

LOCTITE[®] HHD8160™

May 2014

PRODUCT DESCRIPTION

LOCTITE[®] HHD8160™ provides the following product characteristics:

Technology	Acrylic
Chemical Type	Methacrylate
Appearance, Resin (Component A)	Yellow
Appearance, Hardener (Component B)	Blue
Appearance (Mixture)	Green
Cure	Room temperature cure
Components	Two component - requires mixing
Mix Ratio, by volume - Part A: Part B	10 : 1
Application	Bonding

LOCTITE[®] HHD8160™ is a two-component, halogen free and REACH-compliant methacrylate adhesive system designed for structural bonding of laptop computers and other medium to large format devices. It has been specifically formulated to deliver low temperature, fast fixture processing capability. It also possesses excellent adhesion to aluminum alloys, anodized aluminum and polycarbonate.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Part A:

Specific Gravity @ 25 °C	0.98
Viscosity, Cone & Plate, mPa·s (cP): Temperature: 25 °C, Shear Rate: 20 s ⁻¹	57,000
Flash Point - See SDS	

Part B:

Specific Gravity @ 25 °C	1.2
Viscosity, Cone & Plate, mPa·s (cP): Temperature: 25 °C, Shear Rate: 20 s ⁻¹	16,000
Flash Point - See SDS	

Mixed:

Specific Gravity @ 25 °C	1.0
Flash Point - See SDS	

TYPICAL CURING PERFORMANCE

Curing Properties

Working Time on Aluminium, seconds	240
Working Time on Steel, seconds	240
Working Time on HDPE, seconds	210

Fixture Time

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

Fixture Time, ISO 4587, seconds:

Grit Blasted Mild Steel (anodized)	270 to 300
Aluminum (anodized)	180 to 240

Peak Exotherm Temperature

Peak Exotherm Temperature, 10 gram mass:

Peak Temperature Time, minutes	7
Peak Temperature, °C	135

TYPICAL PROPERTIES OF CURED MATERIAL

After 72 hours @ 22 °C

Physical Properties:

Glass Transition Temperature, ISO 11359-2, °C	54
Coefficient of Thermal Expansion, ISO 11359-2, K ⁻¹ :	
Below Tg	110×10 ⁻⁶
Shore Hardness, ISO 868, Shore D	70
Linear Shrinkage, %	5
Volume Shrinkage, %	15
Tensile Strength, at break, ISO 527-2	N/mm ² 18 (psi) (2,570)
Tensile Modulus, ISO 527-2	N/mm ² 840 (psi) (122,000)

TYPICAL PERFORMANCE OF CURED MATERIAL

Adhesive Properties

Cured for 24 hours @ 22 °C

Lap Shear Strength, ISO 4587:

Anodized Aluminum	N/mm ² 12 (psi) (1,690)
-------------------	---------------------------------------

Cured for 72 hours @ 22 °C.

Impact Strength, ISO 9653, J:

Grit Blasted Mild Steel (GBMS)	4
Aluminum (abraded)	4
Grit Blasted Mild Steel (GBMS) @ -40 °C	3

"T" Peel Strength, ISO 11339:

Steel	N/mm 1.7 (lb/in) (10)
Aluminum	N/mm 2.1 (lb/in) (13)

Block Shear Strength, ISO 13445:

Glass	* N/mm ²	7.6
	* (psi)	(1,100)
Polycarbonate	N/mm ²	4.1
	(psi)	(590)
ABS	N/mm ²	3.7
	(psi)	(540)
Ferrite Magnet to Steel	N/mm ²	11
	(psi)	(1,610)

Lap Shear Strength, ISO 4587:

Grit Blasted Mild Steel (GBMS)	N/mm ²	12
	(psi)	(1,690)
Stainless Steel	N/mm ²	13
	(psi)	(1,940)
Aluminum	N/mm ²	13
	(psi)	(1,950)
Anodized Aluminum	N/mm ²	12
	(psi)	(1,720)
IXEF	N/mm ²	7.5
	(psi)	(1,090)

* substrate failure

TYPICAL ENVIRONMENTAL RESISTANCE

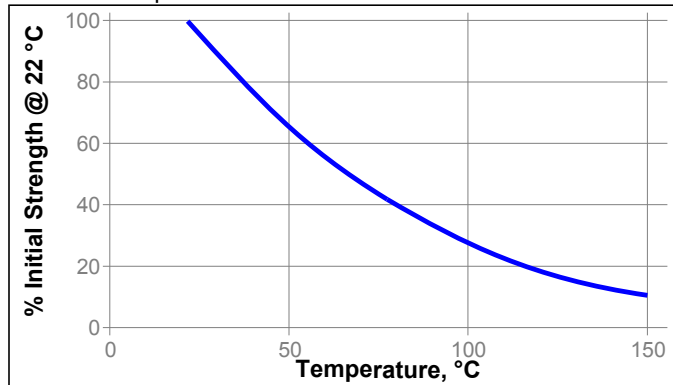
Cured for 72 hours @ 22 °C

Lap Shear Strength, ISO 4587:

Anodized Aluminum

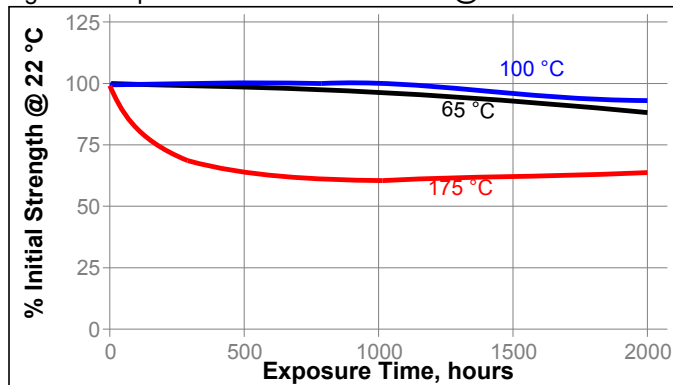
Hot Strength

Tested at temperature



Heat Aging

Aged at temperature indicated and tested @ 22 °C



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:

1. For high strength structural bonds, remove surface contaminants such as paint, oxide films, oils, dust, mold release agents and all other surface contaminants.
2. Use gloves to minimize skin contact. DO NOT use solvents for cleaning hands.
3. **Dual Cartridges:** To begin using a new cartridge, remove cartridge cap and dispense a small amount of adhesive, making sure both parts A&B are extruding. Attach nozzle and dispense approximately 25 to 50mm, before applying onto part to be bonded. Partially used cartridges can be stored with the mixing nozzle attached. To reuse, remove and discard old nozzle, attach the new nozzle, dispense approximately 25 to 50mm, before applying onto part to be bonded.
- Bulk Containers:** Normally material is dispensed through volumetric metered mixing equipment, attached to static mix nozzles.
4. For maximum bond strength apply adhesive evenly to both surfaces to be joined.
5. Application to the substrates should be made as soon as possible. Larger quantities and/or higher temperatures will reduce the working time.
6. Join the adhesive coated surfaces and allow to cure. Higher temperatures will speed up curing.
7. Keep assembled parts from moving during cure. The bond should be allowed to develop full strength before subjecting to any service load.
8. Excessive uncured adhesive can be cleaned up with ketone type solvents.

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 specifications for this product.

Storage

The product is classified as flammable and must be stored in an appropriate manner in compliance with relevant regulations. Do not store near oxidizing agents or combustible materials. Store product in the unopened container in a dry location. Storage information may also be indicated on the product container labelling.

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 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

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

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

Reference 0.0

Henkel Americas
+860.571.5100

Henkel Europe
+49.89.320800.1800

Henkel Asia Pacific
+86.21.2891.8859

For the most direct access to local sales and technical support visit: www.henkel.com/industrial