

# SIGMAGUARD CSF 650

## NSF/ANSI STANDARD 61

5 pages

August 2014

Revision of July 2014

**Description**

two component solvent free amine cured epoxy coating

**PRINCIPAL CHARACTERISTICS**

- tank coating for crude oil/ballast and aliphatic petroleum products
- also suitable as coating system for storage and transport of drinking water
- good resistance to various chemicals
- one coat protection for steel structures, ships and storage tanks with excellent corrosion resistance
- can be applied by heavy duty single feed airless spray equipment (60:1)
- reduced explosion risk and fire hazard
- good visibility due to light colour
- meets the requirements of Mil-C-4556E concerning resistance against aircraft fuel and fuel degradation
- excellent resistance to crude oil up to 60°C
- certified to NSF/ANSI standard 61 – please visit [www.nsf.org](http://www.nsf.org) for more information

**COLOURS AND GLOSS**

- green

**BASIC DATA AT 20°C**(1 g/cm<sup>3</sup> = 8.35 lb/US gal; 1 m<sup>2</sup>/l = 40.7 ft<sup>2</sup>/US gal)

(data for mixed product)

Mass density	1.3 g/cm <sup>3</sup>
Volume solids	100%
VOC (Supplied)	max. 109 g/kg (Directive 1999/13/EC, SED) max. 143 g/l (approx. 1.2 lb/gal)
Recommended dry film thickness	300 - 600 µm depending on system
Theoretical spreading rate	3.3 m <sup>2</sup> /l for 300 µm *
Touch dry after	8 hours at 20°C
Overcoating interval	min. 24 hours * max. 20 days *
Full cure after	5 days * at 20°C

(data for components)

Shelf life (cool and dry place)

at least 12 months

\* see additional data

**RECOMMENDED  
SUBSTRATE CONDITIONS  
AND TEMPERATURES**

- steel; blast cleaned to ISO-Sa2½, blasting profile 50 - 100 µm
- substrate temperature must be above 5°C and at least 3°C above dew point during application and curing
- Steel; power tooling to ISO-St3 for small and isolated areas (like repairs and joint welds) in fresh water and potable water tanks where spot blasting might be impractical

**SYSTEM SPECIFICATION**

marine

1 x 300 µm SigmaGuard CSF 650

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**INSTRUCTIONS FOR USE**

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

Induction time

none

Pot life

approx. 1 hour at 20°C \*

\*see additional data

**AIRLESS SPRAY**

Recommended thinner

no thinner should be added

Nozzle orifice

approx. 0.64 mm (= 0.025 in)

Nozzle pressure

at 20°C (paint temperature) min. 28 MPa (= approx. 280 bar; 4061 p.s.i.)  
at 30°C (paint temperature) min. 22 MPa (+ approx. 220 bar; 3000 p.s.i.)

- 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 spray equipment 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. 30°C in order to obtain the right application viscosity
- length of hoses should be as short as possible

**BRUSH/ROLLER**

Recommended thinner

for stripe coating and spot repair only/no thinner should be added

**CLEANING SOLVENT**

Thinner 90-83 (preferred) or 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

**ADDITIONAL DATA**

**Film thickness and spreading rate**

theoretical spreading rate m <sup>2</sup> /l	4.0	3.3
dft in µm	250	300

Maximum dft when brushing:

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 60 µm

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**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

**Overcoating table for SigmaGuard CSF 650 for dft up to 300 µm**

with itself

substrate temperature	5°C	10°C	20°C	30°C	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

**Curing table for dft up to 300 µm**

substrate temperature	dry to handle	full cure
5°C	60 hours	15 days
10°C	30 hours	7 days
20°C	16 hours	5 days
30°C	10 hours	3 days
40°C	8 hours	2 days

- adequate ventilation must be maintained during application and curing (please refer to sheets 1433 and 1434)
- for drinking water tanks, a tankwash should be carried out after full cure and before the tank goes into service (for more information on application conditions, please see corresponding certificate on <http://www.nsf.org/>)
- when used as coating system for storage and transport of drinking water the recommended working and washing procedure should be followed

**WASHING PROCEDURE**

- The recommended washing procedure must be applied after completion of the application.
- Sufficient time for full-curing and ventilation must be allowed in accordance with the recommendations as stated in the latest Product Data Sheets and working procedure.
- Always an adequate washing procedure should be followed.
- Several adequate washing procedures are available and may be used (see e.g. washing procedure described in relevant certificate).

**Example of adequate washing procedures:**

- the fresh tap water should remain in the tanks at least 4 full days
- afterwards all tank compartments such as inner hull sides, bottom and deck-heads etc. should be thoroughly washed using high pressure water
- after washing, the tanks should be thoroughly drained
- after this procedure the tanks will be fit to carry drinking water

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**Pot life (at application viscosity)**

20°C	60 min.
30°C	45 min.
40°C	25 min.

- due to exothermic reaction, temperature during and after mixing may increase
- Disclaimer for storage and transport of drinking water:
- SigmaGuard CSF 650 is approved for purpose in accordance with the requirements of the relevant certificate
- PPG Protective & Marine Coatings does not accept any responsibility or liability for any odour, taste or contamination imparted to the drinking water from the coatings or products retained in the coating.

**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	see information sheet 1410
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
Relative humidity - substrate temperature - air temperature	see information sheet 1650

**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
  - ventilation should be provided in confined spaces to maintain good visibility
  - no solvent present; however, spray mist is not harmless, a fresh air mask should be used during spraying

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### WARRANTY

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