



Titanium Putty

Description: High-tech, titanium-reinforced epoxy putty engineered for making critical repairs to machinery and precision parts.

Intended Use: Industrial Use: Restore bearing housings and scored shafts; rebuild wear rings, hydraulic rams, and valves; repair equipment and parts that require a machined finish

Features:
High compressive strength
Temperature resistance to 350°F (177°C)
Resistant to chemicals and most acids, bases, solvents, and alkalis

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.

Cured 7 Days @ 75°F (24°C)

	Typical Values
Adhesive Tensile Shear	2,000 psi (14 MPa)
Coefficient of Thermal Expansion (x10-6)	22 in/in.°F (39.6 cm/cm.°C)
Compressive Strength	15,200 psi (105 Mpa)
Cured Shrinkage	0.0010 in/in (cm/cm)
Dielectric Constant	44.8
Dielectric Strength	56 volts/mil (2.2 kV/mm)
Flexural Strength	7,700 psi (53 MPa)
Hardness	87 Shore D
Modulus of Elasticity	9.5 psi x10 ⁵ (6.6 GPa)
Solids by Volume	100
Temperature Resistance	Wet: 150°F / 65°C; Dry: 350°F / 177°C
Thermal Conductivity (x10-3)	1.95 cal/sec.cm.°C

Standard Tests

Adhesive Tensile Shear	ASTM D 1002
Cure Shrinkage	ASTM D 2566
Dielectric Strength, volts/mil	ASTM D 149
Coef. of Thermal Expansion	ASTM D 696
Flexural Strength	ASTM D 790
Thermal Conductivity	ASTM C 177
Compressive Strength	ASTM D 695
Cured Hardness Shore D	ASTM D 2240
Dielectric Constant	ASTM D 150
Modulus of Elasticity	ASTM D 638

Uncured Properties @ 72°F (23°C)

Color	Grey
Coverage (1/4" / 6.35mm)	47 in ² /lb (848 cm ² /Kg)
Functional Cure	16 hrs.
Mix Ratio by Volume	3.1:1
Mix Ratio by Weight	4.3:1
Mixed Viscosity	Putty
Pot Life @ 75F	21 min.
Recoat Time	7 hrs.
Specific Gravity	19.7 lb/Gal (2.36 g/cm ³)
Volume	11.7 in ³ /lb (0.423 cm ³ /g)

- Surface Preparation:**
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).

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 40ppm).

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.

WORKING CONDITIONS: Ideal application temperature is 55°F to 90°F (13°C to 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.

Mixing Instructions: ---- It is strongly recommended that full units be mixed, as ratios are pre-measured. ----

1. Add hardener to resin.
2. Mix thoroughly with screwdriver or similar tool (continuously scrape material away from sides and bottom of container) until a uniform, streak-free consistency is obtained.

INTERMEDIATE SIZES (1,2,3 lb. units): 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.

Application Spread mixed material on repair area and work firmly into substrate to ensure maximum surface contact. Titanium Putty

Instructions: fully cures 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 Titanium Putty prior to application.

FOR VERTICAL SURFACE APPLICATIONS

Titanium Putty can be troweled up to 1/2" thick without sagging. Chemical immersion is possible after 24 hours.

FOR MAXIMUM PHYSICAL PROPERTIES

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

FOR ± 70°F (21°C) APPLICATIONS

Applying epoxy at temperatures below 70°F lengthens functional cure and pot life times. Conversely, applying above 70°F shortens functional cure and pot life.

MACHINING:

Allow material to cure for at least four hours before machining, but wait no longer than 24 hours as the material will wear the tools. Machine using these guidelines:

- Lathe speed: 150 ft/min
- Cut: Dry
- Tools: Carbide Top Rake 6° (+/-2°) – Side/Front 8°F (+/-2°)
- Feed Rate (rough): Travel speed .020 Rough cut .020 - .060
- Feed Rate (finishing): Travel speed .010 Finish cut .010
- Polishing: Use 400-650 grit emery paper wet. Material should polish to a 25-50 micro inch.

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)

Acetic (Dilute) 10%	Excellent	Potassium Hydroxide 40%	Very good
Benzene	Excellent	Sodium Hydroxide 10%	Excellent
Gasoline (Unleaded)	Excellent	Sodium Hydroxide 50%	Very good
Hydrochloric 10%	Very good	Sodium Hypochlorite	Excellent
Kerosene	Excellent	Sulfuric 10%	Very good
Mineral Spirits	Excellent	Sulfuric 50%	Fair
Nitric 20%	Fair	Toluene	Excellent
Phosphoric (dilute)	Fair	Trisodium Phosphate	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>
D10760	1 lb. (454 g) kit

Contacts:

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