



LOCTITE® HHD 4052

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PRODUCT DESCRIPTION

LOCTITE® HHD 4052 provides the following product characteristics:

Technology	Urethane-acrylate
Appearance	Viscous black liquid
Application	Device assembly
Cure	Ultraviolet (UV) light; moisture cure
Product benefits	- One component - UV=moisture cure
Typical package application(s)	Structural bonding of handheld devices

LOCTITE® HHD 4052 is single component, UV+moisture curable adhesive. It is specifically designed for device assembly applications. LOCTITE® HHD 4052 becomes PSA-like adhesive when exposed to UV light with 350nm to 405nm wavelengths. Materials continue to cure by moisture for 72 hours.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Viscosity, PP25 at 50 °C, mPa.s (cP)	
1/s	55,000
Specific gravity, g/cm ³	1.1
Aspect ratio, %	>50
Pot life @ 50°C, hour	8

TYPICAL CURING PERFORMANCE

Recommended cure condition

Ultraviolet (UV) light

UV wavelength, nm	350 to 405
Light intensity, mW/cm ²	1,000
Exposure time, seconds	3

Recommended moisture cure

3 days @ 25°C, 50% RH

Cure rate and depth depend on the intensity, spectral distribution of light source, exposure time and light transmittance of the substrate through which the light must pass.

The above cure profiles are guideline recommendations. Cure conditions (time and temperature) 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

Physical properties

(DMA and TMA sample cured: UV cure condition + 3 days moisture @ RT, 50% RH)	
Coefficient of thermal expansion, TMA	
Below Tg, ppm/°C	160
Above Tg, ppm/°C	480
Glass transition temperature DMA, °C	30
Storage modulus, DMA, @ 25°C, N/mm ²	50
Elongation by texture, %	450

Adhesion properties

Lap shear strength, N/mm ²	
Sus to sus, N/mm ²	>5.0

GENERAL INFORMATION

Please consult the Safety Data Sheet (SDS) for safe handling information of this product.

Thawing

- DO NOT open the container before contents reach 25°C temperature. Any moisture that collects on the thawed container should be removed prior to opening the container.
- Typical thaw/warm-up times for different package sizes are shown below

30cc syringes @ 25°C, minutes	90 to 120
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- For optimal performance, a consistent dispense temperature is recommended. This will reduce the effects of a potential temperature between storage place and cleaning room.

Direction for use

- Use cotton gloves to handle syringe. Touching the syringe with bare hands may induce thaw voids between the adhesive and inside walls of the syringe.
- Handle the syringe by the end, or, if packaged in bags, by the corner. A warm hand holding a cold syringe can sometimes cause formation of freeze/thaw voids.
- Complete cleaning of the substrates should be performed to remove contamination such as oxide layers, dust, moisture, salt and oils which can cause poor adhesion or corrosion in a bonded part.
- Usable shelf life may vary depending on method of application and storage conditions.



Storage

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

Optimal storage: 2 °C - 8°C

Material removed from containers may be contaminated during use. Do not return product to the original container. Henkel 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.

Not for product specifications

The technical data contained herein are intended as reference only. Please contact your local quality department for assistance and recommendations on the specifications of this product.

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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