CA1403

PRODUCT DESCRIPTION

CA1403 provides the following product characteristics:

Technology	Cyanoacrylate
Chemical Type	Alkoxyethyl cyanoacrylate
Appearance (uncured)	Transparent, colorless to pale yellow liquid[LMS]
Components	One part - requires no mixing
Viscosity	High
Cure	Humidity
Application	Bonding
Key Substrates	Metals, Plastics and Elastomers

CA1403 has low odor and low blooming properties and is particularly suitable for applications where vapor control is difficult. The product provides rapid bonding of a wide range of materials, including metals, plastics and elastomers. CA1403 is particularly suited for bonding porous or absorbent materials such as wood, paper, leather and fabric.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Specific Gravity @ 25 °C	1.1
Flash Point - See MSDS	
Viscosity, Cone & Plate, mPa·s (cP):	
Temperature: 25 °C, Shear Rate: 100 s^{-1}	900 to 1,500
Viscosity, Brookfield - LVF, 25 °C, mPa·s (cP):	
Spindle 2, speed 12 rpm	1,100 to 1,650

TYPICAL CURING PERFORMANCE

Under normal conditions, the atmospheric moisture initiates the curing process. 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.

Cure Speed vs. Substrate

The rate of cure will depend on the substrate used. The table below shows the fixture time achieved on different materials at 22 °C / 50 % relative humidity. This is defined as the time to

develop a shear strength of 0.1 N/mm² .

Fixture Time, seconds:

Steel	360 to 480
Aluminum	10 to 15
Zinc dichromate	45 to 75
Neoprene	20 to 40
Rubber, nitrile	5 to 10
ABS	5 to 10
PVC	45 to 75
Polycarbonate	10 to 20
Phenolic	30 to 45
Leather	15 to 20
Wood (pine)	20 to 30
Paper	5 to 10

Cure Speed vs. Bond Gap

The rate of cure will depend on the bondline gap. Thin bond lines result in high cure speeds, increasing the bond gap will decrease the rate of cure.

Cure Speed vs. Humidity

The rate of cure will depend on the ambient relative humidity. The best results are achieved when the relative humidity in the working environment is 40% to 60% at 22°C.Lower humidity leads to slower cure. Higher humidity accelerates it, but may impair the final strength of the bond.

Cure Speed vs. Activator

Where cure speed is unacceptably long due to large gaps,applying activator to the surface will improve cure speed.However, this can reduce ultimate strength of the bond and therefore testing is recommended to confirm effect.

TYPICAL PROPERTIES OF CURED MATERIAL

Cured for 1 week @ 22 °C

Physical Properties:

Coefficient of Thermal Expansion, ISO 11359-2, K^{-1}	498×10^{-6}
Coefficient of Thermal Conductivity, ISO 8302, W/(m·K)	0.25
Glass Transition Temperature ISO 11359-2, °C: (Tg) by TMA	170

Electrical Properties:

Volume Resistivity, IEC 60093, Ω·cm	10.9×10^{15}
Surface Resistivity, IEC 60093, Ω	1.03×10^{15}
Dielectric Breakdown Strength, IEC 60243-1, kV/mm	25
Dielectric Constant / Dissipation Factor, IEC 60250:	
1 kHz	4.26 / 0.03
1 MHz	3.83 / 0.02
10 MHz	3.73 / 0.04

TYPICAL PERFORMANCE OF CURED MATERIAL

Adhesive Properties

Cured for 10 seconds @ 22 °C

Tensile Strength, ISO 6922:	N/mm²	≥4.5
Buna-N	(psi)	(≥652)

Cured for 72 hours @ 22 °C

Tensile Strength, ISO 6922:	N/mm²	7 to 15
Buna-N	(psi)	(1,000 to 2,200)
Steel	N/mm²	8 to 23
	(psi)	(1,200 to 3,300)

Lap Shear Strength, ISO 4587:		
Steel (grit blasted)	N/mm²	19 to 27
	(psi)	(2,800 to 3,900)
Aluminum (etched)	N/mm²	6 to 19
	(psi)	(870 to 2,800)
Zinc dichromate	N/mm²	1 to 5
	(psi)	(150 to 730)
ABS	N/mm²	8 to 9
	(psi)	(1,200 to 1,300)
PVC	N/mm²	4 to 7
	(psi)	(580 to 1,000)
Phenolic	N/mm²	1 to 5
	(psi)	(150 to 730)
Polycarbonate	N/mm²	5 to 7
	(psi)	(730 to 1,000)
Nitrile	N/mm²	0.5 to 1.0
	(psi)	(70 to 150)
Neoprene	N/mm²	1.0 to 1.5
	(psi)	(150 to 220)

TYPICAL ENVIRONMENTAL RESISTANCE

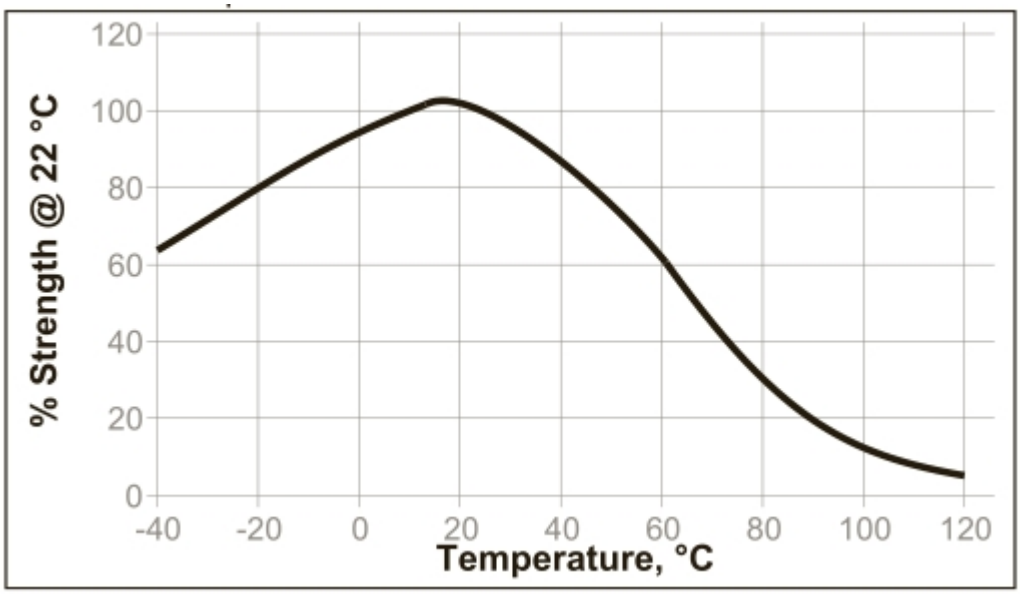
Cured for 1 week @ 22 °C

Lap Shear Strength, ISO 4587:

Steel (grit blasted):

Hot Strength

Tested at temperature



Heat Aging

Aged at temperature indicated and tested @ 22 °C