Devcon®

Technical Data Sheet

6/25/2004

Titanium Putty

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

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

Product features:
High compressive strength
Temperature resistance to 350°F
Resistant to chemicals and most acids, bases, solvents, and alkalis

Limitations: None

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

Color	Grey
Mix Ratio by Volume	3.1:1
Mix Ratio by Weight	4.3:1
% Solids by Volume	100
Pot Life @ 75F	21 min.
Specific Volume	11.7 in.(3)/lb.
Cured Shrinkage	0.0010 in./in.
Specific Gravity	2.36 gm/cc
Temperature Resistance	Wet: 150°F; Dry: 350°F
Coverage/lb	47 sq.in./lb.@1/4"
Cured Hardness	87D
Dielectric Strength	56 volts/mil
Dielectric Constant	44.8
Adhesive Tensile Shear	2,000psi
Compressive Strength	18,800psi
Modulus of Elasticity	9.5 psi x 10(5)in.
Flexural Strength	7,700 psi
Coefficient of Thermal Expansion	22 [(in.)(in). x °F)] x 10(-6)
Thermal Conductivity	1.95 [(cal x cm) / (sec x cm(3) x °C)]x 10(-3)
Cure Time	16 hrs.
Recoat Time	7 hrs.
Mixed Viscosity	Putty

TESTS CONDUCTED

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

Surface Preparation:

1. Thoroughly clean the surface with Devcon® Cleaner Blend 300 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 mesh 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 Cleaner Blend 300 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. In cold working conditions, heat repair area to 100-110°F immediately prior to applying epoxy to dry off any moisture, contamination, or solvents, as well as to assist epoxy in achieving maximum adhesion 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.

LARGE SIZES: (25 lb., 30 lb., 50 lb. 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.

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.

FOR ± 70°F 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:

Store at room temperature.

Compliances:

Qualifies under DOD-C-24176B SH

Chemical Resistance:

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

Acetic (Dilute) 10%	Poor	Potassium Hydroxide 40%	Excellent
Benzene	Excellent	Sodium Hydroxide 10%	Excellent
Gasoline (Unleaded)	Excellent	Sodium Hydroxide 50%	Excellent
Hydrochloric 10%	Excellent	Sodium Hypochlorite	Excellent
Kerosene	Excellent	Sulfuric 10%	Very good
Mineral Spirits	Excellent	Sulfuric 50%	Fair
Nitric 50%	Fair	Toluene	Excellent
Phosphoric 10%	Very good	Trisodium Phosphate	Excellent

Precautions:

Please refer to the appropriate material safety data sheet (MSDS) prior to using this product.

For technical assistance, please call 1-800-933-8266

FOR INDUSTRIAL USE ONLY

Warranty:

Devcon 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.

Disclaimer:

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

Order Information:

10760 1 lb.
10770 2 lb.