

## Features & Benefits

- Full cure seal to the burst rating of pipe
- Easy to use and apply
- Directional freedom
- Does not contain solvents
- Excellent chemical and temperature resistance
- Cures at room temperature
- Ideal for sealing hydraulic systems

## Description

Permabond® LM012 is an unfilled, medium viscosity anaerobic adhesive. Its major benefit as related to other pipe sealants is that it is an unfilled resin that is compatible with hydraulic fluids. If the adhesive is accidentally spilled into the hydraulic system, e.g., squeezed out of the joint, it will be dispersed in the fluid. It contains no particles that can clog or foul hydraulic screens and valves. Thus it is used in very sensitive high pressure hydraulic systems.

### MIL-S-22473 Grade HVV

Each lot of LM012 is tested to the lot requirements of these specifications.

### ASTM D5363 AN 0163 Group 01 Class 6 Grade 3

Each lot of LM012 is tested to the general requirements defined in paragraphs 5.1.1 and 5.1.2 and the detail requirements defined in section 5.2

## Physical Properties of Uncured Adhesive

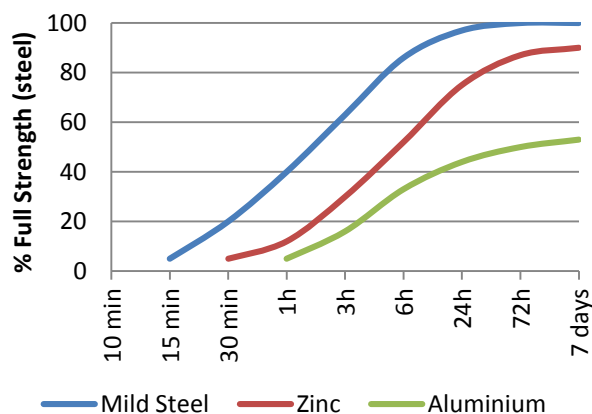
Chemical composition	Methacrylate esters
Appearance	Brown
Viscosity @ 25°C	2,000 mPa.s (cP)
Specific gravity	1.1
Particle size	<10µm
UV fluorescence	Yes

## Typical Curing Properties

Maximum gap fill	0.2 mm <b>0.008 in</b>
Maximum thread size	M20 <b>¾"</b>
Time taken to reach handling 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.

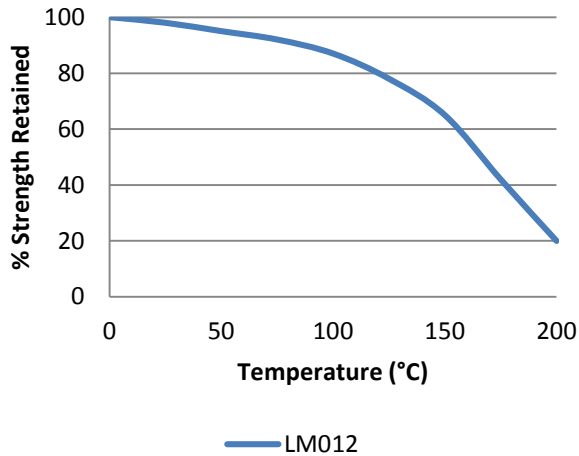
## Typical Performance of Cured Adhesive

Torque strength (M10 steel ISO10964)	Break 3 N·m <b>25 in.lb</b> Prevail 2 N·m <b>15 in.lb</b>
Shear strength (steel collar & pin ISO10123)	5 MPa <b>750 psi</b>
Coefficient of thermal expansion	90 x 10 <sup>-6</sup> mm/mm/°K
Thermal conductivity	0.19 W/(m.K)

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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.*

LM012 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

1000 Hour immersion	Temperature, °C (°F)	Pressure, psi	Results
50% Antifreeze / 50% water solution	126 (260)	60	No leak
Brake fluid	150 (300)	60	No leak
Differential lube	150 (300)	60	No leak
5W/30 Engine oil	150 (300)	60	No leak
Transmission fluid	150 (300)	60	No leak
Diesel fuel #2	25 (77)	60	No leak
ASTM fuel C	25 (77)	60	No leak
Water, steam	198 (390)	60	No leak
Air	150 (300)	60	No leak

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

## Directions for Use

- 1) Prevent the tip from touching metal surfaces during application.
- 2) Apply Permabond® LM012 onto the leading 3-4 threads half way around the male pipe.
- 3) Screw fittings together. Permabond pipe sealants will seal even when the direction the pipe must face does not allow the complete seating of the threads.
- 4) Visually inspect for a bead of pipe sealant around the entire pipe. If the sealant isn't visible around the circumference, repeat the steps above using more sealant.

***Permabond®LM012is designed for use on threaded metallic pipe joints; not recommended for use on plastic components.***

## Storage & Handling

Storage Temperature	5 to 25°C (41 to 77°F)
Shelf Life Stored in original unopened containers	12 months
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.	

## Contact Permabond:

- Americas +1 732 868 1372
- US 800-640-7599
- Asia + 86 21 5773 4913
- Europe +44 (0) 1962 711661
- UK 0800 975 9800
- Deutschland 0800 111 388
- France 0805 111 388

[info.americas@permabond.com](mailto:info.americas@permabond.com)

[info.europe@permabond.com](mailto:info.europe@permabond.com)

[info.asia@permabond.com](mailto:info.asia@permabond.com)

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