

# Permabond<sup>®</sup> 2-Part Epoxies

Permabond 2-part epoxy adhesives are suitable for bonding a wide variety of materials. Available with a range of different cure speeds to suit, Permabond epoxies have been developed to offer a high standard of performance for demanding bonding applications.

## Substrates

Permabond 2-part epoxy adhesives will bond most engineering materials. They form excellent structural bonds to a wide variety of materials including metals, composites, wood and even some plastics.

## Durability

Their excellent chemical and water resistance makes them suitable for harsh environmental conditions. These epoxies are an excellent choice for highstrength structural bonding.

## Applications

Epoxies are widely used in the marine, automotive, aerospace, appliance, general assembly and construction industries. Applications are diverse and include bonding handles onto tools, aerospace structures, kitchen counter tops, motor housings and mounting brackets.

## Material Selection

The high strength durable bonds formed with a vast array of substrates increases the designer's ability to choose the best substrates for the application.

## Process

These 1:1 mix epoxies can be easily dispensed with a static mixing nozzle. No measuring or hand mixing is needed. Heat cure is not needed as the adhesives will cure at room temperature. For cure times faster than those stated on the chart on page 2, heat can be used to increase the speed of cure.

## Joint Design

The high shear and peel strength of the bonds, coupled with the increased stress distribution of adhesives, greatly expands joint design possibilities.

## Benefits

- High peel strength increases design versatility
- 1:1 mix ratio of most Permabond 2-component epoxies reduces equipment costs
- Durability increases material choices
- Rapid cure increases production rates
- Room temperature cure reduces equipment & energy costs
- Solvent free improves workplace safety
- Low odour improves workplace environment



Grade	Description	Color	Mixed Viscosity mPa.s = cP	Max. Gap Fill (mm) in	Pot Life	Handling Strength	Shear Strength (N/mm <sup>2</sup> ) psi	Peel Strength (N/25mm) PIW	Service Temp. (°C) °F	Availability
ET500	Very fast curing, clear, non-yellowing.	Clear, transparent	13,000-24,000	(2.0) 0.08	3 - 4 mins	5 - 8 mins	(12-18) 1750-2600	(5-20) 1-4	(-40 to +80) -40 to +175	Worldwide
ET505	Tough, structural multipurpose adhesive for bonding a wide variety of materials.	Amber	12,000-27,000	(2.0) 0.08	1 - 2 hours	3 - 5 hours	(18-21) 2600-3000	(60-80) 13-18	(-40 to +80) -40 to +175	Worldwide
ET510	Rapid curing and flexible for excellent impact and peel resistance.	Clear, transparent	22,000-39,000	(2.0) 0.08	10 - 20 mins	20 - 40 mins	(8-12) 1200-1750	(70-90) 16-20	(-40 to +80) -40 to +175	Worldwide
ET514	Toughened. Excellent flow control.	Grey	Thixotropic Paste	(2.0) 0.08	30 - 50 mins	60 - 120 mins	(18-20) 2600-2900	(60-80) 13-18	(-40 to +100) -40 to +215	Worldwide
ET5143	Controlled flow, FDA compliant for food & beverage applications.	Grey	Thixotropic Paste	(2.0) 0.08	60 - 80 mins	3 - 5 hours	(18-22) 2600-3200	(30-50) 7-11	(-40 to +80) -40 to +175	Worldwide*
ET5145	Controlled flow, FDA compliant for food & beverage applications.	Off-white	Thixotropic Paste	(2.0) 0.08	50 - 80 mins	3 - 5 hours	(19-21) 2800-3000	(30-50) 7-11	(-40 to +80) -40 to +175	Worldwide*
ET5147	High temperature resistant FDA compliant for food & beverage applications.	Off-white	Thixotropic Paste	(2.0) 0.08	40 - 60 mins	3 - 5 hours	(18-20) 2600-3000	(30-50) 7-11	(-40 to +120) -40 to +250	Worldwide*
ET515	Clear and flexible, again with excellent peel and impact resistance.	Slightly Amber	12,000-22,000	(2.0) 0.08	10 - 20 mins	20 - 30 mins	(8-12) 1200-1750	(70-90) 16-20	(-55 to +100) -65 to +215	Worldwide
ET536	Toughened, thixotropic, excellent gap fill and flow control.	Grey	Thixotropic Paste	(5.0) 0.2	50 - 80 mins	90 - 120 mins	(15-24) 2200-3500	(60-80) 13-18	(-40 to +80) -40 to +175	Worldwide
ET5365	WRAS approved. Will cure at low temperatures with good shear and impact strengths.	Grey	Thixotropic Paste	(2.0) 0.08	20 mins	2 - 4 hours	(10-14) 1450-2000	NA	(-40 to +120) -40 to +250	Worldwide*
ET538	Toughened, thixotropic, excellent gap fill and flow control. Long pot life for large assemblies.	Grey	Thixotropic Paste	(5.0) 0.2	120 - 150 mins	3 - 5 hours	(18-20) 2600-2900	(60-80) 13-18	(-40 to +80) -40 to +175	Worldwide
ET5390	Exceptional adhesion to many substrates including stainless steel. Good gap fill and flow control.	Black	Thixotropic Paste	(3.0) 0.12	2 - 4 hours	8 - 12 hours	(17-22) 2500-3200	NA	(-40 to +120) -40 to +250	Worldwide*
ET5392	Stainless steel bonder, semitoughened, high peel strength, with good gap fill & long pot life.	Grey	Thixotropic Paste	(4.0) 0.16	2 hours	8 - 12 hours	(22-25) 3200-3600	(100-110) 22-24	(-55 to +120) -65 to +250	Worldwide*
ET5393	Fully-toughened, stainless steel bonder, very high peel strength, rapid cure. Properties enhanced by heat curing.	Green	Thixotropic Paste	(2.0) 0.08	15 - 25 mins	2 - 3 hours	(18-23)** 2600-3300	(210-230)** 46-50	(-55 to +80) -65 to +175	Worldwide*
ET5401	Toughened, 2:1 mix ratio, excellent gap fill and no slump, high temperature resistant. Properties enhanced by heat curing.	Amber	Thick Paste	(5.0) 0.2	10 - 12 mins	60 - 90 mins	(20-30)** 2900-4400	(250-300)** 55-66	(-40 to 140°C)+280°F (+180°C)+356°F (peak)	Worldwide
ET5411	High temperature resistant. Low viscosity.	Grey	Thixotropic	(2.0) 0.08	16 hours	Heat cure required	(18-22)** 2600-3200	(150-250)** 33-55	(-40 to +230°C)+446°F (+300°C) 572°F (peak)	Worldwide
ET5428	Composite bonding grade with rapid cure speed.	Cream or Charcoal	Thixotropic Paste	(5.0) 0.2	10 - 20 mins	30 - 45 mins	(18-22) 2600-3200	(150-250) 33-55	(-40 to +120) -40 to +250	Worldwide
ET5429	Composite bonding grade with longer pot life.	Charcoal	Thixotropic Paste	(5.0) 0.2	2-4 hours	6 - 10 hours	(18-22) 2600-3200	(150-230) 33-51	(-40 to +120) -40 to +250	Worldwide
ET5441	High temperature resistance, thermally conductive.	Dark Grey	10,000-15,000	(2.0) 0.08	150 mins	8 hours	(20) 2900	NA	(-40 to +150) -40 to +300	Worldwide*

\*Products may be subject to minimum order quantities and lab approval required for samples.

\*\*Heat cured

Cure-speed varies depending on ambient temperature, the cure times quoted above were tested at 20°C. For further information please contact Permabond for individual technical and safety data sheets.

This table represents a selection of the complete range of Permabond two-part epoxy adhesives. For more detailed technical information and product Material Safety Data Sheets, visit [www.permabond.com](http://www.permabond.com). To discuss your specific application requirements, please call the Permabond Helpline 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.

## **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 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.



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