Permabond®
Engineering Adhesives

Single Part Epoxies

Permabond single-part epoxy adhesives are suitable for bonding a wide variety of materials. They are available with a range of different viscosities and characteristics. Permabond epoxies have been developed to offer a high standard of performance for demanding applications.

Substrates

Permabond single-part epoxy adhesives will bond most engineering materials. They form excellent structural bonds to a wide variety of materials including metals, composites, ferrites and some plastics.

Durability

These adhesives offer excellent performance at high temperatures and harsh environmental conditions, having superb resistance to many aggressive chemicals.

Applications

Single-part epoxies are ideal for use in heavy wear-and-tear applications such as bonding tungsten carbide tools & machinery. They are ideal for replacing welding and brazing and can significantly reduce assembly production costs. For this reason their use is widespread in the heat exchanger bonding market for sealing heat exchanger tubes and end-plates.

Material selection

By replacing welding or brazing, the designer can have greater freedom of choice of manufacturing materials and can bond dissimilar substrates together. This can help reduce component cost and weight as well as improve performance.

Process

These adhesives are available in cartridge form or in bulk to dispense via automated dispensing equipment. They fully cure rapidly when exposed to heat via the use of an oven, induction coil, infra-red or hot air gun.

Joint Design

Joint design possibilities are greatly improved by the high shear and peel strength of joints bonded with these adhesives and by the increased stress distribution that they offer.

Benefits

- High peel strength increases design versatility
- No requirement for weighing or mixing material
- Durability increases material choices
- Rapid full cure increases production rates
- Solvent free improves workplace safety
- Low odour improves workplace environment
- Excellent high temperature resistance and can withstand harsh environmental conditions
- An effective alternative to welding or brazing

This table represents a selection of the complete range of Permabond single-part epoxy adhesives. For more detailed technical information and product Safety Data Sheets, visit permabond.com. To discuss your specific application requirements, please call Permabond and our technical advisors will recommend the best adhesive for you or discuss the development of a new grade or product modification to meet your technical requirements.

Permabond Epoxy Adhesives Comparison Chart

Grade	Description	Colour	Viscosity mPa.s = cP	Max. Gap Fill (mm) in	Cure Schedule Options	Shear Strength (N/mm^2) psi	Service Temp. (°C) °F	Availability
ES550	Toughened, non-sagging at curing temperature, excellent environmental resistance, good thermal conductivity.	Silver-grey	1,000,000 to 2,000,000	(5.0) 0.2	130°C (266°F): 75 mins 150°C (300°F): 60 mins 170°C (338°F): 40 mins	(27-41) 4000-6000	(-40 to +180) -40 to +356	Worldwide
ES558	Toughened, free flowing at curing temperature, excellent environmental resistance, good thermal conductivity.	Silver-grey	100,000 - 300,000	(0.5) 0.02	130°C (266°F): 75 mins 150°C (300°F): 60 mins 170°C (338°F): 40 mins	(27-41) 4000-6000	(-40 to +180) -40 to +356	Worldwide
ES562	Self-levelling, free flowing at curing temperature.	White	15,000 - 30,000	(0.25) 0.01	130°C (266°F): 60 mins 150°C (300°F): 45 mins 160°C (320°F): 20 mins	(20-35) 3000-5000	(-40 to +180) -40 to +356	Worldwide
ES569	High strength bonding, non-sagging at curing temperature.	Black	250,000 to 500,000	(5.0) 0.02	130°C (266°F): 75 mins 150°C (300°F): 60 mins 170°C (338°F): 40 mins	(27-41) 4000-6000	(-40 to +180) -40 to +356	Worldwide
ES578	Good thermal conductivity, excellent electrical insulation.	Black	600,000 - 800,000	(5.0) 0.02	130°C (266°F): 75 mins 150°C (300°F): 60 mins 170°C (338°F): 25 mins	(27-41) 4000-6000	(-40 to +180) -40 to +356	Worldwide

For further information please contact Permabond for individual technical and safety data sheets.

Permabond® Technologies

Anaerobics
Thread lockers, Thread sealants, FIP Gasketmakers, Retaining Compounds

Cyanoacrylates
Instant adhesives, for rapid bonding of metals, plastics, rubber, and more.

Epoxies
Two-part (ET), Single-part (ES), and Modified Technology (MT) grades are available.

MS-Polymers
Single-part, moisture-curing, flexible sealants

Polyurethanes
Two-part room temperature curing adhesives

Toughened Acrylics
Rapid curing, high strength structural adhesives

UV Light Cured Adhesives
For glass, plastic, and metal with dual cure options.

PERMABOND.COM

info.americas@permabond.com **Americas - 800-640-7599** **(732-868-1372)**
info.europe@permabond.com **Europe - 0800 975 9800** **(+44 (0) 1962 711661)**
info.asia@permabond.com **Asia + 86 21 5773 4913**

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