

CHENSO 1451 - Cyanoacrylate Adhesive, Metal

Product Description

CHENSO 1451 is a general purpose cyanoacrylate adhesive and is specifically formulated to bond metal substrates. CHENSO 1451 has a longer setting time and therefore it allows enough time to put materials together after application. CHENSO 1451 was formulated to achieve the strongest possible bond between well-mated metal substrates.

Product Features

- One component
- Contains no solvent
- Gap fill 0.15 mm
- Service temperature -55 °C to +82 °C
- Excellent adhesion to all metal substrates
- Superior solvent and chemical resistance
- Good moisture resistance
- Economical and easy to use
- Cures at R.T.

Typical Properties

Uncured

Chemical Type:	Methyl cyanoacrylate
Appearance:	Hazy colorless liquid
Flash Point, °C:	>75 °C (167 °F) TCC
Density@ 25 °C, g/cm ³ :	1.10
Refractive Index (nD ²⁰):	1.439
Viscosity @25 °C, mPa.s (cP)	100-200
Vapor Pressure (hPa)	<1

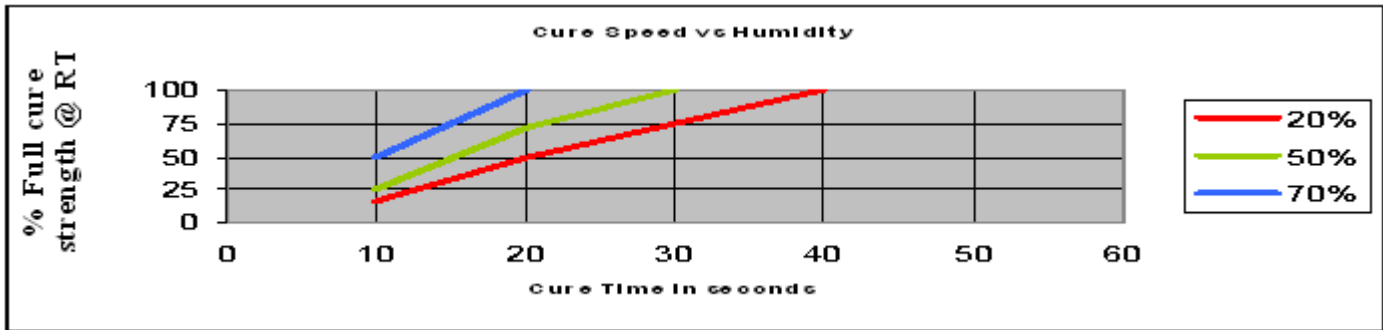
Cured

(After 24 hours @ 23 °C)	
Softening Point, °C	165
Solubility	DMF, acetone acetonitrilate

Cure Speed vs Substrate

(Fixture time @ 22 °C/50%RH, seconds)

Steel / Steel	30-60
Stainless Steel	30-60
Aluminum	45-80
Zinc plated	30-90
ABS / ABS	10-30
ABS / NBR	10-15
ABS/ Wood	10-20
NBR / NBR	5-10
Polycarbonate	30-90



Cure rate:

Cyanoacrylate adhesives require surface moisture on the substrates in order to initiate the curing mechanism. The speed of cure is reduced in low-humidity conditions. Low temperatures will also reduce cure speed. The cure rates of cyanoacrylates are dependent on the substrates to be bonded. Acidic surfaces such as paper and leather will have longer cure times than most plastics and rubbers. Cyanoacrylate adhesives give best results on close fitting parts. The speed of cure and the ultimate strength might decrease as the gap increases. CHENSO 1800 Activator may be used where cure speed needs to be accelerated due to large gaps or tack-free fillets are desired. However, this can reduce the final strength and therefore we recommend testing on the parts to confirm effect. Although full functional strength is developed in a relatively short time, curing continues for at least 24 hours before full chemical/solvent resistance is developed.

Typical Properties of cured Material

Physical Properties

Coefficient of Thermal Expansion (K ⁻¹)	100x10 ⁻⁶
Coefficient of Thermal Conductivity (W/m.K)	0.10
Softening Point	165 °C

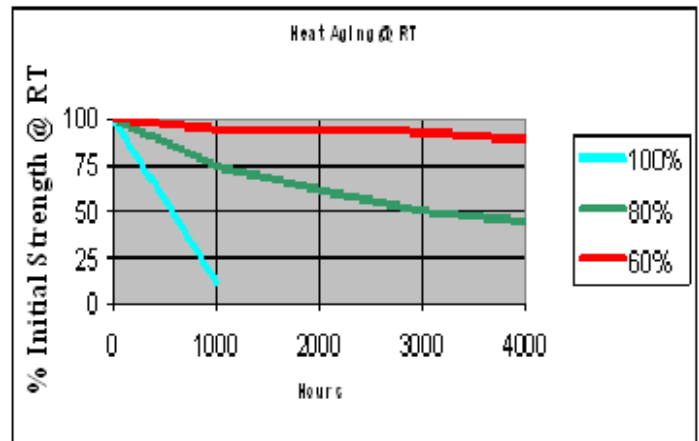
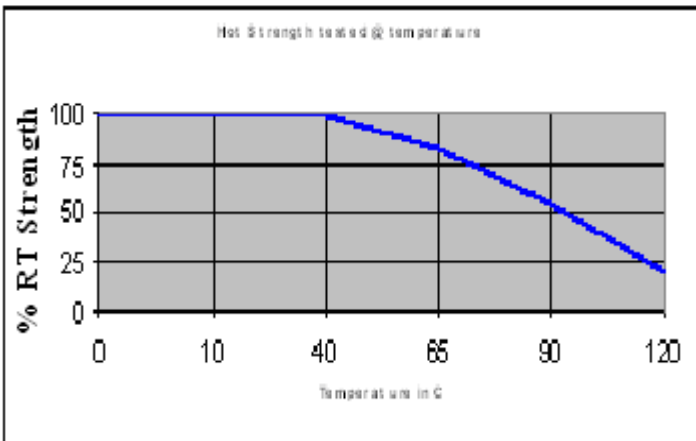
Electrical Properties

Volume Resistivity (Ω.cm)	2x10 ¹⁵ to 10x10 ¹⁵
Surface Resistivity (Ω)	10x10 ¹⁵ to 80x10 ¹⁵
Dielectric Constant @10kHz	2.5
Dielectric Dissipation Factor@10kHz	<0.02
Dielectric Breakdown Strength (kV/mm)	25

Tensile Strength

(After 24 hours @ 25 °C, N/mm²)

Steel	19-21
Stainless Steel	16-18
Aluminum	17-19
Copper	15-17
PVC	4-6
ABS	5-7
Polycarbonate	8-12
Polystyrene	3.0-4.5
NBR	0.5-0.9
SBR	0.5-1.0



Chemical Resistance

Cured cyanoacrylate adhesives have good resistance to many common solvents. The resistance is reduced as the polarity of the solvent increases. Non-polar solvents such as gasoline, motor oil, and dioctyl phthalate have only a minimum effect but polar solvents cause bond deterioration. Amines tend to dissolve the bond rapidly. Most solvent washes will not affect the adhesive bonds due to the short exposure time. Cyanoacrylates are not resistant to high levels of moisture or humidity over time. Boiling water will destroy the bonds in less than 24 hours and this process is accelerated when the solution is alkaline.

Shelf life

Sealed containers are guaranteed for 12 months from the ship date when stored in cool dry area between 2 °C to 8 °C. Do not freeze!

Standards

Limitations

This product is not recommended for applications where the parts are constantly exposed to water, unless the bonding joints are sealed. Strong bonds are initially obtained on glass, but after decrease in strength upon aging. Cyanoacrylates are affected by aliphatics and chlorinated hydrocarbons, esters as well as alkaline solutions and concentrated acids.

Direction for use:

For Assembly

1. For best performance bond surfaces should be clean and free from all contaminants such as dirt, oil, grease, formerly applied products. An alcohol wipe is suitable for cleaning most surfaces. Acetone is recommended for metals, hard plastics such as phenolics, melamine, epoxies, polyester and polyurethane. Optimum strength is obtained by abrading the surface followed by a solvent wipe to remove any loose particles. CHENSO 1800 Activator may be required if there are large gaps or porous surfaces. When bonding polyethylene, polypropylene, PTFE or silicone, we recommend priming these surfaces with CHENSO 1830 Polyolefine Primer before using the adhesive.
2. The adhesive should be applied sparingly to one surface. (Rubber bonding requires freshly cut surfaces to ensure a perfect bond.
3. Assemble parts immediately and apply light contact pressure until fixture has been achieved. Ensure that the parts are correctly aligned. Do not move parts until fixture strength is achieved.
4. Full performance properties will develop over 24 hours.
5. Excess adhesive can be dissolved with nitromethane or acetone. Cured cyanoacrylate may be removed from most substrates, and parts disassembled, with CHENSO 1860 Debonder. It is not possible to fully remove cyanoacrylate from fabrics.

Storage

Store product in the unopened container in a dry location. Optimal Storage: 2 °C to 21 °C (46 °F to 68 °F). Shelf life may be extended by refrigeration between 2 °C to 8 °C (40 °F to 68 °F). When removing product from refrigeration, allow the adhesive to reach room temperature prior to application. Protect product from frost, heat and direct sunlight. Material removed from containers may be contaminated during use. Do not return product to the original container. CHENSO Inc. cannot assume responsibility for product which has been contaminated or stored under conditions other than those previously indicated.

Handling and Safety

Keep containers sealed when not in use. Irritating to eyes, respiratory system and skin. Danger. Bonds skin and eyelids within seconds. Keep out of the reach of children. Uncured sealant irritates eyes and skin. For safe handling information on this product, consult the Material Safety Data Sheet (MSDS).

Packaging

CHENSO 1451 is available in 1 Liter, 40 lb. pails and 400 lb. drums.

Note

All recommendations, statements and technical data herein are based on tests we believe to be reliable and correct, but accuracy and completeness of said tests are not guaranteed and are not to be construed as warranty, either expressed or applied. User shall rely on his own information and tests to determine suitability of the product for the intended use, and the user assumes all risk and liability resulting from the use of this product. Manufacturer's sole responsibility shall be to replace that portion of product of the manufacturer proves to be defective. Manufacturer shall not be liable to the buyer or any third party for injury, loss or damage directly or indirectly resulting from the use of, or inability to use, the product. Recommendations or statements other than those contained in a written agreement signed by an officer of the manufacturer shall not be binding by the manufacturer. This product has not been tested for, and is therefore not recommended for, uses for which prolonged contact with mucous membranes, abraded skin, or blood is intended; or for uses which implantation within the human body is intended.

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