

# LOCTITE® 3296

August 2023

## PRODUCT DESCRIPTION

LOCTITE® 3296 provides the following product characteristics:

<b>Technology</b>	UV curable epoxy
<b>Appearance</b>	Milky white
<b>Product Benefits</b>	<ul style="list-style-type: none"> <li>• Fast UV cure</li> <li>• High Tg and low CTE</li> <li>• Low shrinkage during &amp; after cure</li> <li>• SVHC free and Antimony free</li> </ul>
<b>Cure</b>	Ultraviolet (UV) light and Heat cure
<b>Application</b>	Assembly
<b>Typical Assembly Applications</b>	ADAS Optical Modules

LOCTITE® 3296 dual cure adhesive is specifically designed for Automotive ADAS Optical Modules bonding applications such as lens barrel-to-housing and lens housing-to-circuit board. The ultimate performance of this material is achieved by exposure to UV light of adequate intensity, followed by a thermal cure. This adhesive can be applied by dispensing.

## TYPICAL PROPERTIES OF UNCURED MATERIAL

Viscosity @ 25°C, 15 s <sup>-1</sup> , mPa·s	33,700
Shear thinning index, 1.5/15 s <sup>-1</sup>	4.3
Density, 25°C, g/cm <sup>3</sup>	1.8
Shelf Life @ -25 to -18°C, months	6

## TYPICAL CURING PERFORMANCE

### Required UV Cure

Light Source and Condition:

UV LED:

UV Wavelength, nm	365
Irradiance at bond line mW/cm <sup>2</sup>	1,000
Recommended Time, seconds	3

### Recommended Heat Cure

30minutes @ 120°C

or

60minutes @ 100°C

Cure rate and depth of cure will depend on the UV intensity measured at the product surface, wavelength, exposure time and the light transmittance of the substrate.

Conditions may vary based on customers' experience and their application requirements as well as customer curing equipment, oven loading and actual oven temperatures.

## TYPICAL PROPERTIES OF CURED MATERIAL

Sample cured 3 secs @ 1,000 mW/cm<sup>2</sup> + 30 min @ 120°C

### Physical Properties :

Glass Transition Temperature, tan δ, DMA, °C	189
Coefficient of Thermal Expansion, TMA: 25 to 125°C, ppm/K	22.1
Hardness, Shore D , Durometer	94
E-modulus (Storage) @ 25°C, MPa	10,900
DMA (Single Cantilever)	
Cure Shrinkage, Linear, %	0.33
Cure Depth (UV only), mm	> 3

### Adhesive Properties:

Adhesion Strength:

Die Shear, plasma :

After UV Cure:

Aluminum to Aluminum	N/mm <sup>2</sup> 8 (psi) (1,160)
----------------------	--------------------------------------

After Full Cure :

Aluminum to Aluminum	N/mm <sup>2</sup> 19.3 (psi) (2,800)
----------------------	---

### Outgassing Properties:

Passes Micro-VCM Test	789/22
Total Mass Loss, %	0.27 (0.01)
Recovered Mass Loss, %	0.14 (0.0)
Collected Volatile Condensable Material, %	0.0 (0.0)

## GENERAL INFORMATION

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

## CONDITIONING

Allow container to reach room temperature before use.

Recommended thawing time:

30/55 cc, hours	1
6 oz, hours	2

## DIRECTIONS FOR USE

The rheology of this material makes it suitable for use in dispensing applications

The product needs to be cured according to the cure parameters described above.

## AVAILABILITY

This adhesive is available in 30 and 55 cc syringes and 6oz cartridges.

## STORAGE

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

**Optimal Storage: -25 to -18°C.** Under this condition the shelf life is 6 months.

**Storage below -25°C or higher than -18°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

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

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

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

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

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

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

$$\text{N/mm}^2 = \text{MPa}$$

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

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

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

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

## Disclaimer

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, 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 of Henkel Corporation in the U.S. and elsewhere. ® denotes a trademark registered in the U.S. Patent and Trademark Office.

## Reference 2