PERMABOND® 2013

Cyanoacrylate

Technical Datasheet

Features & Benefits

- Very high viscosity
- High temperature resistance
- Fast cure
- Easy to apply and dispense
- 100% reactive, no solvents
- Maximum gap filling capability

Description

PERMABOND® 2013 is a gel type high performance cyanoacrylate adhesive, specifically designed to provide the high temperature resistance required by certain applications. It is ideal for bonding most metals, plastics and rubbers and will form a high strength, durable bond.

Physical Properties of Uncured Adhesive

Chemical composition	Ethyl cyanoacrylate
Appearance	Colourless
Viscosity @ 25°C	20rpm: 8,000-13,000 mPa.s *(cP)* 2rpm: 35,000-50,000 mPa.s *(cP)*
Specific gravity	1.1

Typical Curing Properties

Maximum gap fill	0.5 mm *0.02 in*
Fixture / handling time* *(0.3 N/mm² shear strength is achieved)*	<30 seconds (Steel) <30 seconds (Buna N Rubber) <30 seconds (Phenolic) <30 seconds (NBR Rubber) <60 seconds (EBDM)
Full strength	24 hours

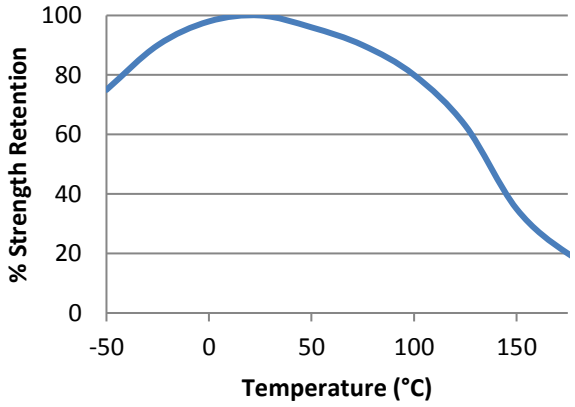
**Handling times can be affected by temperature, humidity and specific surfaces being bonded. Larger gaps or acidic surfaces will also reduce cure speed but this can be overcome by the use of Permabond C Surface Activator (CSA) or Permabond QFS 16.*

Typical Performance of Cured Adhesive

Shear strength* (ISO4587)	Steel: 21-22 N/mm² *(3100-3200 psi)*
Impact strength (ASTM D-950)	3-5 kJ/m² *(1.4-2.4 ft-lb/in²)*
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 (ISO868)	85 Shore D

**Strength results will vary depending on the level of surface preparation and gap.*

Hot Strength



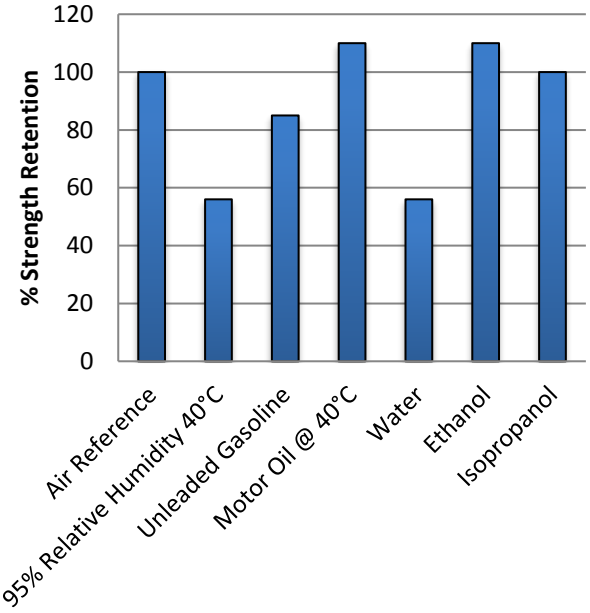
"Hot strength" shear strength tests performed on mild steel. 24hr cure at room temperature and conditioned to pull temperature for 30 minutes before testing.

2013 can withstand higher temperatures for brief periods (such as for paint baking and wave soldering processes) providing the joint is not unduly stressed. The minimum temperature the cured adhesive can be exposed to is -55°C (-65°F) depending on the materials being bonded.

The information given and the recommendations made herein are based on our research and are believed to be accurate but no guarantee of their accuracy is made. In every case we urge and recommend that purchasers before using any product in full-scale production make their own tests to determine to their own satisfaction whether the product is of acceptable quality and is suitable for their particular purpose under their own operating conditions. THE PRODUCTS DISCLOSED HEREIN ARE SOLD WITHOUT ANY WARRANTY AS TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED.

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Chemical Resistance



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

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 in 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).

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 Data Sheet.

This Technical Datasheet (TDS) offers guideline information and does not constitute a specification.

Video Links

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

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

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.

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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