SIGMALINE 445

4 pages

April 2009
Revision of November 2005

DESCRIPTION

two component high build amine adduct cured phenolic epoxy in situ lining

PRINCIPAL CHARACTERISTICS

- provides excellent protection in severe chemical and high temperature service
- excellent resistance to blistering from the "cold wall effect"
- excellent for use in sweet and sour crude, brine and processed petroleum products
- resistant to produced water containing hydrogen sulfide and carbon dioxide

COLOURS AND GLOSS

light green - flat

BASIC DATA AT 20°C

(1 g/cm³ = 8.25 lb/US gal; 1 m²/l = 40.7 ft²/US gal)
(data for mixed product)

Mass density	1.7 g/cm³
Volume solids	70 ± 2%
VOC (supplied)	max. 155 g/kg (Directive 1999/13/EC, SED) max. 264 g/l (approx. 2.2 lb/gal)
Recommended dry film thickness	50 - 100 µm depending on system
Theoretical spreading rate	14 m²/l for 50 µm *
Overcoating interval	min. 12 hours * max. 5 days *
Full cure after	10 days *
	(data for components)
Shelf life (cool and dry place)	at least 12 months

* see additional data

RECOMMENDED SUBSTRATE CONDITIONS AND TEMPERATURES

- steel; chemically cleaned according to sheet 1493 or/and sand jetted, dry and free from any contamination
- substrate temperature should be above 10°C and at least 3°C above dew point

INSTRUCTIONS FOR USE

mixing ratio by volume: base to hardener 90 : 10
(do not vary proportions)

- base and hardener should preferably be stored at a temperature of 15 - 20°C
- power agitate base component to uniform consistency before adding hardener, then again after adding hardener
- add the hardener gradually to the base, using a mechanical mixer
- no thinners should be added when used as an in situ coating
- after mixing, commencement of the in situ application must be within 3 hours

Induction time	15 minutes
Pot life	6 hours at 20°C *

* see additional data

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IN SITU APPLICATION

- application of this coating to internal pipe surfaces is accomplished by the use of pigs, pupjoints, compressors and other specialized equipment
- this application should be referred to contractors specializing and experienced in this type of work
- coating performance is dependent upon proper surface preparation, application and curing; these factors are not under the control of PPG Protective & Marine Coatings and therefore no warranty can be offered
- after the application of each coat, dry air has to be blown through the coated pipe until the next coat is applied (see table for minimum overcoating intervals)
- this will remove the solvents and accelerate the curing
- after the last coat is applied, fresh air blowing has to continue for a minimum of 24 hours
- depending on line length, it may be necessary to switch the direction of the fresh air

Recommended thinner: Thinner 91-92

Ventilation: compressed air to be introduced into the line to remove all solvents during and after coating or drying procedures

CLEANING SOLVENT

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 borne paint and care should be taken to avoid inhalation of spray mist or vapour as well as contact between the wet paint and exposed skin or eyes

ADDITIONAL DATA

Film thickness and spreading rate

theoretical spreading rate m^2/l	14.0	9.3	7.0
dft in µm	50	75	100

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Overcoating table for SigmaLine 445 for dft up to 75 µm

substrate temperature	10°C	20°C	30°C	40°C
minimum interval	24 hours	12 hours	6 hours	3 hours
maximum interval	7 days	5 days	3 days	1 day

– after the application of each coat, warm dry air can be applied after sufficient ambient curing to accelerate the curing
– it is beneficial to post cure the total coating system to increase the chemical resistance

Curing table for dft up to 75 µm

substrate temperature	curing time after final coat
10°C	24 days
15°C	26 days
20°C	10 days
25°C	7 days
30°C	5 days
35°C	3 days
40°C	2 days

– adequate ventilation must be maintained during application and curing (please refer to sheets 1433 and 1434)

Pot life (at application viscosity)

20°C	6 hours
25°C	5 hours

Worldwide availability

Whilst it is always the aim of PPG Protective & Marine 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
Internal chemical cleaning of steel pipes - in-situ application	see information sheet 1493

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 PPG Protective & Marine 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.

PPG Protective & Marine 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. PPG Protective & Marine Coatings does therefore 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.

The English text of this document shall prevail over any translation thereof.

PDS 7618
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