PERMABOND® 919
Cyanoacrylate
Technical Datasheet

Features & Benefits

- Rapid development of high strength
- Ease of use – no mixing or heat cure
- Bonds most materials
- 100% reactive, no solvents

Approved to MIL-A-46050C Type V Class 1 (existing designs)

Description

PERMABOND® 919 is the original allyl cyanoacrylate adhesive. It is a single part, low viscosity liquid that will cure rapidly at room temperature when pressed into a thin film between parts. **PERMABOND 919** will cure to fixture strength in 10 seconds on most surfaces, and rapidly develops high strength with full cure obtained in 24 hours. The adhesive was specifically designed to meet the high temperature resistance required by certain applications. It provides excellent bond strength to steel, aluminum, and most metal surfaces. The cyanoacrylate will also adhere well to a wide variety of other materials including most types of plastic and rubber.
In order to withstand high temperature environments, **PERMABOND 919** was designed with a secondary curing mechanism that is activated at temperatures higher than 150°C (302°F). The procedure to activate this mechanism is as follows:
1) Parts are bonded and clamped at room temperature for four hours.
2) The clamped parts are then heated at 150°C (302°F) for two hours.
3) After the two hours, the bond will be thermally resistant up to 250°C (482°).

Physical Properties of Uncured Adhesive

Chemical composition	Allyl cyanoacrylate
Appearance	Colourless
Viscosity @ 25°C	2-6 mPa.s *(cP)*
Specific gravity	1.1

Typical Curing Properties

Maximum gap fill	0.05 mm *0.002 in*
Fixture / handling time* *(0.3 N/mm² shear strength is achieved)*	<20 seconds (Steel) <15 seconds (NBR Rubber) <20 seconds (Buna N Rubber) <20 seconds (Phenolic)
Full strength	24 hours

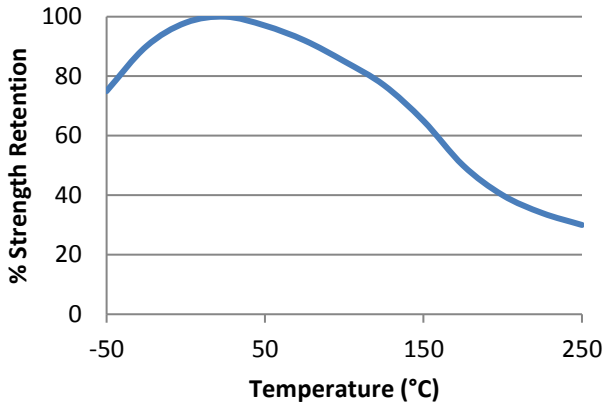
**Handling times can be affected by temperature, humidity and specific surfaces being bonded. Larger gaps or acidic surfaces will also reduce cure speed but this can be overcome by the use of Permabond C Surface Activator (CSA) or Permabond QFS 16.*

Typical Performance of Cured Adhesive

Shear strength* (ISO4587)	Steel 20-22 N/mm² *(2900-3200 psi)* Aluminium 16-18 N/mm² *(2300-2600 psi)* ABS 4 N/mm² *(600psi)* Polystyrene 3.5 N/mm² *(500psi)* PC 7 N/mm² *(1000psi)* Phenolic 14N/mm² *(2000psi)* Gum rubber 2N/mm² *(300psi)* Valox 4N/mm² *(600psi)*
Impact Strength (ASTM D-950)	3-5 kJ/m² *(1.4-2.4 ft-lb/in²)*
Hardness (ISO868)	85 Shore D
Coefficient of thermal expansion	90 x 10^{-6} mm/mm/°C
Coefficient of thermal conductivity	0.1 W/(m.K)

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

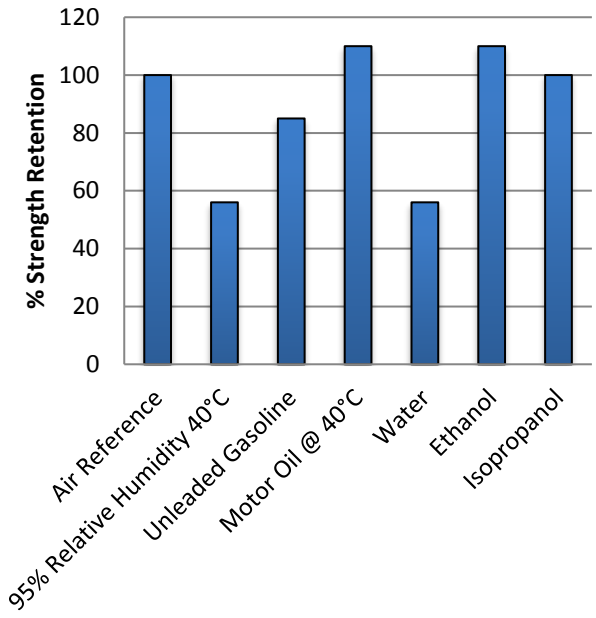
Hot Strength



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

919 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.

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 Data Sheet.

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 curing is achieved, normally in a few seconds.
5) Any surplus adhesive can be removed with Permabond CA solvent, nitromethane or acetone.
6) To enhance high temperature performance, the post-curing schedule on page 1 should be followed.

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/hWLMmsifmyw

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