



BRONZE PUTTY

TECHNICAL REFERENCE INFORMATION



BRONZE PUTTY is a bronze filled epoxy putty designed especially for patching, filling and repairing castings, equipment and generally, components made from bronze or other similar alloys. It cures to a tough inert material that can be easily machined, drilled or tapped to any required tolerances.

TYPICALLY USED ON:

- | | |
|---------------|----------|
| Bearing faces | Bushes |
| Casings | Castings |
| Fixtures | Flanges |
| Housings | Pipes |
| Pumps | Shafts |

GENERAL PRODUCT INFORMATION

USERS DATA

Ratio by weight	4:1
Ratio by volume	2.5:1
Pot Life 500g minutes @ 24°C	20
Mixed colour	Bright Brown
Mixed consistency @ 24°C	Paste
Specific gravity when mixed	2.0
Coverage, kg/m ² @ 1 mm	2.1

TYPICAL CURED PROPERTIES

Compressive strength ASTM D695, Mpa	80
Tensile strength ASTM D638, Mpa	28
Flexural strength ASTM D790, Mpa	30
Hardness, Shore D	85
Thermal conductivity ATSM C177, Kcal/m.hr°C	0.5
Coefficient of thermal expansion ASTM C531 (cm/cm/°C) x 10 ⁻⁵	3.7
Dielectric constant ASTM D150 (150KHz)	4.8
Maximum operating temperature, °C	120
Heat deflection temperature ASTM D648, °C	75
Cure to handling @ 5mm, Minutes	120
Cure time @ 5mm, Hours	24

CHEMICAL RESISTANCE

Tested at 21°C. Samples cured for 10 days at 25°C.
Curing at elevated temperatures (ie: > 45°C) will improve chemical resistance.

- 1 = Continuous or long term immersion
- 2 = Short term immersion
- 3 = Splash and spills
- 4 = Avoid contact

Acetic Acid, 10 %	2	Acetone	2
Acetic Acid, Glacial	2	Ammonium Chloride	1
Hydrochloric Acid, 5 %	2	Beer	1
Hydrochloric Acid, 10 %	2	Dichloromethane	4
Hydrochloric Acid, conc	3	Diesel Fuel	1
Nitric Acid, 5 %	2	Isopropyl Alcohol	1
Nitric Acid, 10 %	3	Kerosene	1
Phosphoric Acid, 5 %	2	Petrol	1
Phosphoric Acid, 20 %	3	Salt Water	1
Sulfuric Acid, 5 %	2	Sewage	1
Sulfuric Acid, 20 %	3	Skydrol	1
Ammonium Hydroxide, 5 %	1	Sodium Cyanide	1
Ammonium Hydroxide, 20 %	1	Sodium Hypochlorite	1
Potassium Hydroxide, 5 %	1	Toluene	2
Potassium Hydroxide, 20 %	1	Trichloroethane	2
Sodium Hydroxide, 5 %	1	Wine	1
Sodium Hydroxide, 20 %	1	Xylene	1

This information is supplied as an indicative reference only. Caution should be used where direct comparisons are to be made.

SURFACE PREPARATION

It is essential that all surfaces to be treated are properly prepared to obtain a strong bond between the substrate and the product.

- All oil, dirt and other loose contamination must be removed by washing, degreasing or blasting.
- Surfaces should preferably be abrasive blasted although roughening using mechanical alternatives such as wire brush or abrasive disc can be used to leave a clean surface, free of scale, rust and other foreign substances.

For maximum adhesion to metallic surfaces, grit blast to expose a sound substrate with a nominal surface profile of 50-80 micron. Application should take place immediately after preparation to avoid oxidation of the freshly prepared surface.

Surfaces that have been exposed to extreme environments such as continuous operation in sea water or petroleum products may necessitate alternate preparation procedures. Consult National or International standards where possible.

APPLICATION

Apply a very thin scratch or smear coat directly to the prepared surface to maximize surface contact before proceeding to apply additional product to the desired build. Ensure product has been worked into all cracks and voids to eliminate air bubbles. If applying several coats or layers, any previously applied product must be roughened if it has been left to cure for more than 24 hours.

CLEAN UP

Clean tools and equipment immediately after use with Cleanup or a heavy duty industrial hand cleaner or detergent.

CURE

Variations in cure may arise due to the amount of material being applied, the thickness of material being applied, the surface temperature, and the product temperature. The cure may be increased by applying external heat to the prepared surface before application of the product. This can be done with heat lamps or other heat sources. The cure may be decreased by cooling the product before mixing.

SHELF LIFE

Store away from heat and direct sunlight. A minimum of 2 years should be expected if held in original unopened containers.

WARRANTY

Since the storage, handling and use of this product is beyond our control, this product is supplied without guarantee. Furthermore, nothing should be construed as a recommendation to use this product in conflict with existing patents.

Material Safety Data (PART A)

U.N. Number	None Allocated
Dangerous Goods Class and Subsidiary Risk:	None Allocated
Hazchem Code:	None Allocated
Poisons Schedule:	5

Physical Description / Properties

Colour:	Bright Brown
Odour:	Slight
Percent Volatiles:	0%
Specific Gravity:	2.2
Solubility in Water:	Non Soluble
Flash Point (°C):	Non Flammable
Flammability Limits:	Not Applicable

Ingredient Chemical entity

	Proportion
Epoxy Resin	Medium
Metallic Fillers (eg: Steel, Aluminium, etc)	Medium
Natural Fillers (eg: Talc, Titanium Dioxide)	Medium
Thixotropes & Suspending Agents (eg: Cellulose)	Low

(High>60%) (Medium 10% - 60%) (Low<10%)

Material Safety Data (PART B)

U.N. Number	None Allocated
Dangerous Goods Class and Subsidiary Risk:	None Allocated
Hazchem Code:	None Allocated
Poisons Schedule:	5

Physical Description / Properties

Colour:	Off White/Pink
Odour:	Slight Amine
Percent Volatiles:	0%
Specific Gravity:	1.4
Solubility in Water:	Non Soluble
Flash Point (°C):	Non Flammable
Flammability Limits:	Not Applicable

Ingredient Chemical entity

	Proportion
Polyamide/Aliphatic Amine Prepolymer	High
Natural Fillers (eg: Talc, Titanium Dioxide)	Medium
Thixotropes & Suspending Agents (eg: Cellulose)	Low

(High>60%) (Medium 10% - 60%) (Low<10%)

HEALTH HAZARD INFORMATION

Health Effects

Swallowed:	Possible irritant. Can result in nausea, vomiting, stomach pain or discomfort.
Eye:	Irritation, no corneal damage likely.
Skin:	Possible irritant. Prolonged or repeated uncontrolled exposure may lead to dermatitic effects.
Inhaled:	None likely, unless heated to extremely high temperatures, in which case irritation of the respiratory tract may occur.

First Aid

Swallowed:	DO NOT induce vomiting. Give a glass of water and contact a doctor or the Poisons Information Centre.
Eye:	Hold eye lids open and flood with water for 15 minutes. See a doctor.
Skin:	Remove contaminated clothing, wash affected area with soap and water. If swelling or blisters occur, seek medical attention.
Inhaled:	Not considered likely, however, if effects are perceived, remove to fresh air and rinse mouth and nasal passage with water.

PRECAUTIONS FOR USE

Exposure limits:	Not determined for this product.
Ventilation:	Conventional airflow is generally acceptable. In confined areas, exhaust fans should be utilised in accordance with proper safe handling procedures.
Personal protection:	Avoid contact with skin and eyes. Wear coveralls, rubber gloves and eye protection while handling.
Flammability:	Non flammable.

SAFE HANDLING INFORMATION

Storage:	No special transporting requirements. When storing, do not allow to freeze and store below 35°C. i.e. Store between 5°C and 35°C.
Spills and Disposals:	Pick up and consult local authorities for disposal. Alternatively, cure as per directions for use and landfill.
Fire/Explosion Hazard:	This product is non flammable, it may burn although auto ignition is highly unlikely. Fumes in the form of oxides of carbon and nitrogen will be evolved during combustion. Self contained breathing apparatus should be available for firemen and water sprays, foam, dry chemical or CO2 should be used.

This MSD summarises our best knowledge of the health and safety hazard information of the product and how to safely handle and use the product in the workplace. Each user should read this MSD and consider the information in the context of how the product will be handled and used in the workplace including use in conjunction with other products. If clarification or further information is needed to ensure that an appropriate risk assessment can be made, the user should contact the manufacturer.

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