Technical Data Sheet
Version 4. 07/2024

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	Standard Tests
Adhesive Tensile Shear	2,000 psi (14 MPa)	Adhesive Tensile Shear ASTM D 1002
Coefficient of Thermal Expansion (x10-6)	22 in/in.°F (39.6 cm/cm.°C)	Cure Shrinkage ASTM D 2566
Compressive Strength	15,200 psi (105 Mpa)	Dielectric Strength, volts/mil ASTM D 149
Cured Shrinkage	0.0010 in/in (cm/cm)	Coef. of Thermal Expansion ASTM D 696
Dielectric Constant	44.8	Flexural Strength ASTM D 790
Dielectric Strength	56 volts/mil (2.2 kV/mm)	Thermal Conductivity ASTM C 177
Flexural Strength	7,700 psi (53 MPa)	Compressive Strength ASTM D 695
Hardness	87 Shore D	Cured Hardness Shore D ASTM D 2240
Modulus of Elasticity	9.5 psi x10^5 (6.6 GPa)	Dielectric Constant ASTM D 150
Solids by Volume	100	Modulus of Elasticity ASTM D 638
Temperature Resistance	Wet: 150°F / 65°C; Dry: 350°F / 177°C	
Thermal Conductivity (x10-3)	1.95 cal/sec.cm.°C	

Uncured Properties @ 72°F (23°C)	
Color	Grey
Coverage (1/4" / 6.35mm)	47 in2/lb (848 cm2/Kg)
Functional Cure	16 hrs.
Mix Ratio by Volume	3.1:1
Mix Ratio by Weight	4.3:1
Mixed Viscosity	Putty
Pot Life	21 min.
Maximum Recoat Time	7 hrs.
Specific Gravity	19.7 lb/Gal (2.36 g/cm3)
Volume	11.7 in3/lb (0.423 cm3/g)

Surface Preparation:

1. Thoroughly clean the surface with Devcon® Cleaner Blend 300 or any appropriate non residual solvent cleaner eg. Acetone, MEK to remove all oil, grease and dirt.
2. Grit blast surface area following at least ISO 8501 SA 2 ½ (Very Thorough Blast Cleaning) and or SSPC-SP 10 (Near White Metal).
When grit blasting is not possible the surface may be prepared following SSPC-SP 3 until at least "Condition A" is achieved.
The required surface profile depth is 3-5 mils (75-125µm).

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.
The salt contaminamination level is recommended to not exceed 20mg/m² (2µg/cm²).

3. Clean surface again with Devcon® Cleaner Blend 300 or any appropriate non residual solvent cleaner eg. Acetone, MEK.
To remove all traces of oil, grease, dust or other foreign substances from the substrate.
Dust contamination level should not exceed Level 2 prior coating applications in accordance to ISO 8502-3.

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- 32°C). In cold working conditions, directly 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.
It's not recommended to apply the product when the temperature of the substrate is less than 5°F (3°C) above the Dewpoint, or the Relative Humidity is higher than 85%.

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 spatula or similar tool (continuously scrape material away from sides and bottom of container) until a uniform, streak-free consistency is obtained.

Application Instructions:

Spread mixed material on repair area and work firmly into substrate to ensure maximum surface contact. Titanium Putty 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 ½" 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: Qualifies under MIL-PRF-24176C, supersedes DOD-C-21476B SH, Type 1

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 **S**afety **D**ata **S**heet prior to using this product.

Warranty: ITW Performance Polymers 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:

EMEA
10761 - 500g
10765 - 1Kg

US
10760 - 1lb
10770 - 2lb

Contacts:

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