaces: see information sheet 1433
- Directives for ventilation practice: see information sheet 1434
- Cleaning of steel and removal of rust: see information sheet 1490
- Specification for mineral abrasives: see information sheet 1491

LIMITATION OF LIABILITY

The information in this data sheet is based upon laboratory tests we believe to be accurate and is intended for guidance only. All recommendations or suggestions relating to the use of the Sigma Coatings products made by SigmaKalon Marine & Protective Coatings, whether in technical documentation, or in response to a specific enquiry, or otherwise, are based on data which to the best of our knowledge are reliable. The products and information are designed for users having the requisite knowledge and industrial skills and it is the end-user's responsibility to determine the suitability of the product for its intended use.

SigmaKalon Marine & Protective Coatings has no control over either the quality or condition of the substrate, or the many factors affecting the use and application of the product. SigmaKalon Marine & Protective Coatings therefore does not accept any liability arising from loss, injury or damage resulting from such use or the contents of this data sheet (unless there are written agreements stating otherwise).

The data contained herein are liable to modification as a result of practical experience and continuous product development. This data sheet replaces and annuls all previous issues and it is therefore the user's responsibility to ensure that this sheet is current prior to using the product.

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