

LOCTITE®

3404 Twin Syringe Ultra Clear, Fast Cure

Product Description

LOCTITE® EA 3430 provides the following product characteristics:

Technology	Epoxy
Chemical type	Epoxy
Appearance (resin)	Ultra clear
Appearance (hardener)	Ultra clear
Appearance (mixture)	Ultra clear, Transparent ^{LMS}
Components	Two parts, resin and hardener
Mix ratio by volume resin : hardener	1 : 1
Mix ratio by weight resin : hardener	100 : 100
Cure	Room temperature cure after mixing
Application	Bonding

LOCTITE® EA 3430 is a two component, clear epoxy adhesive which cures rapidly at room temperature after mixing. It is a general purpose adhesive which develops high strength on a wide range of substrates. The gap filling properties make this adhesive system suitable for rough and poorly fitting surfaces made from metal, ceramic, rigid plastics or wood.

Typical Properties of Uncured Material

Resin Properties	
Specific gravity @ 25°C	1.14 to 1.2
Viscosity @ 25°C, Cone & Plate Rheometer, mPa·s (cP):	
Shear Rate: 10 s ⁻¹	18,000 to 28,000
Flash point – see SDS	
Hardener Properties	
Specific gravity @ 25°C	1.14 to 1.2
Viscosity @ 25°C, Cone & Plate Rheometer, mPa·s (cP):	
Shear Rate: 10 s ⁻¹	18,000 to 28,000
Flash point – see SDS	
Mixed Properties	
Specific gravity @ 25°C	1.14 to 1.2 ^{LMS}
Viscosity @ 25°C, Cone & Plate Rheometer, mPa·s (cP):	
Shear Rate: 10 s ⁻¹	18,000 to 28,000 ^{LMS}
Gel Time @ 25°C, minutes:	
5g resin / 5g hardener	5 to 10 ^{LMS}

Typical Curing Performance

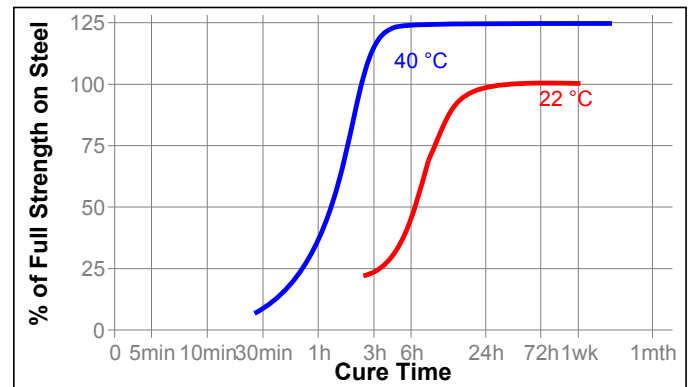
Fixture Time

Fixture time is defined as the time to develop a shear strength of 0.1 N/mm².

Fixture time, mixed, minutes	15
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Cure Speed vs. Time, Temperature

The rate of cure will depend on the ambient temperature. Elevated temperatures may be used to accelerate the cure. The graph below shows shear strength developed with time at various temperatures on grit blasted steel lap shears and tested according to ISO 4587.



Typical Performance of Cured Material

Physical Properties

Cured for 7 days @ 22°C, 4mm thick samples		
Coefficient of Thermal Expansion ISO 11359-2, K-1:		
Temperature range: 10°C to 40°C	53×10 ⁻⁶	
Cured for 7 days @ 22°C, 1.2mm thick samples		
Coefficient of Thermal Conductivity, ISO 8302, W/(m·K)	0.3	
	N/mm²	psi
Tensile strength, ISO 527-3	36	5,220
Tensile modulus, ISO 527-3	3,210	465,500
Compressive strength, ISO 604	65	9,420
Phenolic	*13.8	*2,000
Elongation, ISO 527-3, %	2	
Shore Hardness, ISO 868, Durometer D	70	
Glass transition temperature, ASTM E 1640, °C	58	



Electrical Properties

Dielectric Breakdown Strength IEC 60243-1, kV/mm	25
Volume Resistivity, IEC 60093, $\Omega \cdot \text{cm}$	3×10^{15}
Surface Resistivity, IEC 60093, Ω	0.2×10^{18}
Dielectric Constant / Dissipation Factor, IEC 60250:	
1-kHz	3.07 / 0.04
1-MHz	3.26 / 0.04
10-MHz	3.57 / 0.01

Adhesive Properties

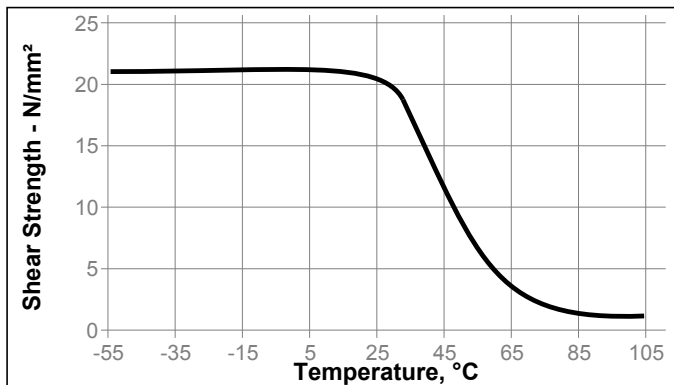
Cured for 7 days @ 22°C		
Lap Shear Strength, ISO 4587:	N/mm ²	psi
Mild steel (grit blasted)	22	3,200
Stainless steel	15	2,175
Aluminium (isopropanol wiped)	7	1,010
Zinc dichromate	16	2,320
Polycarbonate	4	580
ABS	5	725
PVC	5	725
GRP (polyester resin matrix)	3	435
Softwood (deal)	8	1,160
Hardwood (teak)	11	1,600
180° Peel Strength, ISO 8510-2:	N/mm	lb/in
Steel (grit blasted)	3	17
Impact Strength, ISO 9653, J/m ²	3	

Typical Environmental Resistance

Cured for 7 days @ 22 °C (0.05 mm bond gap)	
Lap Shear Strength, ISO 4587:	
Mild steel (grit blasted)	

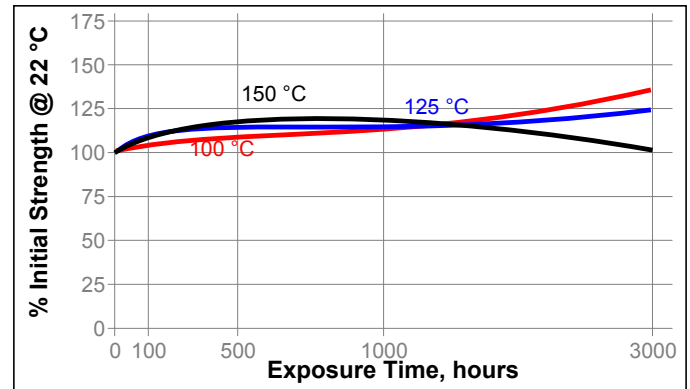
Hot Strength

Tested at temperature



Heat Aging

Stored at temperatures indicated and tested at 22°C



Chemical/Solvent Resistance

Aged under conditions indicated and tested @ 22°C

Environment	°C	% of initial strength		
		100 h	500 h	1000 h
Water	60	55	50	45
Water	90	50	40	20
Motor oil	22	85	75	75
Unleaded gasoline	22	95	90	75
Water/glycol 50/50	87	25	20	20
98% RH	40	95	85	85
Sodium Chloride, 7.5%	22	95	95	80
Acetone	22	85	75	75
Acetic Acid, 10%	22	85	75	50
Sodium hydroxide, 4%	22	90	85	80

General Information

This product is not recommended for use in pure oxygen and/or oxygen rich systems and should not be selected as a sealant for chlorine or other strong oxidizing materials.

For safe handling information on this product, consult the Material Safety Data Sheet (MSDS).

Where aqueous washing systems are used to clean the surfaces before bonding, it is important to check for compatibility of the washing solution with the adhesive. In some cases these aqueous washes can affect the cure and performance of the adhesive.

Directions for Use:

- 1 For best performance surfaces for bonding should be clean, dry and free of grease. For high strength structural bonds, special surface treatments can increase the bond strength and durability.
- 2 To use, resin and hardener must be blended. Product can be applied directly from dual cartridges by dispensing through the mixer head supplied. Discard the first 3 to 8cm of bead dispensed. Using twin cartridges or bulk containers, mix thoroughly by weight or volume in the proportions specified in the Product Description Matrix. For hand mixing, weigh or measure out the desired amount of resin and hardener and mix thoroughly. Mix approximately 15 seconds after uniform colour is obtained.
- 3 Do not mix quantities greater than 20g in mass as excessive heat build-up can occur. Mixing smaller quantities will minimize the heat build-up.
- 4 Apply the adhesive as quickly as possible after mixing to one surface to be joined. For maximum bond strength apply adhesive evenly to both surfaces. Parts should be assembled immediately after mixed adhesive has been applied.
- 5 Working life of the mixed adhesive is ≤ 4 minutes @ 22°C. Higher temperature and larger quantities will shorten this working time.
- 6 Keep the assembled parts from moving during cure. The joint should be allowed to develop full strength before subjecting to any service loads.
- 7 Excess uncured adhesive can be wiped away with organic solvent (e.g. acetone).
- 8 After use and before adhesive hardens, mixing and application equipment should be cleaned with hot soapy water.

Storage

Store product in the unopened container in a dry location. Storage information may be indicated on the product container labelling.

Optimal Storage: 8°C to 21°C. Storage below 8°C or greater than 28°C can adversely affect product properties.

Material removed from containers may be contaminated during use. Do not return product to the original container. Henkel Corporation cannot assume responsibility for product which has been contaminated or stored under conditions other than those previously indicated. If additional information is required, please contact your local Technical Service Center or Customer Service Representative.

Loctite Material Specification

LMS dated August 03, 2007. Test reports for each batch are available for the indicated properties. LMS test reports include selected QC test parameters considered appropriate to specifications for customer use. Additionally, comprehensive controls are in place to assure product quality and consistency. Special customer specification requirements may be coordinated through Henkel Quality.

Conversions

$$(^{\circ}\text{C} \times 1.8) + 32 = ^{\circ}\text{F}$$

$$\text{kV/mm} \times 25.4 = \text{V/mil}$$

$$\text{mm} / 25.4 = \text{inches}$$

$$\mu\text{m} / 25.4 = \text{mil}$$

$$\text{N} \times 0.225 = \text{lb}$$

$$\text{N/mm} \times 5.71 = \text{lb/in}$$

$$\text{N/mm}^2 \times 145 = \text{psi}$$

$$\text{MPa} \times 145 = \text{psi}$$

$$\text{N}\cdot\text{m} \times 8.851 = \text{lb}\cdot\text{in}$$

$$\text{N}\cdot\text{m} \times 0.738 = \text{lb}\cdot\text{ft}$$

$$\text{N}\cdot\text{mm} \times 0.142 = \text{oz}\cdot\text{in}$$

$$\text{mPa}\cdot\text{s} = \text{cP}$$