



Ceramic Repair Putty

Description:	A high performance, trowelable, ceramic-filled epoxy for rebuilding worn or damaged equipment.																																									
Intended Use:	Industrial use: To rebuild worn pump casings and suction plates; repair tube sheets, heat exchangers and other circulating water equipment; restore worn chutes and hoppers; repair and rebuild butterfly and gate valves.																																									
Features:	Excellent chemical resistance, Corrosion-, cavitation-, erosion-resistant, Non-sagging putty, creamy paste																																									
Limitations:	Suitability of product is determined by the end user for their application and process.																																									
Typical Physical Properties:	Technical data should be considered representative or typical only and should not be used for specification purposes.																																									
<table><thead><tr><th>Cured 7 Days @ 75°F (24°C)</th><th>Typical Values</th><th>Standard Tests</th></tr></thead><tbody><tr><td>Adhesive Tensile Shear (GBS)</td><td>2,000 psi (13.8 MPa)</td><td>Coeff. of Thermal Exp. ASTM D 696</td></tr><tr><td>Coefficient of Thermal Expansion (x10-6)</td><td>23.8 in/in.°F (42.8 cm/cm.°C)</td><td>Compressive Strength ASTM D 695</td></tr><tr><td>Compressive Strength</td><td>12,700 psi (87.5 MPa)</td><td>Cured Shrinkage ASTM D 2566</td></tr><tr><td>Cured Shrinkage</td><td>0.0022 in/in (cm/cm)</td><td>Dielectric constant ASTM D 150</td></tr><tr><td>Dielectric Constant</td><td>4.1 @ 1 MHz</td><td>Dielectric strength ASTM D149</td></tr><tr><td>Dielectric Strength</td><td>370 volts/mil (14.6 kV/mm)</td><td>Flexural Strength ASTM D 790</td></tr><tr><td>Flexural Strength</td><td>6,475 psi (44.7 MPa)</td><td>Hardness Shore D ASTM D 2240</td></tr><tr><td>Hardness</td><td>86 Shore D</td><td>Thermal Conductivity ASTM C 177</td></tr><tr><td>Solids by Volume</td><td>100%</td><td>Tensile Shear ASTM D1002</td></tr><tr><td>Temp. Resistance</td><td>Wet 150°F (65°C); Dry 350°F (177°C)</td><td></td></tr><tr><td>Thermal Conductivity (x10-3)</td><td>1.88 cal/(sec.°C.cm)</td><td></td></tr></tbody></table>			Cured 7 Days @ 75°F (24°C)	Typical Values	Standard Tests	Adhesive Tensile Shear (GBS)	2,000 psi (13.8 MPa)	Coeff. of Thermal Exp. ASTM D 696	Coefficient of Thermal Expansion (x10-6)	23.8 in/in.°F (42.8 cm/cm.°C)	Compressive Strength ASTM D 695	Compressive Strength	12,700 psi (87.5 MPa)	Cured Shrinkage ASTM D 2566	Cured Shrinkage	0.0022 in/in (cm/cm)	Dielectric constant ASTM D 150	Dielectric Constant	4.1 @ 1 MHz	Dielectric strength ASTM D149	Dielectric Strength	370 volts/mil (14.6 kV/mm)	Flexural Strength ASTM D 790	Flexural Strength	6,475 psi (44.7 MPa)	Hardness Shore D ASTM D 2240	Hardness	86 Shore D	Thermal Conductivity ASTM C 177	Solids by Volume	100%	Tensile Shear ASTM D1002	Temp. Resistance	Wet 150°F (65°C); Dry 350°F (177°C)		Thermal Conductivity (x10-3)	1.88 cal/(sec.°C.cm)					
Cured 7 Days @ 75°F (24°C)	Typical Values	Standard Tests																																								
Adhesive Tensile Shear (GBS)	2,000 psi (13.8 MPa)	Coeff. of Thermal Exp. ASTM D 696																																								
Coefficient of Thermal Expansion (x10-6)	23.8 in/in.°F (42.8 cm/cm.°C)	Compressive Strength ASTM D 695																																								
Compressive Strength	12,700 psi (87.5 MPa)	Cured Shrinkage ASTM D 2566																																								
Cured Shrinkage	0.0022 in/in (cm/cm)	Dielectric constant ASTM D 150																																								
Dielectric Constant	4.1 @ 1 MHz	Dielectric strength ASTM D149																																								
Dielectric Strength	370 volts/mil (14.6 kV/mm)	Flexural Strength ASTM D 790																																								
Flexural Strength	6,475 psi (44.7 MPa)	Hardness Shore D ASTM D 2240																																								
Hardness	86 Shore D	Thermal Conductivity ASTM C 177																																								
Solids by Volume	100%	Tensile Shear ASTM D1002																																								
Temp. Resistance	Wet 150°F (65°C); Dry 350°F (177°C)																																									
Thermal Conductivity (x10-3)	1.88 cal/(sec.°C.cm)																																									
<table><thead><tr><th>Uncured Properties @ 72°F (23°C)</th><th></th><th></th></tr></thead><tbody><tr><td>Color</td><td>Dark Blue</td><td></td></tr><tr><td>Coverage (1/4" / 6.35mm)</td><td>66 in2/lb (939 cm2/kg)</td><td></td></tr><tr><td>Functional Cure</td><td>16 hrs.</td><td></td></tr><tr><td>Max.Thickness without Sag</td><td>1/2" (12.7 mm)</td><td></td></tr><tr><td>Mix Ratio by Volume</td><td>4:3:1</td><td></td></tr><tr><td>Mix Ratio by Weight</td><td>7:1</td><td></td></tr><tr><td>Mixed Viscosity</td><td>Putty</td><td></td></tr><tr><td>Pot life@75F (24C)</td><td>25 min.</td><td></td></tr><tr><td>Recoat Time</td><td>2-4 hours</td><td></td></tr><tr><td>Recommended Thickness</td><td>1/4" (6.35 mm)</td><td></td></tr><tr><td>Specific Gravity</td><td>14.1 lb/gal (1.69 g/cm3)</td><td></td></tr><tr><td>Specific Volume</td><td>16.4 in3/lb (0.59 cm3/g)</td><td></td></tr></tbody></table>				Uncured Properties @ 72°F (23°C)			Color	Dark Blue		Coverage (1/4" / 6.35mm)	66 in2/lb (939 cm2/kg)		Functional Cure	16 hrs.		Max.Thickness without Sag	1/2" (12.7 mm)		Mix Ratio by Volume	4:3:1		Mix Ratio by Weight	7:1		Mixed Viscosity	Putty		Pot life@75F (24C)	25 min.		Recoat Time	2-4 hours		Recommended Thickness	1/4" (6.35 mm)		Specific Gravity	14.1 lb/gal (1.69 g/cm3)		Specific Volume	16.4 in3/lb (0.59 cm3/g)	
Uncured Properties @ 72°F (23°C)																																										
Color	Dark Blue																																									
Coverage (1/4" / 6.35mm)	66 in2/lb (939 cm2/kg)																																									
Functional Cure	16 hrs.																																									
Max.Thickness without Sag	1/2" (12.7 mm)																																									
Mix Ratio by Volume	4:3:1																																									
Mix Ratio by Weight	7:1																																									
Mixed Viscosity	Putty																																									
Pot life@75F (24C)	25 min.																																									
Recoat Time	2-4 hours																																									
Recommended Thickness	1/4" (6.35 mm)																																									
Specific Gravity	14.1 lb/gal (1.69 g/cm3)																																									
Specific Volume	16.4 in3/lb (0.59 cm3/g)																																									
Surface Preparation:	<ol style="list-style-type: none">1. Thoroughly clean the surface with a solvent such as Isopropanol Alcohol or Acetone to remove all oil, grease and dirt.2. Grit blast surface area with 8-40 mesh grit, or grind with a coarse wheel or abrasive disc pad, to create increased surface area for better adhesion (Caution: An abrasive disc pad can only be used provided white metal is revealed). Desired profile is 3-5mil, including defined edges (do not "feather-edge" epoxy). <p>Note: For metals exposed to sea water or other salt solution, grit-blast and high-pressure-water-blast the area, then leave overnight to allow any salts in the metal to "sweat" to the surface. Repeat blasting to "sweat out" all soluble salts. Perform chloride contamination test to determine soluble salt content (should be no more than 40 ppm).</p> <ol style="list-style-type: none">3. Clean surface again with a solvent such as Isopropanol Alcohol or Acetone to remove all traces of oil, grease, dust or other foreign substances from the grit blasting.4. Repair surface as soon as possible to eliminate any changes or surface contaminants.																																									
<p>WORKING CONDITIONS: Ideal application temperature is 55 to 90°F (13-32°C). In cold working conditions, directly heat repair area to 100-110°F (38-43°C) prior to applying epoxy and maintain at this temperature during product cure to dry off any moisture, contamination or solvents, as well as to achieve maximum performance properties.</p>																																										
<p>Homogenous mixing of resin and hardener is essential for the curing and development of stated strengths.</p>																																										
Mixing Instructions:	<p>It is strongly recommended that full units be mixed, as ratios are pre-measured.</p> <ol style="list-style-type: none">1. Add hardener to resin.2. Mix thoroughly with screwdriver or similar tool (continuously scrape material away from sides and bottom of the container) until a uniform, streak-free consistency is obtained.																																									
<p>INTERMEDIATE SIZES: (1, 2 & 3 lb / 0.5, 0.9, & 1.4 Kg) containers. Place resin and hardener on a flat, disposable surface such as cardboard, plywood or plastic sheet. Use a trowel or wide-blade tool to mix the material as in Step 2 above.</p>																																										
<p>LARGE SIZES: (25, 30 & 50 lb / 11.4, 13.6, & 22.7 Kg) buckets: Use a T-shaped mixing paddle or a propeller-type Jiffy Mixer Model ES on an electric drill. Thoroughly fold putty by vigorously moving paddle/propeller up and down until a homogenous mix of resin and hardener is attained.</p>																																										

Application Instructions:

Spread mixed material on repair area at a minimum thickness of $\frac{1}{4}$ " (6.35 mm). Work firmly into substrate to ensure maximum surface contact. Ceramic Repair Compound functionally cured in 16 hours, at which time it can be machined, drilled, or painted.

FOR BRIDGING LARGE GAPS OR HOLES

Place fiberglass sheet, expanded metal, or mechanical fasteners between repair area and Ceramic Repair Compound. prior to application.

FOR VERTICAL SURFACE APPLICATIONS

Ceramic Repair Compound can be troweled up to $\frac{1}{2}$ " (13 mm) thick without sagging.

FOR MAXIMUM PHYSICAL PROPERTIES

Cure at room temperature for 2.5 hours, then heat cure for 4 hours @ 200°F (93°C).

FOR $\pm 70^{\circ}\text{F}$ (21°C) APPLICATIONS

Applying epoxy at temperatures below 70°F (21°C) lengthens functional cure and pot lifetimes. Conversely, applying

Can withstand processing forces

Do not drop, shock load, or heavily load

Storage:

Shelf life 3 yrs from manufacture. See package label. Store at room temperature, 70°F (21°C)

Compliances:

None

Chemical Resistance:

Chemical resistance is calculated with a 7 day, room temp. cure (30 days immersion) @ 75°F (24°C)

1,1,1-Trichloroethane	Excellent	Nitric Acid 10%	Poor
Aluminum Sulfate 10%	Excellent	Phosphoric 10%	Very good
Benzene	Excellent	Potassium Hydroxide 40%	Excellent
Chlorinated Solvent	Excellent	Sodium Hydroxide 50%	Excellent
Gasoline (unleaded)	Excellent	Sodium Hypochlorite	Excellent
Hydrochloric 10%	Excellent	Sulfuric 10%	Very good
Kerosene	Excellent	Sulfuric 50%	Fair
Mineral Spirits	Excellent	Toluene	Excellent

Precautions:

FOR INDUSTRIAL USE ONLY: Please refer to the appropriate Safety Data Sheet prior to using this product.

Warranty:

ITW Polymers & Fluids will replace any material found to be defective. Because the storage, handling and application of this material is beyond our control, we can accept no liability for the results obtained.

Order Information:

<u>Item No.</u>	<u>Package Size</u>
D11705	500gm
D11700	1.5kg

Contacts:

ITW Polymers & Fluids
100 Hassall Street
Wetherill Park, NSW, 2164, Australia
Phone (02) 9757 8800
www.itwpf.com.au

ITW Polymers & Fluids
Unit 2 / 38 Trugood Drive
East Tamaki, 2013, Auckland, New Zealand
Phone (09) 272 1945
www.itwpf.co.nz

Disclaimer:

All information on this data sheet is based on laboratory testing and is not intended for design purposes.
ITW Polymers & Fluids and Devcon makes no representations or warranties of any kind concerning this data.