

SIGMAGUARD CSF 650

(SIGMAGUARD CSF)

6 pages

July 2007
Revision of February 2006

DESCRIPTION

two component solvent free amine cured epoxy coating

PRINCIPAL CHARACTERISTICS

- tank coating for crude oil/ballast and aliphatic petroleum products
- good resistance to various chemicals
- one coat protection for steel structures, ships and storage tanks with excellent corrosion resistance
- can be reinforced with chopped glassfibre or mat
- can be applied by heavy duty single feed airless spray equipment (60:1)
- reduced explosion risk and fire hazard
- good visibility due to light color
- Recognized corrosion control coating (Lloyd's register), see sheet 1886
- meets the requirements of Mil-C-4556E concerning resistance against aircraft fuel and fuel degradation
- also a conductive version is available, see sheet 7753
- clear version for glassmat reinforced solvent free tank bottom system (see system sheet 4144)

COLORS AND GLOSS

green, clear - gloss

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	10.85 lbs/gal (1.3 g/cm ³)
Solids content	100%
VOC (supplied - EPA 24)	max. 109 g/kg (Directive 1999/13/EC, SED) max. 1.2 lb/gal (approx. 143 g/l) see information sheet 1411
Recommended dry film thickness	12 mils (300 µm)
Theoretical spreading rate	134 ft ² /gal (3.3 m ² /l) for 12 mils (300 µm) *
Touch dry after	8 hours
Overcoating interval	min. 24 hours * max. 20 days *
Full cure after	5 days *
	(data for components)
Shelf life (cool and dry place)	at least 12 months
Flash point	base and hardener above 149°F (65°C) * see additional data

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**RECOMMENDED
SUBSTRATE CONDITIONS
AND TEMPERATURES**

- steel; blast cleaned to SSPC SP10/NACE 2 (ISO-Sa2½), blasting profile (R_z) 2 - 4 mils (50 - 100 µm)
- suitable primer; SigmaCover 280 or SigmaCover 522
- substrate temperature must be above 41°F (5°C) and at least 5°F (3°C) above dew point during application and curing

SYSTEM SPECIFICATION

marine 1 x 12 mils (300 µm) SigmaGuard CSF 650

INSTRUCTIONS FOR USE

- mixing ratio by volume: base to hardener 80 : 20
- the temperature of the mixed base and hardener should preferably be at least 68°F (20°C)
 - at lower temperature the viscosity will be too high for spray application
 - no thinner should be added
 - for recommended application instructions: see working procedure

Induction time

none

Pot life

approx. 1 hour at 68°F (20°C) *
* see additional data

AIRLESS SPRAY

- use heavy duty single feed airless spray equipment preferably 60:1 pump ratio and suitable high pressure hoses
- in-line heating or insulated hoses may be necessary to avoid cooling down of paint in hoses at low air temperature
- application with 45:1 airless spray equipment is possible provided in-line heated high pressure hoses are used
- in case of using 45:1 airless spray equipment the paint must be heated to approx. 86°F (30°C) in order to obtain the right application viscosity
- length of hoses should be as short as possible

Recommended thinner

no thinner should be added

Nozzle orifice

approx. 0.021" - 0.025" inch (= 0.53 - 0.64 mm)

Nozzle pressure

at 68°F (20°C) (paint temperature) min. 4000 p.s.i.
(= approx. 28 Mpa or 280 bar)
at 86°F (30°C) (paint temperature) min. 3000 p.s.i.
(= approx. 22 MPa or 220 bar)

BRUSH/ROLLER

for stripe coating and spot repair only

Recommended thinner

no thinner should be added

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CLEANING SOLVENT

- Sigma thinner 90-83 (preferred) or Sigma thinner 90-53
- all equipment used for application must be cleaned immediately after use
 - paint inside the spraying equipment must be removed before the pot life time has been expired

SAFETY PRECAUTIONS

- for paint and recommended thinners see safety sheets 1430, 1431 and relevant material safety data sheets
- although this is a solvent free paint, care should be taken to avoid inhalation of spray mist as well as contact between the wet paint and exposed skin or eyes
- no solvent present; however, spray mist is not harmless, a fresh air mask should be used during spraying
 - ventilation should be provided in confined spaces to maintain good visibility

ADDITIONAL DATA

Film thickness and spreading rate

theoretical	134 (3.3)	102 (2.5)
spreading rate ft ² /gal (m ² /l)		
dft in mil (µm)	12 (300)	16 (400)

max. dft when brushing: 6 - 8 mils
(150 - 200 µm)

measuring wet film thickness

- a deviation is often obtained between the measured apparent wft and the real applied wft
- this is due to the thixotropy and the surface tension of the paint which retards the release of air trapped in the paint film for some time
- recommendation is to apply a WFT which is equal to the specified dft plus 2.4 mils (60 µm)

measuring dry film thickness

- because of low initial hardness the dft cannot be measured within some days due to the penetration of the measuring device into the soft paint film
- the dft should be measured using a calibration foil of known thickness placed in between the coating and the measuring device

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Overcoating with SigmaGuard CSF 650

with itself

substrate temperature	41°F (5°C)	50°F (10°C)	68°F (20°C)	86°F (30°C)	104°F (40°C)
minimum interval	80 hours	36 hours	24 hours	16 hours	12 hours
maximum interval	20 days	20 days	20 days	14 days	7 days

- surface should be dry and free from any contamination

Curing table for dft up to 6 mils (150 µm)

substrate temperature	dry to handle	full cure
41°F (5°C)	60 hours	15 days
50°F (10°C)	30 hours	7 days
68°F (20°C)	16 hours	5 days
86°F (30°C)	10 hours	3 days
104°F (40°C)	8 hours	2 days

- adequate ventilation must be maintained during application and curing (please refer to sheet 1433 and 1434)
- for drinking water tanks, a tank wash should be carried out after full cure and before the tank goes into service
- for storage and transport of drinking water the recommended working procedure should be followed

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WASHING PROCEDURE

- all personnel should wear watertight suits, boots and gloves properly cleaned with a sodium hypochlorite solution (1% active chlorine per liter)
- all tank sides, bottom and deckheads etc. should be brush cleaned or high-pressure spray cleaned with 1% active chlorine solution as above note: this can also be done by butterworth washing
- all parts should be high pressure cleaned with tap water and tanks drained
- concentrated active chlorine solution should be sprinkled on bottom; approx. 1 quart/100 ft² (1 ltr/10 m²)
- tanks should be filled with tap water to a depth of approx. 8 inches (20 cm) and the water should remain in the tank for at least 2 hours (max. 24 hours)
- tanks should be thoroughly flushed out with tap water
- depending upon local regulations it may be necessary to take water samples, after filling tank completely, to check on bacteria
- after this procedure the tanks will be fit to carry drinking water

Pot life (at application viscosity)

68°F (20°C)	60 min.
86°F (30°C)	45 min.
104°F (40°C)	25 min.

- due to exothermic reaction, temperature during and after mixing may increase

DISCLAIMER

- SigmaGuard CSF 650 is especially developed for the storage and transport of drinking water.
- In order to fulfill the requirements it is important that the coating is well ventilated during application and curing and that the coating has received full curing.
- Furthermore the recommended washing procedure should be followed before exposure to drinking water, in line with our latest datasheet and working procedure.

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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	
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.

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

PDS	7443
179131 green	4000002200
179511 clear	0000002200