Technical Data Sheet

LOCTITE® HY 4092GY™

July 2017

PRODUCT DESCRIPTION

LOCTITE® HY 4092GY™ provides the following product characteristics:

Technology	Cyanoacrylate / Epoxy Hybrid
Chemical Type (Part A)	Cyanoacrylate
Chemical Type (Part B)	Epoxy
Appearance (Comp. A)	Black liquid[LMS]
Appearance (Comp. B)	White to off-white liquid[LMS]
Appearance (Mixture)	Grey
Components	Two components - requires mixing
Mix Ratio, by volume - Part A: Part B	1 : 1
Viscosity	Low
Cure	Two component cure after mixing
Application	Bonding
Specific Benefit	• Flowable • Flexible • Excellent substrate versatility

LOCTITE® HY 4092GY™ is a fast self-leveling hybrid adhesive designed for high performance potting applications as well as structural bonding. This product shows great resistance to impact, heat and humidity, and chemicals such as motor oil. A higher level of bond strength can be gained by utilizing heat, but this is not required.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Part A:

Specific Gravity, g/cm³	1.11
Viscosity, Cone & Plate, mPa·s (cP):	
Temperature: 25 °C	1,200 to 3,700[LMS]

Part B:

Specific Gravity, g/cm³	1.08
Viscosity, Cone & Plate, mPa·s (cP):	
Temperature: 25 °C	700 to 2,800[LMS]

TYPICAL CURING PERFORMANCE

Curing is initiated on mixing the Part A and Part B components. Handling strength is achieved rapidly; full strength is achieved over time.

This product cures rapidly when the components are dispensed through a static mixer at room temperature

Nozzle Life

Dispensing time through mix nozzle @ 25°C minutes	4 to 5

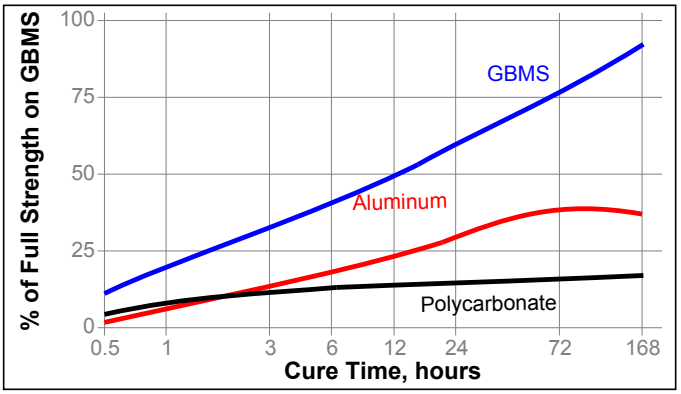
Fixture Time

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

Fixture Time @ 25°C, minutes	<25[LMS]

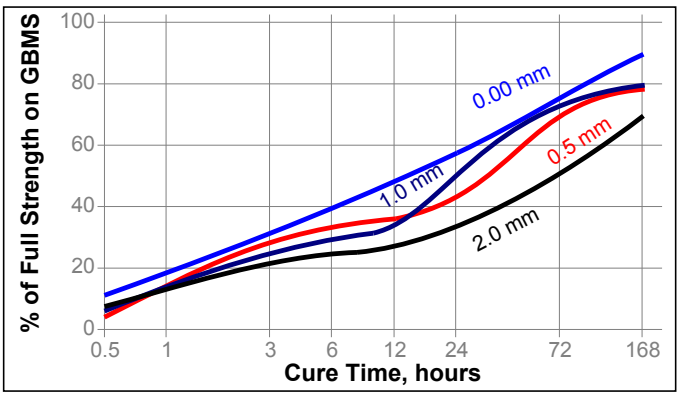
Cure Speed vs. Substrate

The rate of cure will depend on the substrate used. The graph below shows the shear strength developed with time on steel lap shears compared to different materials and tested according to ISO 4587.



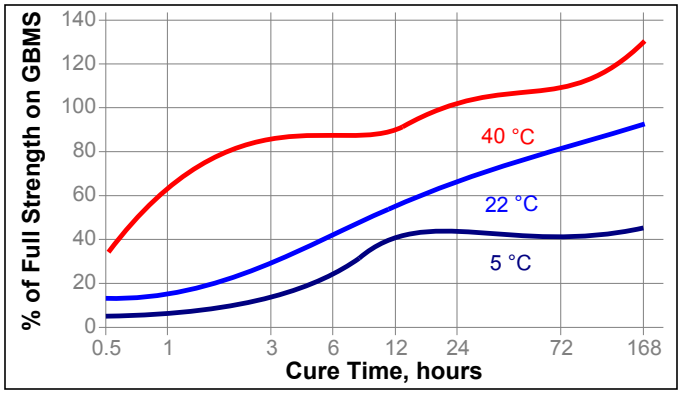
Cure Speed vs. Bond Gap

The rate of cure will depend on the bondline gap. The following graph shows the shear strength developed with time on grit blasted mild steel lap shears at different controlled gaps and tested according to ISO 4587.



Cure Speed vs. Temperature

The rate of cure will depend on the ambient temperature. The graph below shows the shear strength developed with time at different temperatures on grit blasted mild steel lap shears and tested according to ISO 4587.



TYPICAL PROPERTIES OF CURED MATERIAL

Cured for 2 week @ 22 °C

Physical Properties:

Glass Transition Temperature, ISO 11359-2, °C		7
Coefficient of Thermal Expansion, ISO 11359-2 K^{-1}:		
Below Tg (7°C)		76×10^{-06}
Above Tg (7°C)		238×10^{-06}
Shore Hardness, ISO 868, Durometer D		65
Tensile Strength, at break, ISO 527-3	N/mm² (psi)	18 (2,610)
Tensile Modulus, ISO 527-3	N/mm² (psi)	281 (40,745)
Elongation, at break, ISO 527-3, %		72

TYPICAL PERFORMANCE OF CURED MATERIAL

Adhesive Properties

Cured for 2 weeks @ 22 °C

"T" Peel Strength, ISO 11339:

Steel (grit blasted)	N/mm (lb/in)	0.26 (1.46)
Aluminum (grit blasted)	N/mm (lb/in)	0.14 (0.79)

Shear Strength, Lap Shear Strength, ISO 4587:

Mild Steel (grit blasted)	N/mm² (psi)	9.5 (1,380)
Mild Steel (abraded)	N/mm² (psi)	15.4 (2,230)
Aluminum (etched)	N/mm² (psi)	6.2 (900)
Aluminum (abraded)	N/mm² (psi)	4.1 (590)
Zinc dichromate	N/mm² (psi)	2.9 (420)
ABS	N/mm² (psi)	1.3 (180)
Phenolic	N/mm² (psi)	0.7 (100)
Polycarbonate	N/mm² (psi)	1.6 (230)
Nitrile	N/mm² (psi)	0.01 (1.3)
Wood (Oak)	N/mm² (psi)	1.6 (230)
Epoxy FR-10	N/mm² (psi)	2.7 (400)

TYPICAL ENVIRONMENTAL RESISTANCE

Cured for 1 week @ 22 °C

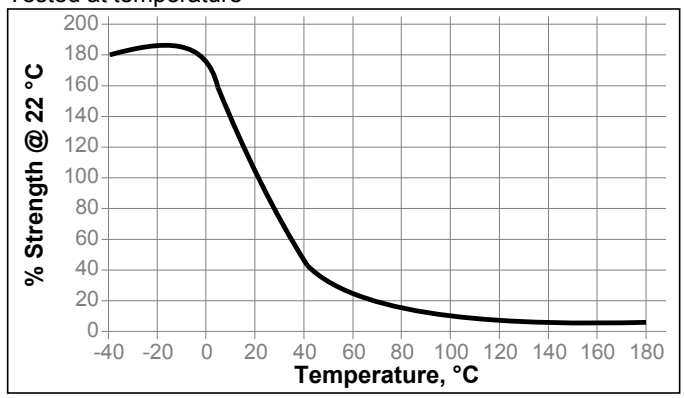
Lap Shear Strength, ISO 4587:

Steel

Mild Steel (grit blasted)

Hot Strength

Tested at temperature



Heat Aging

Aged at temperature indicated and tested @ 22 °C for 1,000 hours

Temperature, °C	% of Initial Strength
100	159
120	180
150	153

Chemical/Solvent Resistance

Aged under conditions indicated and tested @ 22 °C.

		% of initial strength		
Environment	**°C**	**100 h**	**500 h**	**1000 h**
Motor Oil - Shell Helix Ultra	22	101	102	107
Unleaded gasoline	22	72	31	15
Ethanol	22	67	27	17
Isopropanol	22	79	88	114
Water	22	68	63	55
Water	60	51	23	29
Water/glycol 50/50	22	81	73	77
95% RH	40	89	61	62
95% RH	65	55	29	27

Lap Shear Strength, ISO 4587:

Polycarbonate

		% of initial strength		
Environment	**°C**	**100 h**	**500 h**	**1000 h**
98% RH	40	92	91	95

Lap Shear Strength, ISO 4587:

Aluminum

		% of initial strength		
Environment	**°C**	**100 h**	**300 h**	**500 h**
95% RH	65	77	50	47

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).

Where aqueous washing systems are used to clean the surfaces before bonding, it is important to check for compatibility of the washing solution with the adhesive. In some cases these aqueous washes can affect the cure and performance of the adhesive.

Directions for use:

1. Bond areas should be clean and free from grease. Clean all surfaces with a Loctite® cleaning solvent and allow to dry.
2. To use, Part A and Part B must be blended. Product can be applied directly from dual cartridge by dispensing through the mixer head supplied.
3. Stand dual cartridge upright for 1 minute. Keeping the cartridge in an upright position, insert it into the application gun, remove cap and expel a small amount of adhesive to be sure both sides are flowing evenly and freely. Attach the mixing nozzle.
4. Dispense and discard a bead as long and as wide as the mixing nozzle, to ensure sufficient mixing.
5. Apply the mixed adhesive to one of the bond surfaces to be joined. Parts should be assembled immediately after the mixed adhesive has been applied.
6. Bonds should be held fixed or clamped until adhesive has fixtured.
7. Keep assembled parts from moving during cure. The bond should be allowed to develop full strength before subjecting to any service load (typically 24 hours).

Loctite Material Specification[LMS]

LMS dated July 12, 2016 (Part A) and LMS dated July 12, 2016 (Part B). 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 Loctite 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 21°C. Storage below 2°C or greater than 21°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

(°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

Reference 0.1