

Technical Data Sheet Ultrabond™ 736

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Product Description

Hernon® Ultrabond™ 736 is a high impact UV curable structural anaerobic adhesive formulated for bonding glass to glass, glass to metal and for potting and tacking applications. **Ultrabond™ 736** has very high light transmission and reflective index similar to that of glass. **Ultrabond™ 736** cures on exposure to ultraviolet light, with a wavelength of 365 nm, or with **Hernon® EF® Activator 56**.

Typical Applications

- Bonding glass to glass
- Bonding Bonding glass to metal
- Bonding Bonding some plastics
- Bonding Potting
- Bonding Wire tacking
- Bonding Coating

Product Benefits

- One component
- 100% solid (no solvent)
- Fast cure speed with UV light or **EF® Activator 56**
- Unlimited adjustment time until exposed to UV light
- Good adhesion to glass
- Bond is almost invisible

Properties Of Uncured Material

Property	Value
Resin	Modified acrylic ester
Appearance	Amber liquid
Specific Gravity @ 25°C	1.08
Viscosity @ 25°C, cP	20,000
Refractive Index	1.48
Flash Point	See MSDS

Typical Curing Performance

Ultrabond™ 736 is cured when exposed to UV radiation of 365nm. To obtain a full cure on surfaces exposed to air, radiation at 250nm is also required. The speed of cure will depend on the UV intensity as measured at the product surface.

Tack Free Time

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

Light Source	Irradiance (mW/cm ²)	Tack Free Time (seconds)
Zeta® 7200	50	< 20
	100	< 10
Zeta® 7400	30	> 300
	50	> 300
Fusion® D	50	< 90
	100	< 45

Fixture Time

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

UV Fixture Time, Glass microscope slides, seconds:

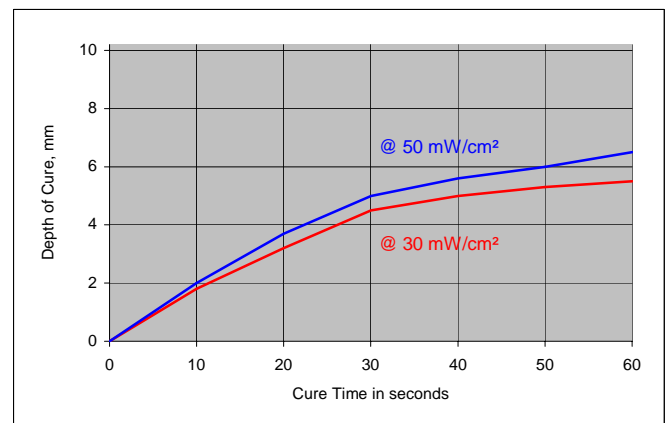
Black light, Zeta® 7500 light source:

6 mW/cm² @ 365 nm = ≤ 12

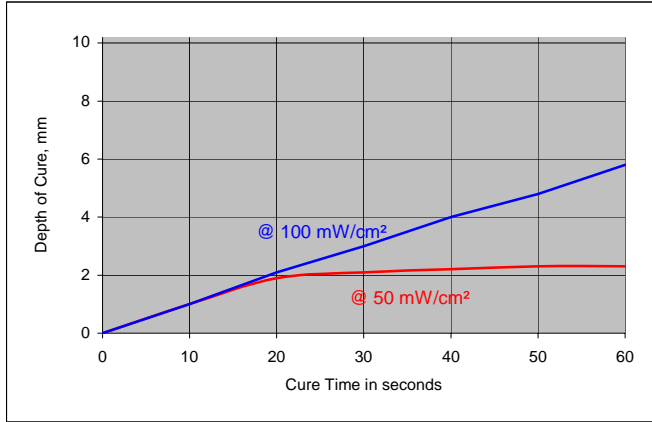
Depth of Cure

Cure depth depends both on external factors including the type of light source, light intensity and exposure time and on internal factors including composition of the adhesive. The following graphs show the effect of light source, light intensity and exposure time on depth of cure for **Ultrabond™ 736**.

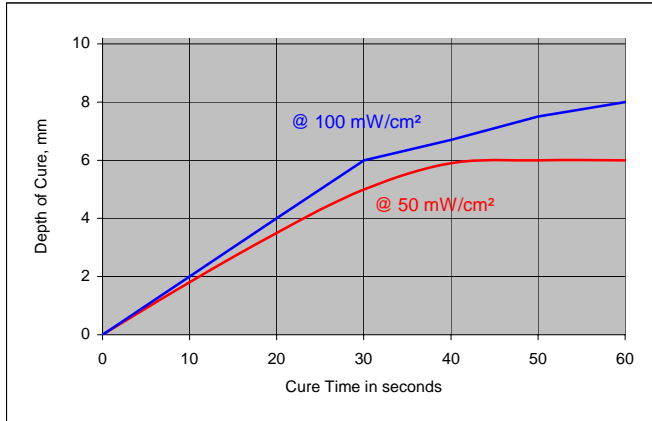
Zeta® 7400



Zeta® 7200



Fusion® D



Heat Cure

This product may be cured with heat. The bond area should be heated to 121°C and maintained at that temperature for 30 minutes.

Activator Cure

This product may be cured with an activator. Apply **EF® Activator 56** to one surface and the adhesive to the other, mate and clamp. The assembly will reach handling strength in approximately 4 minutes if the gap is small, full cure in 72 hours

Typical Properties Of Cured Material

Cured 30 seconds at 100mW/cm² @ 365nm per side plus 24 hours at 22 °C.

Physical Properties

Property	Value
Tensile strength @ break, ASTM D882, psi	3540
Elongation @ break, ASTM D882, %	290
Tensile Modulus, ASTM D882, psi	37000
Hardness, ASTM D2240, Shore D	60
Water Absorption, %	8.7
Refractive Index, N _b	1.51
Glass Transition Temperature, °C	45

Electrical Properties

Property	Value
Dielectric Strength, ASTM D149, kV/mm	25
Dielectric Constant, ASTM D150 @ 1 kHz	5.2
Dissipation Factor, ASTM D150 @ 1 kHz	0.03
Volume Resistivity, ASTM D257, Ω·cm	8 × 10 ¹²

Typical Cured Performance

Shear Strength, psi

UV cure is 30 seconds at 100mW/cm² @ 365 nm using a medium pressure mercury arc light source.

Activator cure is 24 hours at 22°C with **EF® Activator 56** on one side.

ISO Method	Cure Conditions	Substrates	Shear Str.
13445 Block Shear	UV	Steel to Glass	2400
		Aluminum to Glass	1500
		Polycarb to Glass	1200
		PVC to Glass	1300
		ABS to Glass	1200
		G-10 Epoxy to Glass	2000
	25 min. at 121°C	Steel to Steel	1900
	Alumin. to Alumin.	1550	
4587 Lap- Shear	Activator	Gritblasted Steel	≥ 2200
	35 min. at 121°C	Aluminum to Glass	2700
	45 min. at 121°C	Steel to Glass	3000

Typical Environmental Resistance

Block Shear Strength, ISO 13445
 Cured for 30 seconds at 100mW/cm² @ 365 nm using a medium pressure mercury arc light source.
 Steel to glass

Chemical/Solvent Resistance

Aged under conditions indicated and tested @ 22°C.

Environment	Temp °C	% Initial strength retained		
		2 hr	24 hr	170 hr
Isopropyl Alcohol	22	---	80	---
Boiling Water	100	85	---	---
Water	50	---	---	75

Environment	Temp °C	% Initial strength retained	
		300 hr	500 hr
Air	121	75	80
Air	150	50	55
Motor Oil	22	90	85
Gasoline	22	70	80
Heat/Humidity 90%	50	45	30

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 Material Safety Data Sheet (MSDS).

Directions for Use

- **Ultrabond™ 736** is light sensitive. Exposure to daylight, UV light and artificial lighting should be kept to a minimum during storage and handling.
- Product should be dispensed from applicators with black feed lines.
- For best performance bond surfaces should be clean and free from grease.
- Cure rate is dependent on lamp intensity, distance from light source, depth of cure needed or bondline gap and light transmittance of the substrate through which the radiation must pass.
- Recommended irradiance at the bondline for curing is 5mW/cm² minimum with an exposure time of 4-5 times the fixture time at this same irradiance.
- For dry curing of exposed surfaces higher UV irradiance is required (100 mW/cm² minimum).

- Cooling should be provided for temperature sensitive substrates such as thermoplastics.
- Crystalline and semicrystalline thermoplastics should be checked for risk of stress cracking when exposed to liquid adhesive.
- Excess adhesive can be wiped away with organic solvent.
- Bonds should be allowed to cool before subjecting to any service loads.

Storage

Ultrabond™ 736 should be stored in a cool, dry location in unopened containers at a temperature between 46°F to 82°F (8°C to 28°C) unless otherwise labeled. Optimal storage is at the lower half of this temperature range. To prevent contamination of unused material, do not return any material to its original container.

Dispensing Equipment

Hernon® offers a complete line of semi and fully automated dispensing equipment. Contact **Hernon® Sales** for additional information.

These suggestions and data are based on information we believe to be reliable and accurate, but no guarantee of their accuracy is made. HERNON MANUFACTURING®, INC. shall not be liable for any damage, loss or injury, direct or consequential arising out of the use or the inability to use the product. In every case, we urge and recommend that purchasers, before using any product in full scale production, make their own tests to determine whether the product is of satisfactory quality and suitability for their operations, and the user assumes all risk and liability whatsoever, in connection therewith. Hernon's Quality Management System for the design and manufacture of high performance adhesives and sealants is registered to the ISO9001:2000 Quality Standard.