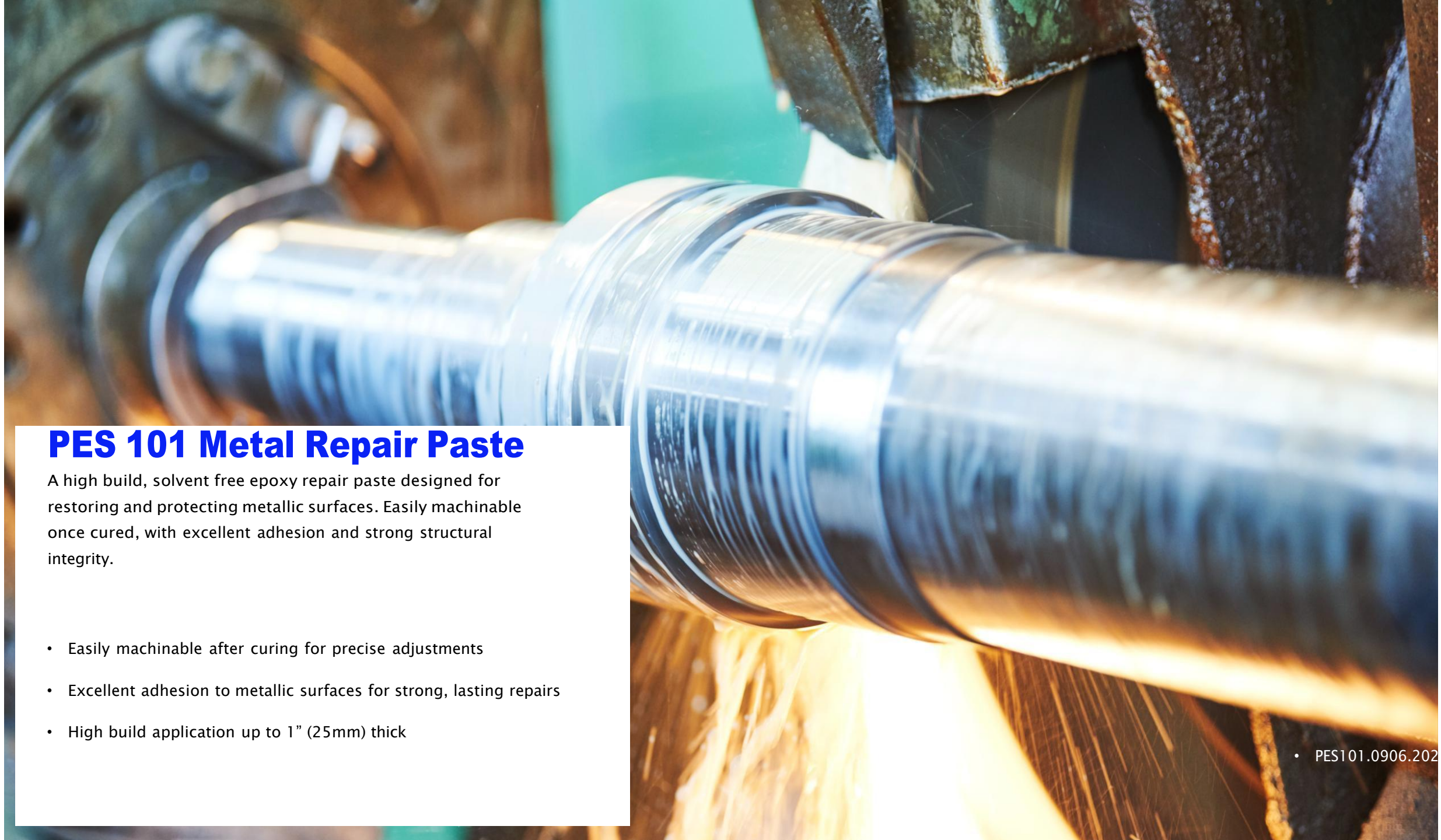


PES 101 Metal Repair Paste

A high build, solvent free epoxy repair paste designed for restoring and protecting metallic surfaces. Easily machinable once cured, with excellent adhesion and strong structural integrity.

- Easily machinable after curing for precise adjustments
- Excellent adhesion to metallic surfaces for strong, lasting repairs
- High build application up to 1” (25mm) thick

- PES101.0906.202

Typical Applications

PES 101 Metal Repair Paste is a two component; solvent free epoxy repair compound designed for restoring and rebuilding worn or damaged metallic surfaces. Engineered for structural repairs, it is ideal for filling pitted areas and gaps, with a deep fill capability of up to 1" (25mm) while maintaining its shape during application.

- Worn or damaged pump shafts
- Cracked pump or valve casings
- Scored hydraulic rams
- Worn bearing housing
- Damaged flanges
- Leaking tank seams

Worn keyways

- Cracked engine blocks
- Damaged hulls on vessels
- Eroded rudder surfaces
- Corroded bow thruster tunnels
- Cold bonding steel plate

Characteristics

Appearance

Base	Dark grey paste
Activator	Light grey paste
Mixed	Mid grey paste

Solids Content

100%

Volume Capacity

24 in^3(406cc)/kg

Sag Resistance

Nil at 1" (25mm)

Density

Base	2.70
Activator	1.70
Mixed	2.46

Mixing Ratio

By weight	5:1
By volume	3:1

Storage Life

5 years if unopened and stored in normal dry conditions, 59-86°F (15-30°C)

Cure times

Usable Life		Min Machining Time		Max Overcoating Time		Full Cure	
50°F /10°C	60 mins	50°F /10°C	4 hours	50°F /10°C	12 hours	50°F /10°C	6 days
68°F/20°C	30 mins	68°F/20°C	2 hours	68°F/20°C	6 hours	68°F/20°C	3 days
86°F/30°C	15 mins	86°F/30°C	1 hour	86°F/30°C	3 hours	86°F/30°C	1.5 days
104°F/40°C	7.5 mins	104°F/40°C	30 mins	104°F/40°C	90 mins	104°F/ 40°C	18 hours

Coverage

1kg (2.2lb) of fully mixed product will give the following coverage rates:

4.3ft^2 at40mil	0.406m^2 at mm
2.2ft^2 at 80mil	0.203m^2at22m
1.45ft^2 at 1/8"	0.135m^2 at 3mm

Please note that the coverage rates quoted are theoretical and do not take into consideration the profile or condition of the surface being repaired.

Mechanical Properties

Abrasion Resistance
Taber CS17 Wheels/1kg load
22mm³ loss/1000 cycles

Compressive Strength
Tested to ASTM D695
15300psi (1075kg/cm²)

Corrosion Resistance
Tested to ASTM B117
Minimum 5000 hours

Flexural Strength
Tested to ASTM D790
10,000psi (703kg/cm²)

Heat Resistance
Suitable for use in immersed conditions at temperatures up to 140°F (60°C)
Resistant to dry heat up to 392°F (200°C) dependent on load , and down to -40°F (-40°C).

Adhesion
Tensile Shear to ASTM D1002 on abrasive blasted mild steel with 3 mil (75 micron) profile 2630 psi (185KG/cm²).

Pull off Adhesion to ASTM D4541 on abrasive blasted mild steel with 3mil (75micron profile) 3480psi (244 kg/cm²)

Heat Distortion
Tested to ASTM D648 at 264psi fiber stress:

68°F (20°C) Cure	136°F (58°C)
212°F (100°C) Cure	208°F (98°C)

Hardness
Tested to ASTM D2240
Shore A: 84

Details & Legal

Chemical Resistance
The product resists attack by a wide variety of inorganic acids, alkalis, salts and organic media. For more detailed information refer to the PES Technical Center for advice.

Food Contact
USDA compliant for incidental food contact.

Title 21, Food and Drugs, Chapter I, U.S. Code of Federal Regulations, FDA, Subchapter B – Food for Human Consumption, Section 175.300 (Resinous and Polymeric Coatings).

Quality
All PES Products are supplied under the scope of the company's fully documented quality system.

Warranty
PES warrants that the performance of the product supplied will conform to the typical descriptions quoted within this specification provided material is stored correctly and used according to the procedures detailed in this document.

Pack Sizes
This product is available in the following pack sizes:

1.1lb (500gm)
2.2lb (1kg)
6.6lb (3kg)
66lb (30kg)

Application Guide

A. Surface Preparation

Metallic Substrates: Mechanical abrasion

1. All oil and grease must be removed from the surface using an appropriate cleaner such as MEK.
2. All surfaces must be mechanically abraded using handheld grinders to SSPC SP3 ST3 (ISO 8501/4ST3).
3. Once abraded, the surface must be degreased and cleaned using MEK or similar type material.
4. All surfaces must be coated before gingering or oxidation occurs.

When using a lathe and where a machined finish is required, the repair area should be overfilled by up to 60mil (1.5mm) and once hardened machined using a surface cutting speed of 200ft/minute and a feed rate of 50 thou/rev initially and 10 thou/rev for finishing.

Metallic Substrates: Abrasive blast cleaning (Preferred method)

1. All oil and grease must be removed from the surface using an appropriate cleaner such as MEK.
2. All surfaces must be abrasive blasted to SSPC SP10 NACE Standard 2 (ISO 8501/4 SA2.5) minimum blast profile of3mil (75 microns) using an angular abrasive.
3. Once blast cleaned, the surface must be decreased and cleaned using MEK or similar type material.
4. All surfaces must be coated before gingering or oxidation occurs.

B. Product Preparation

Prior to mixing, please ensure the following:

1. The base component is at a temperature between 60–77°F (15–25°C).
2. The ambient & surface temperature is above 41°F (5°C). Once these checks have been met, please proceed with mixing the product.

PLEASE NOTE: For salt contaminated surfaces the substrate must be pressure washed with clean water and checked for salt contamination, please refer to the surface preparation and pre-application guide for further information.

C. Mixing

If part mixing the unit of material:

1. Using the spatula provided place 3 equal measures from the base unit onto the mixing board provided.
2. Clean the spatula thoroughly.
3. Then take 1 equal measure from the activator unit and place alongside the base measures.
4. Mix the 2 components together until you have a streak free mix (mid grey) on the mixing board.
5. Ensure there is no unmixed material on the spatula or mixing board.

Health & Safety

Please ensure good practice is observed at all times during the mixing and application of this product. Protective gloves and other recommended personal protective equipment must be worn during the mixing and application of this product.

Before mixing and applying the material, please ensure you have read and fully understood all information.

If mixing a complete unit of material (500gm/1kg/3kg):

1. Dispense the base and activator units onto a clean mixing surface.
2. Mix the 2 components together until you have a streak free mix (mid grey) on the mixing board.
3. Ensure there is no unmixed material on the spatula or mixing board.

PLEASE NOTE: From the commencement of mixing, the material should be used within 30 minutes at 68°F(20°C).

D. Application

1. Using a spatula or applicator tool, apply the material to the prepared surface.
2. Ensure the product is pressed into any holes, scars or cracks.
3. Once the repair has been completed smooth off any imperfections using a gloved hand.

For Optimum Performance: *After an initial curing period of at least 4 hours at 68°F (20°C), raising the cure temperature progressively to 140-212°F (60-100°C) for up to 8 hours will result in improved mechanical, thermal and chemical resistance properties.*



Quick Application Guide









Step 1

Ensure you have:

1 x base unit

1 x activator unit

1 x spatula

1 x applicator

1 x clean mixing area

Step 2

Take 3 equal measures of base material, clean the spatula, then take 1 measure of the activator.

Step 3

Mix the two components using a spatula, ensure any unmixed material around the edges is mixed.

Step 4

To ensure the product is fully mixed create a diamond pattern on the surface and look for any areas which are not mid grey in color.

Step 5

Once the material is fully mixed use the applicator tool provided to apply the PES101 metal repair paste to the surface.

About Polymeric Engineered Solutions

A Texas based supplier of epoxy and polyurethane coatings and repair materials.

From our head office in the heart of rural Texas, USA. we supply our range of Epoxy, Polyurethane & Silicone coatings and repair materials to the Oil & Gas, Petrochemical, Marine, Paper & Pulp, Water, Power Generation & Chemical Industries.

Legal Notice

The data contained within this Product Specification is furnished for information only and is believed to be reliable at the time of issue. We cannot assume responsibility for results obtained by others over whose methods we have no control. It is the responsibility of the customer to determine the products' suitability for use. Polymeric Engineered Solutions accepts no liability arising out of the use of this information or the product described herein.

POLYMERIC ENGINEERED SOLUTIONS

*REPAIR * PROTECT * ENHANCE*

PES PO BOX 126 KURTEN, TX 77862 pes1@pes-solutions.com