

# Marine Adhesives

## Application: Gearbox overhaul



Permabond adhesives are ideal for bonding gears to shafts, repairing and replacing spun bearings, bonding bushes and sealing and gasketing gear box housings.

### Benefits of Permabond anaerobic sealants:

- Available in a range of viscosities to suit component size, diameter and fit
- Help prevent metal fretting
- Machining tolerances can be relaxed (no more interference or shrink fits)
- Help lubricate parts making the assembly process much easier
- Permabond gasketmakers are ideal for making a whole variety of different shaped gaskets - one bottle can seal all.
- Excellent resistance to water, oil, petrol and other chemicals. High temperature resistant products also available.

Adhesive used: Permabond A1046 (for bearings and gears to shaft), Permabond MH196 for gasketing.

Permabond offers a range of adhesive technologies suitable for use in shipbuilding, repair and maintenance.



Threadlocking Pipes Sealing

## Application: Reinforcing Superstructure

Severe environmental conditions and stress exertion on superstructures can cause cracks to appear around high stress areas (such as corners of doorways and window frames). Cracks can be filled and a metal plate bonded across to strengthen such problem areas.

- High viscosity, high strength adhesive with good adhesion
- Easy to apply, good gap fill
- Rapid cure speed as plates normally cannot be clamped in place during cure
- Resistant to salt spray
- High shear and peel strength to cope with high stress exerted, particularly during stormy conditions when the ship lurches.

Adhesive used: Permabond TA4300



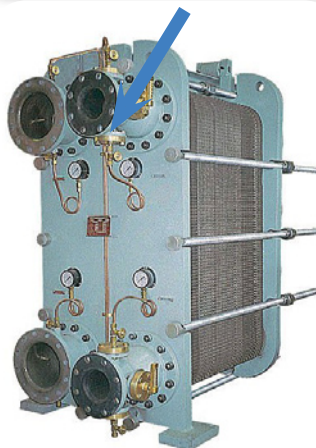
## Application: Rudder bushing repair



This particular customer was unable to weld cast iron to steel and decided to bond the rudder bushing in place instead. Less accurate machining of parts was required as the high viscosity adhesive was able to take up the slack fit between parts.

- Excellent resistance to salt water
- 100% seal prevents corrosion
- Much easier than welding

Adhesive used: Permabond A134



## Application: Flange sealing on ship heat exchanger

Sealing flanges and bolt holes on a ship's heat exchanger.

- Excellent resistance to coolant fluid
- 100% seal prevents leaking
- No bedding in (unlike pre-formed gaskets) so less routine maintenance required.
- High temperature resistance - up to 200°C

Adhesive used: Permabond MH196

# Product selector

| Features  | Typical Applications  | Cure method                              | Viscosity (mPa.s) cP | Gap fill (mm) in | Handling time | Max. shear strength steel (MPa) psi | Temperature range (°C) °F    |
|---|---|--|----------------------|------------------|---------------|-------------------------------------|------------------------------|
| <b>Permabond A1042</b><br>Anaerobic threadlocker - prevents vibration loosening, corrosion, leakage                                 | Threadlocking and sealing hydraulics  | Anaerobic cure                           | 8,000                | (0.12)<br>0.005  | 5 minutes     | (12) 1700                           | (-55 to +150)<br>-65 to +300 |
| <b>Permabond HM129</b><br>Anaerobic threadlocker - can be used on oily / contaminated parts   | Threadlocking nuts and bolts  | Anaerobic cure                           | 500                  | (0.15)<br>0.006  | 10 minutes    | (17) 2500                           | (-55 to +150)<br>-65 to +300 |
| <b>Permabond MH196</b><br>High viscosity anaerobic sealant for making formed-in-situ gaskets and for sealing flanges and bolt holes | Gasketing and flange sealing  | Anaerobic cure                           | 150,000              | (0.5)<br>0.02    | 15 minutes    | (10) 1500                           | (-55 to +200)<br>-65 to +390 |
| <b>Permabond A131</b><br>Pipe sealant - suitable for sealing fuel, water, sprinkler and heating pipework                            | Pipesealing   | Anaerobic cure                           | 40,000               | (0.5)<br>0.02    | 45 minutes    | (6) 900                             | (-55 to +150)<br>-65 to +300 |
| <b>Permabond A1046</b><br>Toughened, rapid curing high strength retaining adhesive  | Bonding gears to shafts, bearings into housings. Also ideal for sealing air conditioning refrigerant pipework | Anaerobic cure                           | 9,000                | (0.25)<br>0.01   | 5 minutes     | (25) 3600                           | (-55 to +150)<br>-65 to +300 |
| <b>Permabond A134</b><br>High viscosity retaining adhesive, suitable for bonding larger parts                                       | Bonding gears to shafts, bearings into housings   | Anaerobic cure                           | 70,000               | (0.5)<br>0.02    | 15 minutes    | (21) 3000                           | (-55 to +150)<br>-65 to +300 |
| <b>Permabond 2011</b><br>General purpose instant bonding gel  | Repairing interior trim, bonding rubber mat edges to prevent trip hazards                                     | Moisture cure                            | Gel                  | (0.5)<br>0.02    | 5-10 seconds  | (24) 3500                           | (-55 to +80)<br>-65 to +175  |
| <b>Permabond TA4300</b><br>Adhesive for structural bonding  | Repair of ship's superstructure - metal bonding   | Resin & hardener (room temperature cure) | Paste                | (2)<br>0.08      | 5-10 minutes  | (22) 3200                           | (-55 to +120)<br>-65 to +250 |
| <b>Permabond ET538</b><br>2-part epoxy for bonding of wood, fibreglass, composites, metal etc. Excellent salt water resistance.     | Hull, mast and deck construction & repair. Filling gaps and cracks.   | Resin & hardener (room temperature cure) | Paste                | (5)<br>0.2       | 3-4 hours     | (20) 2900                           | (-55 to +80)<br>-65 to +175  |

If you can't see the exact product you are looking for, or need more in depth technical information, Permabond's technical team would be more than happy to help.

## Contact Permabond

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## Permabond Worldwide

Wherever your manufacturing or R&D site may be located, Permabond representatives can be called upon to assist you. We have an extensive network of trained distributors worldwide.



Permabond's sales engineers are available to assess your production line and find the best possible turnkey adhesive solution that will result in production efficiencies.

The experienced team of Permabond chemists is on hand to help you with custom formulations and fulfilling your technical data requests.



# Permabond®

Engineering Adhesives

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