

TYPICAL PROPERTIES OF CURED MATERIAL

(Cured 80 seconds @ 30 mW/cm² using a glass filtered metal halide light source)

Physical Properties

Tensile strength at break, ASTM D882, N/mm ²	17
(psi)	(2,500)
Elongation to break ASTM D882, %	260
Modulus, N/mm ²	207
(psi)	(30,000)
Hardness (Shore D):	51
Water absorption, ASTM D570, 2hrs in boiling water, %	2.72
Refractive index, N _D	1.50

Electrical Properties

	Constant	Loss
Dielectric constant & loss, ASTM D150 @ 100 hz	5.697	0.0426
@ 1 khz	5.605	0.0188
@ 1 mhz	5.131	0.0419
Volume resistivity, ASTM D149, Ω - cm		8.9 x 10 ¹⁴
Surface resistivity, ASTM D149, Ω - cm		8.7 x 10 ¹⁴
Dielectric strength, ASTM D257, kV/mm		24

PERFORMANCE OF CURED MATERIAL

Shear strength in tensile mode tested in accordance with ASTM D3136 on polycarbonate with a 0.5mm gap. Lap shear assemblies were cured for 80 seconds @ 30mW/cm² using a metal halide light source.

Initial Strength, N/mm ²	11
(psi)	(1600)

TYPICAL ENVIRONMENTAL RESISTANCE

Test Procedure:	ASTM D3136,
Substrate:	Polycarbonate with 0.5mm gap
Cure Procedure:	80 secs @ 30mW/cm ² Metal Halide

Solvent	% of initial strength retained at			
	Temp	2hrs	24hrs	170hrs
Boiling Water		70		
Water Immersion	49°C			60
Isopropanol immersion	RT		95	
Humidity Resistance	38°C			75

Heat Aging on polycarbonate substrates

	Temp.	170hrs	340hrs
Bonded polycarbonate	71°C	100 ¹	100 ¹
Bonded polycarbonate	93°C	100 ¹	100 ¹
Bonded polycarbonate	121°C	75 ¹	60 ¹

¹Substrate failure

Effects of Sterilization

In general, products similar in composition to Loctite Product 3211 subjected to standard sterilization methods, such as EtO and Gamma Radiation (25 to 50 kilorays cumulative) show excellent bond strength retention. Product 3211 maintains bond strength after 1 cycle of steam autoclave. It is recommended that customers test specific parts after subjecting them to the preferred sterilization method. Consult with Loctite for a product recommendation if your device will see more than 3 sterilization cycles.

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).

Approvals

Product 3211 has been granted ISO-10993 certification which makes it particularly suited for use in disposable medical device assemblies.

Directions for use

This product is UV sensitive. Exposure to daylight, UV light and artificial lighting should be kept to a minimum during storage and handling. Agitate before use. Product should be dispensed from applicators with black feed lines. For best performance bond surfaces should be clean and free from grease. UV 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 intensity for cure in bondline situation is 5 mW/cm² minimum (measured at the bondline) with an exposure time of 4-5 times the fixture time at this same intensity. For drying of exposed surfaces higher intensity UV is required (100 mW/cm² minimum). Cooling should be provided for temperature sensitive substrates such as thermoplastics. Crystalline and semi-crystalline 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

Products shall be ideally stored in a cool, dry location in unopened containers at a temperature between 8°-21° C (46° - 70°F) unless otherwise labeled. The shelf-life period for containers up to 1 liter is 12 months based upon date of manufacture. To prevent contamination of unused product, do not return any material to its original container. For further specific shelf-life information on other package sizes, contact your local Technical Service Center.

Data Ranges

The data contained herein may be reported as a typical value and/or range. Values are based on actual test data and are verified on a periodic basis.

Note

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, **Loctite corporation specifically disclaims all warranties expressed or implied, including warranties of merchantability or fitness for a particular purpose, arising from sale or use of Loctite Corporation's products. Loctite 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 Loctite Corporation patents which may cover such processes or compositions. We recommend that each prospective user test his proposed applications before repetitive use, using this data as a guide. This product may be covered by one or more patents or patent applications.