SP&S
Specialty Polymers and Services

E-Z Putty Multipurpose, Wood, H_20 & Concrete

Restores, Repairs, and Rebuilds Almost Anything

E-Z Putty Multipurpose, Wood, H_2O & Concrete are four varieties of our easy to use fast-setting epoxy putty sticks. They are useful in thousands of industrial, artistic and do-it-yourself applications for repairing, rebuilding, restoring, and re-shaping metal, wood, fiberglass, ceramics, stone, concrete, and many other materials. They are strong materials with excellent bond strengths to most common material. In addition to these varieties E-Z Putty is available in the four metallic versions (Steel, Aluminum, Copper & Bronze) which have the added strength of steel or aluminum reinforcement and the increased thermal and electrical conductivity.. (Please contact us for information on the metallic E-Z Putty varieties.)

Suggested Applications:

- **Automotive:** repair oil pans, gas tanks, radiators, batteries, Engine blocks, pipes, gaskets, mirror mountings, tail pipes, intake manifolds, exhaust systems & mufflers. Rebuild rusted/missing metal.
- **Electrical/Electronic** – Repairing oil filled transformers, balancing rotors. Bonding heat sinks and sealing dip switches, set screws & trimpots. Wire tacking & component staking. Repair Insulators, Bushings, wire insulation, etc.
- **Heating, Ventilation, & Air Conditioning:** repair vents and exhausts. Repair Air Conditioning coils.
- **Underwater/Marine/Plumbing Applications**: Bonds and repairs anchors, hulls, propellers, pipes, docks, drains, and many other metal pieces and components. Will not rust or corrode.
- **Home & Office:** Window frames, thresholds, furniture, crafts, jewelry, fences, gates, & hinges,
- **Industrial & Do-it-Yourself repairs and rebuilding:** Filling voids and cracks in metal, wood, ceramics, & concrete. Fill nail & screw holes. Repair knot holes and gouges in wood. Repair Tools, pumps and equipment. Use to mold or shape ornaments modifications to equipment.

Benefits:

- Economical – often 50% or less costly than paste and liquid adhesive to make the same repair
- Easy to Use - does not require mixing or dispensing equipment and produces little waste.
- Can be painted & stained and many colorants (stains, dyes, etc.) can be mixed into the putty to create custom colors.
- Can be machined, sawn, tapped, planed, carved, drilled, nailed, sanded, or glued with most common equipment and materials
- Cures at temperatures as low as 10ºC (50ºF) & can cure underwater and will bond to wet surfaces

Typical Cured Properties (Not for Specification Purposes. Cured 7 days @ 25ºC (77ºF))

Properties	E-Z Putty Multipurpose	E-Z Putty Wood	E-Z Putty H_2O	E-Z Putty Concrete
Unmixed Color(s)	Beige/Black	Wood/White	Lt. green/White	White/Black
Mixed Color	White	brown	green-blue	off-white
Density	1.75 g/ml	1.75 g/ml	1.75 g/ml	1.75 g/ml
Nonvolatile content:	100%	100%	100%	100%
Working life @ 23ºC(73ºF)[1]	5-7 min	5-7 min	3-4 min	3-4 min
Initial Set time @ 23ºC(73ºF)[2]	15 - 20 min.	15 - 20 min.	8-12 min	8-12 min
Initial Cure time @ 23ºC(73ºF)[3]	16 – 24 hours	16 – 24 hours	16 – 24 hours	16 – 24 hours
Initial Cure time @ 50ºC(122ºF)[3]	1 hour	1 hour	1 hours	1 hour
Shrinkage during Cure	0.0020 in/in	0.0030 in/in	0.0020 in/in	0.0020 in/in
Hardness (Shore D)	88	85	88	90
Dielectric Strength	400 Volts/mil	400 Volts/mil	400 Volts/mil	400 Volts/mil
Volume Resistivity	5 x 10^{15} ohm-cm	5 x 10^{15} ohm-cm	5 x 10^{15} ohm-cm	5 x 10^{15} ohm-cm
Pressure rating	≥ 1300 psi	≥ 1000 psi	≥ 1300 psi	≥ 1000 psi
Bond Strength (Lap Shear)	750	650	750	750
Tensile Strength	640	500	640	640
tensile Elongation	1% - 2%	1% - 2%	1% - 2%	1% - 2%
Compressive strength (psi)	8,750	6,400	8,750	8,750
Compressive Modulus	600,000	520,000	600,000	600,000
Flexural Strength (psi)	5,200	4,000	5,200	5,200
Izod Impact	≥ 0.3 ft/in	≥ 0.3 ft/in	≥ 0.3 ft/in	≥+ 0.3 ft/in
Thermal Conductivity	0.42 W/mK	0.35 W/mK	0.42 W/mK	0.42 W/mK
Service Temperature (Intermittent)	200ºC (392ºF)	200ºC (392ºF)	200ºC (392ºF)	200ºC (392ºF)

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Service Temperature (Continuous-dry)	125ºC (257ºF)	125ºC (257ºF)	125ºC (257ºF)	125ºC (257ºF)
Service temperature (Continuous (wet)	55ºC (130ºF)	55ºC (130ºF)	55ºC (130ºF)	55ºC (130ºF)

[1] Working life is the time in which the putty remains easily spreadable and workable. It may still be able to be smoothed or worked beyond this time, but will be stiffer and harder to work with. The putty should not be repositioned beyond this time if it is being used as an adhesive or sealant as it may be too far advanced to bond properly to a new surface.

[2] Set time is the time for the putty to achieve an initial set and bond such that it may be handled, and subject to minor machining operations. Shore Hardness at this point is typically about 30 – 40 Shore D and the surface is tack-free. Bond strength is typically about 50% - 75% of the final bond strength. Major machining and shock should be avoided until a full cure is achieved. Please note that temperatures below 20ºC (68ºF) will extend the set time.

[3] The Initial Cure is the time to achieved >95% of the final mechanical properties (hardness, bond strength, tensile strength, etc.). For most applications the cured putty is now ready to be processed and handled as usual for your application. The Full Cure Time is the time to achieve 100% curing of the epoxy and maximum properties for that specific cure temperatures. In some cases, a small additional increase in mechanical properties can be obtained by post-curing the putty at 60ºC or above for several hours.

Chemical Resistance (Putty cured for 7 days at room temperature then soaked for 30 days in the fluids indicated at 23ºC C(75ºF)

Ammonia	Very Good
Vinegar (5% Acetic Acid)	Good
Hydrochloric Acid (10%)	Fair
Sodium Hydroxide (10%)	Very Good
Sulfuric Acid (10%)	Fair
Kerosene	Very Good
Transmission Fluid(Type A & F)	Very Good
Power Steering Fluid	Very Good
Brake Fluid	Fair
Simple Green	Very Good
Window Washer Fluid	Very Good

Rubbing Alcohol (70% Isopropyl Alcohol & 30% Water)	Fair
Ethanol	Fair
Toluene	Fair
Paint Thinner/Mineral Spirits	Very Good
Turpentine	Very Good
Chlorinated solvent	Good
Water	Very Good
Mineral Oil	Very Good
Corn Oil	Excellent

Storage Guidelines:

Store this material in a clean, dry environment in its tightly closed original container. Once opened, tightly re-seal to preserve the product. If the plastic wrapping doesn't provide an adequate seal, plastic film or aluminum foil can be used to wrap the remaining putty. Putty surfaces left exposed may dry and oxidize over time and any such areas should be cut off and discarded. These products are not considered temperature sensitive, but ideally should be stored between 15°C (59°F) - 30°C(87°F) to maintain optimum quality. Under these conditions the products will have a minimum shelf-life of 12 months from the date of shipment. Many users report that tightly wrapped putty, stored at room temperature or below is still good 2 or even 3 years from date of shipment, but the user must determine the suitable for use of E-Z putty that is more than 12 months old.

Processing Guidelines:

Simply cut a section of the putty stick of sufficient volume for your application, knead/mix thoroughly for at least 1 minute until a completely uniform color is achieved and then form or apply. For bonding and sealing applications makes sure the surface to be bonded is clean of oil, dirt and loose material. The mixed putty can be rolled into balls, ropes or sheets and pressed into place or draped over a model to form the putty to shape. Sheets of the mixed putty can be cut with cookies cutter, dies, or tools to create almost any shape desired. The surface of the mixed putty can be smoothed and feathered using tools or using fingers wetted with water. Water will have no effect on the epoxy putty, but will prevent sticking to tools and fingers and act as a lubricant to assist in creating a smooth surface.

The cured putty can be machined with many common tools and can be painted and bonded with most paints and adhesives without using primers or other special techniques. When bonding to the putty, roughening it with sand paper, steel wool, a wire brush or other abrasive will assist in creating the strongest possible bond, but be sure to remove any loose material and dust after roughening. This recommendation on roughening applies both to surfaces bonded with the E-Z Putty and to preparing the cured E-Z putty for bonding. Extremely smooth/glossy surface are especially likely to need roughening to achieve high bond strengths.

Personal Hygiene:

Caution!!! Prolonged or Repeated exposure may cause eye or skin irritation and possible allergic skin reaction. May be harmful if inhaled or swallowed. Avoid contact with eyes, skin, and clothing. Wear gloves and eye protection when handling. Use with adequate ventilation. Wash thoroughly after handling. Launder contaminated clothing prior to reuse.

First Aid

In case of contact: **Skin** - Wash skin thoroughly with mild soap and water. Remove contaminated clothing and wash before reuse. Discard contaminated shoes and other articles made of leather **Eyes** - Flush eyes with plenty of water for 15 minutes and get prompt medical attention. **Inhalation** - Remove person to fresh air **Ingestion** – If conscious, dilute with plenty of water, induce vomiting and contact physician immediately. Never give anything by mouth to an unconscious person

Disclaimer:

IMPORTANT: The following supersedes Buyer's documents. **SELLER / MANUFACTURER MAKES NO REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, INCLUDING OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE**. No statements herein are to be construed as inducements to infringe any relevant patent. Under no circumstances shall Seller / Manufacturer be liable for incidental, consequential or indirect damages for alleged negligence, breach of warranty, strict liability, tort or contract arising in connection with the product(s). Buyer's sole remedy and Seller's sole liability for any claims shall be Buyer's purchase price. Data and results presented are based on controlled or laboratory work and must be confirmed by Buyer by testing for its intended conditions of use. The product(s) has not been tested for, and is therefore not recommended for, uses for which prolonged contact with mucous membranes, abraded skin, or blood is intended; or for uses for which implantation within the human body is intended

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