



IPANOL HIMOD

An Epoxy System with a High Modulus of Elasticity

IPANOL HIMOD – Product Data Sheet

Moisture Insensitive High Modulus Epoxy System

Description:

IPANOL HIMOD is a solvent free, 100% solids, two component epoxy system. **IPANOL HIMOD** is used in situations requiring moisture insensitivity and a high modulus of elasticity.

Uses:

IPANOL HIMOD is used to create a structural bond between damp or dry materials in environments that are free of hydrostatic pressure. **IPANOL HIMOD** can also be modified by mixing with aggregate to create a high performance epoxy repair mortar.

IPANOL HIMOD is an excellent adhesive to bond fresh plastic concrete or repair mortars to sound, hardened concrete.

Advantages:

- ◆ High Strength Structural Bonding Adhesive
- ◆ Easy mixing ratio of 1 to 1 (A : B)
- ◆ Rapid strength gain, high early strength within 24 hours
- ◆ Insensitive to moisture before, during and after curing
- ◆ Provides excellent adhesion to many common structural materials
- ◆ Permits low-temperature curing, even as low as 40°F.
- ◆ Conforms with ASTM C881, Type I, II, IV and V, Grade 2, Class B & C., and ASHTO M235-91.

TECHNICAL DATA

Physical Properties:

Type:	Moisture Insensitive, 100% Solids		
Mixing Ratio:	Part A to Part B, 1 :1 by volume		
Viscosity:	40 to 100 Poise		
Color:	Light grey		
Pot Life, Neat:	30 to 60 minutes @ 75°F (24°C)		
Bond Strength (psi), ASTM C 882, Hardened concrete to Hardened Concrete or Steel:	1,200 psi (8.3 MPa)		

Tack Free Time	<u>40°F (4°C)</u> 14-16 hrs	<u>75°F (24°C)</u> 2-4 hrs	<u>90°F (32°C)</u> 1-1.5 hrs
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Tensile Strength, psi	ASTM D 638	7000 psi (48.3 MPa) (14 days)	
Tensile Elongation, %	ASTM D 638	1.6%	
Compressive Strength, psi (MPa)	ASTM D 695		
	<u>40°F (4°C)</u>	<u>75°F (24°C)</u>	<u>90°F (32°C)</u>
24 hours		3,200 (22.1)	3,600 (24.8)
3 Days	1,500 (10.3)	9,100 (62.7)	9,600 (66.2)
7 Days	7,200 (49.6)	10,500 (72.4)	9,600 (66.2)

Flexural Properties @14 Days, ASTM D 790

Flexural Strength, psi	7,600 (52.4 MPa)
Tangent Modulus of Elasticity, bending, psi	4.8×10^5

Packaging: 2 Quart; 2 Gallon Units (1.9 L; 7.6 L)

Coverage:

1 gallon (3.8 L) of **IPANOL HIMOD** will cover approximately 80 to 100 square feet (7.4 m² to 9.3 m²) on a smooth surface. Coverage will be less on a rough surface. 1 gallon (3.8 L) of **IPANOL HIMOD** when mixed with 1 gallon of loose oven dried aggregate yields 360 cubic inches (5.9 L) of grouting adhesive. Mixing 1 gallon of **IPANOL HIMOD** with 3 gallons (11.4 L) of loose aggregate will yield approximately 660 cubic inches (10.8 L) of epoxy mortar.

Surface Preparation:

All surfaces must be clean and free of dirt, dust, oil, grease, curing compound, form oil or any contaminant that would adversely affect the bond. Surfaces must be structurally sound. All loose particles or soft unsound sections must be removed. Surfaces may be dry or damp but must be free of standing water.

On most concrete surfaces it is recommended that the surface be sandblasted to remove laitance on top of the concrete, and on road surfaces remove grease, dirt and oil deposited by vehicles. Sandblasting should completely clean the concrete and expose some aggregate. A minimum of 1/16th inch (1.6 mm) of the concrete surface should be removed.

Prior to placing the first course of epoxy, the installer shall use the Test Method prescribed in ACI 503-R, Appendix A of the ACI Manual of Concrete Practice to determine the cleaning method. The method provides direction for the size of shot, flow of shot, forward speed of shot blast machine, and number of passes necessary. The method shall improve the surface to provide a tensile bond strength greater than or equal to 250 psi (1723.7 kPa) or a failure rate of ¼ inch (6.4 mm) or more into the base concrete, over at least 50 percent of the test area.

Mixing Instructions:

Premix each component separately. Using a clean mixing container, slowly place 1 part by volume of Component B into 1 part by volume of Component A. Mix thoroughly for 2 to 3 minutes with a mixing paddle on slow speed (250 rpm). Mix only the amount of material that can be placed during the working life of the product. Product working time will vary according to temperature.

Do not thin **IPANOL HIMOD** with solvent. This will prevent proper curing and physical properties of the epoxy system will not be developed.

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Application:

To anchor bolts in concrete, use **IPANOL HIMOD** neat, or mix with 1 part kiln dried No. 20 sieve aggregate (salt free) to 1 volume of mixed **IPANOL HIMOD**. The annular space around the bolt should not exceed $\frac{1}{4}$ "; embedment is normally 15 times the bolt diameter.

To bond fresh concrete to hardened concrete, apply by stiff brush or broom. Work completely into the substrate to fully encase any loose dust that may remain on the surface. Place fresh concrete directly upon areas treated with **IPANOL HIMOD** while the epoxy is still tacky. If **IPANOL HIMOD** has become glossy or loses its tackiness, remove all surface hardened epoxy and recoat with additional **IPANOL HIMOD** prior to continuing with concrete placement.

To use as an epoxy mortar, prime substrate with neat **IPANOL HIMOD** working fully into the surface. Place the epoxy mortar (see proportion recommendations below) while the epoxy is still tacky, usually within 15 minutes at 75°F (24°C). Screed and trowel to finish.

To grout structural base plates, add by volume, 1 part mixed **IPANOL HIMOD** epoxy to 1 to 1.5 parts 20 or 30 mesh aggregate (clean kiln dried and salt free). Install epoxy grout under base plate avoiding the underside of the plate and leaving a $\frac{1}{4}$ inch (6.4 mm) space between the top of grout and bottom of plate. Maximum thickness of grout in each lift should be $1\frac{1}{2}$ inches (3.8 cm). If multiple lifts are required, allow the previous lift to cool to touch before installing an additional layer. Form and fill the final $\frac{1}{4}$ inch (6.4 mm) void space using neat **IPANOL HIMOD** epoxy. Best results are attained by pouring neat epoxy to a level above the underside of the plate.

Clean-up:

Using appropriate safety methods and protective clothing, clean equipment and tools with Xylene or Toluene. Dispose of wash solvents according to all applicable waste disposal regulations.

Limitations:

IPANOL HIMOD is a high modulus epoxy system. In its neat form or with low levels of filler, the cured properties will produce a coefficient of expansion that is dissimilar to portland cement. Surface temperature changes affect the coefficient of expansion of exterior epoxy mortar/concrete applications. If **IPANOL HIMOD** is used as a mortar for concrete in exterior applications, this can cause stresses at the bond line during temperature changes.

Temperature must be at least 40°F (4.4°C) and rising during the 72 hour period starting at time of installation. For best use, epoxy materials should be stored at 65°F (18°C) for 24 hours prior to mixing. Lower temperatures will cause thickening and increased difficulty in mixing components. Condition materials to 65°F to 85°F (18°C to 29°C) before using. Protect from freezing.

CAUTION – FOR INDUSTRIAL USE ONLY:

IPANOL HIMOD Epoxy System components contain alkaline amines. These materials are strong sensitizers and MAY CAUSE SKIN SENSITIZATION or allergic response ranging from a mild wheezing to a severe asthmatic type attack. Avoid breathing fumes and vapors and contact with skin or eyes. IN CASE OF CONTACT immediately wash skin with soap and water. Flush eyes with water and obtain medical attention. Wear protective clothing, goggles for eyes and barrier cream on all exposed skin. See MSDS for additional safety requirements.

WARRANTY

This product is warranted and guaranteed to be of good quality. Manufacturer, as its sole and exclusive liability hereunder, will replace material if proved defective. THIS WARRANTY AND GUARANTEE ARE EXPRESSLY IN LIEU OF ALL OTHERS, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND MAY NOT BE EXTENDED BY REPRESENTATIVES OR ANY PERSONS, WRITTEN SALES INFORMATION, OR DRAWINGS IN ANY MANNER WHATSOEVER.

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