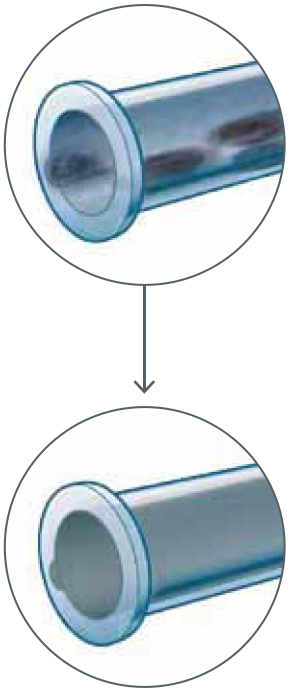
# Metal-Filled Compounds
## To Repair Metal Parts



## Why use a LOCTITE metal-filled compound?

LOCTITE metal-filled compounds offer maintenance solutions to the problems caused by impingement and mechanical damage, including cracks in housings, worn keyways in shafts and collars, worn cylindrical shafts etc.

LOCTITE metal-filled compounds repair, rebuild and restore damaged machinery and equipment permanently and without the need for heating or welding.

### Traditional Methods vs Modern Solutions

Traditional repair methods such as hard face welding are time consuming and expensive. Alternatively, LOCTITE metal-filled compounds are easily applied and offer superior compressive strength and protection qualities.

LOCTITE metal-filled compounds and LOCTITE protective coatings and compounds help you restore and rebuild a wide variety of worn parts and return them to a serviceable condition.

### Key benefits of LOCTITE metal-filled compounds

- Fast repair
- Low shrinkage to reduce stress on components
- Easy to apply
- No need to heat parts
- Suitable for production line repairs
- Match metal colour
- Can be drilled, tapped or machined after cure
- Superior adhesion to metal, ceramic, wood, glass and some plastics
- Excellent resistance to aggressive chemicals to increase part life
- Choice of mild steel, aluminium or non-metallic fillers for metal colour matching
- Create durable repairs
- High compression strength for mechanical applications

## Key factors to consider when choosing the right LOCTITE metal-filled compound

**Metal Repair**
LOCTITE products for metal repair use steel or aluminium fillers to obtain properties as close as possible to the part being repaired. Non metal filled products can be used to rebuild worn areas constantly subjected to cavitation and wear.

**Consistency**
The range of LOCTITE metal-filled compounds includes pourable, putty or kneadable products to meet all requirements.

**Special Requirements**
As some applications are extremely demanding, Henkel has developed special products to resist high compression loads, high temperatures and highly abrasive environments.

## Surface Preparation

Correct surface preparation is vital for the successful application of these products.

**Good surface preparation will:**
- Improve adhesion of LOCTITE metal-filled compounds to parts
- Prevent corrosion between the metal surface and the LOCTITE metal-filled compound
- Extend part life

**After surface preparation, parts must be:**
- Clean and dry
- Without surface or internal chemical contamination
- Without corrosion
- Left with a surface profile of 75 µm minimum


## Product Application

LOCTITE metal-filled compounds are two-component epoxies. Products must be mixed thoroughly before application, using the correct mixing ratio, until a uniform colour is achieved.

Putty products should be applied in thin layers. Press in place firmly and build up to the required thickness to fill the gap. Particular care must be taken to prevent air bubbles forming.

## Shaft Repair

Use LOCTITE EA 3478 for this special application. This product is particularly suitable for rebuilding bearing seats. Please contact your local Technical Support to obtain specific recommendations for shaft repair solutions.

# Metal-Filled Compounds
## Product Table

### Repair or rebuild damaged metal parts?

| | Steel | | |
|---|---|---|---|
| | **Kneadable** | **High compressive strength** | **Putty** |
| **Solution** | **LOCTITE EA 3463** (Metal Magic Steel™ stick) | **LOCTITE EA 3478** (Superior Metal) | **LOCTITE EA 3471** (Metal Set S1) |
| |  |  |  |
| **Description** | 2K Epoxy | 2K Epoxy | 2K Epoxy |
| **Mix ratio by weight** | – | 7.25:1 | 1:1 |
| **Working life** | 3 min. | 20 min. | 45 min. |
| **Fixture time** | 10 min. | 180 min. | 180 min. |
| **Shear strength (GBMS)** | ≥ 6 N/mm² | 17 N/mm² | 20 N/mm² |
| **Compressive strength** | 83 N/mm² | 125 N/mm² | 70 N/mm² |
| **Service temperature range** | -30°C to +120°C | -30°C to +120°C | -20°C to +120°C |
| **Pack sizes** | 114g | 453g, 3.5kg tub kit | 500g tub kit |
| | **LOCTITE EA 3463**<br>• Emergency sealing of leaks in pipes and tanks<br>• Smoothes welds<br>• Repairs small cracks in castings<br>Sets in 10 minutes. Steel-filled kneadable stick. Adheres to damp surfaces and cures under water. Chemical and corrosion resistant. Can be drilled, filed and painted. | **LOCTITE EA 3478**<br>• Rebuilds keyways and spline assemblies<br>• Rebuilding of bearings, clamp connections, tensioning elements, gear wheels or bearing seats<br>Ferro-silicon-filled, with outstanding compression strength. Ideal for renewing surfaces subjected to compressive, thrust, impact and harsh environments. | **LOCTITE EA 3471**<br>• Seals cracks in tanks, castings, vessels and valves<br>• Patches non structural defects in steel casings<br>• Resurfaces worn air seals<br>• Repairs pitting caused by cavitation and/or corrosion<br>General purpose steel filled, non sagging two component epoxy. Used to rebuild worn metal parts. |

## What material are you filling?

| | | Aluminium | | Metallic components exposed to friction |
|---|---|---|---|---|
| **Pourable** | **Fast cure** | **Multi-purpose** | **High temperature resistance** | **Wear resistant** |
| **LOCTITE EA 3472** (Metal Set S2) | **LOCTITE EA 3473** (Metal Set S3) | **LOCTITE EA 3475** (Metal Set A1) | **LOCTITE EA 3479** (Metal Set HTA) | **LOCTITE EA 3474** (Metal Set M) |
|  |  |  |  |  |
| 2K Epoxy | 2K Epoxy | 2K Epoxy | 2K Epoxy | 2K Epoxy |
| 1:1 | 1:1 | 1:1 | 1:1 | 1:1 |
| 45 min. | 6 min. | 45 min. | 40 min. | 45 min. |
| 180 min. | 15 min. | 180 min. | 150 min. | 180 min. |
| 25 N/mm² | 20 N/mm² | 20 N/mm² | 20 N/mm² | 20 N/mm² |
| 70 N/mm² | 60 N/mm² | 70 N/mm² | 90 N/mm² | 70 N/mm² |
| -20°C to +120°C | -20°C to +120°C | -20°C to +120°C | -20°C to +190°C | -20°C to +120°C |
| 500g tub kit | 500g tub kit | 500g tub kit | 500g tub kit | Not available in the U.K. |
| **LOCTITE EA 3472**<br>• Forms moulds, fixtures and prototypes<br>• Repairs threaded parts, pipes and tanks<br>Pourable, steel filled, self levelling. Recommended for casting into hard to reach areas, anchoring and levelling, forming moulds and parts. | **LOCTITE EA 3473**<br>• Repairs holes in tanks, leaks in pipes and elbows<br>• Renews stripped threads<br>• Rebuilds worn steel parts<br>Fast curing, steel filled, non sagging. Ideal for emergency repair and repairing worn metal parts to prevent downtime. | **LOCTITE EA 3475**<br>• Repairs aluminium castings, cracked or worn aluminium parts and stripped aluminium threads<br>A non sagging, heavily reinforced, aluminium powder filled two component epoxy. Easily mixed and moulded to form odd shapes if required. Cures to a non-rusting, aluminium like finish. | **LOCTITE EA 3479**<br>• Rebuilds and repairs worn metal parts in high operating temperature applications<br>A non sagging, heavily reinforced, aluminium powder filled two component epoxy. Easily mixed and moulded to form odd shapes if required. Cures to a non-rusting, aluminium like finish. | **LOCTITE EA 3474**<br>• Ideal for repairing metallic surfaces under friction<br>Steel putty, high wear resistant. Forms a self lubricating surface to reduce sliding wear on moving parts. |