Technical Data Sheet

LOCTITE® EA 3336™

Known as Loctite® 3336™
July 2013

PRODUCT DESCRIPTION

LOCTITE® EA 3336™ provides the following product characteristics:

Technology	Epoxy
Chemical Type (Resin)	Acrylated epoxy
Chemical Type (Hardener)	Amine
Appearance (Resin)	Colorless to slightly greenish liquid[LMS]
Appearance (Hardener)	Colorless to slightly yellowish liquid[LMS]
Appearance (Mixture)	Colorless liquid
Appearance (UV Cured)	Colorless to slightly yellowish solid[LMS]
Components	Two component - requires mixing
Viscosity	Medium
Mix Ratio, by volume - Resin : Hardener	4 : 1
Cure	Ultraviolet (UV) light & heat cure
Application	Bonding

LOCTITE® EA 3336™ is a medium viscosity, two part epoxy adhesive which cures when exposed to medium intensity ultraviolet of suitable wavelength. Cure properties are enhanced by application of heat to bonded parts. LOCTITE® EA 3336™ is designed for potting, bonding, sealing and laminating applications where excellent structural, mechanical and electrical insulating properties along with product clarity are required. The product has excellent chemical resistance as well as superior weatherability. The product has good environmental resistance.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Resin:

Specific Gravity @ 25 °C	1.2
Viscosity, Brookfield - RVT, 25 °C, mPa·s (cP):	
Spindle 6, speed 20 rpm,	8,000 to 12,000[LMS]
Refractive Index	1.575
Flash Point - See MSDS	

Hardener:

Specific Gravity @ 25 °C	1.1
Viscosity, Brookfield - RVT, 25 °C, mPa·s (cP):	
Spindle 6, speed 20 rpm,	1,000 to 3,000[LMS]
Flash Point - See MSDS	

Mixed:

Viscosity, Brookfield - RVT, 25 °C, mPa·s (cP):	
Spindle 6, speed 20 rpm,	14,500
Working life, minutes	15

TYPICAL CURING PERFORMANCE

LOCTITE® EA 3336™ can be cured by exposure to UV light @ 365 nm. To obtain full cure on exposed surfaces, irradiation at 220 to 260 nm is also required. Both speed and depth of cure will depend upon the UV intensity and spectral distribution of the light source, the exposure time and the light transmittance of the substrates.

Fixture Time

UV fixture time is defined as the light exposure time required to develop a shear strength of 0.1 N/mm² .

UV Fixture Time, Glass microscope slides, seconds:

30 mW/cm² , measured @ 365 nm	7
50 mW/cm² , measured @ 365 nm	<5
100 mW/cm² , measured @ 365 nm	<5

Surface Cure

Tack Free Time is the time required to achieve a tack free surface

Tack Free Time, seconds:

Metal halide bulb (Iron):	
30 mW/cm² , measured @ 365 nm	>300
50 mW/cm² , measured @ 365 nm	270 to 300
Hg Arc:	
50 mW/cm² , measured @ 365 nm	5 to 10
100 mW/cm² , measured @ 365 nm	<5
Electrodeless, D bulb:	
50 mW/cm² , measured @ 365 nm	10 to 20
100 mW/cm² , measured @ 365 nm	5 to 10

Depth of Cure vs Intensity @ 365 nm, mm

Lamp Type, Irradiance	**Exposure Time, seconds**	
	10	**30**
Metal Halide, 30 mW/cm²	5.0	13.0
Metal Halide, 50 mW/cm²	7.0	13.0
Hg Arc, 50 mW/cm²	4.5	7.5
Hg Arc, 100 mW/cm²	7.5	12.0
Electrodeless, D bulb, 50 mW/cm²	7.0	≥13
Electrodeless, D bulb, 100 mW/cm²	13.0	≥13

TYPICAL PROPERTIES OF CURED MATERIAL

Cured @ 60 mW/cm² , for 60 seconds followed by 7 days @ 22 °C

Physical Properties:

Tensile Strength, at break, ISO 527-3	N/mm² (psi)	41 (5,900)
Tensile Modulus, ISO 527-3	N/mm² (psi)	1,870 (272,000)
Elongation, at break, ISO 527-3, %		6
Shore Hardness, ISO 868, Durometer D		79
Glass Transition Temperature, ASTM E 1640, °C		55

TYPICAL PERFORMANCE OF CURED MATERIAL

Adhesive Properties

Cured @ 30 mW/cm² , for 60 seconds, plus 16 hours post UV Cure @ 65 °C

Torsional Shear Strength, ASTM D 3658:

Aluminum hex button to glass	N·m (lb.ft.)	>176 (>130)

Tensile Strength, ISO 6922:

Steel pin to Glass	N/mm² (psi)	21.7 (3,160)

Lap Shear Strength, ISO 4587:

Steel to Glass	N/mm² (psi)	17.5 (2,500)
G-10 Epoxy to Glass	N/mm² (psi)	11 (1,600)
Aluminum to Glass	N/mm² (psi)	9.6 (1,400)
Polybutylene Terephthalate (PBT) to Glass	N/mm² (psi)	5 (770)
Polycarbonate to Polycarbonate	N/mm² (psi)	6 (915)
Polycarbonate to PVC	N/mm² (psi)	3.7 (540)

Cured @ 30 mW/cm² , for 60 seconds, plus 7 days post UV Cure @ 22 °C

Torsional Shear Strength, ASTM D 3658:

Aluminum hex button to glass	N·m (lb.ft.)	133 (98)

Tensile Strength, ISO 6922:

Steel pin to Glass	N/mm² (psi)	15.3 (2,215)

Lap Shear Strength, ISO 4587:

Steel to Glass	N/mm² (psi)	7.7 (1,100)
G-10 Epoxy to Glass	N/mm² (psi)	5.5 (800)
Aluminum to Glass	N/mm² (psi)	6 (1,400)
Polybutylene Terephthalate (PBT) to Glass	N/mm² (psi)	4 (620)
Polycarbonate to Polycarbonate	N/mm² (psi)	5.9 (850)
Polycarbonate to PVC	N/mm² (psi)	2.6 (380)

Cured for 2 hours @ 65 °C

Lap Shear Strength, ISO 4587:

Aluminum (acid etched)	N/mm² (psi)	≥0.7[LMS] (≥100)

TYPICAL ENVIRONMENTAL RESISTANCE

Cured @ 30 mW/cm² , for 60 seconds plus 7 days @ 22 °C

Lap Shear Strength, ISO 4587:

Steel to Glass

Chemical/Solvent Resistance

Aged under conditions indicated and tested @ 22 °C.

		% of initial strength	
Environment	**°C**	**500 h**	**1000 h**
Air	87	200	190
Motor oil	87	170	135
Water/glycol	87	0	0
Salt fog	22	130	90
95% RH	38	110	130
Acetone	22	90	60
Water	22	110	70
Isopropanol	22	80	55

GENERAL INFORMATION

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

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.

Directions for use:

1. This product is light sensitive. Exposure to daylight, UV light and artificial lighting should be kept at a minimum during storage and handling. UV Cure rate is dependent on lamp intensity, cure time, light transmission of the substrates and spectral output of the lamp.
2. For high strength structural bonds, remove surface contaminants such as paint, oxide films, oils, dust, mold release agents and all other surface contaminants.
3. Use gloves to minimize skin contact. DO NOT use solvents for cleaning hands.
4. **Dual Cartridges:** To use simply insert the cartridge into the application gun and start the plunger into the cylinders using light pressure on the trigger. Next, remove the cartridge cap and expel a small amount of adhesive to be sure both sides are flowing evenly and freely. If automatic mixing of resin and hardener is desired, attach the mixing nozzle to the end of the cartridge and begin dispensing the adhesive. For hand mixing, expel the desired amount of the adhesive and mix thoroughly. Mix for approximately 15 seconds after uniform color is obtained.
   Bulk Containers: Mix thoroughly by weight or volume in the proportions specified in Product Description section. Mix vigorously, approximately 15 seconds after uniform color is obtained.

Loctite Material Specification[LMS]

LMS dated November 20, 2009. 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 Quality.

Storage

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

Optimal Storage: 8 °C to 21 °C. Storage below 8 °C or greater than 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 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

Disclaimer

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.

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Reference 1.4