Neopoxy LLC
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NPR-1551
High Viscosity Heat Resistant Epoxy System

NPR-1551 is a moderately fast curing, high strength, chemical and corrosion resistant modified epoxy resin, designed to withstand high temperatures. Film thickness of 100–300 mils in a single pass by spray, brush, or trowel. Typically develops a hard surface in 1-2 hours at ambient temperature. Rapid development of physical properties during post cure process.

Typical Physical Properties

Mix Ratio (Resin/Hardener)	***1.5 to 1 by Volume***
Mix Ratio (Resin/Hardener)	1 to 1 by Weight
Initial Cure Time, 100 Grams @ 77˚F (25˚C)	**2 Hours**
Max Service Temperature (300˚F/150˚C Post Cure)	**250˚F (120˚C)**
Glass Transition Temperature (180˚F/82˚C Post Cure)	212˚F (100˚C)
Glass Transition Temperature (300˚F/150˚C Post Cure)	265˚F (130˚C)
Specific Gravity (resin)	1.06 – 1.09 G/ml.
Weight Per Gallon (resin)	8.9 – 9.2 Lbs
Specific Gravity (hardener)	1.53 – 1.57 G/ml.
Weight Per Gallon (hardener)	15.2– 15.4 Lbs
Weight Per Gallon (mixture)	12.0 – 12.3Lbs
Viscosity, Resin @ 25˚C, 20 rpm	100,000 cPs
Viscosity, Hardener @ 25˚C, 20 rpm	100,000 cPs
Flexural Modulus (ASTM D-790)	570,000 psi
Flexural Strength (ASTM D-790)	11,000 psi
Tensile Elongation	3%
Tensile Strength (ASTM D-638)	6,000 psi
Coefficient of Linear Thermal Expansion	3.7 x 10-6cm/cm/OC
Shore D Hardness (ASTM D-4541-95el)	>87
Shrinkage	<0.5%
Adhesion to concrete (ASTM D-4541-95el)	Concrete Fails
Adhesion to steel (ASTM D-4541-95el)	3000 psi

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Curing With Hot Air, Hot Water, or Combination Steam/Air

This epoxy system designed for use in high temperature applications. In its initial ambient cure state, all physical and chemical resistance properties are low. The epoxy requires an elevated temperature post cure to develop high strength and chemical resistance. The purpose of this test was to determine the best method of providing a post cure in a manhole or pipeline structure.

Three heat delivery methods were used: hot air, hot water, and a steam/air combination. A batch of NPR-1551 was mixed, then cast into three separate bars. Each bar was allowed to cure at room temperature. One bar was placed into cold water, which was subsequently heated to 194˚F (90˚C). The second bar was placed in a container with 212˚F (100˚C) steam at ambient pressure. The third bar was placed into an oven at temperature 212˚F (100˚C). All post cures were one hour in length.

The results were excellent in all three cases. Even though the samples were still under cured when placed in water and steam/air, there was no visual difference when compared to the sample cured in hot air.

Cure Method	**Flexural Modulus**
Hot Air Post Cure	596,530 psi
Hot Water Post Cure	584,130 psi
Steam/Air Post Cure	571,350 psi

The results demonstrate that NPR-1551 may be post cured in a number of acceptable industrial settings. Steam, which is generally available at industrial and commercial plants and factories, can be to heat water, or may be mixed with air.

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NPR-1551
Adhesion to Hot Steel

A flat steel bar surface was prepared. Then three Elcometer dollies were adhesively bonded to the surface with Neopoxy NPR-1551. The structural epoxy was cured at room temperature, then placed into an oven at 120°F (50°C) and later post cured at 212°F (100°C) for 6 hours. The steel bar was removed from the hot oven and allowed to cool until reaching 140°F (60°C). The pull-off test was performed at 140°F (60°C) per ASTM D-4541-95el.

Adhesion to steel at 140°F (60°C) was greater than 20 MPa (3,000 psi). Failure was within the adhesive. **There was no failure at the steel surface.**