

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:

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, ISO 4587:

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

Cured for 48 hours @ 22 °C

Lap Shear Strength, ISO 4587:

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/m ² :		
Steel		>21

TYPICAL ENVIRONMENTAL RESISTANCE

Cured for 1 week @ 22 °C

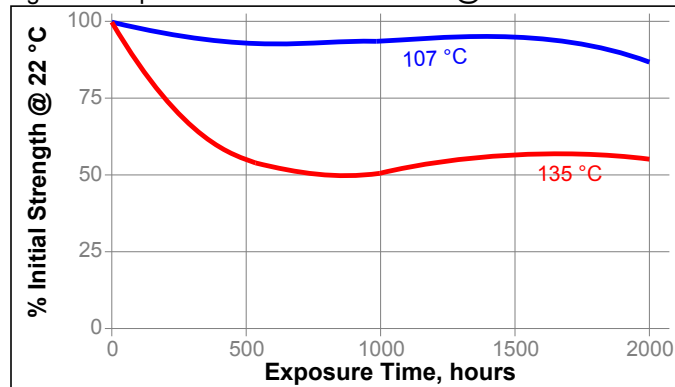
Lap Shear Strength, ISO 4587:
Steel

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 Technical Service Center or Customer Service Representative.

Conversions

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

U.S. and elsewhere.

Reference 1.4

Note:

The information provided in this Technical Data Sheet (TDS) including the recommendations for use and application of the product are based on our knowledge and experience of the product as at the date of this TDS. The product can have a variety of different applications as well as differing application and working conditions in your environment that are beyond our control. Henkel is, therefore, not liable for the suitability of our product for the production processes and conditions in respect of which you use them, as well as the intended applications and results. We strongly recommend that you carry out your own prior trials to confirm such suitability of our product.

Any liability in respect of the information in the Technical Data Sheet or any other written or oral recommendation(s) regarding the concerned product is excluded, except if otherwise explicitly agreed and except in relation to death or personal injury caused by our negligence and any liability under any applicable mandatory product liability law.

In case products are delivered by Henkel Belgium NV, Henkel Electronic Materials NV, Henkel Nederland BV, Henkel Technologies France SAS and Henkel France SA please additionally note the following:

In case Henkel would be nevertheless held liable, on whatever legal ground, Henkel's liability will in no event exceed the amount of the concerned delivery.

In case products are delivered by Henkel Colombiana, S.A.S. the following disclaimer is applicable:

The information provided in this Technical Data Sheet (TDS) including the recommendations for use and application of the product are based on our knowledge and experience of the product as at the date of this TDS. Henkel is, therefore, not liable for the suitability of our product for the production processes and conditions in respect of which you use them, as well as the intended applications and results. We strongly recommend that you carry out your own prior trials to confirm such suitability of our product.

Any liability in respect of the information in the Technical Data Sheet or any other written or oral recommendation(s) regarding the concerned product is excluded, except if otherwise explicitly agreed and except in relation to death or personal injury caused by our negligence and any liability under any applicable mandatory product liability law.

In case products are delivered by Henkel Corporation, Resin Technology Group, Inc., or Henkel Canada Corporation, the following disclaimer is applicable:

The data contained herein are furnished for information only and are believed to be reliable. We cannot assume responsibility for the results obtained by others over whose methods we have no control. It is the user's responsibility to determine suitability for the user's purpose of any production methods mentioned herein and to adopt such precautions as may be advisable for the protection of property and of persons against any hazards that may be involved in the handling and use thereof. In light of the foregoing, **Henkel Corporation specifically disclaims all warranties expressed or implied, including warranties of merchantability or fitness for a particular purpose, arising from sale or use of Henkel Corporation's products. Henkel Corporation specifically disclaims any liability for consequential or incidental damages of any kind, including lost profits.** The discussion herein of various processes or compositions is not to be interpreted as representation that they are free from domination of patents owned by others or as a license under any Henkel Corporation patents that may cover such processes or compositions. We recommend that each prospective user test his proposed application before repetitive use, using this data as a guide. This product may be covered by one or more United States or foreign patents or patent applications.

Trademark usage: [Except as otherwise noted] All trademarks in this document are trademarks and/or registered trademarks of Henkel and its affiliates in the