PERMABOND® 920

Allyl Cyanoacrylate Adhesive

Ref. #: 041509PB920

TYPICAL APPLICATIONS

Metal to Metal
Name Plates
Wire Tacking
Gaskets

FEATURES & BENEFITS

- Fast Setting at Room Temperature
- Rapid Development of High Strength
- Ease of use – Single Part, No Mixing
- Excellent Adhesion to Metal Surfaces
- Will Bond to Most Materials
- High Temperature Resistance
- 100% Reactive, No Solvents
- Nonflammable

GENERAL DESCRIPTION

PERMABOND 920 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 920** 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 plastics and rubbers.

In order to withstand high temperature environments, **PERMABOND 920** 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°).

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CURE RATE

The cure rates of cyanoacrylates are dependent on the substrate used, gap, and relative humidity. The table below shows the set time of various substrates. Cyanoacrylate adhesives have limited gap-filling capability. The speed of cure and the ultimate strength might decrease as the gap increases. The cure speed of cyanoacrylates will depend on the ambient relative humidity; the cure rate generally increases with increasing humidity. The cure rate of cyanoacrylates can be increase by applying activator **QFS16.** However, the application of the activator might decrease the ultimate strength of the bond.

PHYSICAL PROPERTIES OF THE UNCURED ADHESIVE

Properties	
Base Compound	Allyl Cyanoacrylate
Color	Colorless
Viscosity, cP	80
Specific Gravity	1.05
Flash Point, ^{o}C (^{o}F)	95 (202)
Flammability	Nonflammable
Solids, %	100
Shelf Life stored at 2^{o}C-7°C (35^{o}F-45°F), months	12
Gap Fill, in (mm)	0.006 (0.15)

SPEED OF CURE

SET TIME, seconds	
Steel	10
Full Cure, hours	24

PHYSICAL PROPERTIES OF THE CURED ADHESIVE

Appearance	Colorless, Transparent Solid
Operating Temperature, ^{o}C (^{o}F)	-54 (-65) to 250 (482)*
Soluble In	Nitroethane, MEK, Acetone

*When the procedure in the general description is followed.

PERFORMANCE PROPERTIES

Lap Shear Strength on (ASTM D1002)	
Grit blasted Steel, psi (N/mm^2)	3000 (21)
Aluminum, psi (N/mm^2)	2500 (17)
Polycarbonate	1000 (7)
ABS	600 (4)
Polystyrene	500 (3.5)
Gum Rubber	300 (2)
Valox	600 (4)

*Denotes failure of the material before the adhesive bond fails.

Heat Resistance:

The following tables show the performance of **PERMABOND 920** vs. a regular methyl cyanoacrylate.

Heat Aging*

Temperature °C (°F)	Permabond 920 Shear Strength psi (N/mm^2)	Methyl Cyanoacrylate Shear Strength psi (N/mm^2)
25 (77)	3000	3600
100(212)	3900	250
120 (248)	900	0
150 (302)	1500	0
250 (482)	1700	0
300 (572)	0	0

* Bonds were aged one week at temperature and then tested at 25°C (ASTM D1002).

Hot Strength*

Temperature °C (°F)	Permabond 920 Shear Strength psi (N/mm^2)	Methyl Cyanoacrylate Shear Strength psi (N/mm^2)
25 (77)	3000	3000
100(212)	3300	2400
150 (302)	650	0
250 (482)	1500	0

*Bonds were cured at room temperature for 24 hours, heated for two hours at temperature shown, and tested at that temperature (ASTM D1002).

STORAGE & HANDLING

Cyanoacrylate adhesives are subject to an aging process and have a limited shelf life. The shelf life is one year when stored in a refrigerator.

A note of caution: Before opening, the containers must be warmed to room temperature; otherwise water might condense into the bottle and cause hardening of the adhesive.

Avoid skin contact. Wear nitrile rubber gloves and safety glasses. Do not use rubber or cloth gloves. Cyanoacrylates can form strong bonds rapidly to skin. To break the bond, peel and flex the skin carefully. Immersion in soapy water aids in breaking the cyanoacrylate bond. Acetone or nail polish remover may also be used. **If cyanoacrylate should come in contact with the eyes, seek medical attention.**

Cyanoacrylate vapors are lachrymatory and can irritate eyes and mucous membranes. Use these materials with proper ventilation.

VAPOR CONTROL RECOMMENDATIONS

1. Use adequate ventilation. Remove adhesive vapors with suitable exhaust ducting. Since cyanoacrylate vapors are heavier than air, place exhaust intake below work area. Activated charcoal filters using an acidic charcoal have been found effective in removing vapors from effluent air.
2. Avoid use of excess adhesive. Excess adhesive outside of the bond area will increase the level of vapors. Automatic dispensing equipment will prevent excess adhesive.
3. Assemble parts as quickly as possible. Long open times will increase level of vapors.

CLEAN UP OF SPILLED LIQUID

When large quantities of cyanoacrylate adhesives are accidentally spilled, the area should be flooded with water that will cause the liquid cyanoacrylate to cure. The cured material can then be scraped from the surface. **NOTE**: The liquid adhesive should not be wiped up with rags or tissue. The fabric will cause polymerization and large quantities of adhesive will generate heat on cure, causing smoke and strong irritating vapors. **ALWAYS FLOOD WITH EXCESS WATER TO CLEAN UP SPILL CONDITIONS.**

For additional information consult the Material Safety Data Sheet (MSDS).

FOR INDUSTRIAL USE ONLY. KEEP OUT OF REACH OF CHILDREN.