

SIGMA PHENGUARD 935**(SIGMA PHENGUARD COATING)**

5 pages

September 2005
Revision of January 2003

DESCRIPTION	two component high build amine adduct cured phenolic epoxy coating
PRINCIPAL CHARACTERISTICS	<ul style="list-style-type: none"> – second 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	pink - eggshell
BASIC DATA AT 68°F	(8.25 lb/US gal = 1 g/cm ³ ; 40.7 ft ² /US gal = 1 m ² /l) (data for mixed product)
Mass density	14.19 lbs/gal (1.7 g/cm ³)
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 ft ² /gal (6.6 m ² /l) for 4 mils (100 µm) *
Touch dry after	2 hours
Overcoating interval	min. 24 hours * max. 21 days *
Curing time	see curing table * (data for components)
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	<ul style="list-style-type: none"> – previous coat of Sigma Phenguard 930; dry and free from any contamination – the substrate must be perfectly dry before and during application of Sigma Phenguard 935 – substrate temperature must be above 50°F (10°C) and at least 5°F (3°C) above dew point during application and curing

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SYSTEM SPECIFICATION marine system sheet 3141
 tank coatings 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

Induction time allow induction time before use
 59°F (15°C) - 20 min.
 68°F (20°C) - 15 min.
 77°F (25°C) - 10 min.

Pot life 4 hours at 68°F (20°C) *
 * see additional data

AIRLESS SPRAY

Recommended thinner Sigma thinner 91-92
 Volume of thinner 2 - 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 2 - 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

Recommended thinner Sigma thinner 91-92
 Volume of thinner 0 - 5%

CLEANING SOLVENT

Sigma thinner 90-53

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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	268 (6.6)	215 (5.3)
spreading rate ft ² /gal (m ² /l)		
dft in mil (µm)	4 (100)	5 (125)

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

Overcoating table for Sigma Phenguard 935

substrate temperature	50°F (10°C)	59°F (15°C)	68°F (20°C)	86°F (30°C)	104°F (40°C)
minimum interval	36 hours	32 hours	24 hours	16 hours	12 hours
maximum interval	28 days	25 days	21 days	14 days	7 days

– surface should be dry and free from any contamination

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Curing table

substrate temperature	min. 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
50°F (10°C)	14 days
59°F (15°C)	14 days
68°F (20°C)	10 days
86°F (30°C)	7 days
104°F (40°C)	5 days

- minimum curing time of Sigma Phenguard tank coating system before transport of cargoes with note 4, 7, 8 or 11: 3 months
- 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)

Pot life (at application viscosity)

50°F (10°C)	6 hours
68°F (20°C)	4 hours
86°F (30°C)	1.5 hour

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.

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REFERENCES

Explanation to product data sheets	see information sheet 1411
Safety indications	see information sheet 1430
Safety in confined spaces and health safety	
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
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.

In the event of any disparity or dispute in the wording of this document, the original English text shall prevail.

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