Technical Data Sheet

LOCTITE® HHD 4002BK

June 2024

PRODUCT DESCRIPTION

LOCTITE® HHD 4002BK provides the following product characteristics:

Technology	Polyurethane Hot Melt
Appearance	Black
Odor	Slight
Cure	Moisture and Solidification
Application	Structural adhesive, Electronic structural bonding
Product benefits	• Jet dispensible • Fast curing • Excellent adhesion • Good impact resistance • Reworkable • Good reliability performance

LOCTITE® HHD 4002BK is a reactive hotmelt adhesive based on polyurethane prepolymers. Strong initial strength is realized immediately after the material solidifies at the bondline. This product has excellent chemical and impact resistance. This product is formulated with an open time appropriate for use in automatic or manual assembly line processing.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Solids, %	100
Density @ 25ºC, g/cm^3	1.1
Viscosity, Brookfield - Thermosel, 110°C, mPa·s (cP):	
Spindle 27, speed 20 rpm	5,000

TYPICAL CURING PERFORMANCE

Open time @ 25°C, minutes	> 4
Preheating schedule @ 100°C, minutes	20 to 30
Application temperature, ºC	100 to 130

Open time is the bonding range of a 1 mm bead of molten adhesive on substrate. Open time is based on room temperature environment. Higher temperature will prolong the open time while lower environmental temperatures will shorten the open time.

LOCTITE® HHD 4002BK cures exclusively by moisture and gains its final strength in 1 to 5 days. This material, however, exhibits high handling strength instantly after bonding.

Curing is a chemical reaction depending on the following parameters:

- Humidity in the rooms of application and storage
- Moisture content on the substrates
- Permeability of the substrates to be bonded
- Application volume / layer of the adhesive film

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

Young's modulus, N/mm^2	82
Elongation at break, %	600

Adhesion properties

Sample cured at recommended cure conditions

Cross tensile strength	
PC/GF to Ink Glass, N/mm^2	8.0

GENERAL INFORMATION

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

Pretreatment:

1. The bonding surfaces must be clean, dry and free of oil and grease.
2. Substrate temperature should not fall below 20ºC during application.
3. Low temperatures will lead to early solidification of the adhesive and to a reduced open time. The adhesive may even flake off.
4. The substrates may be preheated if necessary.

Application:

1. This material can be applied from heating cartridge guns, from usual syringe type melting equipment.
2. At longer rest periods, melting and application temperatures should be decreased. Longer exposure to higher temperatures can lead to a viscosity increase.

Storage:

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

Optimal Storage: 8 to 28ºC. Storage below 8°C or above 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 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
(°C x 1.8) + 32 = °F
kV/mm x 25.4 = V/mil
mm / 25.4 = inches
µm / 25.4 = mil
N x 0.225 = lb
N/mm x 5.71 = lb/in
N/mm² x 145 = psi
MPa x 145 = psi
N·m x 8.851 = lb·in
N·m x 0.738 = lb·ft
N·mm x 0.142 = oz·in
mPa·s = cP

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