Product Specification

PES-CHEM 512 UCEN194

PES-CHEM 512 UCEN 194 is a high build solvent-free high functionality epoxy novolac coating designed to provide outstanding chemical and corrosion protection of steel and concrete structures at elevated temperatures.

Typical applications

Chimneys, chemical containment and bund areas, tanks, pumps, chemical drains and channels and pipework.

Characteristics

Appearance

Base:	Red/Grey Paste
Activator:	Amber liquid
Mixed:	Red/Grey thixotropic liquid

Mixing Ratio

By weight:	5.34:1
By volume:	4:1

Density

Base:	1.63
Activator:	1.05
Mixed:	1.34

Solids content

100%

Sag Resistance

Nil at 20mil (500 microns)

Useable Life

54°F (12°C)	50 minutes
68°F (20°C)	30 minutes
86°F (30°C)	15 minutes

Coverage

Apply the mixed material onto the prepared surface by brush or roller. This should be in two coats at a target thickness of 10 mil (250 microns) per coat using a practical coverage rate of 37 sq. ft. (3.5 sq meters) per liter per coat. On rough concrete surfaces the coverage rate of the first layer in particular will be significantly reduced.

For spray application use sufficient passes to achieve a minimum thickness of 20 mil (500 microns), checking the film thickness regularly with a wet film thickness gauge and brushing out the test marks. As a guide, 1 liter of material should be sufficient to cover 17 sq.ft. (1.6 sq meters) allowing for wastage.

Cure Times

At 68°F (20°C) the applied materials should be allowed to harden for the times indicated below before being subjected to the conditions indicated. These times will be extended at lower temperatures and reduced at higher temperatures:

Movement without load or immersion	6 hours
Light loading	12 hours
Full loading/water immersion	4 days
Chemical Contact	7 days

NOTE:
PES-CHEM 512 UCEN 194 has been formulated to optimize resistance to mineral acids up to 194°F (90°C) immersion temperature. Exposure to mineral acids will result in the formation of a black protective lacquer. In addition, after an initial curing period of at least 12 hours at 68°F (20°C), raising the cure temperature progressively to 140°F-176°F (60 - 80°C) for up to 8 hours will result in improved mechanical, thermal, and chemical resistance properties.

Storage life

5 years if unopened and stored in normal dry conditions 59-86°F (15-30°C).

Mechanical Properties

Adhesion

Tensile Shear to ASTM D1002 on abrasive blasted mild steel with 3mil (75 micron) profile.

2650 psi (188 kg/cm²)

Compressive strength

Tested to ASTM D 695
8,400 psi (592kg/cm²)

Corrosion Resistance

Tested to ASTM B117 > 1000 hours

Flexural Strength

Tested to ASTM D790
6,800 psi (480 kg/cm²)

Hardness

Shore D to ASTM D2240

68°F (20°C)	86
212°F (100°C)	84
302°F (150°C)	72

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Heat Distortion

Tested to ASTM D648 at 264psi fibre stress.
68°F (20°C) Cure 144°F (62°C)
212°F (100°C) Cure 208°F (98°C)
302°F(150°C) Cure 234°F(112°C)

Heat Resistance

Suitable for use in immersed conditions at temperatures up to 194°F (90°C) dependent on chemical contact and dry conditions up to 338°F (170°C) dependent on service.

Chemical Resistance

PES-CHEM 512 UCEN 194 (post cured) offers excellent resistance to the following chemicals when tested at the temperatures indicated:

98% Sulphuric Acid 167°F (75°C)
75% Sulphuric Acid 194°F (90°C)
50% Sulphuric Acid 194°F (90°C)
25%Sulphric Acid 194°F (90°C)
36%HydrochloricAcid 122°F (50°)
10% Hydrochloric Acid 122°F (50°C)
40% Phosphoric Acid 140°F (60°C)
20% Phosphoric Acid 140°F (60°C)
5% Nitric Acid 122°F (50°C)
40% Sodium hydroxide 194°F (90°C)
20% Sodium Chloride 194°F (90°C)

In addition the product offers excellent resistance to the following chemicals when tested at 68°F (20°C):

Ammonium hydroxide	30%
Butanol	100%
Benzene	100%
Cyclohexane	100%
Diethanolamine	100%
Ethanol	100%
Ethylene glycol	100%
Hexane	100%
Hexanol	100%
Methyl diethanolamine	100%
Propylene glycol	100%
Octane	100%
Xylene	100%

Quality

All Polymeric Engineered Solutions Products are supplied under the scope of the company's fully documented quality system.

Warranty

Polymeric Engineered Solutions warrants that the performance of the product supplied will conform to the typical descriptions quoted within this specification provided material is stored correctly and used according to the procedures detailed in the Technical Data Sheet for the material.

Health and safety

Please ensure good practice is observed at all times during the mixing and application of this product. Protective gloves and other recommended personal protective equipment must be worn during the mixing and application of this product. Before mixing and applying the material please ensure you have read and fully understood the detailed Material Safety Data Sheet