PERMABOND® 820

Cyanoacrylate

Ref.#: 010104PB820

TYPICAL APPLICATIONS

Rubber Bonding
Speaker Bonding
Metal Bonding

FEATURES & BENEFITS

- Fast Setting
- High Temperature Resistance (200°C)
- High Strength

GENERAL DESCRIPTION

PERMABOND 820 is a low viscosity ethyl cyanoacrylate suitable for applications where high temperature resistance is required. This material is fast setting and has good adhesion to rubber, metal and plastics.

PROPERTIES OF THE UNCURED ADHESIVE

Chemical Type	Modified Ethyl
Color	Colorless
Viscosity, cP @ 25°C	100
Specific Gravity	1.06
Maximum Gap Filling, in	0.006
Flash point (ISO 2592), °C (°F)	87 (189)
Shelf Life stored at 2°C – 7°C (35°F – 45°F), months	12

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CURE RATE

The cure rate of cyanoacrylates is 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 rate of cyanoacrylates can be increase by applying activator QFS16. However, the application of the activator might decrease the ultimate strength of the bond.

SET TIME, SECONDS

PVC	3 - 10
Phenolic Resin	5 - 20
ABS	10 - 30
Neoprene / NBR	5
Steel	10 - 30
Aluminum	5 - 15
Zinc	30 - 60

PROPERTIES OF THE CURED ADHESIVE

Tensile Strength	DIN 53288, N/mm^2 (psi)	25 – 30 (3625 – 4350)
Shear Strength	DIN 53283, N/mm^2 (psi)	20 – 25 (2900 – 3625)
Impact Strength	ASTM D 950, $N.mm/mm^2$	10 – 15
Operating Temperature, °C (°F)		-50 (-58) to 200 (390)
Softening Range, °C (°F)		160 – 170 (302 – 338)
Refractive Index, n_D^{20}		Similar to Glass
Electrical Resistivity	DIN 53482, Ohm-mm	10^{15}
Dielectric Strength	DIN 53481, kV.mm	12 – 13
Dielectric Constant	DIN 53483, 1MHz	5.2

CHEMICAL RESISTANCE

Cured PERMABOND adhesives have good resistance to many common solvents. (See table below.) However, the cured resistance is reduced as the polarity of the solvent increases. Non-polar solvents such as gasoline, motor oil, and dioctyl phthalate (DOP) have only a minimal effect but polar solvents cause severe bond deterioration. Alcohols will only deteriorate bonds over several months, but acetone is a good solvent for cyanoacrylate. Boiling water will destroy the bonds in less than 24 hours and this process is accelerated when the solution is alkaline. Amines tend to dissolve the bond rapidly. Most solvent washes will not affect the adhesive bonds due to the short exposure time.

Solvent Resistance	
Solvent at 24°C (75°F)	Percent Strength Retention of Cured Methyl Cyanoacrylate after 1 month Immersion
None (control)	100
Gasoline	100
Isopropyl alcohol	100
10-W-30 Oil	100
Toluene	82
VM&P Naphtha	80
Acetone	1

SURFACE PREPARATION

The surface should be free of gross contamination such as dirt, dust, grease or oil. An alcohol wipe is suitable for cleaning most surfaces. Acetone is recommended for epoxies, polyesters, phenolics, melamine, urea formaldehyde, nylon and polyurethane. Optimum strength is obtained by abrading the surface followed by a solvent wipe to remove any loose particles.

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 between 2°C and 7°C (35°F and 45°F). It could be less when stored at ambient environment depending on conditions of temperature and humidity.

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 polyethylene 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 eye, 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 easily 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 more information refer to the msds for this product.

FOR INDUSTRIAL USE ONLY. KEEP OUT OF REACH OF CHILDREN