

**Hysol® QMI 538**

Electronics Product September 2003

PRODUCT DESCRIPTION

QMI 538 is a Fluoropolymer filled non-conductive adhesive for attachment of integrated circuits and components to advanced substrates, including: PBGAs, CSPs, array packages, and stacked die. The material exhibits a very low modulus, which can reduce stress in a package with die size > 600 mils per side. In addition, the adhesive is hydrophobic and stable at high temperatures. These features produce a void-free bond line with excellent interfacial adhesion strength to a wide variety of organic and metal surfaces, including solder mask, BT, FR, polyimide, Au, Palladium and Alloy 42. The adhesive also has excellent dielectric properties

QMI 538 can be cured in a conventional oven, on a snap cure oven, or utilize Loctite's SkipCure™ processing on a die bonder or wire bonder.

"This product and its use may be covered by one or more pending patent applications."

TYPICAL PROPERTIES**QMI 538 Test Method**

Viscosity 5 rpm @ 25°C, cPs	8,500	TM 547
Thixotropic Index (0.5/5 rpm)	5.5	TM 547
Pot Life @ 25°C, hours	48	TM 592
Shelf life @ -40°C, months	12	TM 589
Specific Gravity @ 25°C, (77°F)	1.26	TM 461
Extractable Ion Content, ppm		TM 449
Na+, K+	≤20	
Cl-, F-	≤20	
Die Shear (300 mil x 300 mil, 1 mil BLT, Si to Ag-plated Cu)		
Average kg-f @ 25°C	≥ 14	TM 558
Moisture Absorption, wt. %		
168 hrs @ 85°C/85%RH	≤ 0.35%	TM 590
Glass Transition Temperature, °C	-70	TM 433
Coefficient of Thermal Expansion (TMA)		TM 433
α ₁ , ppm/°C	85	
α ₂ , ppm/°C	149	
DMA Modulus @ 25°C, GPa	0.1	TM 458
DMA Modulus @ 25°C, psi	14,5000	
Volume Resistivity, ohm-cm	> 10 ¹³	TM 572
Dielectric Constant @ 1 MHz, 25°C	2.7	TM 588
Thermal Conductivity, W/m °K	0.3	ASTM 1461

The above figures are typical material properties only and are not to be used for material specification purposes. To generate a specification for this product, please contact our Quality Manager and request a copy of the current stock specification.

STORAGE AND HANDLING

QMI 538 is supplied in syringes and should be stored at -40°C. Please review Loctite's current Die Attach Handling Procedure for additional details on thawing and usage.

TYPICAL CURING CONDITIONS

QMI 538 can be cured using a variety of cure schedules, depending on the specific cure equipment. For maximum productivity improvement and production cost efficiencies, curing for ≥ 6 seconds @ 240°C¹ SkipCure™ is recommended. QMI 538 may also be cured in conventional ovens (15 min. @ 150°C) or snap cure oven (≥ 10 seconds @ 200°C). For cure schedule recommendations, please contact your nearest Loctite Electronic Materials representative.

DISPENSING AND BONDLINE CONTROL

QMI 538 adhesion is tested using 150 mil x 150 mil die with 1 mil bondline thickness. Since thinner bondlines increase stress and may affect adhesion, please call your nearest Loctite technical service engineer for consultation in cases where bondlines less than 1 mil are desired.

QMI 538 has excellent rheology and flows easily under shear stresses such as those present during die bonding. Therefore, bondforces used with other adhesives which produce a certain bondline thickness, may result in thinner bondlines with QMI 538. Optimization of die bonding parameters is strongly recommended to consistently meet target bondline thicknesses.

GENERAL INFORMATION

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

DATA RANGES

The data contained herein may be reported as a typical value and/or range values 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.

NOT FOR PRODUCT SPECIFICATIONS

THE TECHNICAL INFORMATION CONTAINED HEREIN IS INTENDED AS REFERENCE ONLY. PLEASE CONTACT LOCTITE CORPORATION QUALITY DEPARTMENT FOR ASSISTANCE AND RECOMMENDATIONS ON SPECIFICATIONS FOR THIS PRODUCT.

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¹ Time at temperature of the adhesive bondline.

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Loctite Electronics

Henkel Loctite Corporation, 9938 Via Pasar, San Diego, CA 92126, U.S.A.
U.S.A.: 858.695.1716 Canada: 905.814.6511 Brazil: 011.55.11.4143.7000
Loctite is a Trademark of Henkel Loctite Corp. U.S.A. www.loctite.com