

## Features & Benefits

- Fast setting and fixing of components
- Very high strength
- Thixotropic
- Excellent chemical resistance

## Description

**Permabond® HM163** is a medium viscosity, thixotropic anaerobic retaining compound that cures when confined between metal parts to form a tough bond. It has been specifically formulated to provide a fast cure on inactive surfaces such as aluminium and stainless steel. The viscosity and thixotropic effect of the material allows for the use of larger tolerances on components.

## Physical Properties of Uncured Adhesive

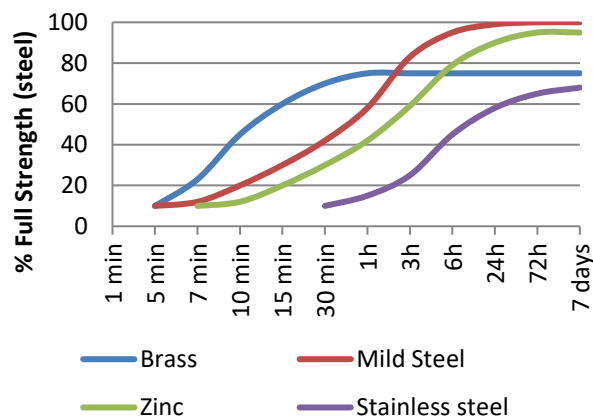
Chemical composition	Acrylic
Appearance	Green
Viscosity @ 25°C	3,500 mPa.s (cP)
Specific Gravity	1.1
UV fluorescence	Yes

## Typical Curing Properties

Maximum gap fill	0.2 mm <b>0.008"</b>
Time taken to reach handling strength (M10 steel) @23°C	5 minutes*
Time taken to reach working strength (M10 steel) @23°C	1-3 hours
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.

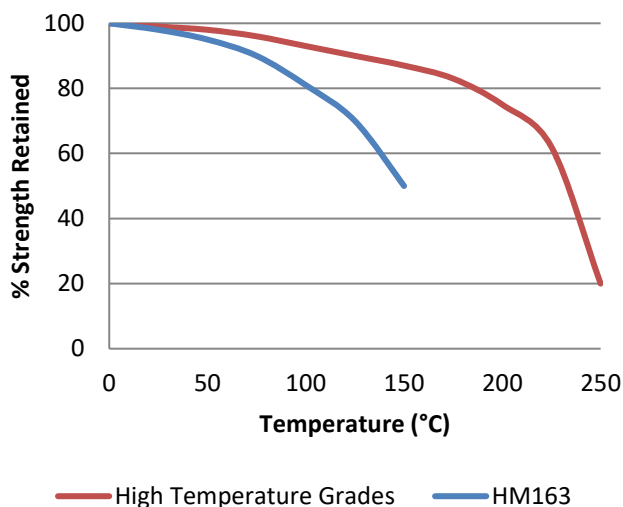
## Typical Performance of Cured Adhesive

Torque strength (M10 steel ISO10964)	Break 30 N·m <b>260 in.lb</b> Prevail 55 N·m <b>480 in.lb</b>
Shear strength (steel collar & pin ISO10123)	28 MPa <b>4000 psi</b>
Coefficient of thermal expansion	90 x 10 <sup>-6</sup> mm/mm/°C
Dielectric strength	11 kV/mm
Thermal conductivity	0.19 W/(m.K)

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## Hot Strength



*"Hot strength" shear strength tests performed on mild steel. 24hr cure at room temperature and conditioned to pull temperature for 30 minutes before testing.*

HM163 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	140
Water/Glycol	85	90
Petrol	23	55

*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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