

# PERMABOND<sup>®</sup> 943

## Alkoxyethyl Cyanoacrylate



Ref. #: 041808PB943

### TYPICAL APPLICATIONS

Black or dark plastic and metal surface facia  
Where ventilation is limited or difficult  
Visible bondlines on appliances or cabinets  
Nameplates

### FEATURES & BENEFITS

- ◆ Low odor
- ◆ Eliminates whitening (frosting and fogging) of parts
- ◆ Excellent adhesion to a wide variety of surfaces
- ◆ Better flexibility and impact resistance than conventional cyanoacrylates

### GENERAL DESCRIPTION

The **PERMABOND 943** is a low odor, non-fogging, non-frosting alkoxyethyl cyanoacrylate. The reduced odor improves worker comfort. Unsightly fogging adjacent to bondlines, common with other cyanoacrylate adhesives on hot and humid days, is eliminated. The elimination of fogging improves the production rate of acceptable parts as well as their appearance. The adhesive is very stable and will provide optimum performance for one year when refrigerated. It can be handled and dispensed with standard equipment.

### PROPERTIES OF THE UNCURED ADHESIVE

Color	Colorless
Viscosity, cP @ 25°C	100
Specific Gravity	1.07
Maximum Gap Filling, in	0.006 (0.15)
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 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 rate increases as the ambient relative humidity increases. The cure rate of cyanoacrylates can be increased by applying activator **QFS16**. However, the application of the activator might decrease the ultimate strength of the bond.

### SET TIME, SECONDS

PVC	10
Phenolic Resin	10
ABS	10
Neoprene / NBR	<5
Steel	15
Aluminum	10
Zinc	40

### PROPERTIES OF THE CURED ADHESIVE

Operating Temperature, °C (°F)	-54 (-65) to 82 (180)	
Softening Range, °C (°F)	150 (302)	
Refractive Index, $n_D^{20}$	Similar to Glass	
Electrical Resistivity	DIN 53482, Ohm-mm	$10^{15}$
Dielectric Strength	DIN 53481, kV.mm	25
Dielectric Constant	DIN 53483, 1MHz	3

### PERFORMANCE OF THE CURED ADHESIVE

Cured at 25°C for 24 hours

Shear Strength, psi (N/mm <sup>2</sup> )	
Grit blasted steel	2600 (18)
Impact Strength (ASTM D-950), ft-lb/in <sup>2</sup>	15-20

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

## THERMAL RESISTANCE

The cured cyanoacrylate is a thermoplastic material. Can safely be used at temperatures between -54°C (-65°F) and 82°C (180°F). Beyond this temperature, strength loss will occur. While the product may perform in certain situations, a general recommendation is not made for use above 82°C (180°F).

## 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.

## APPLICATION

1. For best results the surface should be properly cleaned.
2. Apply the adhesive sparingly to one surface.
3. Assemble the parts making sure that they are correctly aligned.
4. Apply sufficient pressure to ensure that the adhesive spreads into a thin film.
5. Do not move parts until fixture strength is achieved.
6. When bonding polyethylene, polypropylene, PTFE or silicone, we recommend priming the surfaces with **Permabond Polyolefin Primer** before using the adhesive.

## 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 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 INDUSTRIAL USE ONLY. KEEP OUT OF REACH OF CHILDREN**

