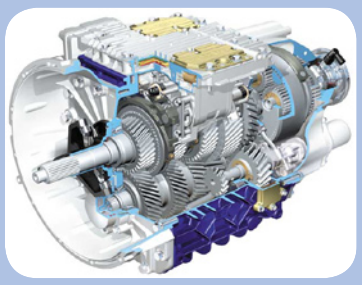
Automotive Adhesives

Application: Gearboxes



There are a number of applications within the gearbox where Permabond adhesives excel during use:

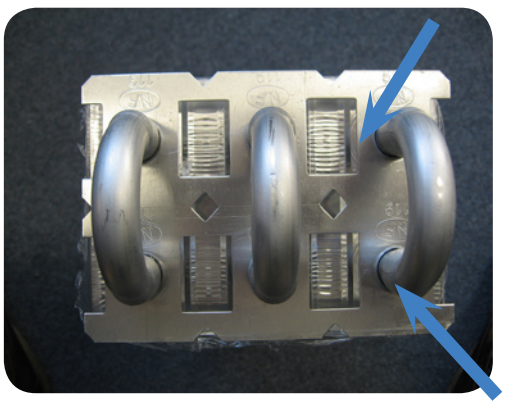
- High strength bonding of gears to shafts - Permabond A118
- Threadlocking nuts and bolts to prevent vibration loosening - Permabond A1042
- Gasketing gear box cover and sealing bolt holes - Permabond MH196

Adhesives are a lightweight method of joining a variety of composites and plastic materials.

By replacing mechanical fasteners with adhesives, automotive components manufacturers can achieve lighter component weight, a cleaner, more streamlined finish and better stress distribution and component performance, as well as access to a wider variety of composite materials. Permabond adhesives are used widely in the automotive industry on a wide variety of applications on the chassis, exterior panels (particularly on high performance vehicles), interior bonding applications, underbonnet, electrical and braking systems.

Engine applications

- Fanbelt drive - threadlocking bolt tensioner, retaining fan drive bearing and bush. Bonding on heat sensor.
- Camshaft - threadlocking timing gear bolts, retaining camshaft spacer, locking chain tensioner studs or bolts.
- Lock engine mounting bolts, bonding rubber pads in mounting brackets.
- Sealing flywheel casing to crankcase and front plate to crankcase.



Application: Sealing Heat Exchangers

Single part epoxy applied to seal around tubes, for wicking between tight fitting components, ES558 is used. For making a fillet around the tube where it meets the plate ES550 is used.

Application: Brake wear sensors

Wear sensor wires are bonded into vehicle brake pads

- Requires a high pull out strength after 5 minutes (so rapid curing product required)
- Cables are dipped in A905 to activate the plastic surface.
- Adhesive can be applied by hand or procedure can be fully automated
- No heat cure or mixing required

Adhesive used: Permabond A905 activator and Permabond A1046

Automotive interior

Permabond offers a broad range of adhesives suitable for use in the construction of automotive interior parts and electronics. Products are formulated to optimise bonding performance on materials commonly found in the automotive industry, at the same time, careful consideration is given to the finished appearance of the cured adhesive. Bonded parts need to be high strength, offer good temperature resistance and be aesthetically pleasing. Permabond has a number of products which combine these requirements *and* offer production line benefits (such as ease of application, speed of adhesive cure and cost reductions).

Application: Luggage Covers

Bonding special automotive grade "Green PVC" (which can be recycled) around a roller. This is seen in the rear of many hatch / estate-type vehicles for covering luggage.

- Green PVC is particularly difficult to bond due to slip additives migrating to the surface.
- Standard cyanoacrylate cannot bond green PVC so a special surface-insensitive grade was tested and approved instead.

Adhesive used: Permabond 792

Application: Bonding auto weather strips

Bonding clips to the ends of EPDM rubber strips which are used to seal around doors, vehicle bonnet and boot.

- High viscosity, high strength adhesive with good adhesion
- Easy to apply
- Flexible and toughened - will not go brittle and snap off
- Black colour to match the rubber

Adhesive used: Permabond 737

Application: Sealing wiring harnesses

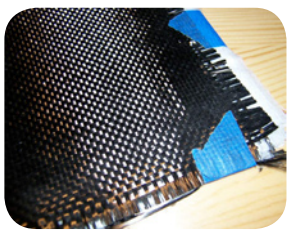
Sealing harness housing to prevent moisture ingress into the electronics of the vehicle.

- Sealing tin plated brass to Nylon 6
- Requires low viscosity wicking action to form a complete seal around the incoming wires
- Adhesive needs to survive extremes of temperature.

Adhesive used: Permabond A905 activator and A126

Permabond offer adhesive solutions to bond many materials including:

-Carbon fibre
-Leather
-ABS
-Polypropylene
-Wood veneer
-Polyurethane
-Rubber
-Metal



Application: Seat runner ends

Bonding polypropylene ends onto seat runners (to prevent clothing snags or scratched skin).

- Polypropylene, although low cost and popular can be very difficult to bond.
- High peel strength is required to prevent detachment.
- Adhesive needs to survive extremes of temperature.

Adhesive used: Permabond POP Primer and 737

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
Permabond A1042 Anaerobic threadlocker - prevents vibration loosening, corrosion, leakage	Threadlocking and sealing hydraulics.	Anaerobic cure	8,000	(0.12) *0.005*	5 minutes	(12) *1700*	(-55 to +150) *-65 to +300*
Permabond A118 Low viscosity, high strength retaining adhesive	Bonding gears to shafts, bearings into housings.	Anaerobic cure	500	(0.12) *0.005*	15 minutes	(21) *3000*	(-55 to +150) *-65 to +300*
Permabond MH196 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) *0.02*	15 minutes	(10) *1500*	(-55 to +200) *-65 to +390*
Permabond A126 Wicking grade sealant. Can be applied post-assembly.	Ideal for sealing wiring harnesses. Can also be used for sealing weld porosities.	Anaerobic cure	30	(0.05) *0.001*	15 minutes	(21) *3000*	(-55 to +150) *-65 to +300*
Permabond A1046 Toughened, rapid curing high strength retaining adhesive	Bonding gears to shafts, bearings into housings. Brake cables into pads (with A905).	Anaerobic cure	9,000	(0.25) *0.01*	5 minutes	(25) *3600*	(-55 to +150) *-65 to +300*
Permabond A905 Surface activator	Ideal for use with Permabond anaerobics on inactive surfaces	-	0.55	-	-	-	-
Permabond 792 Instant bonding cyanoacrylate for hard-to-bond materials	Bonding interior trim, luggage covers.	Moisture cure	70-90	(0.05) *0.001*	2-3 seconds	(22) *3200*	(-55 to +80) *-65 to +175*
Permabond 737 Rubber toughened cyanoacrylate	Automotive weather seal.	Moisture cure	Paste	(2) *0.08*	30 seconds	(22) *3200*	(-55 to +120) *-65 to +250*
Permabond ES550 Toughened epoxy, excellent chemical and temperature resistance	Bonding wire mesh into filter end caps	No mix, heat cure (oven) or induction	Paste	(3.0) *0.12*	20 mins (full strength at 150°C / 300°F oven cure)	(25) *3600*	(-40 to +180) *-40 to +350*
Permabond PT328 Flexible polyurethane, with excellent vibration and impact resistance	Bonding automotive interior panels. Bonding carbon fibre.	2-part 1:1 mix ratio room temperature cure	4500	(0.5) *0.02*	15-20 minutes	(6) *900*	(-55 to +120) *-65 to +250*

This is just a brief summary of some of our products, 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'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 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® Engineering Adhesives

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