

Features & Benefits

-  Toughened
-  Rapid cure
-  Ideal when bonding dissimilar materials
-  Improved fatigue life

Description

Permabond® A1046 is a rapid curing adhesive designed to provide permanent locking and sealing of metal parts such as bearings, gears, pulleys and threaded components. It exhibits high strength and excellent durability, even under the most arduous conditions. Permabond A1046 helps joints resist vibration, fatigue and fretting corrosion, which allows machining tolerances to be relaxed and mechanical locking devices to be eliminated. Permabond A1046 will help reduce processing costs.

Physical Properties of Uncured Adhesive

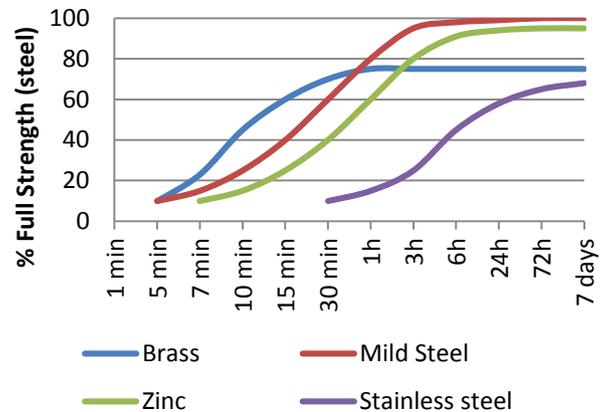
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|----------------------|---|
| Chemical composition | Acrylic |
| Appearance | Green |
| Viscosity @ 25°C | 2rpm: 9,000 mPa.s (cP) 20rpm: 2,500 mPa.s (cP) |
| Specific Gravity | 1.1 |
| UV fluorescence | Yes |

Typical Curing Properties

| | |
|---|----------------------|
| Maximum gap fill | 0.25 mm 0.01" |
| Maximum thread size | M30 ¾" |
| Time taken to reach handling strength (M10 steel) @23°C | 5-10 minutes* |
| Time taken to reach working strength (M10 steel) @23°C | 30 minutes |
| Full strength (M10 steel) @23°C | 24 hours |

*Handling time at 23°C / 73°F. Copper and its alloys will make the adhesive cure more quickly, while oxidised or passivated surfaces (like stainless steel) will reduce cure speed. To reduce curing time, use Permabond activator A905 or ASC10 alternatively, increasing the curing temperature will reduce curing time.

Strength Development



*Cure times are typical at 23°C. Copper and its alloys will follow the faster cure while oxidised or passivated surfaces like stainless steel will tend towards the slower curve. Lower temperatures or large gaps will tend to extend the cure time. To reduce the cure time the use of Permabond A905, ASC10, or heat can be considered.

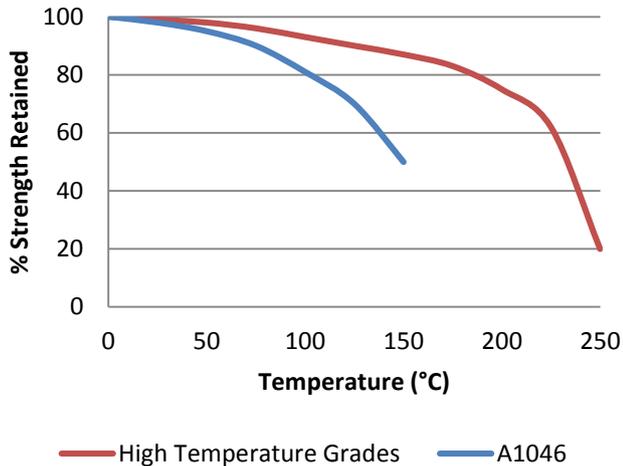
Typical Performance of Cured Adhesive

| | |
|--|--|
| Torque strength (M10 steel ISO10964) | Break 30 N·m 270 in.lb Prevail 50 N·m 450 in.lb |
| Shear strength (steel collar & pin ISO10123) | 25 MPa 3600 psi |
| Coefficient of thermal expansion | 90 x 10 ⁻⁶ mm/mm/°C |
| Dielectric strength | 11 kV/mm |
| Thermal conductivity | 0.19 W/(m.K) |

The information given and the recommendations made herein are based on our research and are believed to be accurate but no guarantee of their accuracy is made. In every case we urge and recommend that purchasers before using any product in full-scale production make their own tests to determine to their own satisfaction whether the product is of acceptable quality and is suitable for their particular purpose under their own operating conditions. THE PRODUCTS DISCLOSED HEREIN ARE SOLD WITHOUT ANY WARRANTY AS TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED.

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Hot Strength



"Hot strength" Breakaway strength on M10 Zinc plated bolts according to ISO 10964. Cured at 23°C for 24 hours then conditioned for 30 minutes at testing temperature.

A1046 can withstand higher temperatures for brief periods (such as for paint baking and wave soldering processes) providing the joint is not unduly stressed. The minimum temperature the cured adhesive can be exposed to is -55°C (-65°F) depending on the materials being bonded.

Chemical Resistance

| Immersion (1000 hours) | Temperature (°C) | Strength Retention (%) |
|------------------------|------------------|------------------------|
| Engine Oil | 125 | 235 |
| Water/Glycol | 75 | 100 |
| Leaded Petrol | 23 | 175 |
| Unleaded Petrol | 23 | 175 |
| Diesel | 23 | 160 |
| Brake Fluid | 23 | 180 |
| 99% IMS | 23 | 175 |
| Acetone | 23 | 160 |

This product is not recommended for use in contact with oxygen, oxygen rich systems and other strong oxidizing materials. This product may adversely affect some thermoplastics and users must check compatibility of the product with such substrates before using.

Surface Preparation

Though the anaerobic adhesives will tolerate a slight degree of surface contamination, best results are obtained on clean, dry and grease free surfaces. The use of a suitable solvent-based cleaner (such as acetone or isopropanol) is recommended.

In general, roughened surfaces (~25µm) give higher bond strengths than polished or ground surfaces.

To reduce the curing time, especially on inactive surfaces (such as zinc, aluminium and stainless steel), the use of Permabond A905 or ASC10 can be considered.

Directions for Use

- 1) Apply a circumferential bead; preferentially to the female component. Assemble with a twisting action.
- 2) For larger components use thixotropic products to prevent run off.
- 3) Take care to ensure adhesive does not enter ball races or other mechanisms.

Storage & Handling

| | |
|---|------------------------|
| Storage Temperature | 5 to 25°C (41 to 77°F) |
| Users are reminded that all materials, whether innocuous or not, should be handled in accordance with the principles of good industrial hygiene. Full information can be obtained from the Safety Data Sheet. | |

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