Permabond® Engineering Adhesives

PERMABOND® 105
Cyanoacrylate
Technical Datasheet

Features & Benefits

- Natural and synthetic rubber bonding
- Ideal for hard-to-bond plastics
- Ease of use – no mixing or heat-cure
- Bonds most materials
- 100% reactive – no solvents

Approvals

WRAS Drinking Water Approval Approved to MIL-A-46050C Type II Class 1 (existing designs)

Description

PERMABOND® 105 is a low-viscosity, high-purity cyanoacrylate adhesive. It is ideal for use on hard-to-bond plastics and rubbers such as natural rubber, EPDM and butyl rubber.
Cyanoacrylate adhesives are single component adhesives that polymerize rapidly when pressed into a thin film between parts. The moisture adsorbed on the surface initiates the curing of the adhesive. Strong bonds are developed extremely fast and on a great variety of materials. These properties make Permabond® cyanoacrylates the ideal adhesives for high-speed production lines.

Typical Physical Properties of Uncured Adhesive

Chemical composition	Ethyl cyanoacrylate
Appearance	Colourless
Viscosity @ 25°C	30-50 mPa.s ***(cP)***
Specific Gravity	1.1

Typical Curing Properties

Maximum gap fill	0.1 mm ***0.004 in***
Fixture / handling time* (0.3 N/mm^2 shear strength is achieved)	10-15 seconds (Steel) 5-10 seconds (Buna N Rubber) 5-10 seconds (Phenolic) 5-10 seconds (PVC) 5-10 seconds (ABS) <20 seconds (EPDM)
Full strength	24 hours

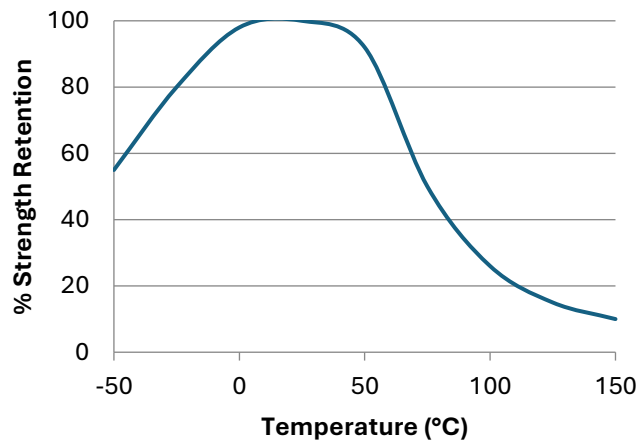
**Handling times can be affected by temperature, humidity and specific surfaces being bonded. Larger gaps or acidic surfaces will also reduce cure speed, but this can be overcome by the use of Permabond C Surface Activator (CSA) or Permabond QFS 16.*

Typical Performance of Cured Adhesive

Shear strength* (ISO 4587)	Steel	18-22 N/mm2 ***(2600-3200 psi)***
	Aluminium	6-8 N/mm2 ***(900-1200 psi)***
	Zinc	6-8 N/mm2 ***(900-1200 psi)***
	ABS	>7 N/mm2 ***(>1000 psi)*** SF**
	PVC	>10 N/mm2 ***(>1400 psi)*** SF**
	PC	>5 N/mm2 ***(>700 psi)*** SF**
	Phenolic	12-14 N/mm2 ***(1700-2000 psi)***
Impact strength (ASTM D-950)	3-5 Kj/m^2 ***(1.4-2.4 ft-lb/in^2)***	
Dielectric constant @10kHz	2.5	
Dielectric strength	25 kV/mm	
Coefficient of thermal expansion	90 x 10^{-6} mm/mm/°C	
Coefficient of thermal conductivity	0.1 W/(m.K)	
Hardness (ISO 868)	85 Shore D	

**Strength results will vary depending on the level of surface preparation and gap.*
***SF = Substrate failure*

Hot Strength



**"Hot strength" shear strength tests performed on mild steel. 24-hour cure at room-temperature and conditioned to pull-temperature for 30 minutes before testing. Permabond® 105 can withstand higher temperatures for brief periods (such as for paint-baking and wave soldering processes) provided the joint is not unduly stressed.*

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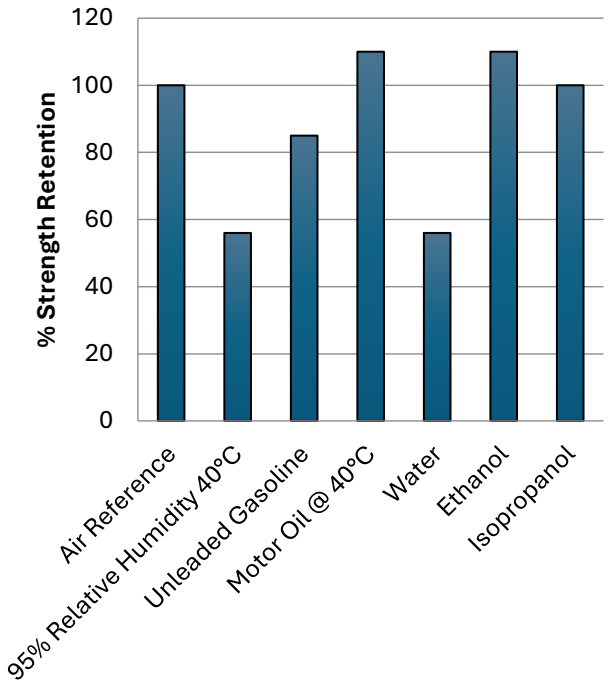
Chemical Resistance



Specimens were immersed for 1000 hours at 22°C (unless otherwise stated).

Additional Information

This product is not recommended for use in contact with strong oxidizing materials and polar solvents, although will withstand a solvent wash without any bond-strength deterioration. Users are reminded that all materials, whether innocuous or not, should be handled in accordance with the principles of good industrial hygiene.
Full information can be obtained from the Safety Datasheet.
This Technical Datasheet (TDS) offers guideline information and does not constitute a specification.

Storage & Handling

Storage Temperature	2 to 7°C ***(35 to 45°F)***

Allow adhesive to reach room temperature before opening bottle to prevent condensation inside the bottle which can reduce shelf-life.

Surface Preparation

Surfaces should be clean, dry and grease-free before applying the adhesive. Use a suitable solvent (such as acetone or isopropanol) for the degreasing of surfaces.
Some metals such as aluminium, copper and its alloys will benefit from light abrasion with emery cloth (or similar) to remove the oxide layer.

Directions for Use

1. Apply the adhesive sparingly to one surface.
2. Bring the components together quickly and correctly aligned.
3. Apply sufficient pressure to ensure the adhesive spreads into a thin film.
4. Do not disturb or re-align until sufficient strength is achieved, normally within a few seconds.
5. Any surplus adhesive can be removed with Permabond® CA solvent, nitromethane or acetone.

NB:
For difficult or porous surfaces, using a Permabond® activator is recommended. If bonding polypropylene, polyethylene, PTFE or silicone, prime first with Permabond® Polyolefin Primer (POP).

Video Links

Surface preparation:
https://youtu.be/8CMOMP7hXjU

Cyanoacrylate directions for use:
https://youtu.be/PiPzutdRmsk

www.permabond.com
- ***UK: 0800 975 9800***
- ***General Enquiries: +44 (0)1962 711661***
- ***US: 732-868-1372***
- ***Asia: + 86 21 5773 4913***

info.europe@permabond.com
info.americas@permabond.com
info.asia@permabond.com

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