

# LOCTITE ABLESTIK QMI3555R

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## PRODUCT DESCRIPTION

QMI 3555R is a low temperature processing, no dry, silver glass die attach adhesive for the attachment of integrated circuits in both solder seal and glass seal hermetic packages. It is designed for fast firing large die or small dies on either gold plated or bare ceramic substrates. The paste fires into a film that provides high thermal and electrical conductivity as well as excellent initial adhesion. It is extremely resistant to degradation during temperature cycling from -65°C to +150°C.

QMI 3555R incorporates a patented silver/vanadium glass. Sub-350°C firing enhances the reliability of devices fabricated with sub-micron design rules. Also, in cofired package applications, nickel diffusion through gold plated seal rings and leadfinger pads are minimized at lower temperatures. QMI3555R low stress allows for a thin bondline, offering improved thermal performance for high power devices.

## TYPICAL PROPERTIES OF UNCURED MATERIAL

Viscosity @ 25 °C, cps:

Speed 10 rpm	40,000
Thixotropic Index (Speed 1/speed 20)	9.5
Shelf Life, days	365
Filler Content, %	87
Metal to Glass Ratio, by weight in fired film	6.5:1

## TYPICAL CURING CONDITIONS

QMI 3555R can be fired at temperatures between 300°C and 450°C on bare ceramic. On gold plated parts, the minimum peak should be 325°C. The minimum dwell time should be at least 14 minutes above 300°C when the peak is <325°C. Higher peak temperatures require less dwell time. There should not be any rapid spikes in the ramp that would volatilize the solvents and create voids.

### Firing Profile and Minimum Recommended Bondlines

Firing must be in CDA (clean/dry/air)

Die Size (mils largest side)	Minimum Wet Bondline (mils)	Minimum Fired Bondline (mils)
200	2.5	2.1
300	3.0	2.3
400	3.5	2.7
500	4.0	3.1
600	4.5	3.5
700	5.0	3.9
800	5.5	4.3

Staging time(time after the die is placed and before the parts are fired)should be less than eight hours

## Maximum Ramp Rates in °C / Minute

Die Size (Mils largest side)

Temp	<200	<300	<400	<500	<600	<700	<800
40-120° C	<34	<28	<24	<20	<14	<8	<6
120-200 °C	<44	<38	<32	<28	<26	<22	<18
200-280 °C	<65	<60	<55	<50	<40	<34	<24
>280°C	<65	<65	<60	<50	<40	<40	<40

After firing, the parts should be stored in a low humidity(<30%)atmosphere before sealing to optimize RGA moisture and adhesion.

## TYPICAL PROPERTIES OF CURED MATERIAL

### Physical Properties

Coefficient of Thermal Expansion, TMA, ppm/°C:

alpha 1 16

Glass Transition Temperature, °C 150

DMA Modulus @ 25°C N/mm<sup>2</sup> 11,500  
(psi) (1.67×10<sup>6</sup>)

Thermal Conductivity, W/(m-K) >80

Extractable Ionic Content, :

Sodium (Na+) ≤20

Potassium (K+) ≤20

Chloride (Cl-) ≤60

Fluoride (F-) ≤20

Package cavity headspace moisture concentration, <2,000

Residual Glass Analysis (RGA), ppm H2

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## TYPICAL PERFORMANCE OF CURED MATERIAL

### Miscellaneous

Tensile Adhesion @ 25°C:

0.6 x 0.6 inch Si die on ceramic, lb-f ≥350

## GENERAL INFORMATION

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

### 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.

## Disclaimer

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