Permabond
Composite Bonding Adhesives

ISO 9001 Certified
"Our Science ... Your Success"

Permabond offers a wide range of different adhesive technologies for bonding composites. Whether you require a rapid cure in seconds or several hours to assemble parts, Permabond can help you find a bonding solution.

Permabond® Adhesive Features & Benefits

Existing Permabond adhesive users already enjoy many of the following benefits over mechanical fasteners:

- Cost savings
- Component weight reduction
- Improved stress distribution
- Improved appearance
- Faster manufacturing process
- Eliminates pre-drilling & prevents leaks
- Helps prevent corrosion
- Wider choice of substrate materials
- Better noise and vibration absorption
- Low shrinkage - no show-through marks

Ideal for bonding:

- ***ABS***
- ***Acrylic***
- ***Alucobond***
- ***Aluminium***
- ***Carbon Fiber***
- ***Ceramic & Stone***
- ***Composite***
- ***Ferrite***
- ***FRP & GRP***
- ***Glass***
- ***Laminate***
- ***Nylon***
- ***Phenolic***
- ***Polycarbonate***
- ***Polyethylene****
- ***Polypropylene****
- ***Polystyrene***
- ***SMC***
- ***Steel***
- ***Wood***
- ***Zinc***

+Many more materials
**Special grades only on untreated*

Permabond
Engineering Adhesives

Permabond Adhesives for Composites

Here is a small selection of our most popular adhesive grades suitable for use in a range of composite bonding applications. If you can't see exactly what you require, please contact our technical advisors with information about your application and your particular requirements and we will make a recommendation. The Permabond team provides support through the design phase, sample trials and production line integration. Whether you require technical support, custom formulations, or small batch production, please contact us.




Permabond two part epoxy is used to bond fasteners to a carbon fiber car hood and Permabond PT326 bonds the 2 skins of a carbon fiber car hood together.

Composite Bonding Product Data

Technical Information	737	ES569	ES5681	ET515	ET5401	ET5428	ET5429	MT382	MT3821	PT321	PT326	PT328	TA4246	TA4810
Features	Toughened, impact resistant single part cyanoacrylate.	Thick epoxy paste, ideal for bonding carbon fiber where vertical application or gap filling is required.	Single part epoxy for the high strength bonding of carbon fiber or FRP/GRP	Flexible epoxy with excellent impact and vibration resistance. Ideal for use on sensitive composites (such as foams).	High temperature resistant epoxy. Ideal for applications where clamping or jigging during heat cure is not possible.	Toughened epoxy with rapid strength development.	Toughened epoxy ideal for applications where high temperatures may be experienced.	Low viscosity, self levelling, soft, slightly flexible modified epoxy product.	Highly flexible modified epoxy adhesive with a Shore A hardness of 50.	2-Part polyurethane ideal for bonding composites such as carbon fiber and interior trim.	As PT321 with longer pot life.	As PT326 but with longer pot life.	Toughened, rapid cure, good adhesion to a wide variety of surfaces.	Toughened, gap filling, 1:1 mix ratio, easy to apply. Ideal for bonding clips, hinges and brackets.
Color	Black	Black	Black	Clear / colorless	Grey	Charcoal black or cream version available	Charcoal black	Charcoal black	Charcoal black	Grey	Grey	Grey	Amber	Cream
Viscosity (mPa.s = cP)	2,000-4,000	250,000-500,000 Thixotropic Paste	40,000-60,000	Mixed: 12,000-22,000	Thixotropic paste	Thixotropic paste	Thixotropic paste	Mixed: 13,000-30,000	Thixotropic paste	Mixed: 3,500-7,000	Mixed: 3,500-7,000	Mixed: 3,500-7,000	23,000	Mixed: 175,000
Maximum gap fill (mm) in	(0.5) 0.02	(5.0) 0.2	(0.5) 0.02	(2.0) 0.08	(5.0) 0.2	(5.0) 0.2	(5.0) 0.2	(0.5) 0.02	(5.0) 0.2	(5.0) 0.2	(5.0) 0.2	(5.0) 0.2	(0.5) 0.02	(2.0) 0.08
Handling time (steel)	15-20 sec.	Full strength 60 minutes at 150°C	Full strength 35 minutes at 135°C	20-30 min.	Handling 1-1.5 hr. 23°C Full strength 1 hr. 80°C	30-45 min.	6-10 hrs.	105-120 min.	60-90 min.	10-15 min.	60-90 min.	90-120 min.	2-4 min.	20-30 min.
Full strength (cured at 23°C)	24 hours			72 hours		24-48 hrs.	72 hrs.	72 hrs.	>72 hrs.	24 hrs.	4-5 days	4-5 days	24 hrs.	24 hrs.
Shear strength (MPa) psi — Steel	(19-23) 2,800-3,300	(27-41) 4,000-6,000	(30-35) 4,400-5,100	(8-12) 1,200-1,750	(20-30) 2,900 -4,350*	(18-22) 2,600-3,200	(18-22) 2,600-3,200	(4-7) 600-1,000	(4-7) 600-1,000	(18-25) 2,600-3,600	(12-20) 1,700-2,900	(12-18) 1,700-2,600	(33-35) 4,800-5,100	(21-28) 3,000-4,000
Shear strength (MPa) psi — FRP-glass polyester	N/A	N/A	(3-5) 400-700	(3-5) 400-700	(6-8) 900-1,200*	(6-9) 900-1,300	(7-10) 1,000-1,450	(5-7) 700-1,000	(5-7) 700-1,000	(5-7) 700-1,000	(5-7) 700-1,000	(5-7) 700-1,000	(6-8) 600-1,200	(4-6) 600-900
Shear strength (MPa) psi — FRP-glass epoxy	(7-9) 1,000-1,300	(9-11) 1,300-1,600	(14-16) 2,000-2,300	(4-6) 600-900	(19-23) 2,800-3,300*	(24-28) 3,500-4,000	(14-18) 2,000-2,600	(5-7) 700-1,000	(5-7) 700-1,000	(12-14) 1,700-2,000	(12-14) 1,700-2,000	(12-14) 1,700-2,000	(9-11) 1,300-1,600	(13-15) 1,900-2,200
Shear strength (MPa) psi — Carbon fiber	(4-6) 600-900	(10-12) 1,450-1,700	(18-22) 2,600-3,200	(4-6) 600-900	(22-24) 3,200-3,500*	(20-38) 2,800-5,500	(20-37) 2,900-5,400	(6-8) 600-1,200	(6-8) 600-1,200	(6-8) 800-1,200	(9-11) 1,300-1,600	(9-11) 1,300-1,600	(18-22) 2,600-3,200	(9-11) 1300-1600
Peel strength (N/25mm) PIW	(40-60) 9-13	(100-120) 22-26	(180-200) 40-44	(70-90) 16-20	(140-160) 31-35*	(150-250) 33-55	(150-230) 33-51	(140-160) 31-36	(140-160) 31-36	(150-170) 33-38	(150-170) 33-38	N/A	(150-180) 33-40	(70-90) 15-20
Service temperature range (°C)°F	(-55 to +120) -65 to +250	(-40 to +180) -40 to +356	(-40 to +180) -40 to +356	(-55 to +100) -65 to 215	(-40 to +140,180 peak) -40 to +284, 356 peak	(-40 to +120) -40 to +250	(-40 to +120) -40 to +250	(-40 to +120) -40 to +250	(-40 to +120) -40 to +250	(-40 to +120) -40 to +250	(-40 to +120) -40 to +250	(-40 to +120) -40 to +250	(-40 to +120) -40 to +250	(-40 to +120) -40 to +250
Availability	Worldwide	Worldwide	Worldwide	Worldwide	Worldwide	Worldwide	Worldwide	Worldwide	Worldwide	Worldwide	Worldwide	Worldwide	Worldwide	Americas

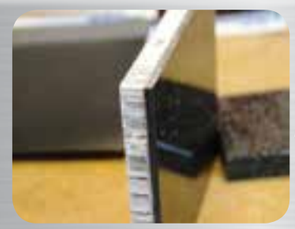
For full, up-to-date technical information, please refer to the TDS (Technical Data Sheet).
** Product cured at 80°C for 1 hour.*

Application: Bonding aircraft seat trays

Bonding ABS, plastic laminate, and aluminium seat tray construction together. ET515 was selected due to its excellent impact and vibration resistance, quick cure, and most importantly it doesn't attack any of the sensitive substrate materials.

Benefits of Permabond ET515

- Rapid-curing
- Non-flammable
- Flexible, good impact resistance
- Easy application process
- Clear appearance gives an aesthetically good finish.



Application: Bonding marble honeycomb panels with Permabond ET5429

- Bonding thin marble sections to honeycomb composite for use as work surfaces in kitchens and bathrooms on yachts, motor homes, caravans, and aeroplanes.
- If color-matched product is required, Permabond's chemists can produce custom formulations.

Permabond® Engineering Adhesives

Permabond
Composite Bonding Adhesives

ISO 9001 Certified
"Our Science ... Your Success"

Adhesives for Design, Manufacturing, Assembly, Maintenance, Repair, and Overhaul.

Permabond's history of developing and manufacturing engineering adhesives spans four decades and three continents. Today, Permabond Engineering Adhesives Ltd (Europe & Asia) and Permabond LLC (Americas) provide technological solutions to engineers all over the world, with offices and facilities in America, Asia, and Europe.

Permabond bonds composites in many industry sectors including:

- Aerospace
- Automotive
- Boat Building
- Buildings
- Buses
- Partitioning & Shop fitting
- Sports Equipment
- Street Furniture
- Trains & Trams
- Wind Turbines

• **Technical** – Our chemists and technicians are available to provide application assistance, custom formulation, in-house prototype testing, joint product development programs, and much more.

• **Training** – Permabond's knowledgeable sales group will provide your staff with the information they need to maximize the efficiencies, cost savings, and safety benefits Permabond products generate.

• **Sales** – From preliminary project appraisals and product needs assessments through to process reliability analysis, Permabond's knowledgeable sales group will support you from product concept through to production.

This brochure contains information on our most popular products. If you don't see exactly what you need, or would like assistance in selecting the best product for your application, please contact us:

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Distributor Stamp

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