

LOCTITE® AA 3412™

Known as LOCTITE® 3412™
July 2019

PRODUCT DESCRIPTION

LOCTITE® AA 3412™ provides the following product characteristics:

Technology	Acrylic
Chemical Type (Resin)	Methacrylate
Chemical Type (Hardener)	Methacrylate
Appearance (Resin)	White creamy soft gel ^{LMS}
Appearance (Hardener)	Amber gel
Appearance (Mixture)	Pale yellow/green opaque gel
Components	Two components - requires mixing
Mix Ratio, by weight - Resin : Hardener	1 : 1
Mix Ratio, (by volume) Resin : Hardener	1 : 1
Cure	Room temperature cure after mixing
Application	Bonding

LOCTITE® AA 3412™ is a fast-fixturing two component statically mixed adhesive that cures at room temperature. Its non-sag dispensing properties make it ideal for filling large gaps, dispensing on vertical surfaces and manual dispensing. The adhesive develops high strength, peel resistant, structural bonds to a wide variety of substrates usually without the aid of surface preparation, primers, or chemical wipes. The product has excellent durability and resistance to most industrial cleaners, fuels, lubricants and environmental conditions. LOCTITE® AA 3412™ is ideal for structural bonding of metals, most plastics, composites and ceramics where a high strength impact resistant bond is needed. Typical applications include the bonding of structural plastics and metal members, fiberglass parts, structural bonding for sports and leisure, general industrial and automotive applications.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Resin:

Specific Gravity @ 25 °C	1.0
Flash Point - See SDS	
Viscosity, Brookfield - DVE 3,25°C,mPa·s (cP):	
Spindle TD, speed 2.5 rpm, Helipath	150,000 to 450,000 ^{LMS}

Hardener:

Specific Gravity @ 25 °C	0.97
Flash Point - See SDS	
Viscosity, Brookfield - DVE 3,25°C,mPa·s (cP):	
Spindle TD, speed 2.5 rpm, Helipath	150,000 to 450,000 ^{LMS}

Mixed Properties:

Specific Gravity @ 25 °C	0.99
Working Time @ 25 °C, minutes	5

TYPICAL CURING PERFORMANCE

Fixture Time

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

Fixture Time, ISO 4587, minutes:	
Steel	12 to 15

TYPICAL PROPERTIES OF CURED MATERIAL

Physical Properties:

Shore Hardness, ISO 868, Durometer D	70 to 80 ^{LMS}
Shrinkage, %	5
Elongation, at break, ISO 527-3, %	2.4
Tensile Strength, at break, ISO 527-3	N/mm ² 23.7 (psi) (3,430)
Tensile Modulus, ISO 527-3	N/mm ² 1,318 (psi) (191,000)

TYPICAL PERFORMANCE OF CURED MATERIAL

Adhesive Properties

Cured for 24 hours @ 22°C

Lap Shear Strength :

Steel:	
0.25 mm gap	N/mm ² ≥17 ^{LMS} (psi) (≥2,465)

Cured for 48 hours @ 22°C

Lap Shear Strength :

Steel (grit blasted)	N/mm ² 28.6 (psi) (4,140)
Aluminum	N/mm ² 23.1 (psi) (3,350)
Polycarbonate	N/mm ² 17.3 (psi) (2,510)
Nylon	N/mm ² 1.2 (psi) (180)

Block Shear Strength, ISO 13445:

PVC	N/mm ² 10.8 (psi) (1,560)
ABS	N/mm ² 10.3 (psi) (1,500)
G-10 Epoxy	N/mm ² 11.0 (psi) (1,590)
Acrylic	N/mm ² 8.4 (psi) (1,220)

"T" Peel Strength, ISO 11339:

Aluminum	N/mm 0.9 (lb/in) (5.1)
Steel (grit blasted)	N/mm 5.6 (lb/in) (32)

Impact Strength, ISO 9653, kJ/m² :

Steel	>21
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TYPICAL ENVIRONMENTAL RESISTANCE

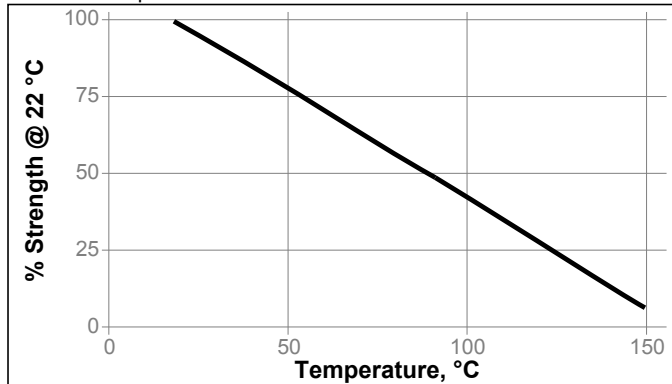
Cured for 1 week @ 22°C

Lap Shear Strength :

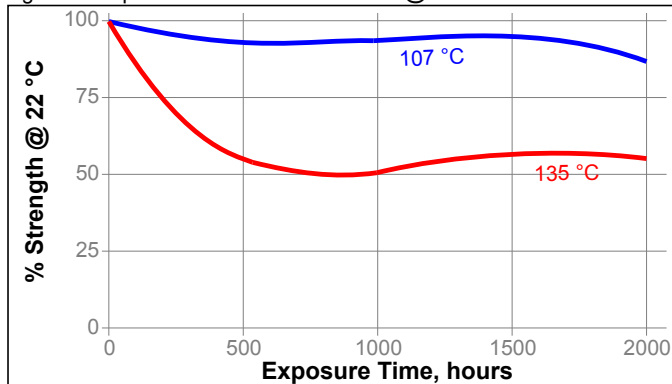
Steel

Hot Strength

Tested at temperature

**Heat Aging**

Aged at temperature indicated and tested @ 22 °C

**Chemical/Solvent Resistance**

Aged under conditions indicated and tested @ 22°C

Environment	°C	% of initial strength	
		1000 h	2000 h
Humidity, 100% RH	49	55	35
Salt fog	35	75	60
Processing Temperature	22	75	90
Water/glycol	66	75	50
Motor oil	66	75	90
Gasoline	66	95	90

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 Safety Data Sheet (SDS).

Directions for use

- For best performance part surfaces should be clean and free of grease.
- For high strength structural bonds, remove surface contaminants such as paint, oxide films, oils, dust, mold release agents and all other surface contaminants.
- Dual Cartridges:** To use simply insert the cartridge into the application gun and start the plunger into the cylinders using light pressure on the trigger. Next, remove the cartridge cap and expel a small amount of adhesive to be sure both sides are flowing evenly and freely. If automatic mixing of resin and hardener is desired, attach the mixing nozzle to the end of the cartridge and begin dispensing the adhesive. For hand mixing, expel the desired amount of the adhesive and mix thoroughly. Mix for approximately 15 seconds after uniform color is obtained.
Bulk Containers: Mix thoroughly by weight or volume in the proportions specified in Product Description section. Mix vigorously, approximately 15 seconds after uniform color is obtained.
- Do not mix quantities greater than 4 kg as excessive heat build-up can occur. Mixing smaller quantities will minimise the heat build-up.
- 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.
- Keep assembled parts from moving during cure. The bond should be allowed to cure 24 hours before subjecting to any service loads.
- Excess uncured adhesive can be wiped away with organic solvent (e.g. Acetone).
- After use and before adhesive hardens mixing and dispensing equipment should be cleaned with hot soapy water.

Loctite Material Specification^{LMS}

LMS dated October 30, 2001. 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.

Storage

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

Optimal Storage: 2 °C to 8 °C. Storage below 2 °C or greater than 8 °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 Henkel representative.

Conversions
 $(^{\circ}\text{C} \times 1.8) + 32 = ^{\circ}\text{F}$
 $\text{kV/mm} \times 25.4 = \text{V/mil}$
 $\text{mm} / 25.4 = \text{inches}$
 $\mu\text{m} / 25.4 = \text{mil}$
 $\text{N} \times 0.225 = \text{lb}$
 $\text{N/mm} \times 5.71 = \text{lb/in}$
 $\text{N/mm}^2 \times 145 = \text{psi}$
 $\text{MPa} \times 145 = \text{psi}$
 $\text{N}\cdot\text{m} \times 8.851 = \text{lb}\cdot\text{in}$
 $\text{N}\cdot\text{m} \times 0.738 = \text{lb}\cdot\text{ft}$
 $\text{N}\cdot\text{mm} \times 0.142 = \text{oz}\cdot\text{in}$
 $\text{mPa}\cdot\text{s} = \text{cP}$
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Reference 1.4