

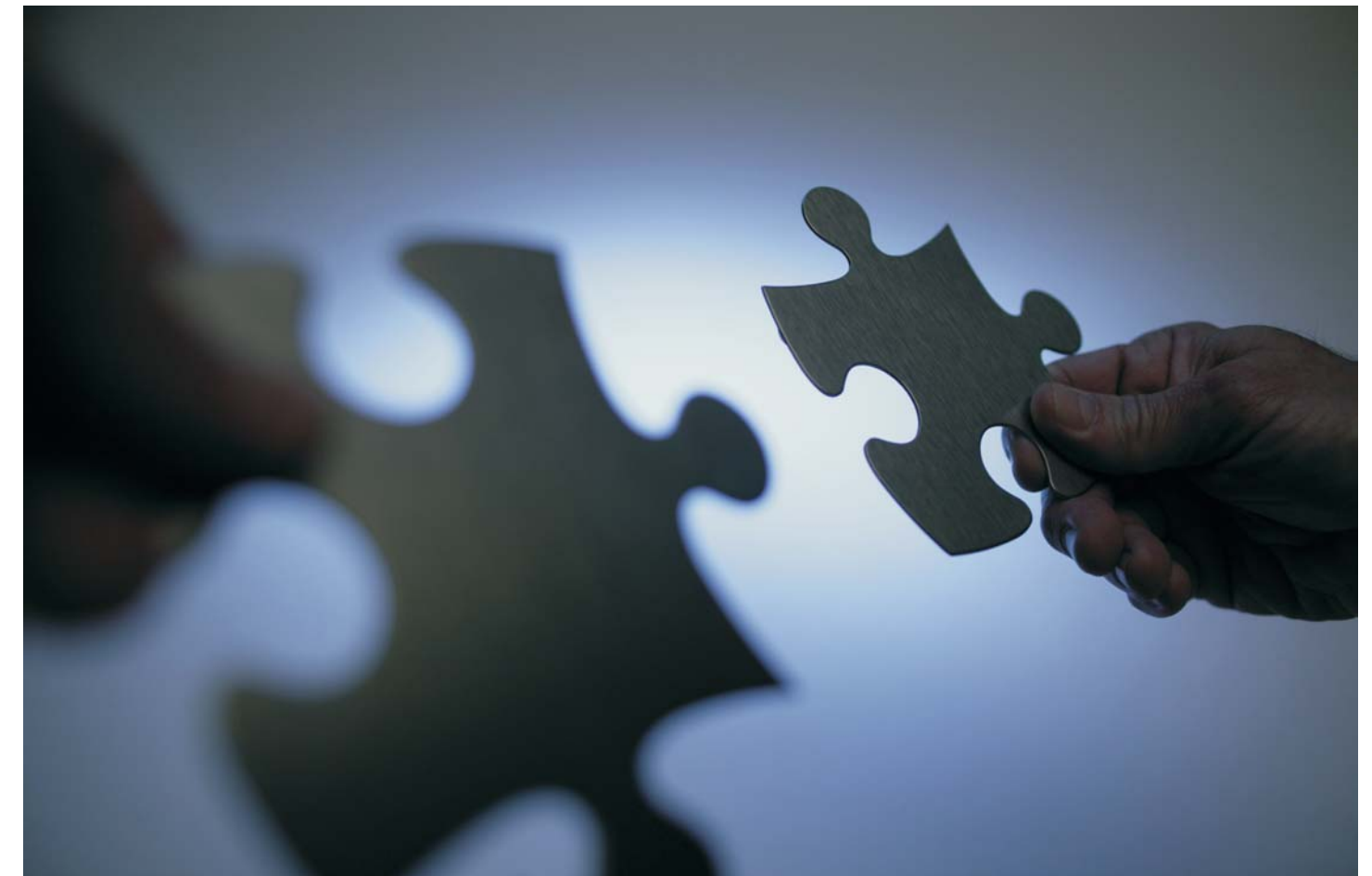
## Principal Locations

| Regional Information   | Phone  | Fax                    |
|--|--|------------------------|
| <b>North America</b>   |  |                        |
| World Headquarters<br>187 Danbury Road<br>Wilton, CT 06897, USA              | 800.295.2392   | 607.754.7517           |
| <b>Latin America</b>   |  |                        |
| Rodovia Eng. Constâncio Cintra, Km 78,5<br>Itatiba, SP – 13255-700<br>Brazil | + 55.11.4534.9650  | + 55.11.4534.9660      |
| <b>Europe, Middle East, Africa and India</b>                                 |  |                        |
| GE Bayer Silicones GmbH & Co. KG<br>Leverkusen,<br>Germany                   | 00.800.4321.1000   |                        |
| <b>Pacific</b>   |  |                        |
| GE Toshiba Silicones<br>6-2-31 Roppongi<br>Minato-ku<br>Tokyo 106-8550 Japan | + 81.3.3479.5361   | + 81.3.3479.5391       |
| <b>Customer Service Centers</b>  |  |                        |
| <b>North America</b>   |  |                        |
| South Charleston, WV 25303, USA<br>E-mail: cs-na.osi@ge.com                  | <b>Specialty Fluids</b><br>800.523.5862                        | 304.746.1654           |
|  | <b>UA, Silanes, Resins and Specialties</b><br>800.334.4674     | 304.746.1623           |
|  | <b>RTV Products-Elastomers</b><br>800.332.3390                 | 304.746.1623           |
|  | <b>Sealants and Adhesives and Construction</b><br>877.943.7325 | 304.746.1654           |
| <b>Canada</b>  | Within Canada  | 800.668.4644           |
| Toronto, Ontario   | Outside Canada   | 905.858.6687           |
| <b>Latin America</b>   |  |                        |
| Argentina and Chile  | + 54.23.2055.2857  | + 54.23.2055.2811      |
| Brazil   | + 55.11.4534.9650  | + 55.11.4534.9660      |
| Mexico and Central America   | + 52.55.5257.6042  | + 52.55.5257.6094      |
| Venezuela, Ecuador, Peru, Colombia and Caribbean                             | + 58.21.2902.5167  | + 58.21.2902.5158      |
| E-mail: cs-la.gesosi@ge.com  |  |                        |
| <b>Europe, Middle East, Africa and India</b>                                 |  |                        |
| GE Bayer Silicones GmbH & Co. KG<br>E: ebusiness1.gebs@ge.com                | 00.800.4321.1000   |                        |
| GE Specialty Materials (Suisse) Sàrl<br>E: cs-eur.osi@ge.com                 | 00.800.4321.1000   |                        |
| <b>Pacific</b>   |  |                        |
| Japan<br>E-mail: helpdesk@getos.co.jp  | + 81.276.20.6182   |                        |
| China  | + 86.800.820.0202  |                        |
| Korea  | + 82.2.530.6400  |                        |
| Singapore  | + 65.6220.7022   |                        |
| <b>Worldwide Hotline</b>   | 800.295.2392   | + 607.786.8131         |
| <b>Worldwide Web</b>   |  | + 607.754.7517         |
|  |  | <b>GESilicones.com</b> |

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## Solutions

The final piece in your puzzle - a diverse product offering of adhesives, sealants and specialty RTV silicone rubber



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\* InvisiSil, SilCool, Lexan, Noryl, and Cycoloy are trademarks of the General Electric Company.

# RTV Overview

R<sub>oom</sub>

T<sub>emperature</sub>

V<sub>ulcanizing</sub>

## One-part

### Versatile Technology

One-part silicone adhesives and sealants from GE require no mixing, utilize either atmospheric moisture or heat to cure, and offer primerless adhesion to many substrates.

### Addition Cure or Heat-Accelerated Cure

GE produces a full range of one-part materials, each with distinct customer benefits. Many one-part silicone adhesives and sealants are excellent candidates for assembly applications near sensitive electrical or electronic components. Heat accelerated or addition cure silicones offer very fast cure, have virtually no shrinkage and no corrosive by-products.

### Dispensing System Productivity

One-part products can be precisely dispensed with automated or manual equipment as:

- Formed-in-place gaskets
- Sealants
- Structural adhesives
- Protective coatings

### Major Industry Segments that Utilize GE One-Part Silicone Adhesives and Sealants:

- Appliances
- Automotive
- Commercial aircraft
- Communications
- Mass transit
- Industrial maintenance & repair
- RV's

RTV Silicones consist of rubber and gel products developed for adhesion, sealing, coating, and encapsulation/potting applications. GE - Advanced Materials, Silicones offers a broad line-up of RTVs to serve a broad spectrum of Industrial and Electronic applications.

## Two-part

### Electronic Specialties

Widely used in electronics, silicone encapsulants from GE are primarily two-part materials, and all use atmospheric moisture or heat to initiate cure. These products are intended to be compatible with most electronic devices and offer superior mechanical and environmental protection.

### Custom Technologies

GE two-part silicones have no corrosive cure by-products. They are available in a wide range of cure speeds and viscosities. Products are available that offer enhancements for extra thermal cycling protection, optical clarity and strength. GE Silicones two-part adhesives and encapsulants offer innovative solutions to the challenges of protecting high performance electronic components, wherever they are used.

### Major Application Segments:

- Appliances
- Automobiles
- Computers & business equipment
- Commercial aircraft
- Telecommunications
- Mass transit



One-Part

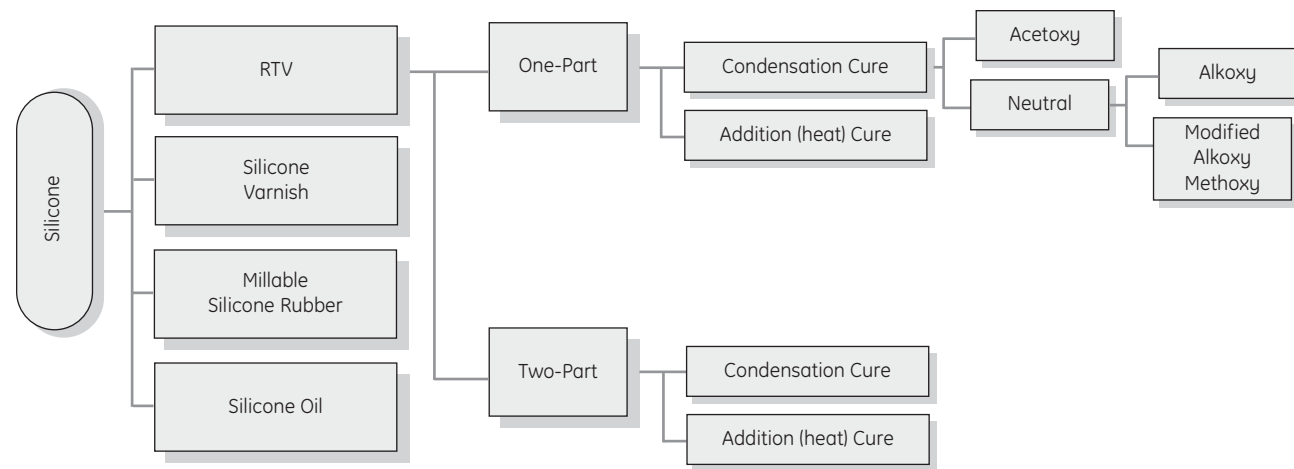


Two-Part

## RTV Silicone Profile

RTV silicones consist of Condensation Cure and Addition (heat) Cure grades. Selection of the appropriate type of RTV depends upon the required manufacturing process, handling requirements, curing conditions, equipment, and desired material properties.

- **Condensation Cure RTV:** Cure to form an elastic silicone rubber when exposed to moisture in the environment at room temperature. One-part RTVs are categorized into acetoxy, alkoxy or modified alkoxy (methoxy) based upon the by-products that occur during cure.
- **Addition (heat) Cure RTV:** Cure to form an elastic silicone rubber when exposed to elevated heat or room temperature.



## Adhesive Sealant Cure Systems

### Application Performance Guide

|                              | Cure Systems    |                   |                   |                                  |
|------------------------------|-----------------|-------------------|-------------------|----------------------------------|
|                              | Acetoxy         | Alkoxy (Neutral)  | Modified Alkoxy   | Addition (Heat) Cure             |
| By-Product                   | Acetic Acid     | Alcohol           | Ammonia Alcohol   | None                             |
| Non-Corrosive                | No              | Yes               | Moderate          | Yes                              |
| Substrates for Good Adhesion | Glass<br>Metals | Plastics<br>Glass | Plastics<br>Glass | Metals<br>Glass<br>Some Plastics |
| Odor                         | Yes             | Low               | Low               | None                             |
| Tack Free Time               | Fast            | Moderate          | Moderate          | Very Fast                        |
| Cure Rate                    | Fast            | Slow              | Moderate          | Very Fast                        |

All data suggested @ 77°F, 55% RH

\* While all silicone sealants chemically bond to glass and most metals, specific cure chemistries were developed to optimize adhesion to other key substrates such as plastics and certain metal alloys. For more information on adhesion, please refer to page 36.

## RTV Consistencies

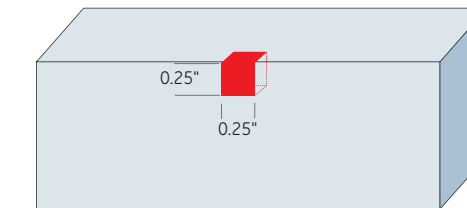
### Silicones Range from Thixotropic Pastes to Very Thin Viscosity Flowables



### Application Geometry and Cure Chemistry Options

The shape and conditions of the part are important in selecting a suitable RTV silicone grade for each application. While one-part condensation cure grades offer the convenience of a one component material without the need for heating equipment, their cure chemistry is dependent on exposure to atmospheric moisture. The following are some general guidelines:

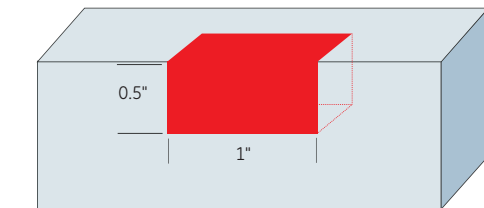
#### Shallow Cavity / Small Mass



Selection Options:

- One-part Condensation Cure
- One-part Addition Cure
- Two-part Condensation Cure
- Two-part Addition Cure

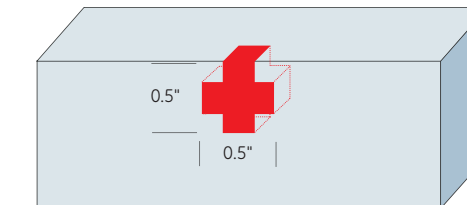
#### Deep Cavity / Large Mass



Selection Options:

- One-part Addition Cure
- Two-part Condensation Cure
- Two-part Addition Cure

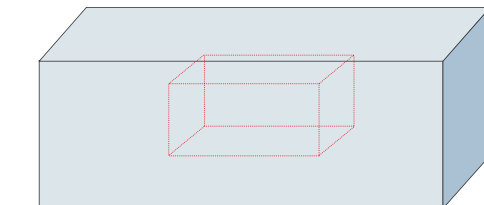
#### Complex Design - Exposed Surface



Selection Options:

- One-part Addition Cure
- Two-part Condensation Cure
- Two-part Addition Cure

#### Enclosed System



Selection Options:

- One-part Addition Cure
- Two-part Addition Cure

# Industries/Applications

## Aviation and Aerospace

Electronic component and frame assembly needs in the Aerospace Industry are served through RTV adhesives, potting, coating, encapsulation, and sealing materials that withstand stress and temperature extremes.



### Typical Applications:

- Cockpit Instruments
- Electronic Power Equipment
- Circuit and Terminal Protection
- Wire Sealants
- Engine Gasketing

- Engine Electronics Potting
- Cargo Door Seals
- Window Assembly Sealants
- Weather Strip Adhesive
- Lighting Sealants

- Ventilation Ducts
- General Maintenance

## Automotive

The Automotive Industry plays a critical role in integrating new electronic technologies. As more and more components migrate to electronic solutions, RTVs play an increasingly vital role in delivering material solutions to provide design flexibility, protection, and long term component reliability under harsh operating conditions.



### Typical Applications:

- ECU Potting, Sealing, Coating
- Wire Connector Potting
- Alternator Voltage Regulators
- Actuators
- HVAC Systems

- Sensor Potting, Sealing
- Air Flow Meters
- Pressure Sensors
- Temperature Sensors
- Rotation Sensors
- Ultrasonic Sensors

- Headlamp Seals
- LED Lamp Potting
- Airbag Coating
- Engine FIGG Gaskets

# Industries/Applications

## Consumer

RTVs are commonly used in a wide variety of consumer goods and home appliance products. In addition to strong adhesion performance to many substrates, silicones provide heat resistance, flame retardancy, and moisture/dirt protection that make silicone an excellent material for a variety of sealing, bonding, and insulation applications.



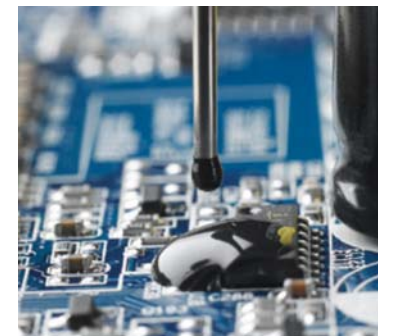
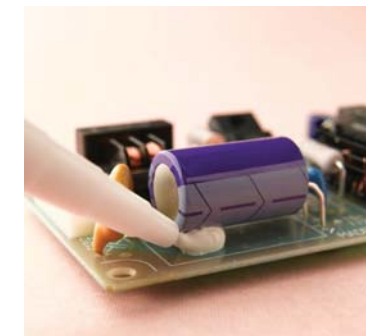
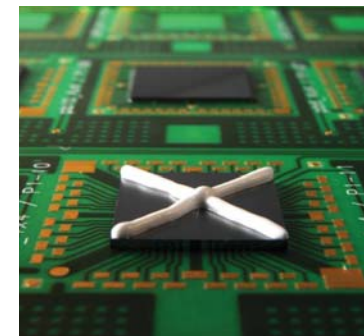
### Typical Applications:

- Flat Panel Display Sealing
- CRT Wedges, Bases, Anodes
- Microwave Oven Doors, Box Sealing
- Steam Iron Plate Seals
- Air Conditioner Units

- Gas Stoves
- Heaters, Ovens
- Control Panel Insulation
- PCB Fixing & Sealing

## Electronics

RTVs are used extensively in the Electronic and Electric industries to ensure long-term, reliable performance of critical components and electronic circuit assemblies. Silicone adhesives, sealants, conformal coatings, potting gels, encapsulants, and thermal management materials play a vital role in many of today's demanding electronic applications.



### Typical Applications:

- Power Modules
- Converters
- Solar Cells
- Hybrid ICs
- Micro-Electronics

- PCB Fixing & Sealing
- High Voltage Part Insulation
- Sensors
- Membrane Switches
- LEDs

- Photo Couplers

One-Part Condensation Cure: Acetoxy Cure Chemistry<sup>+</sup>

|  | HIGH PERFORMANCE  |  |  |   |  | SPECIALTY  |  | GENERAL PURPOSE  |  |   |
|--|---|--|--|---|--|--|--|--|--|---|
|  | RTV100 Series   | RTV106   | RTV112<br>RTV118   | RTV116  | RTV157   | RTV159   | FRV1106  | RTV1473  | IS800 Series   | IS806   |
| <b>Features and Benefits</b>                             | Paste adhesive with FDA, USDA, NSF, MIL-A-46106B and UL compliant.                          | High temperature, paste adhesive. FDA, USDA, NSF, MIL-A-46106B and UL compliant. | Flowable adhesive with FDA, USDA, NSF, MIL-A-46106B and UL compliant.                                  | High temperature, flowable adhesive. FDA, USDA, NSF, MIL-A-46106B and UL compliant. | High strength, paste adhesive.   | High temperature, high strength, paste adhesive.   | Fluorosilicone, paste adhesive. Excellent resistance to fuel, oil, moisture, UV, ozone and chemicals.      | Oil-resistant, heavy-bodied, paste adhesive.             | Paste adhesive with FDA, USDA, NSF and UL compliant.                     | High temperature, paste adhesive. FDA, USDA, NSF, UL compliant. |
| <b>Typical Applications (include but not limited to)</b> | Electrical insulation; Formed-in-place gaskets; Assembly applications; Sealing and bonding. | Sealing heating elements; Gasketing; Electrical insulation; Sealing and bonding. | Electrical insulation; Thin section potting; Self leveling protective coatings; Assembly applications. | Thin section potting; Self leveling protective coatings; Electrical insulation.     | High voltage wire and cables; Valve sealants; Turbines; Fluid metering devices; Gaskets and sealing devices. | High voltage wire and cables; Valve sealants; Turbines; Fluid metering devices; Gaskets and sealing devices. | Formed-in-place gasketing; Sealing seams; Fuel handling systems; Sealing and bonding; Valve manufacturers. | Formed-in-place gasketing; Sealing and bonding.          | Sealing and bonding.   | Sealing and bonding.  |
| <b>Key Substrate Adhesion</b>                            | Primerless adhesion to many metals, plastics, and glass.                                    | Primerless adhesion to many metals, plastics, and glass.                         | Primerless adhesion to many metals, plastics, and glass.   | Primerless adhesion to many metals, plastics, and glass.                            | Primerless adhesion to many metals, plastics, and glass.   | Primerless adhesion to many metals, plastics, and glass.   | Primerless adhesion to many metals, plastics, and glass.   | Primerless adhesion to many metals, plastics, and glass. | Primerless adhesion to many metals, plastics, and glass.                 | Primerless adhesion to many metals, plastics, and glass.        |
| <b>Color (Final Product)</b>                             | RTV102: White<br>RTV103: Black<br>RTV108: Translucent<br>RTV109: Aluminum                   | Red  | RTV112: White<br>RTV118: Translucent   | Red   | Gray   | Red  | Red  | Black  | IS802: White<br>IS803: Black<br>IS808: Translucent<br>IS800.09: Aluminum | Red   |
| <b>Viscosity (cps)/<br/>Application Rate (g/min)</b>     | 400 g/min   | 400 g/min  | RTV112: 25,000 cps<br>RTV118: 25,000 cps   | 25,000 cps  | 180 g/min  | 180 g/min  | 92 g/min   | 375 g/min  | 425 g/min  | 550 g/min   |
| <b>Useful Temperature Range</b>                          | -60 to 205°C (-75 to 400°F)   | -60 to 260°C (-75 to 500°F)  | -60 to 205°C (-75 to 400°F)  | -60 to 260°C (-75 to 500°F)   | -60 to 205°C (-75 to 400°F)  | -60 to 260°C (-75 to 500°F)  | -60 to 205°C (-75 to 400°F)  | -60 to 205°C (-75 to 400°F)                              | -60 to 205°C (-75 to 400°F)  | -60 to 260°C (-75 to 500°F)                                     |
| <b>Specific Gravity</b>                                  | 1.05  | 1.07   | 1.05   | 1.09  | 1.09   | 1.09   | 1.45   | 1.06   | 1.04   | 1.05  |
| <b>Hardness, Shore A Durometer</b>                       | 30  | 30   | 25   | 20  | 28   | 28   | 39   | 30   | 23   | 22  |
| <b>Tensile Strength, psi</b>                             | 400   | 375  | 325  | 350   | 975  | 1025   | 485  | 450  | 300  | 250   |
| <b>Elongation, %</b>                                     | 450   | 400  | 325  | 350   | 825  | 825  | 200  | 500  | 450  | 425   |
| <b>Dielectric Strength (75 mils), V/mil</b>              | 500   | 500  | 400  | 400   | 525  | 500  | -  | -  | 500  | 500   |
| <b>Dielectric Constant (60 Hz)</b>                       | 2.80  | 2.80   | 2.80   | 2.80  | 2.90   | 2.60   | -  | -  | 2.90   | 2.90  |
| <b>Linear Shrinkage, %</b>                               | 1.0   | 1.0  | 1.0  | 1.0   | 1.0  | 1.0  | -  | -  | -  | -   |
| <b>Processing:</b>                                       |   |  |  |   |  |  |  |  |  |   |
| <b>Tack Free Time</b>                                    | 20 minutes  | 20 minutes   | 20 minutes   | 30 minutes  | 45 minutes   | 45 minutes   | 20 minutes   | 25 minutes   | 30 minutes   | 30 minutes  |
| <b>Cure Time @ 25°C (77°F)**</b>                         | 24 hours  | 24 hours   | 24 hours   | 24 hours  | 24 hours   | 24 hours   | 24 hours   | 24 hours   | 24 hours   | 24 hours  |

Note: Additional information may be available on the technical datasheet.

+ These sealants are not for use in delicate electrical and electronic applications in which corrosion of copper, brass and other sensitive metals is undesirable.

++ Cure times are typical values which may be affected by bead size, temperature, relative humidity, and the equipment used. Full property development with standard condensation cure products may take 3 to 7+ days (at 25°C and 50% RH).

One-Part Condensation Cure: Neutral (Alkoxy and Modified Alkoxy) Cure Chemistry

| HIGH PERFORMANCE, NON-CORROSIVE <sup>(1)</sup>           |  |   |  |   |  |  |  |   |  |  |  |  |  |
|--|--|---|--|---|--|--|--|---|--|--|--|--|--|
|  |  |   |  | UL94-V0   |  | FAST CURE  |  |   |  |  | LOW VOLATILE   |  |  |
|  | RTV522X series   | RTV167  | RTV162   | RTV133  | RTV160   | RTV524X series   | TSE392-C<br>TSE392-W   | TSE3991-C   | TSE399-B<br>TSE399-C<br>TSE399-W   | TSE397-B<br>TSE397-C<br>TSE397-W   | RTV142   | TSE3925-C<br>TSE3925-W   | TSE3975-W  |
| <b>Features and Benefits</b>                             | Low modulus, paste adhesive with UL recognition.   | Highest strength, paste adhesive with MIL-A-46146B and UL recognition.              | High strength, paste adhesive with MIL-A-46146B and UL HB recognition.   | Paste adhesive with UL94-V0 recognition.  | Flowable adhesive with UL recognition.   | Hydrolytically stable, paste adhesive with fast green strength build and UL recognition. | Paste adhesive with UL94 HB recognition.   | Flowable adhesive.  | Flowable adhesive.   | Semi-flowable adhesive. UL94 HB recognition.   | Low volatile, paste adhesive.  | Low volatile, paste adhesive with a fast tack free time.   | Low volatile, flowable adhesive with a fast tack free time.  |
| <b>Typical Applications (include but not limited to)</b> | Assembly applications; Masonry applications; Weatherproofing seals; Applications which require a long tooling time; Sealing and bonding. | Mechanical/Electrical bonding and insulating applications; Electronic applications. | Bond capacitors, resistors and integrated circuits to PCB's; Seal exposed wires, faying surfaces, and connectors; Electronic parts assemblies. | Firewalls; Flame retardant coating; Switching devices; Motors; High voltage transformers. | Thin-section PCB coating; Insulating, encapsulating, and coating in thin sections; Electronic and integrated circuits; Semiconductors. | Assembly applications; Headlamps; Weatherproofing seals; Sealing and bonding.            | Electronic sealing and coating.  | Moisture proof sealing, potting, and coating of electric and electronic parts and LED displays. | Insulating coating and potting for transistor and high-voltage parts; Waterproof coating for electrical, electronic and communication equipment; Electronic and integrated circuits and semiconductors, copper connections on electric parts assemblies. | Electronic sealing and coating; Waterproof sealant for electrical, electronic and communication equipment. | Electronic adhesive; Electronic gasketing; Sealing and bonding.                  | Electrical and electronic machinery; Potting and coating of hybrid integrated circuits, printed circuit boards, etc. | Electrical and electronic machinery; Potting and coating of hybrid integrated circuits, printed circuit boards, etc. |
| <b>Key Substrate Adhesion</b>                            | Primerless adhesion to many metals, plastics, masonry, wood, glass and ceramics.   | Primerless adhesion to many metals, plastics, masonry, wood, glass and ceramics.    | Primerless adhesion to many metals, plastics, masonry, wood, glass and ceramics.   | Primerless adhesion to many metals, plastics, masonry, wood, glass and ceramics.          | Primerless adhesion to many metals, plastics, masonry, wood, glass and ceramics.   | Primerless adhesion to many metals, plastics, masonry, wood, glass and ceramics.         | Primerless adhesion to many metals, plastics, masonry, wood, glass and ceramics. | Primerless adhesion to many metals, plastics, masonry, wood, glass and ceramics.                | Primerless adhesion to many metals, plastics, masonry, wood, glass and ceramics.   | Primerless adhesion to many metals, plastics, masonry, wood, glass and ceramics.                           | Primerless adhesion to many metals, plastics, masonry, wood, glass and ceramics. | Primerless adhesion to many metals, plastics, masonry, wood, glass and ceramics.                                     | Primerless adhesion to many metals, plastics, masonry, wood, glass and ceramics.                                     |
| <b>Cure Chemistry</b>                                    | Alkoxy   | Alkoxy  | Alkoxy   | Alkoxy  | Alkoxy   | Alkoxy   | Alkoxy   | Alkoxy  | Alkoxy   | Alkoxy   | Alkoxy   | Alkoxy   | Alkoxy   |
| <b>Color (Final Product)</b>                             | RTV5222: White<br>RTV5223: Black<br>RTV5229: Gray  | Gray  | White  | Black   | White  | RTV5242: White<br>RTV5243: Black<br>RTV5249: Gray  | TSE392-C: Translucent<br>TSE392-W: White   | Translucent   | TSE399-B: Black<br>TSE399-C: Translucent<br>TSE399-W: White  | TSE397-B: Black<br>TSE397-C: Translucent<br>TSE397-W: White  | White  | TSE3925-C: Clear<br>TSE3925-W: White   | White  |
| <b>Viscosity (cps)/<br/>Application Rate (g/min)</b>     | 185 g/min  | 200 g/min   | 475 g/min  | 700 g/min   | 35,000 cps   | 250 g/min  | -  | 1,500 cps   | 2,500 cps  | 50,000 cps   | 725 g/min  | -  | 33,000 cps   |
| <b>Useful Temperature Range</b>                          | -60 to 204°C (-75 to 400°F)  | -60 to 204°C (-75 to 400°F)   | -60 to 204°C (-75 to 400°F)  | -60 to 204°C (-75 to 400°F)   | -60 to 204°C (-75 to 400°F)  | -60 to 204°C (-75 to 400°F)  | -55 to 200°C (-67 to 392°F)  | -55 to 200°C (-67 to 392°F)   | -55 to 200°C (-67 to 392°F)  | -55 to 200°C (-67 to 392°F)  | -60 to 204°C (-75 to 400°F)  | -55 to 200°C (-67 to 392°F)  | -55 to 200°C (-67 to 392°F)  |
| <b>Specific Gravity</b>                                  | 1.40   | 1.12  | 1.09   | 1.23  | 1.04   | 1.50   | 1.04   | 1.03  | 1.04   | 1.04   | 1.09   | 1.04   | 1.05   |
| <b>Hardness, Shore A Durometer</b>                       | 26   | 37  | 35   | 45  | 25   | 40   | 30   | 19  | 25   | 20   | 34   | 30   | 25   |
| <b>Tensile Strength, psi</b>                             | 370  | 800   | 550  | 650   | 275  | 320  | 228  | 105   | 190  | 175  | 550  | 235  | 175  |
| <b>Elongation, %</b>                                     | 750  | 600   | 400  | 250   | 230  | 425  | 400  | 150   | 140  | 360  | 400  | 350  | 220  |
| <b>Dielectric Strength (75 mils), V/mil</b>              | 420  | 500   | 450  | 500   | 500  | 500  | 560  | 450   | 500  | 560  | 500  | 560  | 585  |
| <b>Dielectric Constant (60 Hz)</b>                       | 3.90   | 2.90  | 2.80   | 2.80 @ 100 Hz   | 2.80   | 2.80   | 2.90   | 2.90  | 2.90   | 2.90   | 2.80   | 2.90   | 2.90   |
| <b>Volume Resistivity, ohm-cm</b>                        | 5.4 x 10 <sup>15</sup>   | 3.0 x 10 <sup>15</sup>  | 3.0 x 10 <sup>15</sup>   | 3.0 x 10 <sup>15</sup>  | 4.0 x 10 <sup>14</sup>   | 3.0 x 10 <sup>15</sup>   | 2.0 x 10 <sup>15</sup>   | 2.0 x 10 <sup>15</sup>  | 2.0 x 10 <sup>15</sup>   | 2.0 x 10 <sup>15</sup>   | 4.5 x 10 <sup>15</sup>   | 2.0 x 10 <sup>15</sup>   | 2.0 x 10 <sup>15</sup>   |
| <b>Processing:</b>                                       |  |   |  |   |  |  |  |   |  |  |  |  |  |
| <b>Tack Free Time</b>                                    | 3 hours  | 4 hours   | 4 hours  | 1 hour  | 4 hours  | 45 minutes   | 10 minutes   | 10 minutes  | 10 minutes   | 10 minutes   | 4 hours  | 5 minutes  | 10 minutes   |
| <b>Cure Time @ 25°C (77°F)*</b>                          | 24 hours   | 24 hours  | 24 hours   | 24 hours  | 24 hours   | 24 hours   | 24 hours   | 24 hours  | 24 hours   | 24 hours   | 24 hours   | 24 hours   | 24 hours   |

Note: Additional information may be available on the technical datasheet.

<sup>(1)</sup> Non-corrosive to most sensitive metals.

\* Cure times are typical values which may be affected by bead size, temperature, relative humidity, and the equipment used. Full property development with standard condensation cure products may take 3 to 7+ days (at 25°C and 50% RH).

One-Part Condensation Cure: Neutral (Alkoxy and Modified Alkoxy) Cure Chemistry

|  | HIGH PERFORMANCE   |  |  |  |  |  | GENERAL PURPOSE   |   |
|--|--|--|--|--|--|--|---|---|
|  | RTV1673LV  | RTV5313<br>RTV5319   | RTV670X series**   | RTF5308  | RTV581X series**   | RTV12X series**  | IS902   | IS522<br>IS523  |
| <b>Features and Benefits</b>                             | Low volatile, paste adhesive. Non-corrosive to aluminum and steel.   | Low volatile, paste adhesive.  | Paste adhesive with UL recognition.  | Fast curing, paste adhesive. Capable of being mechanically foamed.   | Fast curing, paste adhesive designed to provide quick initial adhesion build. UL recognition.  | Paste adhesive with MIL-A-46146B and UL recognition.   | Paintable adhesive offering superb weatherability and long-term performance; Linear shrinkage of less than 2%.    | General purpose paste adhesive with UL recognition.   |
| <b>Typical Applications (include but not limited to)</b> | Gasketing; Under hood applications.  | Formed-in-place gasketing; Plastic lamp assembly.  | Suited for applications in confined spaces; Applications requiring long work life for tooling of finished assemblies.                    | Formed-in-place gaskets; Vertical and Horizontal applications; Hot/Cold thermal cycles; Expandable Silicone Foam per GM2224M2D2CF1, Type II. | Assembly applications requiring high productivity; Sealed assemblies; Suited for applications in confined spaces.                        | Sealing vertical joints; Electrical insulation of wires and terminals; Formed-in-place gasketing.  | Interior and exterior applications; Sealing and bonding; Weatherproofing seals; Adhering auto and appliance trim. | Assembly applications; Insulate corrosion sensitive electrical quipment and appliances; Weatherproofing seals; Sealing and bonding. |
| <b>Key Substrate Adhesion</b>                            | Primerless adhesion to many metals, plastics, masonry, wood, glass and ceramics. Not recommended for use on polycarbonates and acrylics. | Primerless adhesion to many metals, plastics, masonry, wood, glass and ceramics. Not recommended for use on polycarbonates and acrylics. | Primerless adhesion to many metals, plastics, masonry, wood, glass and ceramics. Not recommended for use on polycarbonates and acrylics. | Primerless adhesion to many metals, plastics, masonry, wood, glass and ceramics. Not recommended for use on polycarbonates and acrylics.     | Primerless adhesion to many metals, plastics, masonry, wood, glass and ceramics. Not recommended for use on polycarbonates and acrylics. | Primerless adhesion to many metals, plastics, masonry, wood, glass and ceramics. Not recommended for use on polycarbonates and acrylics. | Primerless adhesion to many metals, plastics, masonry, wood, glass and ceramics.                                  | Primerless adhesion to many metals, plastics, masonry, wood, glass and ceramics.  |
| <b>Cure Chemistry</b>                                    | Modified Alkoxy  | Modified Alkoxy  | Modified Alkoxy  | Modified Alkoxy  | Modified Alkoxy  | Modified Alkoxy  | Modified Alkoxy   | Alkoxy  |
| <b>Color (Final Product)</b>                             | Black  | RTV5313: Black<br>RTV5319: Dark Gray   | RTV6702: White<br>RTV6703: Black<br>RTV6708: Translucent   | Translucent  | RTV5812: White<br>RTV5813: Black<br>RTV5818: Translucent   | RTV122: White<br>RTV123: Black<br>RTV128: Translucent  | White   | IS522: White<br>IS523: Black  |
| <b>Viscosity (cpsl)/<br/>Application Rate (g/min)</b>    | 750 seconds  | 130 g/min  | 250 g/min  | 290 g/min  | 480 g/min  | 600 g/min  | -   | 300 g/min   |
| <b>Useful Temperature Range</b>                          | -60 to 204°C (-75 to 400°F)  | -60C to 204°C (-75F to 400°F)  | -60 to 204°C (-75 to 400°F)  | -60 to 204°C (-75 to 400°F)  | -60 to 204°C (-75 to 400°F)  | -60 to 204°C (-75 to 400°F)  | -60 to 204°C (-75 to 400°F)   | -60 to 204°C (-75 to 400°F)   |
| <b>Specific Gravity</b>                                  | 1.06   | 1.06   | 1.04   | 1.04   | 1.04   | 1.04   | -   | 1.50  |
| <b>Hardness, Shore A Durometer</b>                       | 28   | 25   | 18   | 22   | 21   | 30   | 33  | 35  |
| <b>Tensile Strength, psi</b>                             | 360  | 305  | 225  | 305  | 275  | 250  | 230   | 315   |
| <b>Elongation, %</b>                                     | 560  | 465  | 450  | 485  | 500  | 350  | 350   | 390   |
| <b>Dielectric Strength (75 mils), V/mil</b>              | 500  | -  | 409  | -  | 425  | 500  | -   | -   |
| <b>Dielectric Constant (60 Hz)</b>                       | 2.60   | -  | 2.9 @ 100 Hz   | -  | 2.8 @ 100 Hz   | 2.80   | -   | -   |
| <b>Volume Resistivity, ohm-cm</b>                        | 2.0 x 10 <sup>15</sup>   | -  | 2.0 x 10 <sup>15</sup>   | -  | 2.0 x 10 <sup>15</sup>   | 4.0 x 10 <sup>15</sup>   | -   | -   |
| <b>Processing:</b>                                       |  |  |  |  |  |  |   |   |
| <b>Tack Free Time</b>                                    | 15 minutes   | 30 minutes   | 25 minutes   | 18 minutes   | 15 minutes   | 20 minutes   | < 2 hours   | 45 minutes  |
| <b>Cure Time @ 25°C (77°F)*</b>                          | 24 hours   | 24 hours   | 24 hours   | 12 - 24 hours  | 12 to 24 hours   | 24 hours   | 5 to 7 days   | 24 hours  |

Note: Additional information may be available on the technical datasheet.

\* Cure times are typical values which may be affected by bead size, temperature, relative humidity, and the equipment used. Full property development with standard condensation cure products may take 3 to 7+ days (at 25°C and 50% RH).

\*\* When allowed to cure in enclosed conditions, these sealants may discolor sensitive metals they are in direct contact with.

Two-Part Condensation (Alkoxy) Cure

|   | HIGH PERFORMANCE  |   |  |  |  |   |   |  |   |  |   |
|---|---|---|--|--|--|---|---|--|---|--|---|
|   | FAST CURE   |   | EXTREME HIGH TEMPERATURE PERFORMANCE   |  |  |   | HIGH AND LOW TEMPERATURE PERFORMANCE  |  | EXTREME LOW TEMPERATURE PERFORMANCE                                 |  |   |
|   | RTV200 SERIES<br>RTV210A<br>RTV210B, RTV213B, RTV223B   | TSE3664   | RTV31  | RTV60  | RTV8262  | RTV88<br>RTV88HB  | RTV560  | RTV566   | RTV567  | RTV511   | RTV577  |
| <b>Features and Benefits</b>  | Extremely fast RT cure, high strength adhesive offering flexible mix ratios and tack free times.          | Fast cure, low viscosity adhesive with deep section cure capability. UL94 V-0 recognition.  | Flowable sealant with variable work times and cure rates available through catalyst options. Excellent release capabilities.   | Flowable sealant with variable work times and cure rates available through catalyst options. Excellent release capabilities. | High temperature, flowable sealant. MIL-PRF-23586F compliance (non-corrosive to copper). | Spreadable paste sealant with variable work times and cure rates available through catalyst options. Excellent release capabilities.  | Flowable sealant with low and high temperature performance capability. Variable work times and cure times available through catalyst options. Excellent release capabilities. | Low volatile, low outgassing sealant with low and high temperature performance capability. Excellent release capabilities.         | Low volatile, low outgassing sealant. Excellent release properties. | Flowable sealant with variable work times and cure times available through catalyst options. Excellent release capabilities. | Paste sealant with variable work times and cure times available through catalyst options. Excellent release capabilities. |
| <b>Typical Applications (include but not limited to)</b>                | Automotive component assembly; Industrial assembly applications; Manufacture of sporting good components. | Solar cells/modules; Automotive Electronics; Electronic devices; Home appliances; Moisture proof sealing of meters; Moisture proof coating of electronic circuit boards; Potting of electric and communication parts. | Fabrication of rubber parts; Potting and encapsulating (electric motors and transformers, surge protectors, industrial filters); Release applications such as rubber rollers; Thermal insulation; Mechanical protection. | Potting, encapsulating, cushioning, and coating.   | Potting of electronic circuit modules, electrical connectors and coils.                  | Fabrication of rubber parts; Potting and encapsulating electric motors and transformers; Casting molds for low-melting point metals; Release applications such as rubber rollers; Thermal Insulation. | Cast-in-place heat shielding; Thermal insulation; Potting and encapsulating of electrical assemblies.   | Low outgassing applications; Cast-in-place heat shielding; Thermal insulation; Potting and encapsulating of electrical assemblies. | Applications which require a low outgassing product.                | Cast-in-place heat shielding; Thermal insulation; Potting and encapsulating of electrical assemblies.                        | Cast-in-place heat shielding; Thermal insulation; Potting and encapsulating of electrical assemblies.                     |
| <b>Key Substrate Adhesion</b>   | Most metals and plastics (such as Lexan*, Noryl*, Cycoloy*), Fiberglass, and Formica.                     | Aluminum, Stainless Steel, Plastics (Epoxy resin, polyester, phenolic resin), Glass   | May require a primer for bonding.  | May require a primer for bonding.  | May require a primer for bonding.  | May require a primer for bonding.   | May require a primer for bonding.   | May require a primer for bonding.  | May require a primer for bonding.                                   | May require a primer for bonding.  | May require a primer for bonding.   |
| <b>Cure Chemistry</b>   | Alkoxy  | Alkoxy  | Alkoxy   | Alkoxy   | Alkoxy   | Alkoxy  | Alkoxy  | Alkoxy   | Alkoxy  | Alkoxy   | Alkoxy  |
| <b>Mix Ratio (base to curing agent by weight)</b>                       | RTV210B & RTV213B : 12.5 :1<br>RTV223B : 13.5 :1  | 100 : 7.5   | 100 : 0.5  | 100 : 0.5  | 100 : 5  | 100 : 0.5   | 100 : 0.5   | 100 : 0.1  | 100 : 0.1   | 100 : 0.5  | 100 : 0.5   |
| <b>Standard Catalyst</b>  | None  | TSE3664B  | DBT  | DBT  | RTV9858  | RTV88 : DBT<br>RTV88HB : RTV9858  | DBT   | RTV566B  | RTV567B   | DBT  | DBT   |
| <b>Catalyst Options Available*</b>                                      | RTV210B, RTV213B, RTV223B   | None  | Yes  | Yes  | None   | RTV88 : Yes   | Yes   | None   | None  | Yes  | Yes   |
| <b>Color (Final Product)</b>  | Gray to Black   | Gray  | Red  | Red  | Red  | Red   | Red   | Red  | Translucent   | White  | White   |
| <b>Viscosity (cps)</b>  | Paste   | 3,000   | 25,000   | 40,000   | 47,000   | 880,000   | 30,000  | 42,700   | 3,900   | 16,000   | 700,000   |
| <b>Useful Temperature Range</b>   | -50 to 150°C (-58 to 302°F)   | -54 to 204°C (-65 to 400°F)   | -54 to 260°C (-65 to 500°F)  | -54 to 260°C (-65 to 500°F)  | -54 to 260°C (-65 to 500°F)  | -54 to 260°C (-65 to 500°F)   | -115 to 260°C (-175 to 500°F)   | -115 to 260°C (-175 to 500°F)  | -115 to 204°C (-175 to 400°F)                                       | -115 to 204°C (-175 to 400°F)  | -115 to 204°C (-175 to 400°F)   |
| <b>Specific Gravity</b>   | 1.35  | 1.41  | 1.42   | 1.48   | 1.47   | 1.47  | 1.42  | 1.49   | 1.00  | 1.21   | 1.35  |
| <b>Hardness, Shore A Durometer</b>                                      | 33 - 35   | 60  | 54   | 57   | 52   | 58  | 55  | 61   | 20  | 42   | 48  |
| <b>Tensile Strength, psi</b>  | 250   | 435   | 870  | 990  | 580  | 830   | 690   | 800  | -   | 380  | 440   |
| <b>Elongation, %</b>  | 250   | 70  | 170  | 120  | 150  | 120   | 120   | 120  | -   | 170  | 150   |
| <b>Tear Strength (Die B), lb/in</b>                                     | -   | -   | 29   | 40   | 43   | 42  | 31  | -  | -   | 21   | 38  |
| <b>Thermal Conductivity, W/mK</b>                                       | -   | 0.42  | 0.34   | 0.34   | 0.34   | 0.34  | 0.31  | -  | 0.29  | 0.26   | 0.31  |
| <b>Coefficient of Thermal Expansion (Linear CTE), cm/cm°C (in/in°F)</b> | -   | -   | 20 x 10 <sup>-5</sup> (11 x 10 <sup>-5</sup> )   | 20 x 10 <sup>-5</sup> (11 x 10 <sup>-5</sup> )   | 20 x 10 <sup>-5</sup> (11 x 10 <sup>-5</sup> )   | 20 x 10 <sup>-5</sup> (11 x 10 <sup>-5</sup> )  | 20 x 10 <sup>-5</sup> (11 x 10 <sup>-5</sup> )  | -  | 25 x 10 <sup>-5</sup> (14 x 10 <sup>-5</sup> )                      | 22 x 10 <sup>-5</sup> (12 x 10 <sup>-5</sup> )   | 20 x 10 <sup>-5</sup> (11 x 10 <sup>-5</sup> )  |
| <b>Dielectric Strength (75 mils), V/mil</b>                             | -   | 660   | 4.3  | 450  | 470  | 440   | 540   | -  | 515   | 520  | 470   |
| <b>Dielectric Constant (1 kHz)</b>                                      | -   | 3.1 (60Hz)  | 4.4  | 4.0  | 3.9  | 4.3   | 3.9   | -  | 3.3   | 3.6  | 3.9   |
| <b>Dissipation Factor (1 kHz)</b>                                       | -   | 0.01 (60Hz)   | 0.03   | 0.02   | 0.017  | 0.03  | 0.02  | -  | 0.006   | 0.005  | 0.02  |
| <b>Volume Resistivity, ohm-cm</b>                                       | -   | 5 x 10 <sup>15</sup>  | 1.6 x 10 <sup>14</sup>   | 4.4 x 10 <sup>14</sup>   | 4.4 x 10 <sup>14</sup>   | 2.8 x 10 <sup>14</sup>  | 2 x 10 <sup>14</sup>  | -  | 1.1 x 10 <sup>15</sup>  | 2 x 10 <sup>14</sup>   | 5.6 x 10 <sup>14</sup>  |
| <b>Linear Shrinkage, %</b>  | -   | -   | 0.6  | 0.6  | 0.6  | 0.6   | 1   | -  | 0.6   | 1.3  | 0.65  |
| <b>Processing:</b>  |   |   |  |  |  |   |   |  |   |  |   |
| <b>Work (Pot) Life</b>  | 5 to 30 minutes<br>Mix ratio and B-component dependent  | 0.1 hours   | 2 hours  | 2 hours  | 2 hours  | 0.75 hours  | 2.25 hours  | 1.5 hours  | 9 hours   | 1.5 hours  | 2 hours   |
| <b>Cure Time @ 25°C (77°F)</b>  | 24 hours  | 24 hours  | 24 hours   | 24 hours   | 24 hours   | 24 hours  | 24 hours  | 24 hours   | 24 hours  | 24 hours   | 24 hours  |

Note: Additional information may be available on the technical datasheet.

\* InvisiSil, SilCool, Lexan, Noryl, and Cyclooy are trademarks of the General Electric Company.

\* For the RTVs which have catalyst options, please refer to page 17 for a detailed listing of choices.



Two-Part Condensation (Alkoxy) Cure

|   | GENERAL PURPOSE  |  |  |  |  |  |
|---|--|--|--|--|--|--|
|   | RTV12  | RTV8111  | RTV8112  | RTV11  | RTV21  | RTV41  |
| <b>Features and Benefits</b>  | Low viscosity adhesive offering deep section cure capability, easy repair capability, can apply heat up to 85°C to attain a faster cure. | Flowable sealant and MIL-PRF-23586F compliant (non-corrosive to copper). | Flowable sealant and MIL-PRF-23586F compliant (non-corrosive to copper). | Sealant with variable work time and cure time available through catalyst options. FDA compliant. Excellent release properties. | Sealant with variable work time and cure time available through catalyst options. FDA compliant. Excellent release properties. | Sealant with variable work time and cure time available through catalyst options. FDA compliant. Excellent release properties. |
| <b>Typical Applications (include but not limited to)</b>                | Electrical and electronic potting; High and low voltage electrical assemblies.   | Potting of electronic circuit modules, electrical connectors and coils.  | Potting of electronic circuit modules, electrical connectors and coils.  | Cast-in-place gaskets and molds; Medical molds/ instruments; High voltage power supply potting; Electrical potting.            | Cast-in-place gaskets and molds; Medical molds/ instruments; High voltage power supply potting; Electrical potting.            | Cast-in-place gaskets and molds; Medical molds/ instruments; High voltage power supply potting; Electrical potting.            |
| <b>Key Substrate Adhesion</b>   | Primerless adhesion to many metals, plastics and glass.  | May require a primer for bonding.  | May require a primer for bonding.  | May require a primer for bonding.  | May require a primer for bonding.  | May require a primer for bonding.  |
| <b>Cure Chemistry</b>   | Alkoxy   | Alkoxy   | Alkoxy   | Alkoxy   | Alkoxy   | Alkoxy   |
| <b>Mix Ratio (base to curing agent by weight)</b>                       | 20 : 1   | 100 : 2  | 100 : 5  | 100 : 0.5  | 100 : 0.5  | 100 : 0.5  |
| <b>Standard Catalyst</b>  | RTV12C   | RTV9891  | RTV9858  | DBT  | DBT  | DBT  |
| <b>Catalyst Options Available*</b>                                      | None   | None   | None   | Yes  | Yes  | Yes  |
| <b>Color (Final Product)</b>  | Clear  | White  | White  | White  | Pink   | White  |
| <b>Viscosity (cps)</b>  | 1,300  | 9,900  | 11,000   | 11,000   | 26,000   | 39,000   |
| <b>Useful Temperature Range</b>   | -54 to 204°C (-65 to 400°F)  | -54 to 204°C (-65 to 400°F)  | -54 to 204°C (-65 to 400°F)  | -54 to 204°C (-65 to 400°F)  | -54 to 204°C (-65 to 400°F)  | -54 to 204°C (-65 to 400°F)  |
| <b>Specific Gravity</b>   | 1.00   | 1.18   | 1.19   | 1.19   | 1.32   | 1.31   |
| <b>Hardness, Shore A Durometer</b>                                      | 18   | 45   | 42   | 41   | 45   | 47   |
| <b>Tensile Strength, psi</b>  | -  | 350  | 300  | 300  | 310  | 310  |
| <b>Elongation, %</b>  | 200  | 160  | 160  | 160  | 180  | 180  |
| <b>Tear Strength (Die B), lb/in</b>                                     | -  | 4.3 (24)   | 4.8 (27)   | 190  | 210  | 190  |
| <b>Thermal Conductivity, W/mK</b>                                       | 0.17   | 0.29   | 0.29   | 0.29   | 0.31   | 0.31   |
| <b>Coefficient of Thermal Expansion (Linear CTE), cm/cm°C (in/in°F)</b> | 29 X 10 <sup>-5</sup> (16 X 10 <sup>-5</sup> )   | 25 X 10 <sup>-5</sup> (14 X 10 <sup>-5</sup> )                           | 25 X 10 <sup>-5</sup> (14 X 10 <sup>-5</sup> )                           | 25 X 10 <sup>-5</sup> (14 X 10 <sup>-5</sup> )   | 20 X 10 <sup>-5</sup> (11 X 10 <sup>-5</sup> )   | 20 X 10 <sup>-5</sup> (11 X 10 <sup>-5</sup> )   |
| <b>Dielectric Strength (75 mils), V/mil</b>                             | 400  | 500  | 475  | 515  | 420  | 515  |
| <b>Dielectric Constant (1 kHz)</b>                                      | 3.0  | 3.3  | 4.0  | 3.3  | 3.8  | 3.7  |
| <b>Dissipation Factor (1 kHz)</b>                                       | 0.001  | 0.0055   | 0.007  | 0.006  | 0.02   | 0.007  |
| <b>Volume Resistivity, ohm-cm</b>                                       | 1x10 <sup>13</sup>   | 1.0 x 10 <sup>15</sup>   | 2.7 x 10 <sup>15</sup>   | 1.1 x 10 <sup>15</sup>   | 2.6 x 10 <sup>14</sup>   | 1.6 x 10 <sup>14</sup>   |
| <b>Linear Shrinkage, %</b>  | 2.0  | 1.0  | 1.0  | 0.6  | 0.6  | 0.6  |
| <b>Processing:</b>  |  |  |  |  |  |  |
| <b>Work (Pot) Life</b>  | 1.6 hours  | 0.5 hours  | 2 hours  | 1.5 hours  | 1 hour   | 1 hour   |
| <b>Cure Time @ 25°C (77°F)</b>  | 24 hours   | 24 hours   | 24 hours   | 24 hours   | 24 hours   | 24 hours   |

Note: Additional information may be available on the technical datasheet.

+ For the RTVs which have catalyst options, please refer to page 17 for a detailed listing of choices.

Two-Part Condensation Cure: Catalyst Options

| Curing Agent     | Features   | Curing Agent Concentration (wt%)      |
|------------------|--|---------------------------------------|
| <b>DBT</b>       | Standard curing agent. Small volume of curing agent to add. Best for small volume applications.  | <b>0.1% to 0.5% (suggested 200:1)</b> |
| Cure Speed       | Moderate   |                                       |
| Color            | Clear to Amber   |                                       |
| Consistency      | Easily Pourable  |                                       |
| Work Life (hrs)  | 1 to 5   |                                       |
| Cure Time (hrs)  | 24 to 48   |                                       |
| <b>RTV9811</b>   | Suitable for automatic mixing equipment, large volume applications. Good deep section cure. Less affected by atmospheric conditions.   | <b>5% to 10% (suggested 10:1)</b>     |
| Cure Speed       | Moderate   |                                       |
| Color            | Light Beige  |                                       |
| Specific Gravity | 1.50   |                                       |
| Consistency      | Paste  |                                       |
| Work Life (hrs)  | 0.5 to 1.5   |                                       |
| Cure Time (hrs)  | 12 to 24   |                                       |
| <b>RTV9910</b>   | Paste version of 0.1% DBT. Suitable for automatic mixing equipment, large volume applications.   | <b>5% to 10% (suggested 10:1)</b>     |
| Cure Speed       | Slow   |                                       |
| Color            | Tan  |                                       |
| Specific Gravity | 1.81   |                                       |
| Consistency      | Paste  |                                       |
| Work Life (hrs)  | 3 to 6   |                                       |
| Cure Time (hrs)  | 24 to 48   |                                       |
| <b>RTV9950</b>   | Paste version of 0.5% DBT. Suitable for automatic mixing equipment, large volume applications.   | <b>5% to 10% (suggested 10:1)</b>     |
| Cure Speed       | Moderate   |                                       |
| Color            | White  |                                       |
| Specific Gravity | 1.75   |                                       |
| Consistency      | Paste  |                                       |
| Work Life (hrs)  | 1 to 3   |                                       |
| Cure Time (hrs)  | 16 to 24   |                                       |
| <b>RTV9858</b>   | Paste version of DBT.  | <b>5% to 7%</b>                       |
| Cure Speed       | Moderate   |                                       |
| Color            | Light Beige  |                                       |
| Consistency      | Paste  |                                       |
| Work Life (hrs)  | 2 to 3   |                                       |
| Cure Time (hrs)  | 18 to 24   |                                       |
| <b>STO</b>       | Small volume of curing agent to add. Best for short production cycles, rapid production of cured parts. Best choice for reversion resistance. Less affected by atmospheric conditions. | <b>0.2% to 0.5% (suggested 200:1)</b> |
| Cure Speed       | Fast   |                                       |
| Color            | Clear to Amber   |                                       |
| Consistency      | Easily Pourable  |                                       |
| Work Life (hrs)  | 0.1 to 0.5   |                                       |
| Cure Time (hrs)  | 4 to 12  |                                       |
| <b>RTV9891</b>   | Paste version of STO.  | <b>2% to 4%</b>                       |
| Cure Speed       | Fast   |                                       |
| Color            | Blue   |                                       |
| Specific Gravity | 1.78   |                                       |
| Consistency      | Paste  |                                       |
| Work Life (hrs)  | 0.1 to 0.5   |                                       |
| Cure Time (hrs)  | 4 to 12  |                                       |

\* Notes: Typical property values are recorded at standard testing conditions of 25°C (77°F) and 50% relative humidity.

Catalyst options are used in place of the standard DBT catalyst provided.

One-Part Addition Cure<sup>(1)</sup>

|  | FAST CURE  |   |   |   |  | HIGH TEMPERATURE   |  |  |   |
|--|--|---|---|---|--|--|--|--|---|
|  | ADDISIL 6101   | ECC4865   | RTV6424   | TSE325  | TSE3251  | TSE326   | TSE3221S-W   | TSE322<br>TSE322-B<br>TSE322-S   | TSE3212   |
| <b>Features and Benefits</b>                             | High performance, neutral cure, paste adhesive offering fast heat cure, low shrinkage and a long pot life. | Low viscosity conformal coating with a UV tracer, fast thermal cure and outstanding long-term viscosity stability.    | Fast heat curing, paste adhesive with low linear shrinkage and excellent dielectric properties. | Flowable, heat curing adhesive.   | Flowable, heat curing adhesive.  | High temperature, flowable, heat curing adhesive. UL94 HB recognition.                                 | Flowable, heat curing adhesive.  | Semi-flowable or flowable adhesive with low linear shrinkage and excellent dielectric properties.  | Semi-flowable, heat curing adhesive.  |
| <b>Typical Applications (include but not limited to)</b> | Assembly adhesive; Cure in place gasketing; Deep section sealant.  | Printed circuit boards and other electronic assemblies; Applications requiring moisture and environmental protection. | Thermal barrier for automotive parts.   | Coating of hybrid IC's and printed circuit boards; Electrical potting and encapsulating; Sealing and bonding. | Coating of hybrid IC's and printed circuit boards; Dip coating and encapsulation of electronic parts; Connectors; Sealing and bonding. | High heat assembly, gasketing and coating applications; Electronic applications; Silk screen printing. | Potting, coating, and sealing applications requiring visual clarity; Electronics applications; Printing ink. | Electronics sealing, bonding, and coating; Thermal barrier for automotive parts; Fabric seam seal. | Sealing and bonding of electric and electronic components; Adhesives for ceramic board to metal case in hybrid IC's; High voltage components. |
| <b>Key Substrate Adhesion</b>                            | Primerless adhesion to many metals, plastics and glass.  | Primerless adhesion to many metals, plastics and glass.   | Primerless adhesion to many metals, plastics and glass.   | Primerless adhesion to many metals, plastics and glass.   | Primerless adhesion to many metals, plastics and glass.  | Primerless adhesion to many metals, plastics and glass.  | Primerless adhesion to many metals, plastics and glass.  | Primerless adhesion to many metals, plastics and glass.  | Primerless adhesion to many metals, plastics and glass.   |
| <b>Color (Final Product)</b>                             | Black  | Translucent   | White   | White   | White  | Red  | Translucent  | TSE322: Light blue<br>TSE322B: Black<br>TSE322S: Light blue  | White   |
| <b>Viscosity (cps)</b>                                   | Paste  | 240   | 800,000   | 4,000   | 8,500  | 28,000   | 58,000   | TSE322, TSE322B: 110,000<br>TSE322S: 70,000  | 280,000   |
| <b>Useful Temperature Range</b>                          | -60 to 205°C (-75 to 400°F)  | -40 to 200°C (-40 to 328°F)   | -60 to 205°C (-75 to 400°F)   | -60 to 205°C (-75 to 400°F)   | -60 to 205°C (-75 to 400°F)  | -54 to 260°C (-65 to 500°F)  | -60 to 205°C (-75 to 400°F)  | -60 to 205°C (-75 to 400°F)  | -60 to 205°C (-75 to 400°F)   |
| <b>Specific Gravity</b>                                  | 1.11   | 0.98  | 1.17  | 1.02  | 1.02   | 1.45   | 1.03   | 1.28   | 1.26  |
| <b>Hardness, Shore A Durometer</b>                       | 43   | 35  | 30  | 12  | 16   | 43   | 28   | 45   | 52  |
| <b>Tensile Strength, MPa (psi)</b>                       | 1325   | 1015  | 675   | 102   | 102  | 498  | 406  | 425  | 537   |
| <b>Elongation, %</b>                                     | 580  | 75  | 550   | 200   | 200  | 170  | 370  | 200  | 240   |
| <b>Dielectric Strength (75 mils), V/mil</b>              | -  | 500   | 500   | 530   | 500  | 558  | 635  | 500  | 500   |
| <b>Dielectric Constant (60 Hz)</b>                       | -  | 2.4   | 2.9   | 2.9   | 2.8  | 3.3  | 2.8  | 3.1  | 3.2   |
| <b>Volume Resistivity, ohm-cm</b>                        | -  | 5 x 10 <sup>14</sup>  | 1 x 10 <sup>15</sup>  | 2.0 X 10 <sup>15</sup>  | 2 x 10 <sup>15</sup>   | 2.0 x 10 <sup>15</sup>   | 6 x 10 <sup>14</sup>   | 1.0 x 10 <sup>15</sup>   | 2 x 10 <sup>15</sup>  |
| <b>Processing:</b>                                       |  |   |   |   |  |  |  |  |   |
| <b>Cure Time @</b>                                       |  |   |   |   |  |  |  |  |   |
| <b>100°C</b>   | 110°C <15 minutes  | Cure time of 10 minutes @ 125°C<br>Cure temperature range<br>105 to 175°C   | -   | 4 hours   | 4 hours  | 2 hours  | 3 hours  | 3 hours  | 4 hours   |
| <b>125°C</b>   | <10 minutes  |   | 45 minutes  | 2 hours   | 2 hours  | 1.5 hours  | 1.5 hours  | 1.5 hours  | 2 hours   |
| <b>150°C</b>   | <5 minutes   |   | 30 minutes  | 1 hours   | 1 hours  | 1 hours  | 1 hours  | 1 hours  | 1 hours   |

Note: Additional information may be available on the technical datasheet.

(1) Cure inhibition may be a concern for addition cure RTV's. Please reference the FAQ page for more information on this phenomenon.

Two-Part Addition Cure<sup>(1)</sup>

|  | OPTICALLY CLEAR   |  |   |   | UL94 V-0  |   | ADHESIVE   |   |
|--|---|--|---|---|---|---|--|---|
|  | LOW TEMPERATURE PERFORMANCE   |  |   |   |   |   | LOW VOLATILE   |   |
|  | RTV615  | TSE3033  | RTV656  | RTV655  | RTV627  | RTV6428   | LVG342   | RTV6108-D1  |
| <b>Features and Benefits</b>   | Low viscosity, heat curing sealant with the capability to cure at room temperature. Provides unlimited depth of cure, even in completely enclosed assemblies and offers easy repairability. FDA compliant.  | Low viscosity, heat curing adhesive.   | Heat curing sealant with the capability to cure at room temperature. Provides unlimited depth of cure, even in completely enclosed assemblies.  | Heat curing sealant with the capability to cure at room temperature. Provides unlimited depth of cure, even in completely enclosed assemblies.  | Low viscosity sealant which offers deep section cure capabilities. UL94 V-0 recognition; Reversion resistant; Hydrolytically stable.  | Fast curing, low viscosity sealant. UL94 V-0 recognition; Reversion resistant; Hydrolytically stable. | Low volatile, paste adhesive with excellent compression set and compression set recovery properties. | Paste adhesive offering long room temperature pot-life and fast heat cure capabilities. |
| <b>Typical Applications (Include but not limited to)</b>                 | Solar potting; Optical instruments; Cell phone solar batteries; Gasketing; Applications requiring visual identification of potted assemblies; Electrical insulation; Applications requiring shock resistance; Applications in high humidity environments. | Electrical and electronic potting; Moisture proof coating of electronic circuit boards; Potting of various modules and high voltage parts. | Solar potting; Optical instruments; Cell phone solar batteries; Gasketing; Applications requiring visual identification of potted assemblies; Electrical insulation; Applications requiring shock resistance; Applications in high humidity environments. | Solar potting; Optical instruments; Cell phone solar batteries; Gasketing; Applications requiring visual identification of potted assemblies; Electrical insulation; Applications requiring shock resistance; Applications in high humidity environments. | Production line potting compounds; Encapsulation of high voltage transformers voltage regulators, power converters; Complete power supplies, Flyback Electronics. transformers. | Encapsulation; Potting; High voltage transformers; Voltage regulators; Power converters;              | Gasketing; Applications which are sensitive to volatile siloxane species.                            | Gasketing; Sealing and bonding.   |
| <b>Key Substrate Adhesion</b>  | May require a primer for adhesion.  | Primerless adhesion to many metals, plastics, and glass.   | May require a primer for adhesion.  | May require a primer for adhesion.  | May require a primer for adhesion.  | May require a primer for adhesion.  | Primerless adhesion to many metals, plastics, and glass.   | Primerless adhesion to many metals, plastics, and glass.                                |
| <b>Mix Ratio (base to curing agent by weight)</b>                        | 10:1  | 1:1  | 10:1  | 10:1  | 1:1   | 1:1   | 10:1   | 1:1   |
| <b>Color (Final Product)</b>   | Translucent   | Translucent  | Translucent   | Translucent   | Dark Gray   | Dark Gray   | White  | Translucent   |
| <b>Viscosity (cps)/Application Rate (g/min)</b>                          | 4,000   | 1,000  | 5,000   | 5,200   | 1,300   | 1,400   | 150 g/min  | 500,000   |
| <b>Useful Temperature Range</b>  | -60 to 204°C (-75 to 400°F)   | -60 to 204°C (-75 to 400°F)  | -115 to 204°C (-175 to 400°F)   | -115 to 204°C (-175 to 400°F)   | -60 to 204°C (-75 to 400°F)   | -60 to 204°C (-75 to 400°F)   | -60 to 204°C (-75 to 400°F)  | -60 to 204°C (-75 to 400°F)   |
| <b>Specific Gravity</b>  | 1.02  | 1.01   | 1.03  | 1.04  | 1.37  | 1.37  | 1.19   | 1.08  |
| <b>Hardness, Shore A Durometer</b>                                       | 44  | 30   | 44  | 45  | 62  | 62  | 40   | 40  |
| <b>Tensile Strength, psi</b>   | 920   | 142  | 920   | 920   | 475   | 475   | 650  | 750   |
| <b>Elongation, %</b>   | 120   | 130  | 100   | 120   | 60  | 60  | 275  | 450   |
| <b>Thermal Conductivity, W/mK</b>  | 0.19  | 0.17   | 0.19  | 0.11  | 0.31  | 0.31  | -  | 0.19  |
| <b>Coefficient of Thermal Expansion(Linear CTE), cm/cm °C (in/in °F)</b> | 27 x 10 <sup>-5</sup> (15.3 x 10 <sup>-5</sup> )  | 23 x 10 <sup>-5</sup> (12.5 x 10 <sup>-5</sup> )   | 33 x 10 <sup>-5</sup> (18.3 x 10 <sup>-5</sup> )  | 33 x 10 <sup>-5</sup> (18.3 x 10 <sup>-5</sup> )  | 21 x10 <sup>-5</sup> (11.4 x 10 <sup>-5</sup> )   | 21 x10 <sup>-5</sup> (11.4 x 10 <sup>-5</sup> )   | -  | -   |
| <b>Dielectric Strength(75 mils), V/mil</b>                               | 500   | 530  | 500   | 500   | 510   | 530   | 500  | 500   |
| <b>Dielectric Constant (1 kHz)</b>                                       | 2.70  | 2.80   | 2.69  | 2.69  | 2.97  | 3.00  | -  | 2.85  |
| <b>Dissipation Factor (1 kHz)</b>  | 0.0006  | 0.001  | 0.0004  | 0.0004  | 0.0060  | 0.0061  | -  | 3.2 x10 <sup>-4</sup>   |
| <b>Volume Resistivity, ohm-cm</b>  | 1.8 x 10 <sup>15</sup>  | 2.0 x 10 <sup>15</sup>   | 1.2 x 10 <sup>15</sup>  | 1.2 x 10 <sup>15</sup>  | 5.7 x 10 <sup>14</sup>  | 5.7 x 10 <sup>14</sup>  | 1 x 10 <sup>14</sup>   | 2.9 x 10 <sup>14</sup>  |
| <b>Processing:</b>   |   |  |   |   |   |   |  |   |
| <b>Work (Pot) Life @ 25°C (77°F)</b>                                     | 4 hours   | 6 hours  | 4 hours   | 4 hours   | 2 hours   | 4 minutes   | 12 hours   | 48+ hours   |
| <b>Cure Time @</b>   |   |  |   |   |   |   |  |   |
| <b>25°C</b>  | 7 hours   | -  | 7 days  | 7 days  | 2 days  | 30 minutes  | -  | -   |
| <b>65°C</b>  | 4 hours   | -  | 4 hours   | 4 hours   | 4 hours   | 15 minutes  | -  | -   |
| <b>100°C</b>   | 1 hour  | 1 hour   | 1 hour  | 1 hour  | 1 hours   | 10 minutes  | -  | 1 hour  |
| <b>125°C</b>   | 45 minutes  | 45 minutes   | 45 minutes  | 45 minutes  | 45 minutes  | 5 minutes   | 20 minutes   | 45 minutes  |
| <b>150°C</b>   | 15 minutes  | 30 minutes   | 15 minutes  | 15 minutes  | 15 minutes  | 2 minutes   | 15 minutes <sup>1</sup>  | 5 minutes   |

Note: Additional information may be available on the technical datasheet.

(1) Cure inhibition may be a concern for addition cure RTVs. Please reference the FAQ page for more information on this phenomenon.

Thermally Conductive Adhesives And Sealants<sup>(1)</sup>

|   | 1 PART CONDENSATION CURE  |   |  | 1 PART ADDITION CURE   |   |   |   | 2 PART ADDITION CURE  |  |  |  |
|---|---|---|--|--|---|---|---|---|--|--|--|
|   | FAST TACK FREE TIME   |   |  | THIN BOND LINE CAPABILITY  |   |   |   | UL94 V-0  |  | GELS   |  |
|   | XE11-B5320  | TSE3941   | TSE3940  | SilCool* LTR3291   | SilCool* LTR3292  | TSE3281-G   | TSE3280-G   | TSE3331   | TSE3380  | TSE3081  | TSE3080  |
| <b>Features and Benefits</b>                              | Low volatile, paste adhesive. Thermal conductivity of 1.3 W/mK.   | Paste adhesive with UL94 V-0 recognition. Thermal conductivity of 0.83 W/mK.                              | Paste adhesive with UL94 V-0 and MIL-A-46146B (corrosion only) recognition. Thermal conductivity of 0.41 W/mK. | Low thermal resistance, semi-flowable, thermal silicone adhesive. Excellent dielectric properties. Thermal conductivity of 2.5 W/mK. | Low thermal resistance, flowable, thermal silicone adhesive. Excellent dielectric properties. Thermal conductivity of 1.9 W/mK. | Flowable, heat curing adhesive offering excellent dielectric properties. Thermal conductivity of 1.66 W/mK. | Semi-flowable, heat curing adhesive. Thermal conductivity of 0.88 W/mK.                                   | Flowable adhesive with long thermal conductive performance and a long pot life at 23°C. Mix ratio of 1:1. UL94 V-0 recognition. Thermal conductivity of 0.63 W/mK.                                    | Flowable, heat curing adhesive. Mix ratio of 1:1. Thermal conductivity of 1.68 W/mK. | Thermally conductive, flowable, heat curing gel. Mix ratio of 1:1. Thermal conductivity of 1.25 W/mK.  | Thermally conductive, flowable, heat curing gel. Mix ratio of 1:1. Thermal conductivity of 0.63 W/mK.  |
| <b>Typical Applications (include but not limited to)</b>  | Board level assembly and component sealing/repair which requires moderate thermal management performance. | Board level assembly and component sealing/repair which requires moderate thermal management performance. | Board level assembly and component sealing/repair which requires moderate thermal management performance.      | Thermal interface between high performance devices and heat dissipation devices (heat sinks); TIM1/TIM2 applications.                | Thermal interface between high performance devices and heat dissipation devices (heat sinks); TIM1/TIM2 applications.           | Thermal interface adhesive for medium performance CPU's and general heat dissipation in board assemblies.   | Thermal interface adhesive for medium performance CPU's and general heat dissipation in board assemblies. | Good for heat-generating electronic components; Potting and encapsulating applications; Provides moisture and vibration protection in power modules, converters, IGBT's, and other sensitive devices. | Sealing and bonding; Heat generating elements (regulators, rectifiers, etc).         | Good for heat-generating electronic components; Potting and encapsulating applications; Moisture and vibration protection in power modules, converters, IGBT's, and other sensitive devices. | Good for heat-generating electronic components; Potting and encapsulating applications; Moisture and vibration protection in power modules, converters, IGBT'S, and other sensitive devices. |
| <b>Color (Final Product)</b>                              | White   | White   | Gray   | Gray   | Gray  | Gray  | Gray  | Dark Gray   | Gray   | Black  | Black  |
| <b>Viscosity (cps)</b>                                    | -   | -   | -  | 260,000  | 30,000  | 60,000  | 60,000  | 3,500   | 40,000   | 20,000   | 7,000  |
| <b>Tack Free Time</b>                                     | 5 minutes   | 5 minutes   | 5 minutes  | -  | -   | -   | -   | -   | -  | -  | -  |
| <b>Thermal Conductivity<sup>1</sup>, W/mK</b>             | 1.3   | 0.83  | 0.41   | 2.5  | 1.9   | 1.66  | 0.88  | 0.63  | 1.68   | 1.26   | 0.63   |
| <b>Thermal Resistance<sup>2</sup>, mm<sup>2</sup>-k/W</b> | -   | -   | -  | 22 (40 μm)   | 25 (40 μm)  | 35 (50 μm)  | -   | -   | -  | -  | -  |
| <b>Useful Temperature Range</b>                           | -55 to 200°C (-67 to 392°F)   | -55 to 200°C (-67 to 392°F)   | -55 to 200°C (-67 to 392°F)  | -60 to 205°C (-75 to 400°F)  | -60 to 205°C (-75 to 400°F)   | -55 to 200°C (-67 to 392°F)   | -55 to 200°C (-67 to 392°F)   | -55 to 200°C (-67 to 392°F)   | -55 to 200°C (-67 to 392°F)  | -50 to 200°C (-58 to 392°F)  | -50 to 200°C (-58 to 392°F)  |
| <b>Specific Gravity</b>                                   | 2.59  | 1.65  | 1.49   | 2.82   | 2.62  | 2.70  | 2.10  | 1.51  | 2.70 @ 23°C  | 2.50   | 1.53   |
| <b>Hardness, Shore A Durometer</b>                        | 80  | 65  | 40   | 92   | 83  | 84  | 62  | 60  | 70   | 10 (penetration)   | 25 (penetration)   |
| <b>Tensile Strength, psi</b>                              | 3.6   | 421   | 2.9 (426)  | (300)  | 375   | 654   | 470   | 421   | 363  | -  | -  |
| <b>Elongation, %</b>                                      | 40  | 100   | 200  | 15   | 49  | 50  | 110   | 70  | 100  | -  | -  |
| <b>Coefficient of Thermal Expansion, ppm/K</b>            | 190   | 160   | -  | 113  | -   | 1.4 x 10 <sup>-4</sup> cm/cm °C   | 2.2 x 10 <sup>-4</sup> cm/cm °C   | 170   | -  | -  | -  |
| <b>Glass Transition Temp</b>                              | -   | -   | -  | -120   | -120  | -120  | -   | -   | -  | -  | -  |
| <b>Volume Resistivity<sup>3</sup>, ohm-cm</b>             | 2.0 x 10 <sup>15</sup>  | 4.0 x 10 <sup>14</sup>  | 6.0 x 10 <sup>14</sup>   | 1.6 x 10 <sup>16</sup>   | 4.6 x 10 <sup>15</sup>  | 4.8 x 10 <sup>14</sup>  | 2.5 x 10 <sup>14</sup>  | 2 x 10 <sup>14</sup>  | 2.1 x 10 <sup>14</sup>   | 1.0 x 10 <sup>15</sup>   | 1.0 x 10 <sup>15</sup>   |
| <b>Dielectric Strength, kV/mm</b>                         | 17  | 22  | 22   | 16.6   | 17  | 15  | 21  | 26  | 15   | 22   | 22   |
| <b>Work (Pot) Life @ 23°C</b>                             | -   | -   | -  | -  | -   | -   | -   | 8 hours   | 8 hours  | 3 hours  | 3 hours  |
| <b>Cure Time</b>  |   |   |  |  |   |   |   |   |  |  |  |
| 25°C  | 24 hours  | 24 hours  | 24 hours   | Cure temperatures below 100°C are not recommended, and cure temperatures above 200°C need to be tested.**                            |   | 2 hours at 100°C  | 2 hours at 100°C  | -   | -  | 48 hours   | 48 hours   |
| 120°C   | -   | -   | -  |  |   | 45 minutes at 125°C   | 45 minutes at 125°C   | 1 hour  | -  | 100°C for 1 hour   | 100°C for 1 hour   |
| 150°C   | -   | -   | -  |  |   | 30 minutes  | 30 minutes  | -   | 30 minutes   | -  | -  |

Note: Additional information may be available on the technical datasheet.

1 Bulk sample measurement (Hot wire method).

2 Laser flash analysis on a Si-Si sandwiched material.

3 ASTM E14561 method utilized.

(1) See Thermal Management Silicones for Electronics Brochure for additional technical information.

\* InvisiSil, SilCool, Lexan, Noryl, and Cycoloy are trademarks of the General Electric Company.

\*\*Actual cure time will depend on the cross-sectional thickness of the silicone adhesive, the thermal properties of the overall assembly, as well as the type and efficiency of the oven.

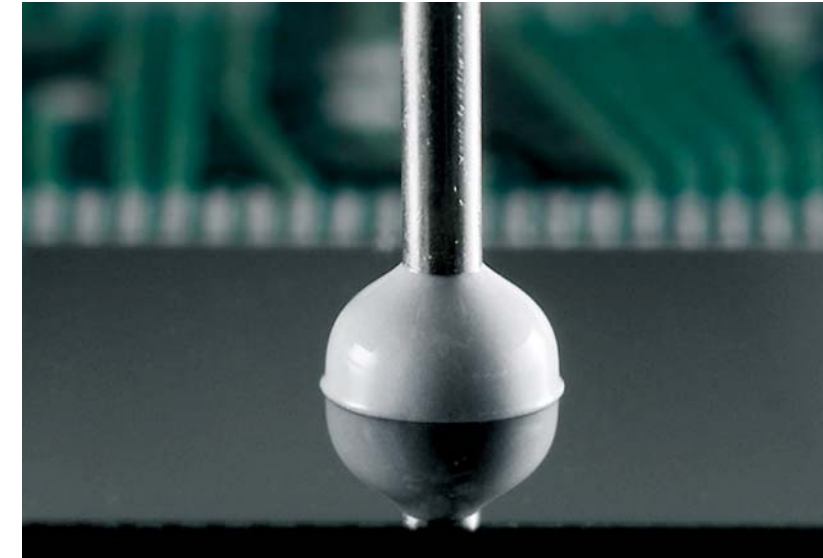
## Thermally Conductive Greases

Typical applications include but are not limited to: Heat management; Automated dispensing; Screen printing and stamping applications.

|   | ONE PART<br>LOW VOLATILE  |  |   |   |
|---|---|--|---|---|
|   | SilCool* TIG825   | SilCool* TIG2000   | YG6260  | YG6111  |
| <b>Features and Benefits</b>                  | Low thermal resistance; Excellent workability; Minimal weight loss at elevated temperatures. MIL-S-8660B compliant. Thermal conductivity of 4 W/mK. | Outstanding dielectric properties; Excellent workability; Minimal weight loss at elevated temperatures. MIL-S-8660B compliant. Thermal conductivity of 2 W/mK. | Higher temperature performing dielectric compound. Thermal conductivity of 0.84 W/mK. | Higher temperature performing dielectric compound. Thermal conductivity of 0.84 W/mK. |
| <b>Color (Final Product)</b>                  | Gray  | Pale Blue  | White-opaque  | White   |
| <b>Thermal Conductivity, W/mK</b>             | 4   | 2  | 0.84  | 0.84  |
| <b>Thermal Resistance, mm<sup>2</sup>·K/W</b> | 8   | 24 (50 um)   | -   | -   |
| <b>Useful Temperature Range</b>               | -50 to 170°C (-58 to 338°F)   | -50 to 170°C (-58 to 338°F)  | -50 to 150°C (-58 to 302°F)   | -55 to 200°C (-67 to 392°F)   |
| <b>Specific Gravity</b>                       | 2.80  | 2.80   | 2.50  | 2.45  |
| <b>Penetration @ 23°C</b>                     | 250   | 400  | 300   | 310   |
| <b>Bleed (@150°C, 24 hours), weight %</b>     | 0.1   | <0.1   | 0.2   | 0.4   |
| <b>Evaporation (@150°C, 24 hours), %</b>      | 0.1   | <0.1   | 0.1   | 0.1   |
| <b>Volume Resistivity, ohm-cm</b>             | 1.0 x 10 <sup>15</sup>  | 1.0 x 10 <sup>14</sup>   | 2.0 x 10 <sup>14</sup>  | 2.0 x 10 <sup>14</sup>  |
| <b>Dielectric Strength kV/0.25 mm</b>         | 4.9   | <100   | -   | 5   |

Note: Additional information may be available on the technical datasheet.

\* InvisiSil, SilCool, Lexan, Noryl, and Cycloy are trademarks of the General Electric Company.



## Semiconductor Die-Attach Adhesives And Encapsulants

|  | ELECTRICALLY CONDUCTIVE  | DIE ATTACH   | OPTICALLY CLEAR   | JUNCTION COATING RESINS (JCR)   |  |   | SEMI-CONDUCTIVE ADHESIVE  |
|--|--|--|---|---|--|---|---|
|  | SilFas* SDC5000  | SilFas* SDI3000  | XE5844  | TSJ3158-B   | TSJ3185  | TSJ3175   | CRTV5120  |
| <b>Features and Benefits</b>                             | 1-part, fast, heat curable paste adhesive. Outstanding thermal stability, low stress, and low moisture absorption. Thermal conductivity of 3.1 W/mK.                             | Electrically insulating, one-part, heat curable silicone die attach adhesive offering low stress and high die shear toughness. Thermal conductivity of 0.2 W/mK. | Translucent, junction coating rubber offering a high refractive index (n <sub>D</sub> <sup>25</sup> = 1.507) and a long pot life. Mix ratio of 1:1. | High purity, flowable junction coating. Offers primerless adhesion to many substrates. Thermal conductivity of 0.18 W/mK. | High purity, flowable, junction coating. Heat cures to a soft gel shape for adhesion to metals. Thermal conductivity of 0.18 W/mK. | Two component, heat curing gel with low impurities. Extended pot life. Mix ratio of 1:1. Thermal conductivity of 0.18 W/mK. | One-part, fast cure, acetoxo paste adhesive. Tack free time of 20 minutes. Primerless adhesion to many metals, plastics, and glass. |
| <b>Typical Applications (include but not limited to)</b> | Attachment of integrated circuits and components to a variety of substrates. Offers excellent adhesion on organic and metal surfaces, including soldermask, gold, and polyimide. | Semiconductor packages of thin and/or large-sized chips, which require a high degree of reliability.   | Optical fiber coating; Optical devices.   | Junction coating for semiconductors, transistors, diodes and for Si bare chips such as hybrid IC's.                       | Protecting semiconductor devices, power transistors, hybrid IC chips; Bonding wire.  | Si bare chip coating; Thermal stress and vibration protection coating for electronics parts/ devices.                       | Sealing and bonding.  |
| <b>Color (Final Product)</b>                             | Yellow   | Translucent  | Translucent   | Black   | Translucent  | Black   | Black   |
| <b>Viscosity (cps)/Application Rate (g/min)</b>          | 16,000   | 14,000   | 2,000   | 15,000  | 3,000  | 10,000  | 550 g/min   |
| <b>Thermal Conductivity, W/mK</b>                        | 3.1  | 0.2  | 0.18  | 0.18  | 0.18   | 0.18  | -   |
| <b>Useful Temperature Range</b>                          | -60 to 205°C (-75 to 400°F)  | -60 to 205°C (-75 to 400°F)  | -60 to 205°C (-75 to 400°F)   | -60 to 205°C (-75 to 400°F)   | -60 to 205°C (-75 to 400°F)  | -60 to 205°C (-75 to 400°F)   | -60 to 205°C (-75 to 400°F)   |
| <b>Specific Gravity</b>                                  | 3.77   | 1.03   | 1.07  | 1.08  | 1.01   | 1.00  | 1.065   |
| <b>Hardness, Shore A Durometer</b>                       | 65   | 23   | 15  | 70  | 80 (Penetration)   | 70 (Penetration)  | 35  |
| <b>Tensile Strength, psi</b>                             | 174  | 160  | 29  | -   | -  | -   | 265   |
| <b>Elongation, %</b>                                     | 200  | 160  | 100   | -   | -  | -   | 420   |
| <b>Volume Resistivity, ohm-cm</b>                        | 2 x 10 <sup>-4</sup>   | 2 x 10 <sup>15</sup>   | -   | 1 x 10 <sup>11</sup>  | -  | 1 x 10 <sup>11</sup>  | 500   |
| <b>Dielectric Strength, kV/mm</b>                        | -  | 21   | -   | 25  | 15   | 15  | -   |
| <b>Dielectric Constant (60 Hz)</b>                       | -  | 2.6  | -   | 2.9   | 2.7  | 2.8   | -   |
| <b>Dielectric Factor (60 Hz)</b>                         | -  | 0.003  | -   | 0.0004  | 0.001  | 0.0004  | -   |
| <b>Ionic Content (Na, K, Cl), ppm</b>                    | each <5  | <2, <2, <5   | <2, <2, -   | <2, <2, -   | each <2  | <2, <2, -   | -   |
| <b>Work (Pot) Life @ 23°C</b>                            | -  | 20 days  | 6 hours   | -   | -  | 12 hours  | -   |
| <b>Cure Time @</b>                                       |  |  |   |   |  |   |   |
| <b>25°C</b>  | -  | -  | -   | -   | -  | -   | 24 hours  |
| <b>120°C</b>   | -  | -  | -   | -   | -  | 2 hours at 125°C  | -   |
| <b>150°C</b>   | 1 hour   | 1 hour   | 30 minutes  | 4 hour  | 1 hour   | -   | -   |

Note: Additional information may be available on the technical datasheet.

\* SilFas is a trademark of the General Electric Company.

GELS

Our gels are designed to preserve dielectric integrity and protection to delicate electronic circuit assemblies operating in harsh environments.

They offer external shock and vibration protection/dampening, mechanical cushioning, excellent moisture protection, low shrinkage and are self-healing.

|   | 2 PART ADDITION CURE  |   |  |  |  |  |  |  |  | 1 PART ADDITION CURE  |  |   |                                      |
|---|---|---|--|--|--|--|--|--|--|---|--|---|--------------------------------------|
|   | RTV6100A*   | RTV6126-D1  | RTV6136-D1   | RTV6156  | RTV6166  | RTV6186  | RTV6188  | RTV6196  | TSE3070  | TSE3067   | TSE3051                                      | UL94 V-1<br>TSE3051FR   | TSE3053                              |
| <b>Features and Benefits</b>  | Base component for RTV61XX series. Designed for applications requiring additional "Part A" for off ratio mixing; Yields a softer gel with a higher penetration value. | Extremely fast curing, low viscosity gel; Requires the use of automated meter-mix dispensing equipment. | High strength, fast cure, tough gel; Good tear resistance; Requires the use of automated meter-mix dispensing equipment. | High performance gel which offers low temperature performance. | General purpose gel.                             | High strength, fast heat curing, tough gel; Good tear resistance; temperature pot-life (8+ hours) for effective use on non-automated production lines. | High strength, fast heat curing, tough gel; Good tear resistance; Extended room temperature pot-life (8+ hours) for effective use on non-automated production lines. | Fast curing, low viscosity silicone gel; Requires the use of dispensing equipment. | Low viscosity, high elongation gel.              | Thixotropic consistency gel offering room temperature cure and heat accelerated cure. | Fast heat curing, low viscosity potting gel. | Flame retardant, fast heat curing, low viscosity potting gel. UL94-V1 compliant at 3.0mm. | Low viscosity, fast heat curing gel. |
| <b>Mix Ratio (base to curing agent by weight)</b>                         | 1:1   | 1:1   | 1:1  | 1:1  | 1:1  | 1:1  | 1:1  | 1:1  | 1:1  | 1:1   | 1-component                                  | 1-component   | 1-component                          |
| <b>Color (Final Product)</b>  | Translucent   | Translucent   | Translucent  | Translucent  | Translucent                                      | Translucent  | Translucent  | Translucent  | Translucent                                      | Blue  | Translucent                                  | Translucent   | Translucent                          |
| <b>Viscosity (cps)</b>  | 750   | 750   | 750  | 750  | 750  | 750  | 750  | 750  | 7,800  | 20,000  | 700  | 700   | 700                                  |
| <b>Useful Temperature Range</b>   | -50 to 204°C (-58 to 400°F)   | -50 to 204°C (-58 to 400°F)   | -50 to 204°C (-58 to 400°F)  | -115 to 204°C (-175 to 400°F)                                  | -50 to 204°C (-58 to 400°F)                      | -50 to 204°C (-58 to 400°F)  | -50 to 204°C (-58 to 400°F)  | -50 to 204°C (-58 to 400°F)  | -50 to 204°C (-58 to 400°F)                      | -50 to 200°C (-58 to 392°F)   | -50 to 200°C (-58 to 392°F)                  | -50 to 200°C (-58 to 392°F)   | -50 to 200°C (-58 to 392°F)          |
| <b>Specific Gravity</b>   | -   | 0.98  | 0.98   | 0.98   | 0.98   | 0.98   | 0.98   | 0.98   | 0.98   | 0.97  | 0.97   | 0.97  | 0.97                                 |
| <b>Refractive Index</b>   | -   | 1.406   | 1.406  | 1.430  | 1.406  | 1.406  | 1.406  | 1.406  | 1.406  | 1.404   | -  | 1.404   | 1.404                                |
| <b>Hardness, Penetration, mm</b>  | -   | 6.5   | 6.0  | 4.0  | 6.0  | 6.0  | 6.0  | 6.0  | 6.0  | -   | -  | -   | -                                    |
| <b>Hardness, Penetration, ASTM D 1403, mm</b>                             | -   | -   | -  | -  | -  | -  | -  | -  | -  | 65  | 65   | 85  | 105                                  |
| <b>Thermal Conductivity, W/mK</b>   | -   | 0.19  | 0.19   | 0.19   | 0.19   | 0.19   | 0.19   | 0.19   | 0.17   | 0.17  | 0.17   | 0.17  | 0.17                                 |
| <b>Coefficient of Thermal Expansion (Linear CTE), cm/cm °C (in/in °F)</b> | -   | 27 x 10 <sup>-5</sup> (15.3 x 10 <sup>-5</sup> )  | 27 x 10 <sup>-5</sup> (15.3 x 10 <sup>-5</sup> )   | 27 x 10 <sup>-5</sup> (15.3 x 10 <sup>-5</sup> )               | 27 x 10 <sup>-5</sup> (15.3 x 10 <sup>-5</sup> ) | 27 x 10 <sup>-5</sup> (15.3 x 10 <sup>-5</sup> )   | 27 x 10 <sup>-5</sup> (15.3 x 10 <sup>-5</sup> )   | 27 x 10 <sup>-5</sup> (15.3 x 10 <sup>-5</sup> )                                   | 27 x 10 <sup>-5</sup> (15.3 x 10 <sup>-5</sup> ) | -   | -  | -   | -                                    |
| <b>Cubical Expansion (l/°C)</b>   | -   | -   | -  | -  | -  | -  | -  | -  | -  | 0.56 x 10 <sup>-3</sup>   | NA   | 0.56 x 10 <sup>-3</sup>   | 0.56 x 10 <sup>-3</sup>              |
| <b>Dielectric Strength (75 mils), kV/mm (V/mil)</b>                       | -   | 20.5 (500)  | 20.5 (500)   | 20.5 (500)   | 20.5 (500)                                       | 20.5 (500)   | 20.5 (500)   | 20.5 (500)   | 20.5 (500)                                       | 18 (400)  | 18 (400)                                     | 18 (400)  | 18 (400)                             |
| <b>Dielectric Constant (1 kHz)</b>  | -   | 2.8   | 2.8  | 2.8  | 2.8  | 2.8  | 2.8  | 2.8  | 2.8  | 2.7   | 2.8  | 2.8   | 2.8                                  |
| <b>Dissipation Factor (1 kHz)</b>   | -   | 0.001   | 0.001  | 0.001  | 0.001  | 0.001  | 0.001  | 0.001  | 0.001  | 0.002   | 0.001  | 0.001   | 0.001                                |
| <b>Volume Resistivity, ohm-cm</b>   | -   | 1.0 x 10 <sup>15</sup>  | 1.0 x 10 <sup>15</sup>   | 1.0 x 10 <sup>15</sup>   | 1.0 x 10 <sup>15</sup>                           | 1.0 x 10 <sup>15</sup>   | 1.0 x 10 <sup>15</sup>   | 1.0 x 10 <sup>15</sup>   | 1.0 x 10 <sup>15</sup>                           | 1.0 x 10 <sup>15</sup>  | 1.0 x 10 <sup>15</sup>                       | 1.0 x 10 <sup>15</sup>  | 1.0 x 10 <sup>15</sup>               |
| <b>Processing</b>   | -   | -   | -  | -  | -  | -  | -  | -  | -  | -   | -  | -   | -                                    |
| <b>Work (Pot) Life @ 23°C</b>   | -   | 5 minutes   | 30 minutes   | 1 hour   | 2 hours  | 8+ hours   | 8+ hours   | 15 minutes   | 4 hours  | 1.5 hours   | 2 weeks                                      | 2 weeks   | 2 weeks                              |
| <b>Cure Time</b>  | -   | -   | -  | -  | -  | -  | -  | -  | -  | -   | -  | -   | -                                    |
| <b>25°C</b>   | -   | < 1 hour  | < 4 hours  | < 18 hours   | < 24 hours                                       | -  | -  | < 2 hours  | < 24 hours                                       | < 24 hours  | -  | -   | -                                    |
| <b>65°C</b>   | -   | 20 minutes  | 2 hours  | 4 hours  | 4 hours  | 4 hours  | 4 hours  | 1 hour   | 45 minutes                                       | 45 minutes  | -  | -   | -                                    |
| <b>100°C</b>  | -   | 5 minutes   | 20 minutes   | 1 hour   | 1 hour   | 1 hour   | 1 hour   | 10 minutes   | -  | -   | 3 hours                                      | 3 hours   | 3 hours                              |
| <b>125°C</b>  | -   | -   | -  | -  | -  | -  | -  | -  | -  | -   | 2 hours                                      | 2 hours   | 2 hours                              |
| <b>150°C</b>  | -   | 2 minutes   | 10 minutes   | 15 minutes   | 15 minutes                                       | 15 minutes   | 15 minutes   | 5 minutes  | -  | -   | 1 hour                                       | 1 hour  | 1 hour                               |

Note: Additional information may be available on the technical datasheet.

\* Not intended for use with RTV6156 which was designed for low temperature performance. Changes to the mix ratios can either shorten or lengthen the pot life of the catalyzed mixture.

### InvisiSil\* LED And Optoelectronics Encapsulants<sup>(1)</sup>

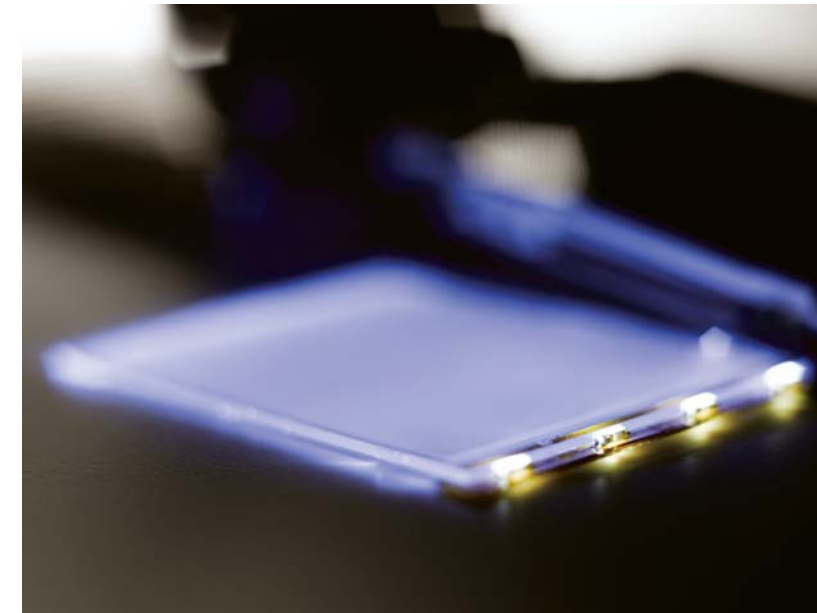
Two-part, optically clear, heat curable gels or elastomers. Silicone benefits include non-yellowing, high light transmittance, and a high refractive index designed for LED chip encapsulation. Other applications may include, but are not limited to: coating optical devices and semi-conductors; absorbing shock and protecting delicate mechanical components from vibration.

|  | 2 PART ADDITION CURE           |                                |                                |                                |                                |
|--|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
|  | IVS4012                        | IVS4312                        | IVS4632                        | IVS5022                        | IVS5332                        |
| Mix Ratio (base to curing agent by weight)       | 1:1                            | 1:1                            | 1:1                            | 1:1                            | 1:1                            |
| Color (Final Product)                            | Translucent                    | Translucent                    | Translucent                    | Translucent                    | Translucent                    |
| Viscosity After Mix @ 23°C (cps)                 | 800                            | 1,000                          | 3,200                          | 2,200                          | 3,300                          |
| Useful Temperature Range                         | -50 to 204°C<br>(-58 to 400°F) | -50 to 204°C<br>(-58 to 400°F) | -50 to 204°C<br>(-58 to 400°F) | -50 to 204°C<br>(-58 to 400°F) | -50 to 204°C<br>(-58 to 400°F) |
| Refractive Index (n <sub>D</sub> <sup>25</sup> ) | 1.40                           | 1.41                           | 1.41                           | 1.51                           | 1.53                           |
| Penetration (JIS K 6249)                         | 57                             | -                              | -                              | 34                             | -                              |
| Hardness, Shore A Durometer                      | -                              | 29                             | 64                             | -                              | 30                             |
| Tensile, MPa                                     | -                              | 0.8                            | 9.0                            | -                              | 0.3                            |
| Elongation, %                                    | -                              | 110                            | 80                             | -                              | 50                             |
| Specific Gravity @ 23°C                          | 0.98                           | 0.99                           | 1.05                           | 1.06                           | 1.12                           |
| Adhesion Strength (PPA), MPa                     | -                              | 0.2                            | 2.7                            | -                              | 0.3                            |
| Processing                                       |                                |                                |                                |                                |                                |
| Work (Pot) Life @ 23°C                           | 4 hours                        | 6 hours                        | 8 hours                        | 8 hours                        | 8 hours                        |
| Cure Time  |                                |                                |                                |                                |                                |
| 70°C   | 30 minutes                     | -                              | -                              | -                              | -                              |
| 150°C  | -                              | 1 hour                         | 1 hour                         | 1 hour                         | 1 hour                         |

Note: Additional information may be available on the technical datasheet.

\* InvisiSil, SilCool, Lexan, Noryl, and Cycology are trademarks of the General Electric Company.

(1) Please see Silicone Material Solutions for LED Packages and Assemblies brochure for more detailed technical information.



### Silicone Liquid Elastomers (SLE)

Typical applications include but are not limited to: Industrial, medical, and structural fabrics, Electrical sleeving, Performance outerware, Airbag coatings, Protective blankets, and Belting.

|  | SLE5300   | SLE5500  | SLE5401   | SLE5600   | SLE5700-D1   | SLE7000   | SLE8000  |
|--|---|--|---|---|--|---|--|
| Features and Benefits                      | Lowest viscosity, low durometer. Intermediate viscosities can be achieved by blending with SLE5500. | High viscosity, low durometer. Intermediate viscosities can be achieved by blending with SLE5300. FDA compliant. | Excellent adhesion to synthetic fabrics while providing durable antiblocking characteristics.                       | High strength and abrasion resistance. FDA compliant.                                 | Designed to enhance the physical strength of engineered textiles while providing durable antiblocking characteristics. | Medium viscosity silicone liquid elastomer which can be applied in thin films and cured rapidly. Designed to enhance the physical strength of textiles. | Paste consistency silicone liquid elastomer which can be cured rapidly. Designed to enhance physical strength of textiles while providing durable anti-blocking characteristics. |
| Key Substrate Adhesion                     | Natural fabrics and fiberglass.   | Natural fabrics and fiberglass.  | Nylon, kevlar, fiberglass, polypropylene, polyethylene, natural fibers and other industrial and structural fabrics. | Primarily mechanical adhesion. May require the use of a primer for chemical adhesion. | Natural fabrics and fiberglass.  | Nylon, kevlar, fiberglass, polypropylene, polyethylene, natural and structural fabrics.   | Nylon, kevlar, fiberglass, polypropylene, polyethylene, natural fibers and other industrial and structural fabrics.  |
| Color (Final Product)                      | White   | White  | Translucent   | Beige   | Translucent  | Translucent   | Translucent  |
| Mix Ratio (base to curing agent by weight) | 10:1  | 10:1   | 1:1   | 1:1   | 1:1  | 1:1   | 1:1  |
| Viscosity, cps                             | 16,000  | 100,000  | 25,000  | 150,000   | 20,000   | 200,000   | 320,000  |
| Useful Temperature Range                   | -60 to 204°C (-75 to 400°F)   | -60 to 232°C (-75 to 450°F)  | -60 to 204°C (-75 to 400°F)   | -60 to 204°C (-75 to 400°F)   | -60 to 204°C (-75 to 400°F)  | -60 to 204°C (-75 to 400°F)   | -60 to 204°C (-75 to 400°F)  |
| Specific Gravity                           | 1.16  | 1.17   | 1.01  | 1.27  | 1.01   | 1.06  | 1.08   |
| Hardness, Shore A Durometer                | 33  | 27   | 45  | 58  | 40   | 34  | 40   |
| Tensile, psi                               | 200   | 190  | 800   | 790   | 500  | 550   | 750  |
| Elongation, %                              | 185   | 280  | 200   | 220   | 200  | 375   | 450  |
| Work (Pot) Life @ 25°C, hrs                | 48  | 48   | 8   | 48  | 48   | 8   | 24   |
| Cure Time (Thin Films)                     | 1 minute @ 204°C  | 1 minute @ 204°C   | 1 to 2 minutes @ 150°C  | 1 minute @ 204°C  | 1 - 2 minutes @ 160°C  | 1 - 2 minutes @ 150°C   | 1 - 2 minutes @ 150°C  |

Note: Additional information may be available on the technical datasheet.

Foams And Foamable Products

|  | D1-RTF7000   | RTF762<br>UL94 V-0  | RTF8510   | REQUIRES AUTOMATED EQUIPMENT<br>RTF5308  |
|--|--|---|---|--|
| <b>Features and Benefits</b>                             | Multi component foam for the design of finished foam products with a wide range of density cell structure and physical properties; Non halogenated fire retardancy; Low smoke generation; Low toxicity combustion byproduct; Room temperature process capable. | Medium density flexible foam; room temperature cure; Pigmentable; UL94 V-0 recognition (6.44 mm thick).   | Medium density flexible foam; Room temperature cure; Low viscosity; Resists cracking and splitting after cure.  | Fast curing, paste adhesive. Capable of being mechanically foamed.   |
| <b>Typical Applications (include but not limited to)</b> | Thermal insulation and cast in place thermal insulation; Applications requiring flame Retardancy and/ or low density   | Cast in place thermal insulation; Small molded parts; Foam/foil laminates for heat management; Sheet stock for firewall application and die gaskets; Sound dampening. | Pour-in-place thermal insulation; Sprayable insulation; Mechanical cushioning; Fire stop system; Vibration dampening, sound deadening; Molding parts. | Formed-in-place gaskets; Vertical and Horizontal applications; Hot/Cold thermal cycles; Expandable Silicone Foam per GM2224M2D2CF1, Type II. |
| <b>Key Substrate Adhesion</b>                            | May require a primer for adhesion.   | Primerless adhesion to many metals, plastics, and glass.  | Primerless adhesion to many metals, plastics, and glass.  | Primerless adhesion to many metals, plastics, masonry, wood, glass and ceramics. Not recommended for use on polycarbonates and acrylics.     |
| <b>Color (Final Product)</b>                             | White  | Off white   | Black   | Translucent  |
| <b>Mix Ratio (base to curing agent by weight)</b>        | Variable   | 10:1  | 1:1   | One-part   |
| <b>Viscosity (cps)/</b>                                  | Base: 65,000 cps   | RTF762A: 65,000 cps   | RTF8510A: 9,000 cps   | 290 g/min  |
| <b>Application Rate (g/min)</b>                          |  | RTF762B: 1,500 cps  | RTF8510B: 6,000 cps   |  |
| <b>Work Time</b>   | 1 to 4 minutes   | 3.5 minutes   | 3 minutes   | -  |
| <b>Expansion Ratio</b>                                   | Varies   | 4:1   | 4:1   | -  |
| <b>Time for Full Rise</b>                                | 5 to 23 minutes  | 20 minutes  | 20 minutes  | -  |
| <b>Density, lb/ft<sup>3</sup></b>                        | Varies   | 15  | 16  | -  |
| <b>Tensile Strength, psi</b>                             | Varies   | 75  | -   | 305  |
| <b>Elongation, %</b>                                     | Varies   | 90  | -   | 485  |
| <b>25% Compression Deflection, lb/in<sup>2</sup></b>     | Varies   | 6   | -   | -  |
| <b>Thermal</b>   |  |   |   |  |
| Thermal Conductivity, BTU in/hr, ft <sup>2</sup> , °F/ft | 0.38   | 0.44  | 0.44  | -  |
| <b>Flammability</b>                                      |  |   |   |  |
| Limiting Oxygen Index                                    | -  | 30  | 30  | -  |
| ASTM E-162 Radiant Panel Flame spread index              | -  | 16  | 18  | -  |
| ASTM E-662/ NFPA 258 Smoke Density                       | 17   | 18  | 41  | -  |
| <b>Smoldering (4 minutes)</b>                            | -  | 9   | 70  | -  |
| <b>FAA25.853 (b) Vertical Burn</b>                       | Pass   | Pass  | -   | -  |
| <b>Useful Temperature Range</b>                          | -52 to 162°C (-62 to 324°F)  | -60 to 204°C (-75 to 400°F)   | -60 to 204°C (-75 to 400°F)   | -60 to 204°C (-75 to 400°F)  |

Note: Additional information may be available on the technical datasheet.



Mold Making Products

| CONDENSATION CURE  |   |   |  |   |   |   |  |   |  |   |   |  |
|--|---|---|--|---|---|---|--|---|--|---|---|--|
|  | RTV421  | RTV426  |  |   | RTV430  |   | RTV7888-10   |   |  | RTV7888-20  |   |  |
| <b>Features and Benefits</b>                             | Low durometer, good pour. Good resistance to polyurethane resins. | Excellent resistance to polyurethane. Flexible catalyst system. |  |   | High durometer, low viscosity. Can be used/customized with three different catalysts. |   | Lowest durometer with excellent resistance to polyester. Three catalysts give durometer and work life options. |   |  | Mid durometer with excellent resistance to polyester. Offers a variety of curing options. |   |  |
| <b>Typical Applications (include but not limited to)</b> | Art Reproduction  | Art Reproduction; Architectural and Furniture Molding           |  |   | Art Reproduction  |   | Art Reproduction   |   |  | Art Reproduction; Architectural and Furniture Molding                                     |   |  |
| <b>Catalyst</b>  | Beta 16<br>Mixed at 10:1 wt. %                                    | Beta 26<br>Mixed at 3 wt. %                                     | Beta 26<br>Mixed at 5 wt. %                            | Beta 26<br>Mixed at 7 wt. %                           | Beta 5<br>Mixed at 10 : 1 wt. %   | Beta 11<br>Mixed at 10 : 1 wt. %                    | Beta 16<br>Mixed at 10 : 1 wt. %   | Beta 17<br>Mixed at 40 : 1 wt. %                  | Beta 18<br>Mixed at 10 : 1 wt. %                 | Beta 16<br>Mixed at 10 : 1 wt. %  | Beta 17<br>Mixed at 40 : 1 wt. %                  | Beta 18<br>Mixed at 10 : 1 wt. %                 |
| <b>Color</b>   | Beige (base)<br>Red (catalyst)<br>Pink (mixed)                    | Beige (base)<br>Green (catalyst)<br>Lt. Green (mixed)           | Beige (base)<br>Green (catalyst)<br>Med. Green (mixed) | Beige (base)<br>Green (catalyst)<br>Dk. Green (mixed) | White (base)<br>Red (catalyst)<br>Pink (mixed)  | White (base)<br>Blue (catalyst)<br>Lt. Blue (mixed) | White (base)<br>Red (catalyst)<br>Pink (mixed)   | White (base)<br>Clear (catalyst)<br>White (mixed) | White (base)<br>Red (catalyst)<br>Pink (mixed)   | White (base)<br>Red (catalyst)<br>Pink (mixed)  | White (base)<br>Clear (catalyst)<br>White (mixed) | White (base)<br>Red (catalyst)<br>Pink (mixed)   |
| <b>Viscosity, cps</b>                                    | 40,000 (base)<br>30 (catalyst)<br>29,000 (mixed)                  | 40,000 (base)<br>20 (catalyst)<br>37,000 (mixed)                | 40,000 (base)<br>20 (catalyst)<br>35,500 (mixed)       | 40,000 (base)<br>20 (catalyst)<br>32,000 (mixed)      | 55,000 (base)<br>50 (catalyst)<br>47,000 (mixed)                                      | 55,000 (base)<br>20 (catalyst)<br>47,000 (mixed)    | 29,457 (base)<br>30 (catalyst)<br>18,000 (mixed)   | 29,457 (base)<br>20 (catalyst)<br>23,000 (mixed)  | 29,457 (base)<br>30 (catalyst)<br>18,000 (mixed) | 42,584 (base)<br>30 (catalyst)<br>30,000 (mixed)  | 42,584 (base)<br>20 (catalyst)<br>40,000 (mixed)  | 42,584 (base)<br>30 (catalyst)<br>30,000 (mixed) |
| <b>Useful Temperature Range</b>                          | -51 to 204°C<br>(-60 to 400°F)                                    | -51 to 204°C<br>(-60 to 400°F)                                  | -51 to 204°C<br>(-60 to 400°F)                         | -51 to 204°C<br>(-60 to 400°F)                        | -60 to 200°C<br>(-75 to 392°F)  | -60 to 200°C<br>(-75 to 392°F)                      | -60 to 200°C<br>(-75 to 392°F)   | -60 to 200°C<br>(-75 to 392°F)                    | -60 to 200°C<br>(-75 to 392°F)                   | -60 to 200°C<br>(-75 to 392°F)  | -60 to 200°C<br>(-75 to 392°F)                    | -60 to 200°C<br>(-75 to 392°F)                   |
| <b>Specific Gravity</b>                                  | 1.29 (base)<br>0.97 (catalyst)<br>1.25 (mixed)                    | 1.10 (base)<br>1.05 (catalyst)<br>1.11 (mixed)                  | 1.10 (base)<br>1.05 (catalyst)<br>1.11 (mixed)         | 1.10 (base)<br>1.05 (catalyst)<br>1.11 (mixed)        | 1.08 (base)<br>1.22 (catalyst)<br>1.08 (mixed)  | 1.08 (base)<br>0.95 (catalyst)<br>1.06 (mixed)      | 1.25 (base)<br>0.97 (catalyst)<br>1.22 (mixed)   | 1.25 (base)<br>0.95 (catalyst)<br>1.24 (mixed)    | 1.25 (base)<br>0.98 (catalyst)<br>1.22 (mixed)   | 1.25 (base)<br>0.98 (catalyst)<br>1.22 (mixed)  | 1.25 (base)<br>0.95 (catalyst)<br>1.24 (mixed)    | 1.25 (base)<br>0.98 (catalyst)<br>1.22 (mixed)   |
| <b>Work Life</b>   | 60 minutes  | 126 minutes   | 68 minutes   | 43 minutes  | 90 minutes  | 70 minutes  | 60 minutes   | 12 minutes  | 60 minutes                                       | 60 minutes  | 12 minutes  | 60 minutes                                       |
| <b>Pot Life</b>  | 90 minutes  | 258 minutes   | 121 minutes  | 76 minutes  | 180 minutes   | 90 minutes  | 90 minutes   | 15 minutes  | 90 minutes                                       | 90 minutes  | 15 minutes  | 90 minutes                                       |
| <b>Demold Time, hours</b>                                | 12  | >7  | 4.6  | 3.6   | 14  | 12  | 12   | 1   | 12   | 12  | 1   | 12   |
| <b>Hardness, Shore A Durometer (24 hrs/ 36 hrs)</b>      | 16/18   | 21  | 25   | 28  | 28/30   | 28/30   | 12   | 12  | 8  | 20  | 19  | 14   |
| <b>Tensile, psi</b>                                      | 530   | 447   | 487  | 546   | 450   | 600   | 400  | 400   | 350  | 500   | 500   | 400  |
| <b>Elongation, %</b>                                     | 430   | 321   | 309  | 257   | 300   | 360   | 450  | 450   | 450  | 350   | 350   | 400  |
| <b>Tear Strength, lb/in</b>                              | 130   | 114   | 137  | 118   | 130   | 120   | 110  | 110   | 100  | 130   | 130   | 115  |
| <b>Linear Shrinkage, % (24 hrs, 7 days)</b>              | 0.2/ 0.5  | 0.05/0.05   | 0.03/0.48  | 0.1/1.2   | 0.5/1.0   | 0.5/1.0   | 0.17/0.51  | 0.26/0.42   | 0.13/0.20  | 0.14/0.43   | 0.11/0.14   | 0.23/0.06  |
| <b>Cure Time</b>   |   |   |  |   |   |   |  |   |  |   |   |  |
| <b>25°C</b>  | 24 hours  | 24 hours  | 24 hours   | 12 to 15 hours  | 24 hours  | 24 hours  | 24 hours   | 3 to 4 hours                                      | 24 hours   | 24 hours  | 3 to 4 hours                                      | 24 hours   |
| <b>65°C</b>  | -   | -   | -  | -   | -   | -   | -  | -   | -  | -   | -   | -  |
| <b>100°C</b>   | -   | -   | -  | -   | -   | -   | -  | -   | -  | -   | -   | -  |
| <b>150°C</b>   | -   | -   | -  | -   | -   | -   | -  | -   | -  | -   | -   | -  |

Note: Additional information may be available on the technical datasheet.

Mold Making Accessory Products

Catalysts

|                              | BETA 5  | BETA 11   | BETA 16   | BETA 17  | BETA 18                                   | BETA 26  |
|------------------------------|---|---|---|--|---|--|
| <b>Features and Benefits</b> | High temperature catalyst. This catalyst is not resistant to sulfur based clays. Suitable for jewelry molding and spin molding. | This catalyst is not resistant to sulfur-based clays. | Use of Beta 16 typically results in durometers 4 to 6 points higher than Beta 18. Suitable for use with sulfur-based clays. | Suitable for use with sulfur-based clays. Suitable for brush and lay-up molding. | Suitable for use with sulfur-based clays. | Very flexible, giving a range of durometers from 20 to 28 Shore A and fast demold times by adjusting the catalyst level. Suitable for use with sulfur-based clays. Designed for polyurethane casting resins. |
| <b>Color</b>                 | Red   | Blue  | Red   | Clear  | Red                                       | Green  |
| <b>Viscosity (cps)</b>       | 50  | 20  | 30  | 20   | 30  | 20   |
| <b>Specific Gravity</b>      | 1.22  | 0.95  | 0.97  | 0.95   | 0.98                                      | 1.05   |
| <b>Work Life</b>             | 45 minutes  | 70 minutes  | 60 minutes  | 8 to 12 minutes  | 60 minutes                                | Variable   |
| <b>Demold Time</b>           | 12 to 16 hours  | 12 hours  | 12 to 16 hours  | 1 hour   | 12 to 16 hours                            | Variable   |
| <b>Cure Time</b>             | 24 hours  | 24 hours  | 24 hours  | 3 to 4 hours   | 24 hours                                  | < 24 hours   |

Primer and Additives

|                                | SS4171P*   | SF1188A   | SF97-50   |
|--------------------------------|--|---|---|
| <b>Features and Benefits</b>   | Minimizes cure inhibition of addition curing silicone rubber mold making material; Allows easy release of the silicone rubber from the model or master; Can be used as a parting agent in making two-part molds. | Thixotropic agent for condensation cure products. Add ~3% by weight to the base and allow to sit for ~5 minutes. This product is typically used to allow the silicone to be brushed onto vertical surfaces. There should not be an impact to the cure rate. | Dilutant to add more customization to durometer. Sometimes used as a mold lubricant. Can add up to ~7% by weight to the base without significantly impacting the physical properties. |
| <b>Color</b>                   | Blue   | Clear to straw  | Clear liquid  |
| <b>Viscosity @ 25°C, CSTKS</b> | -  | 800 to 1400   | 47.5 to 52.5  |
| <b>Specific Gravity @ 25°C</b> | 0.84   | 1.04  | 0.956 to 0.964  |
| <b>Flash Point</b>             | -12°C (10°F)*  | >100°C (212°F)**  | >302°C (575°F)**  |
| <b>Approximate Dry Time</b>    | 30 minutes   | -   | -   |

Note: Additional information may be available on the technical datasheet.

\* Product is to be used solely with addition cure mold making products. Not intended for use with condensation cure mold making products, as SS4171P can act as a bonding agent.

+ Flash point measured through a tag open cup method.

++ Flash point measured through a closed cup method.

Mold Making Products

|  | ADDITION CURE   |  |   |   |   |   |   |   |   |  |   |   |
|--|---|--|---|---|---|---|---|---|---|--|---|---|
|  | RTV630  | RTV662   | RTV664  | RTV668  | RTV866  | RTV868  | TSE3453   | TSE3453T  | TSE3455T  | TSE3456T   | TSE3457T  | TSE3466   |
| <b>Features and Benefits</b>                             | High tear resistance, excellent durability.           | Highest durometer and long work life. Ideal for embossing, release rolls, and large molds. | High durometer and good dimensional stability. The work horse of the mold making line. Excellent chemical and abrasion resistance. Designed for high production on manufacturing lines. | High durometer and good dimensional stability. Designed for sulfur resistance. Ideal for casting with masters made of pine, oak, and elm. | Lower durometer and viscosity than RTV868. Excellent inhibition resistance. Ideal for casting patterns from clay. | Fast demold time with excellent inhibition resistance.            | Easy flow, low durometer, good resistance to urethanes.           | Easy flow, low durometer, good resistance to urethanes.             | Lowest viscosity product. Excellent resistance to polyurethane.     | High flexibility and tear, low durometer product. Superior resistance to polyurethane. | Medium durometer, good dimensional stability.                       | High durometer, low viscosity.                                      |
| <b>Typical Applications (include but not limited to)</b> | Art reproduction; Prototyping                         | Architectural and Furniture Molding  | Architectural and Furniture Molding; Prototyping  | Architectural and Furniture Molding   | Architectural and Furniture Molding; Prototyping  | Architectural and Furniture Molding; Prototyping                  | Architectural and Furniture Molding; Prototyping                  | Architectural and Furniture Molding; Prototyping                    | Architectural and Furniture Molding; Prototyping                    | Architectural and Furniture Molding; Prototyping                                       | Prototyping   | Architectural and Furniture Molding; Prototyping                    |
| <b>Catalyst</b>  | RTV630B<br>Mixed at 10 : 1 wt. %                      | RTV662B<br>Mixed at 10 : 1 wt. %   | RTV664 B<br>Mixed at 10 : 1 wt. %   | RTV668 B<br>Mixed at 10 : 1 wt. %   | RTV866 B<br>Mixed at 10 : 1 wt. %   | RTV868 B<br>Mixed at 10 : 1 wt. %                                 | TSE3453 B<br>Mixed at 10 : 1 wt. %                                | TSE3453T B<br>Mixed at 10 : 1 wt. %                                 | TSE3455T B<br>Mixed at 10 : 1 wt. %                                 | TSE3456 C<br>Mixed at 10 : 1 wt. %   | TSE3457 C<br>Mixed at 10 : 1 wt. %                                  | TSE3466 B<br>Mixed at 10 : 1 wt. %                                  |
| <b>Color</b>   | Beige (base)<br>Blue (catalyst)<br>Blue (mixed)       | Beige (base)<br>Blue (catalyst)<br>Blue (mixed)  | Beige (base)<br>Blue (catalyst)<br>Blue (mixed)   | Beige (base)<br>Green (catalyst)<br>Green (mixed)   | Beige (base)<br>Green (catalyst)<br>Green (mixed)   | Beige (base)<br>Blue (catalyst)<br>Lt. Blue (mixed)               | White (base)<br>Blue (catalyst)<br>Lt. Blue (mixed)               | Translucent (base)<br>Translucent (catalyst)<br>Translucent (mixed) | Translucent (base)<br>Translucent (catalyst)<br>Translucent (mixed) | Translucent (base)<br>Translucent (catalyst)<br>Translucent (mixed)                    | Translucent (base)<br>Translucent (catalyst)<br>Translucent (mixed) | Translucent (base)<br>Translucent (catalyst)<br>Translucent (mixed) |
| <b>Viscosity, cps</b>                                    | 160,000 (base)<br>6,000 (catalyst)<br>150,000 (mixed) | 150,500 (base)<br>5,000 (catalyst)<br>120,000 (mixed)                                      | 153,000 (base)<br>6,000 (catalyst)<br>120,000 (mixed)   | 151,000 (base)<br>3,800 (catalyst)<br>120,000 (mixed)   | 150,000 (base)<br>5,000 (catalyst)<br>42,000 (mixed)  | 160,000 (base)<br>5,500 (catalyst)<br>110,000 (mixed)             | 60,000 (base)<br>3,000 (catalyst)<br>44,000 (mixed)               | 60,000 (base)<br>2,500 (catalyst)<br>45,000 (mixed)                 | 45,000 (base)<br>1,500 (catalyst)<br>30,000 (mixed)                 | 88,000 (base)<br>3,500 (catalyst)<br>55,000 (mixed)                                    | 68,000 (base)<br>2,500 (catalyst)<br>45,000 (mixed)                 | 55,000 (base)<br>300 (catalyst)                                     |
| <b>Useful Temperature Range</b>                          | -60 to 204°C<br>(-75 to 400°F)                        | -60 to 200°C<br>(-75 to 392°F)   | -60 to 200°C<br>(-75 to 392°F)  | -60 to 200°C<br>(-75 to 392°F)  | -60 to 200°C<br>(-75 to 392°F)  | -60 to 200°C<br>(-75 to 392°F)                                    | -55 to 200°C (-67 to 392°F)                                       | -55 to 200°C (-67 to 392°F)   | -55 to 200°C (-67 to 392°F)   | -55 to 200°C (-67 to 392°F)  | -55 to 200°C (-67 to 392°F)   | -55 to 200°C (-67 to 392°F)   |
| <b>Specific Gravity</b>                                  | 1.29 (base)<br>1.07 (catalyst)<br>1.28 (mixed)        | 1.28 (base)<br>1.05 (catalyst)   | 1.28 (base)<br>1.05 (catalyst)  | 1.28 (base)<br>1.05 (catalyst)  | 1.21 (base)<br>1.00 (catalyst)  | 1.28 (base)<br>1.05 (catalyst)                                    | 1.10 (mixed)  | 1.09 (mixed)  | 1.10 (mixed)  | 1.09 (mixed)   | 1.10 (mixed)  | 1.10 (mixed)  |
| <b>Work Life</b>   | 4 hours   | 4 hours  | 2 hours   | 2 hours   | 2 hours   | 2.5 hours   | 2 hours   | 2 hours   | 1.5 hours   | 1 hour   | 1 hour  | 1.5 hours   |
| <b>Pot Life</b>  | -   | 5 hours  | 3 hours   | 2.5 hours   | 2.5 hours   | 3 hours   | -   | -   | -   | -  | -   | -   |
| <b>Demold Time, hours</b>                                | -   | 24   | 18  | 24  | 16  | 12  | 24  | 24  | 24  | 24   | 24  | 24 hours  |
| <b>Hardness, Shore A Durometer</b>                       | 60 (24 hours)   | 68 (36 hours)  | 62 (36 hours)   | 62 (36 hours)   | 50 (36 hours)   | 60 (36 hours)   | 40 (72 hours)   | 40 (72 hours)   | 41 (72 hours)   | 39 (72 hours)  | 47 (72 hours)   | 60 (72 hours)   |
| <b>Tensile, psi</b>                                      | 820   | 1015   | 933   | 1041  | 1100  | 800   | 928   | 928   | 924   | 995  | 1123  | 1073  |
| <b>Elongation, %</b>                                     | 250   | 235  | 245   | 240   | 190   | 200   | 400   | 400   | 360   | 420  | 400   | 350   |
| <b>Tear Strength, lb/in</b>                              | 110   | 136  | 122   | 100   | 69  | 100   | 143   | 143   | 112   | 140  | 191   | 91  |
| <b>Linear Shrinkage, % (24 hrs, 7 days)</b>              | 0.8   | < 0.2  | < 0.2   | < 0.2   | < 0.1   | < 0.2   | < 0.1   | < 0.1   | < 0.1   | < 0.1  | < 0.1   | < 0.1   |
| <b>Cure Time</b>   |   |  |   |   |   |   |   |   |   |  |   |   |
| <b>25°C</b>  | 24 hours  | 24 hours   | 24 hours  | 24 hours  | 24 hours  | 24 hours  | 24 hours  | 24 hours  | 24 hours  | 24 hours   | 24 hours  | 24 hours  |
| <b>65°C</b>  | 4 hours   | 4 hours  | 4 hours   | 4 hours   | To achieve faster cure speeds, elevated temperatures may be used.   | To achieve faster cure speeds, elevated temperatures may be used. | To achieve faster cure speeds, elevated temperatures may be used. | To achieve faster cure speeds, elevated temperatures may be used.   | To achieve faster cure speeds, elevated temperatures may be used.   | To achieve faster cure speeds, elevated temperatures may be used.                      | To achieve faster cure speeds, elevated temperatures may be used.   | To achieve faster cure speeds, elevated temperatures may be used.   |
| <b>100°C</b>   | 1 hour  | 1 hour   | 1 hour  | 1 hour  |   |   |   |   |   |  |   |   |
| <b>150°C</b>   | 15 minutes  | 15 minutes   | 15 minutes  | 15 minutes  |   |   |   |   |   |  |   |   |

Note: Additional information may be available on the technical datasheet.

# Surface Preparation and Adhesion

• **What is Adhesion?**

- Adhesion refers to the bond between two adjacent materials, and is related to the force required to affect their complete separation.

• **Types of Failure:**

- Cohesive failure (silicone breaks)
  - Adhesive ruptures leaving adhesive on both substrates involved in the bond
- Adhesive failure (bond breaks)
  - Adhesive pulls cleanly away from the substrate

• **Why is Surface Preparation Important?**

- Substrate preparation is critical to good adhesion
- Poor substrate preparation can contribute to adhesion problems
- Important to remove contamination
  - Process oils, mold release, dirt, grease, etc
  - Can be done by:
    - Appropriate solvent cleaning
      - ▲ Acetone, IPA, ethyl acetate, toluene, etc
      - Wipe, immerse
    - Detergent cleaning
      - ▲ Soap and water
      - Wash and water rinse, dry thoroughly

• **For Difficult to Bond to Substrates/Surfaces:**

- **Mechanical roughening**
  - Examples:
    - ▲ Sandpaper
    - ▲ Sand blasting
    - ▲ Metal wool
- **Chemical treatment**
  - Chemical treatment is the process of treating a clean surface by chemical means. The chemical nature of the substrate surface is altered to make it highly receptive to adhesion
  - Examples:
    - ▲ Etching with oxalic acid/sulfuric acid/distilled water
    - ▲ Etching with hydrofluoric acid/distilled water

• **For Difficult to Bond to Substrates/Surfaces (continued):**

■ **Use of primers**

- One-component, no mixing required
- Promote adhesion to difficult-to-bond substrates
- Apply in thin coats (0.5 mil)
- Dry at room temperature and ambient humidity conditions
  - Allow the primer to air-dry for at least 30 minutes before applying silicone.
  - When drying, avoid touching the primer or allowing it to be exposed to dust or water.

- Primers (refer to page 34 for primer options)

■ **Flame treatment**

- High temperature flame which has reactive species oxidizes the surface of the substrate and provides new functional groups.
- Used for many types of plastics

■ **Corona treatment**

- High voltage, high frequency discharge in air; another oxidation method, in which new functional groups are produced on the surface

■ **Plasma treatment**

- Neutral and charged species created by discharge in the presence of a gas similar to corona, but presence of additional gasses
- Add different functionalities to surface requires sophisticated vacuum equipment

# Primers

| Property   | SS4004P                                 | SS4044P                                 | SS4120            | SS4155          | SS4179                           |
|--|---|---|-------------------|-----------------|----------------------------------|
| <b>Color</b>   | Pink                                    | Clear/Amber                             | Clear, Colorless  | Blue            | Clear, Colorless                 |
| <b>Specific Gravity</b>                                    | 0.85                                    | 0.85                                    | 0.82              | 0.82            | 0.98                             |
| <b>Solids Content, %</b>                                   | 15                                      | 15                                      | 3                 | 10              | 6                                |
| <b>Solvent(s)</b>  | Acetone; Isopropanol; Xylene; N-butanol | Acetone; Isopropanol; Xylene; N-butanol | Ethanol; Methanol | Mineral Spirits | Ethyl acetate; Toluene; methanol |
| <b>Flash Point, (Pensky-Martin Closed Cup)</b>             | -12°C (10°F)                            | -12°C (10°F)                            | -0.5°C (31°F)     | 37°C (98°F)     | -3°C (27°F)                      |
| <b>Dry Time<sup>(1)</sup>, colder environment, minutes</b> | 5 to 15                                 | 5 to 15                                 | 30                | 30              | 5 to 10                          |
| <b>Dry Time<sup>(1)</sup>, warmer environment, minutes</b> | 3 to 5                                  | 3 to 5                                  | -                 | -               | 3 to 5                           |
| <b>VOC<sup>(2)</sup>, g/L</b>                              | 636                                     | 624                                     | 794               | 765             | 859                              |
| <b>D.O.T. Label</b>  | Flammable                               | Flammable                               | Flammable         | Flammable       | Flammable                        |

(1) Drying times shown are typical, however, these times may be longer or shorter depending upon local conditions at point of use. It is suggested to confirm that the primer is dry to the touch prior to the application of the RTV.

(2) Excluding water and exempts.

| RTV Silicone Rubber Compound | Primer Suggested for Evaluation |                 |
|------------------------------|---------------------------------|-----------------|
|                              | Primary                         | Alternates      |
| RTV11 through RTV88          | SS4004P                         | SS4044P, SS4155 |
| RTV500 Series                | SS4004P                         | SS4044P, SS4155 |
| RTV615, RTV655               | SS4120                          | SS4155          |
| RTV627                       | SS4155                          | SS4120          |
| RTV630                       | SS4155                          | SS4120          |
| RTV61X6 Series               | SS4120                          | SS4155          |
| RTV8000 Series               | SS4004P                         | SS4044P         |

**SS4004P and SS4044P**

✓ Helps promote adhesion to:

- Aluminum
- Copper
- Steel
- Stainless steel
- Brass
- Galvanized metals
- Porous metals
- Unglazed ceramics
- Wood

- ✓ SS4004P is bright pink providing easy visual determination of uniform coating
- ✓ SS4044P is the same as SS4004P but dries to a transparent film (for applications where discoloration of the substrates is undesirable)
- ✓ FDA compliant - SS4044P

**SS4120**

- ✓ Helps promote adhesion of GE Silicones addition cure RTV's
- ✓ For applications where clarity is required
- ✓ FDA compliant

**SS4155**

- ✓ General purpose for use with any GE Silicones RTV

**SS4179**

- ✓ Helps to promote adhesion to difficult-to-bond to plastic substrates including:
  - acrylics
  - acrylonitrile-butadiene-styrene (ABS)
  - cellulotics (cellulose acetate)
  - high-impact styrene
  - thermoplastic resins (Noryl\*)
- ✓ Transparent to preserve visibility of colorless products
- ✓ FDA compliant

**Caution:** Primers are flammable. Keep away from flames and ensure proper ventilation when applying the primer. Transfer only the required amount to a separate container. Ensure that the unused portion is properly sealed and store in a cool, dark place. Avoid exposing the unused primer to moisture.

Note: Additional information may be available on the technical datasheet.

\* InvisiSil, SilCool, Lexan, Noryl, and Cycology are trademarks of the General Electric Company.

# Tables

- Low Volatility Grades
- UL Recognition
- Mil-Spec: Military Specification
- Food Contact Applications:
  - FDA, USDA, NSF compliant
- Standard Methyl Silicone Chemical Resistance

## Low Volatility Grades:

Low volatility grades are developed to limit the levels of low molecular weight siloxane. Low molecular weight siloxane refers to cyclic dimethyl polysiloxane that may volatilize during and after cure.

| Type            | Grade      |
|-----------------|------------|
| One Part        | RTV142     |
|                 | RTV1673LV  |
|                 | RTV5313    |
|                 | RTV5319    |
|                 | TSE3925    |
|                 | TSE3975    |
|                 | XE11-B5320 |
| Two Part        | LVG342     |
|                 | RTV566     |
|                 | RTV567     |
| One Part Grease | YG6111     |
|                 | YG6260     |

## UL Directory File Number E56745: Toshiba Silicone Company, Ltd

| Type     | Grade     | UL HB* | UL94-V1 | UL94-V0 |
|----------|-----------|--------|---------|---------|
| One Part | TSE3051FR |        | •       |         |
|          | TSE326    | •      |         |         |
|          | TSE392    | •      |         |         |
|          | TSE3940   |        | •       | •       |
|          | TSE3941   |        | •       | •       |
|          | TSE397    | •      |         |         |
| Two Part | TSE3331   |        |         | •       |
|          | TSE3664   |        |         | •       |

## UL Directory Listing File Number E36952; Plastics Component Directory

| Type     | Grade    | UL | UL HB* | UL94-V1 | UL94-V0 |
|----------|----------|----|--------|---------|---------|
| One Part | IS522    |    | •      |         |         |
|          | IS523    |    | •      |         |         |
|          | IS802    |    | •      |         |         |
|          | IS803    |    | •      |         |         |
|          | IS806    |    | •      |         |         |
|          | IS808    |    | •      |         |         |
|          | IS800.09 |    | •      |         |         |
|          | RTV102   | •  |        |         |         |
|          | RTV103   | •  |        |         |         |
|          | RTV106   | •  |        |         |         |
|          | RTV108   | •  |        |         |         |
|          | RTV109   | •  |        |         |         |
|          | RTV112   | •  |        |         |         |
|          | RTV116   | •  |        |         |         |
|          | RTV118   | •  |        |         |         |
|          | RTV122   |    | •      |         |         |
|          | RTV123   |    | •      |         |         |
|          | RTV128   |    | •      |         |         |
|          | RTV133   |    |        | •       | •       |
|          | RTV160   |    | •      |         |         |
|          | RTV162   |    | •      |         |         |
|          | RTV167   |    | •      |         |         |
|          | RTV5222  |    | •      |         |         |
|          | RTV5223  |    | •      |         |         |
|          | RTV5229  |    | •      |         |         |
|          | RTV5812  |    | •      |         |         |
|          | RTV5813  |    | •      |         |         |
|          | RTV5818  |    | •      |         |         |
|          | RTV5242  |    | •      |         |         |
|          | RTV5243  |    | •      |         |         |
| RTV5249  |          | •  |        |         |         |
| RTV6702  |          | •  |        |         |         |
| RTV6703  |          | •  |        |         |         |
| RTV6708  |          | •  |        |         |         |
| Two Part | RTV627   |    |        | •       | •       |
|          | RTV6428  |    |        | •       | •       |
|          | RTF762   |    |        |         | •       |

\* The UL94 HB rating is based on standard, small-scale laboratory tests and as such is not reliable for determining, evaluating, predicting, or describing the flammability or burning characteristics of the product under actual file conditions.

## Military Specifications

| Type     | Grade    | MIL-A-46106B Group I, Type I | MIL-A-46106B Group I, Type II | MIL-A-46106B Group III, Type I | MIL-A-46106B Group III, Type II | MIL-A-46146B Group I, Type I | MIL-A-46146B Group II, Type I | MIL-PRF-23586F |
|----------|----------|------------------------------|-------------------------------|--------------------------------|---------------------------------|------------------------------|-------------------------------|----------------|
| One Part | RTV102   | •                            |                               |                                |                                 |                              |                               |                |
|          | RTV103   | •                            |                               |                                |                                 |                              |                               |                |
|          | RTV106   |                              |                               | •                              |                                 |                              |                               |                |
|          | RTV108   | •                            |                               |                                |                                 |                              |                               |                |
|          | RTV109   | •                            |                               |                                |                                 |                              |                               |                |
|          | RTV112   |                              | •                             |                                |                                 |                              |                               |                |
|          | RTV116   |                              |                               |                                | •                               |                              |                               |                |
|          | RTV118   |                              | •                             |                                |                                 |                              |                               |                |
|          | RTV122   |                              |                               |                                |                                 | •                            |                               |                |
|          | RTV123   |                              |                               |                                |                                 | •                            |                               |                |
|          | RTV128   |                              |                               |                                |                                 | •                            |                               |                |
|          | RTV162   |                              |                               |                                |                                 | •                            |                               |                |
|          | RTV167   |                              |                               |                                |                                 |                              | •                             |                |
|          | Two Part | RTV8111                      |                               |                                |                                 |                              |                               |                |
| RTV8112  |          |                              |                               |                                |                                 |                              |                               | •              |
| RTV8262  |          |                              |                               |                                |                                 |                              |                               | •              |

\* Testing for the referenced MIL Specs is performed in accordance with current GE Advanced Materials, Silicones quality test methods, laboratory conditions and procedures, frequency, and sampling, which are not necessarily identical with the methods, conditions, procedures, frequency and sampling stated or referenced in the listed specification.

Any certification will be limited to listed properties and will not imply or state conformity to any other aspect of the referenced specification, including but not limited to marking, packaging, bar coding, testing, or sampling.

Contact the Technical Service center at 800.255.8886 for additional information on MIL Specs.

## Thermal Conductivity Unit Conversion Guide

| Original Unit                | Conversion Multiplier | Final Unit                   |
|------------------------------|-----------------------|------------------------------|
| W/mK                         | $2.4 \times 10^{-3}$  | cal/cm-s°C                   |
|                              | 6.94                  | BTU-in/hr-ft <sup>2</sup> °F |
| cal/cm-s°C                   | $4.2 \times 10^2$     | W/mK                         |
| BTU-in/hr-ft <sup>2</sup> °F | 0.14                  | W/mK                         |

# Food Contact Applications For Silicone Rubber Compounds

Several GE Silicones RTV silicone rubber compounds can be evaluated for food contact applications where FDA, USDA and NSF regulations apply.

## FDA STATUS

The following one-part RTV silicone rubber compounds may be used in repeated contact with foods under FDA regulation 21CFR177.2600 "Rubber Articles Intended for Repeated Use" (and, by reference, 21CFR175.300 "Resins and Polymeric Coatings").

|         |         |        |
|---------|---------|--------|
| RTV102  | RTV103  | RTV106 |
| RTV108* | RTV109  | RTV112 |
| RTV116  | RTV118* |        |
| IS802   | IS803   |        |
| IS806   | IS808   |        |

\* USP Class VI

### The Use of these Sealants is Subject to the Following Conditions:

The sealant must be applied in accordance with good manufacturing practices at a thickness not to exceed 6mm (1/4") from an exposed edge, and as a continuous film between joints acting as a functional barrier between the food and the substrate (the area underneath the joint).

The sealant must be cured for a minimum of 14 days at 25°C (77°F) and 50% RH. The sealant must be thoroughly cleansed before the first use.

The sealant, when properly cured, must comply with the extractives limitations at temperatures up to and including reflux applications. The user should verify compliance with extractives limitations at higher temperatures.

Compliance with 21CFR177.2600 does not authorize use of these sealants for the manufacture of baby bottle nipples.

All previously mentioned sealants must be evaluated to determine bond strength for each specific application. If greater adhesion is required, the evaluation of primer SS4044 (clear) is recommended. SS4044 may be used in repeated

contact with food under 21CFR175.105 "Adhesives" and used in conjunction with the RTV products covered under 21CFR177.2600.

The following two-part RTV silicone rubber compounds may be used in repeated contact with foods under FDA regulation 21CFR177.2600, "Rubber Articles Intended for Repeated Use"

|         |
|---------|
| RTV11   |
| RTV41   |
| RTV615  |
| RTV664  |
| SLE5500 |
| SLE5600 |

### The Use of these Compounds is Subject to the Following Conditions:

The compound must be applied in accordance with Good Manufacturing Practices. The compound must be thoroughly cleansed before the first use. Compliance with 21CFR177.2600 does not authorize use of the compound for the manufacture of baby bottle nipples.

RTV11 and RTV41 must be formulated with Dibutyl Tin Dilaurate (DBT) or RTV9950 to comply with 21CFR175.300, 21CFR177.2600. RTV11, RTV41 and SLE5500 compounds should not be used in contact with acid foods.

As with the sealants, primers may be desired. If so, the evaluation of primers SS4044 or SS4120 is recommended. These are covered under FDA regulation 21CFR175.105 "Adhesives", and can be used in conjunction with the silicone compounds mentioned above covered under 21CFR177.2600.

## USDA STATUS

GE Silicones has on file approval letters from the USDA which states that **RTV102, RTV103, RTV106, RTV108, RTV109, RTV112, RTV116, RTV118, IS802, IS803, IS806 and IS808** sealants, are chemically acceptable for use as sealants on equipment which may contact edible products in official establishments operating under the federal meat and poultry products inspection program. The areas sealed should be thoroughly rinsed with potable water after the sealant has properly cured. The compound must be used in a manner which prevents direct or indirect contamination of edible products.

If greater adhesion is required, the evaluation of primer SS4044 (clear) is recommended. SS4044 is listed with the USDA.

The final granting of authorization for the proposed use of such sealants is the responsibility of the inspector in charge of the official plant. Technical assistance will be provided by the Product Safety Branch of USDA upon request. These sealants are found in the "List of Proprietary Substances and Nonfood Compounds" issued by USDA. A copy of the approval letter may be required by the USDA inspector. A copy of the approval letter may be obtained from the GE Silicone Product Regulatory Compliance Operation.

## NSF STATUS

The National Sanitation Foundation lists **RTV102, RTV103, RTV106, RTV108, RTV109, RTV112, RTV116, RTV118, IS802, IS803, IS806 and IS808** sealants under NSF Standard No. 51 "Plastic Materials and Components for Use in Food Equipment" as satisfactory for use on food contact surfaces. If greater adhesion is required, the evaluation of SS4044 primer is recommended. SS4044, is also listed under NSF Standard No. 51.

## PRODUCT DATA

Product data sheets describing specific product properties, typical industrial applications and instructions for use are available from GE Silicones. Call the GE Silicones sales office nearest you, or an authorized GE silicone product distributor. You can visit our website at [www.gesilicones.com](http://www.gesilicones.com) for additional information.

## Standard Methyl Silicone Chemical Resistance

|                           | Chemical                       | Volume Change |
|---------------------------|--------------------------------|---------------|
| Acid                      | Concentrated Hydrochloric Acid | +             |
|                           | Hydrochloric Acid (3%)         | +             |
|                           | Concentrated Sulphuric Acid    | Decomposition |
|                           | Sulphuric Acid (10%)           | +             |
|                           | Concentrated Nitric Acid       | △             |
|                           | Nitric Acid (7%)               | +             |
|                           | Glacial Acetic Acid            | +             |
|                           | Acetic Acid                    | +             |
|                           | Hydrofluoric Acid              | Decomposition |
|                           | Citric Acid                    | +             |
| Alkali                    | Phosphoric Acid                | +             |
|                           | Concentrated Ammonia           | +             |
|                           | Ammonia (10%)                  | +             |
|                           | Potassium Hydroxide (20%)      | +             |
|                           | Sodium Hydroxide (1%)          | +             |
|                           | Sodium Hydroxide (20%)         | +             |
| Inorganic Saline Solution | Sodium Hydroxide (50%)         | +             |
|                           | Sodium Chloride (10%)          | +             |
|                           | Sodium Carbonate (2%)          | +             |
|                           | Sodium Carbonate (20%)         | +             |
|                           | Hydrogen Peroxide (3%)         | +             |
|                           | ASTM No.1 Oil (150°C, 70h)     | +             |
| Oil                       | ASTM No.3 Oil (150°C, 70h)     | △             |
|                           | Mineral Oil                    | +             |
|                           | Castor Oil                     | +             |
|                           | Flax Seed Oil                  | +             |
| Solvent*                  | Silicone Oil (35°C, 70h)       | △             |
|                           | Acetone                        | △             |
|                           | Butyl Alcohol                  | O             |
|                           | Ethyl Alcohol                  | +             |
|                           | Gasoline                       | X             |
|                           | Mineral Spirit                 | X             |
| Water                     | Toluene                        | X             |
|                           | Water (room temperature)       | +             |
|                           | Boiling Water (70h)            | +             |

+ :<10%

O :10-25%

△ :25.75%

Test Method: Volume change of cured liquid silicone rubber after immersion time of 1week at 25°C.

\* Suggest the evaluation of fluorosilicones (FRV1106) for solvent applications.

## FAQ's

### What does RTV mean?

RTV stands for Room Temperature Vulcanization. RTV silicones are products that cure (vulcanize) at room temperature although some need higher temperatures to cure. RTV silicones are thermoset products.

### What does thermoset mean?

Thermoset relates to products that cannot be transformed to their original form once cured. Once RTV silicones have cured (or vulcanized), they can not be transformed back into a paste to be recast.

### What is the cure mechanism of a condensation cure product?

Condensation cure silicone products cure when exposed to atmospheric moisture. Moisture in the air is generally required to cure (or vulcanize) condensation cure products. The cure process begins from the most exposed area of the product to air, to the least exposed area, thus time is required for complete cure. The cure time is affected by the reaction mechanism and viscosity of the material. Generally, at 25°C and 50%RH, condensation cure RTV silicones cure through in 24 to 48 hours. Full physical properties may take 7 to 14 days to develop (refer to product literature for specific cure rates).

### What are the byproducts for condensation cure RTV's?

For one-part condensation cure RTV's, the byproducts are: acetic acid (acetoxo cure RTV's), alcohol (alkoxy cure RTV's) and methanol and/or ammonia (methoxy cure RTV's). For two-part condensation cure RTV's, the byproducts are alcohol and water. Because condensation cure RTV's release byproducts during the cure process, it is recommended to cure the RTV in an open system to permit the byproduct to escape. This will enable the full properties of the material to develop and will reduce or eliminate any stability issues due to reversion.

### What is the depth (bead thickness) limitation for a condensation cure RTV?

For one-part, condensation cure RTV's, the depth (bead thickness) limitation is 1/4 inch. For two-part, condensation cure RTV's, the depth (bead thickness) limitation is 1 inch unless RTV9811 or STO is used in place of DBT.

### Can I accelerate the cure time of a one-part RTV silicone?

Condensation cure RTV silicone product cure rates depend on humidity, silicone thickness, and to a smaller degree heat. Increasing the relative humidity around the silicone or reducing the thickness of the material will reduce the time to cure the material. Increased heat (not over 50°C) will somewhat reduce cure time but as mentioned, will do so to a much smaller degree than humidity or thickness.

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### What is the cure mechanism of an addition cure product?

Addition cure silicone products cure when exposed to heat. Although some heat cure products can cure at room temperature, higher heat greatly accelerates the cure. One-part heat cure products typically have an inhibitor in the formulation which prevents the product from curing until an activation temperature, greater than room temperature, is achieved. The inhibitor is subsequently driven off and the cure reaction is allowed to proceed. Heat cure products do not liberate by-products during cure.

### What are the byproducts for addition cure RTV's?

Addition cure RTV's do not give off a byproduct.

### What do "pot life" and "work life" mean?

The amount of time after a two-part RTV is mixed with its curing agent that it will remain useful or pliable.

### What does "tack free time" mean?

Tack free time refers to the amount of time it takes for a condensation cure RTV silicone product to form a cured outer layer (the cured outer layer is not tacky like uncured material). Condensation cure products generally cure from the outside (or exposed surface(s)) inward because of the need for moisture in the air for the curing reaction. Tack free time is not applicable to addition cure RTV materials.

### What does thixotropic mean?

Thixotropy is the property that allows a paste-like material to flow under pressure or agitation (i.e. allows a paste to be dispensed from a caulk gun). Basically, a thixotropic material thins (reduces in viscosity) when shear forces are applied to it and then thickens again when the shear forces are removed.

### What does "flowable" (also called self-leveling) mean?

Flowable describes a material whose top surface when dispensed will self level. Typical RTV materials that are flowable will have the consistency of ketchup and some will even flow like honey.

### What is mix ratio and where is the mix ratio found?

Mix ratio is a term used to state the amount of each material to be mixed in a multi-component material. The mix ratios for two-part RTV products are described on the individual product data sheets and are given as a ratio by weight of each material.

### How do I remove silicone?

**Before it is cured:** Use a putty knife to remove any of the uncured paste. Wipe the area clean with isopropyl alcohol to remove any leftover residue.

**After it is cured:** First you should mechanically remove as much of the silicone as you can with either a knife or a razor. A solvent can then be used to remove any oily residue or any remaining silicone. It may be necessary to soak the silicone in a solvent overnight to break it down. Below is a list of solvents in the order of aggressiveness in attacking the silicone:

- Paint thinner (mineral spirits)
- Toluene
- Xylene
- Acetone

### Can I thin a silicone?

Silicone can be thinned using a solvent in which the silicone is miscible, generally an aromatic solvent such as toluene or xylene. As always, be sure to follow the manufacturer's instructions when using solvent products and always use in a well-ventilated area. The shrinkage of the silicone and the cure time will increase with the addition of solvent. Alternative suggestions would include non-reactive fluids or an RTV with a lower viscosity.

### What type of release agents should I use if I don't want silicone to adhere to a substrate?

For small molds, a customer can use a dry Teflon spray or petroleum jelly as a release agent (dilute the petroleum jelly with hexane to make it easier to apply - 80% hexane to 20% petroleum jelly).

### How do I ensure that air is removed from two-part grades?

If you are hand mixing, air may become added to the material during the mixing process. Vacuum de-airing is most effective in removing air prior to use. Automated mixing equipment that utilizes a static mixer can eliminate the need to de-air prior to dispensing.

### Why use a Silicone vs. an organic compound such as an epoxy or urethane?

RTV silicones exhibit high performance under many harsh operating environments.

## Relative Performance Characteristics

| Property          | Silicone RTV | Epoxy       | Urethane    |
|-------------------|--------------|-------------|-------------|
| Temperature Range | 50 to 200°C  | 50 to 150°C | 30 to 120°C |
| Heat Resistance   | Excellent    | Poor        | Poor        |
| Flame Retardency* | Excellent    | None        | None        |
| UV Stability      | Excellent    | Poor        | Poor        |
| Ozone Stability   | Excellent    | Poor        | Poor        |
| Modulus           | Low          | High        | High        |

\* As a base material, silicone demonstrates flame retardant properties comparable to UL94HB. Refer to page 38 for information on UL recognized products.

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### What is the Young's Modulus for silicone?

In rubber, modulus refers to the force per unit of original cross section to a specific extension. It is a ratio of the stress of rubber to the tensile strain but differs from that of metal, as it is not a Young's modulus stress-strain-type curve. Stress-strain values are extremely low for slight extensions but increase logarithmically with increased extension. Rubber has the useful property, for some products, of being extensible to 10 times its original length. The modulus can vary for the same hardness and does affect the stiffness of insulation. (Source: Handbook of Plastics, Elastomers, and Composites, 3rd Edition, Charles A Harper, McGraw-Hill.)

### What is cure inhibition?

Cure inhibition is a phenomenon that may be observed in addition cure grades. Addition cure products use a platinum catalyst to drive the curing reaction. Inhibition can be prevented by the application of a barrier coat, cleaning the inhibiting material prior to application of the addition cure silicone, replacing the inhibiting material with a more suitable alternative, or selecting a condensation cure RTV.

### Indicators: Interface between the silicone and substrate will appear "gummy/sticky" and/or incomplete cure attained.

### Typical contaminants include, but are not limited to:

- Sulfur, Sulfides (common example: Latex gloves)
- Amines
- Tin-fatty acids, Tin salts and Tin soaps
- Some clays
- Natural rubber
- Neoprene rubber
- Petroleum jelly
- Phosphorus-phosphines, phosphites
- Nitrogen-amines, amides, nitriles, cyanates
- Arsenic-arsines
- Compounds with unsaturated bonds
- Alcohols-ethanol, methanol
- Esters-ethyl acetate, vinyl acetate
- Substrates containing plasticizers, anti-slip additives, stabilizers
- Substrates with coatings containing calcium carbonate, polyvinyl acetate, acrylic latex, natural rubber latex
- Alginates

Product Selector Guide: Condensation Cure Adhesives and Sealants

| Type                       | Grade          | Cure Chemistry  | Cured Property                                    | Feature   | Performance   |                |                |                             |                            |               |                      | Product Detail |                        |
|----------------------------|----------------|-----------------|---|---|---------------|----------------|----------------|-----------------------------|----------------------------|---------------|----------------------|----------------|------------------------|
|                            |                |                 |   |   | Flowability   | UL Recognition | Low Volatility | High Temperature Resistance | Low Temperature Resistance | FDA Compliant | Thermally Conductive |                | Military Specification |
| One Part Condensation Cure | FRV1106        | Acetoxy         | Rubber  | Fuel, solvent, chemical resistant Fluoro sealant                  | Non-flowable  |                |                |                             |                            |               |                      |                | P. 9                   |
|                            | IS522          | Alkoxy          | Rubber  | General purpose paste adhesive                                    | Non-flowable  | UL94 HB        |                |                             |                            |               |                      |                | P. 13                  |
|                            | IS523          | Alkoxy          | Rubber  | General purpose paste adhesive                                    | Non-flowable  | UL94 HB        |                |                             |                            |               |                      |                | P. 13                  |
|                            | IS800 series   | Acetoxy         | Rubber  | General purpose paste adhesive                                    | Non-flowable  | UL94 HB        |                |                             |                            | •             |                      |                | P. 9                   |
|                            | IS806          | Acetoxy         | Rubber  | Temperature resistant paste adhesive                              | Non-flowable  | UL94 HB        |                | •                           |                            | •             |                      |                | P. 9                   |
|                            | IS902          | Modified Alkoxy | Rubber  | Paintable adhesive  | Non-flowable  |                |                |                             |                            |               |                      |                | P. 13                  |
|                            | RTV100 series  | Acetoxy         | Rubber  | General purpose paste adhesive                                    | Non-flowable  | UL E36952      |                |                             |                            | •             |                      | MIL-A-46106B   | P. 8                   |
|                            | RTV106         | Acetoxy         | Rubber  | Temperature resistant paste adhesive                              | Non-flowable  | UL E36952      |                | •                           |                            | •             |                      | MIL-A-46106B   | P. 8                   |
|                            | RTV112         | Acetoxy         | Rubber  | General purpose self-leveling sealant                             | Flowable      | UL E36952      |                |                             |                            | •             |                      | MIL-A-46106B   | P. 8                   |
|                            | RTV116         | Acetoxy         | Rubber  | General purpose self-leveling sealant                             | Flowable      | UL E36952      |                |                             |                            | •             |                      | MIL-A-46106B   | P. 8                   |
|                            | RTV118         | Acetoxy         | Rubber  | Temperature resistant flowable sealant                            | Flowable      | UL E36952      |                | •                           |                            | •             |                      | MIL-A-46106B   | P. 8                   |
|                            | RTV12X series  | Modified Alkoxy | Rubber  | Paste adhesive  | Non-flowable  | UL94 HB        |                |                             |                            |               |                      | MIL-A-46146B   | P. 13                  |
|                            | RTV133         | Alkoxy          | Rubber  | Paste sealant   | Non-flowable  | UL94 V-0       |                |                             |                            |               |                      |                | P. 10                  |
|                            | RTV142         | Alkoxy          | Rubber  | Low volatile, paste adhesive                                      | Non-flowable  |                |                | •                           |                            |               |                      |                | P. 11                  |
|                            | RTV1473        | Acetoxy         | Rubber  | Oil resistant, paste adhesive                                     | Non-flowable  |                |                |                             |                            |               |                      |                | P. 9                   |
|                            | RTV157         | Acetoxy         | Rubber  | High strength sealant   | Non-flowable  |                |                |                             |                            |               |                      |                | P. 8                   |
|                            | RTV159         | Acetoxy         | Rubber  | High strength sealant   | Non-flowable  |                |                | •                           |                            |               |                      |                | P. 9                   |
|                            | RTV160         | Alkoxy          | Rubber  | Non-corrosive coating   | Flowable      | UL94 HB        |                |                             |                            |               |                      |                | P. 10                  |
|                            | RTV162         | Alkoxy          | Rubber  | High strength, non-corrosive adhesive                             | Non-flowable  | UL94 HB        |                |                             |                            |               |                      | MIL-A-46146B   | P. 10                  |
|                            | RTV167         | Alkoxy          | Rubber  | High strength, non-corrosive adhesive                             | Non-flowable  | UL94 HB        |                |                             |                            |               |                      | MIL-A-46146B   | P. 10                  |
|                            | RTV1673LV      | Modified Alkoxy | Rubber  | Low volatile, non-corrosive paste adhesive                        | Non-flowable  |                |                | •                           |                            |               |                      |                | P. 12                  |
|                            | RTV522X series | Alkoxy          | Rubber  | Low modulus, paste adhesive                                       | Non-flowable  | UL94 HB        |                |                             |                            |               |                      |                | P. 10                  |
|                            | RTV524X series | Alkoxy          | Rubber  | Hydrolytically stable, paste adhesive                             | Non-flowable  | UL94 HB        |                |                             |                            |               |                      |                | P. 10                  |
|                            | RTF5308        | Modified Alkoxy | Rubber  | Fast curing, paste adhesive                                       | Non-flowable  |                |                |                             |                            |               |                      |                | P. 12                  |
|                            | RTV5313        | Modified Alkoxy | Rubber  | Low volatile, paste adhesive                                      | Non-flowable  |                |                | •                           |                            |               |                      |                | P. 12                  |
|                            | RTV5319        | Modified Alkoxy | Rubber  | Low volatile, paste adhesive                                      | Non-flowable  |                |                | •                           |                            |               |                      |                | P. 12                  |
|                            | RTV581X series | Modified Alkoxy | Rubber  | Fast curing, paste adhesive                                       | Non-flowable  | UL94 HB        |                |                             |                            |               |                      |                | P. 13                  |
|                            | RTV670X series | Modified Alkoxy | Rubber  | Paste adhesive; UL recognized                                     | Non-flowable  | UL94 HB        |                |                             |                            |               |                      |                | P. 12                  |
|                            | TSE392         | Alkoxy          | Rubber  | Fast tack, non-corrosive adhesive                                 | Non-flowable  | UL94 HB        |                |                             |                            |               |                      |                | P. 11                  |
|                            | TSE3925        | Alkoxy          | Rubber  | Low volatile variant of TSE392                                    | Non-flowable  |                |                | •                           |                            |               |                      |                | P. 11                  |
|                            | TSE397         | Alkoxy          | Rubber  | Non-corrosive, flowable adhesive                                  | Flowable      | UL94 HB        |                |                             |                            |               |                      |                | P. 11                  |
|                            | TSE399         | Alkoxy          | Rubber  | Non-corrosive pourable adhesive / coating                         | Flowable      |                |                |                             |                            |               |                      |                | P. 11                  |
| TSE3991                    | Alkoxy         | Rubber          | Low viscosity variant of TSE399                   | Flowable  |               |                |                |                             |                            |               |                      | P. 11          |                        |
| TSE3975                    | Alkoxy         | Rubber          | Fast tack, low volatile, flowable adhesive        | Flowable  |               |                | •              |                             |                            |               |                      | P. 11          |                        |
| Two Part Condensation Cure | RTV11          | Alkoxy          | Rubber  | General purpose, potting sealant                                  | Flowable      |                |                |                             |                            | •             |                      |                | P. 16                  |
|                            | RTV12          | Alkoxy          | Rubber  | Low viscosity, general purpose coating                            | Flowable      |                |                |                             |                            |               |                      |                | P. 16                  |
|                            | RTV200 series  | Alkoxy          | Rubber  | Fast cure, high strength paste adhesive                           | Flowable      |                |                |                             |                            |               |                      |                | P. 14                  |
|                            | RTV21          | Alkoxy          | Rubber  | General purpose, potting sealant                                  | Flowable      |                |                |                             |                            | •             |                      |                | P. 16                  |
|                            | RTV31          | Alkoxy          | Rubber  | High temperature resistant, flowable sealant                      | Flowable      |                |                | •                           |                            |               |                      |                | P. 14                  |
|                            | RTV41          | Alkoxy          | Rubber  | General purpose, potting sealant                                  | Flowable      |                |                |                             |                            | •             |                      |                | P. 16                  |
|                            | RTV511         | Alkoxy          | Rubber  | Low temperature, flowable sealant                                 | Flowable      |                |                |                             |                            | •             |                      |                | P. 15                  |
|                            | RTV560         | Alkoxy          | Rubber  | Low and high temperature resistant, flowable sealant              | Flowable      |                |                | •                           |                            | •             |                      |                | P. 15                  |
|                            | RTV566         | Alkoxy          | Rubber  | Low volatile, low and high temperature resistant flowable sealant | Flowable      |                |                | •                           |                            | •             |                      |                | P. 15                  |
|                            | RTV567         | Alkoxy          | Rubber  | Low volatile, low temperature resistant flowable sealant          | Flowable      |                |                | •                           |                            | •             |                      |                | P. 15                  |
|                            | RTV577         | Alkoxy          | Rubber  | Low temperature, paste sealant                                    | Non-flowable  |                |                |                             |                            | •             |                      |                | P. 15                  |
|                            | RTV60          | Alkoxy          | Rubber  | General purpose, potting sealant                                  | Flowable      |                |                | •                           |                            |               |                      |                | P. 14                  |
|                            | RTV8111        | Alkoxy          | Rubber  | General purpose, potting sealant                                  | Flowable      |                |                |                             |                            |               |                      | MIL-PRF-23586F | P. 16                  |
|                            | RTV8112        | Alkoxy          | Rubber  | General purpose, potting sealant                                  | Flowable      |                |                |                             |                            |               |                      | MIL-PRF-23586F | P. 16                  |
|                            | RTV8262        | Alkoxy          | Rubber  | High temperature resistant, flowable sealant                      | Flowable      |                |                | •                           |                            |               |                      | MIL-PRF-23586F | P. 14                  |
|                            | RTV88          | Alkoxy          | Rubber  | High temperature resistant, spreadable paste sealant              | Non-flowable  |                |                | •                           |                            |               |                      |                | P. 15                  |
|                            | RTV88HB        | Alkoxy          | Rubber  | High temperature resistant, spreadable paste sealant              | Non-flowable  |                |                | •                           |                            |               |                      |                | P. 15                  |
|                            | TSE3664        | Alkoxy          | Rubber  | Fast cure, low viscosity adhesive                                 | Flowable      | UL94 V-0       |                |                             |                            |               |                      |                | P. 14                  |
| One Part Addition Cure     | ADDISIL 6101   | Heat            | Rubber  | Fast cure at elevated temperatures; storage stability             | Non-flowable  |                |                |                             |                            |               |                      |                | P. 18                  |
|                            | ECC4865        | Heat            | Rubber  | Low viscosity coating   | Flowable      |                |                |                             |                            |               |                      |                | P. 18                  |
|                            | RTV6424        | Heat            | Rubber  | Fast cure at elevated temperatures; Paste adhesive                | Non-flowable  |                |                |                             |                            |               |                      |                | P. 18                  |
|                            | TSE322         | Heat            | Rubber  | Non-corrosive adhesive  | Non-flowable  |                |                |                             |                            |               |                      |                | P. 19                  |
|                            | TSE3212        | Heat            | Rubber  | Thixotropic, non-corrosive adhesive                               | Semi-flowable |                |                |                             |                            |               |                      |                | P. 19                  |
|                            | TSE3221        | Heat            | Rubber  | Non-corrosive adhesive  | Flowable      |                |                |                             |                            |               |                      |                | P. 19                  |
|                            | TSE325         | Heat            | Rubber  | Non-corrosive encapsulation and potting                           | Flowable      |                |                |                             |                            |               |                      |                | P. 18                  |
|                            | TSE3251        | Heat            | Rubber  | Non-corrosive coating   | Flowable      |                |                |                             |                            |               |                      |                | P. 19                  |
| TSE326                     | Heat           | Rubber          | High temperature resistant adhesive               | Flowable  | UL94 HB       |                | •              |                             |                            |               |                      | P. 19          |                        |
| Two Part Addition Cure     | LVG342         | Heat            | Rubber  | Low volatile adhesive; fast cure at elevated temperatures         | Flowable      |                | •              |                             |                            |               |                      |                | P. 21                  |
|                            | RTV6108-D1     | Heat            | Rubber  | Long room temperature pot life; fast heat curing adhesive         | Non-flowable  |                |                |                             |                            |               |                      |                | P. 21                  |
|                            | RTV615         | Heat            | Rubber  | High strength with optical clarity                                | Flowable      |                |                |                             |                            | •             |                      |                | P. 20                  |
|                            | RTV627         | Heat            | Rubber  | Fast curing sealant   | Flowable      | UL94 V-0       |                |                             |                            |               |                      |                | P. 21                  |
|                            | RTV6428        | Heat            | Rubber  | Fast cure at low temperature                                      | Flowable      | UL94 V-0       |                |                             |                            |               |                      |                | P. 21                  |
|                            | RTV655         | Heat            | Rubber  | Low temperature resistant potting compound                        | Flowable      |                |                |                             |                            | •             |                      |                | P. 20                  |
|                            | RTV656         | Heat            | Rubber  | Low temperature resistant potting compound                        | Flowable      |                |                |                             |                            | •             |                      |                | P. 20                  |
| TSE3033                    | Heat           | Rubber          | Adhesive type potting with transparent appearance | Flowable  |               |                |                |                             |                            |               |                      | P. 20          |                        |

Product Selector Guide: Catalyst Options

| Type            | Grade   | Feature                                 | Product Detail |
|-----------------|---------|---|----------------|
| Paste Catalysts | DBT     | Standard curing agent; Moderate speed   | P. 17          |
|                 | RTV9811 | Deep section cure; paste version of DBT | P. 17          |
|                 | RTV9858 | Paste version of DBT; used in 5% to 7%  | P. 17          |
|                 | RTV9891 | Fast curing, paste version of STO       | P. 17          |
|                 | RTV9910 | Paste version of DBT (0.1%)             | P. 17          |
|                 | RTV9950 | Paste version of DBT (0.5%)             | P. 17          |
|                 | STO     | Fast cure speed                         | P. 17          |

Product Selector Guide: Thermally Conductive Adhesives and Sealants

| Type                 | Grade            | Cure Chemistry | Feature  | Performance   |                |                | Product Detail |
|----------------------|------------------|----------------|--|---------------|----------------|----------------|----------------|
|                      |                  |                |  | Flowability   | UL Recognition | Low Volatility |                |
| Thermally Conductive | SilCool* LTR3291 | Heat           | Thin bond line capable, semi-flowable adhesive | Semi-flowable |                |                | • P. 22        |
|                      | SilCool* LTR3292 | Heat           | Thin bond line capable, flowable adhesive      | Flowable      |                |                | • P. 22        |
|                      | TSE3080          | Heat           | Thermally conductive potting gel               | Flowable      |                |                | • P. 23        |
|                      | TSE3081          | Heat           | Thermally conductive potting gel               | Flowable      |                |                | • P. 23        |
|                      | TSE3280-G        | Heat           | Adhesive for thermally conductive applications | Flowable      |                |                | • P. 22        |
|                      | TSE3281-G        | Heat           | Thermally conductive adhesive applications     | Flowable      |                |                | • P. 22        |
|                      | TSE3331          | Heat           | Thermally conductive adhesive                  | Flowable      | UL94 V-0       |                | • P. 23        |
|                      | TSE3380          | Heat           | Thermally conductive adhesive                  | Flowable      |                |                | • P. 23        |
|                      | TSE3941          | Condensation   | Paste adhesive                                 | Non-flowable  | UL94 V-0       |                | • P. 22        |
|                      | TSE3940          | Condensation   | Paste adhesive                                 | Non-flowable  | UL94 V-0       |                | • P. 22        |
|                      | XE11-85320       | Condensation   | Low volatile paste adhesive                    | Non-flowable  |                |                | • P. 22        |

\* InvisiSil, SilCool, Lexan, Noryl, and Cycology are trademarks of the General Electric Company.

Product Selector Guide: Greases

| Type    | Grade            | Feature                       | Performance          |                | Product Detail |
|---------|------------------|-------------------------------|----------------------|----------------|----------------|
|         |                  |                               | Thermally Conductive | Low Volatility |                |
| Greases | SilCool* TIG825  | High thermal conductivity     | •                    |                | P. 24          |
|         | SilCool* TIG2000 | High thermal conductivity     | •                    |                | P. 24          |
|         | YG6111           | Moderate thermal conductivity | •                    | •              | P. 24          |
|         | YG6260           | Moderate thermal conductivity | •                    | •              | P. 24          |

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Product Selector Guide: Semiconductor Die-Attach Adhesives and Sealants

| Type  | Grade           | Cure Chemistry          | Cured Property | Feature  | Performance  |                              |                    |                      | Product Detail |
|---|-----------------|-------------------------|----------------|--|--------------|------------------------------|--------------------|----------------------|----------------|
|   |                 |                         |                |  | Flowability  | Junction Resin Coating (JCR) | Electro-Conductive | Thermally Conductive |                |
| Semiconductor Die-Attach Adhesives and Sealants | CRTV5120        | Acetoxyl (Condensation) | Rubber         | Semi-conductive paste adhesive                   | Non-flowable |                              | •                  |                      | P. 25          |
|   | SilFas* SDC5000 | Addition                | Rubber         | Electrically conductive paste adhesive           | Non-flowable |                              | •                  | •                    | P. 24          |
|   | SilFas* SDI3000 | Addition                | Rubber         | Electro-insulative die-attach                    | Flowable     |                              |                    | •                    | P. 24          |
|   | TSJ3158-B       | Addition                | Rubber         | High purity JCR-grade with primerless adhesion   | Flowable     | •                            |                    |                      | P. 24          |
|   | TSJ3185         | Addition                | Gel            | High purity JCR-grade which forms into a gel     | Flowable     | •                            |                    |                      | P. 25          |
|   | TSJ3175         | Addition                | Gel            | Low impurities JCR-grade which forms into a gel  | Flowable     | •                            |                    |                      | P. 25          |
|   | XE5844          | Addition                | Rubber         | Translucent JCR-grade with high refractive index | Flowable     | •                            |                    |                      | P. 24          |

\* SilFas is a trademark of the General Electric Company.

Product Selector Guide: Gels

| Type | Grade     | Cure Chemistry                       | Cured Property | Feature                                     | Performance |                |                            | Product Detail |
|------|-----------|--------------------------------------|----------------|---|-------------|----------------|----------------------------|----------------|
|      |           |                                      |                |   | Flowability | UL Recognition | Low Temperature Resistance |                |
| Gels | RTV6100A  | Heat / Room temperature cure capable | Gel            | Additive for RTV61XX series                 | Flowable    |                |                            | P. 26          |
|      | RTV6126   | Heat / Room temperature cure capable | Gel            | Fast cure gel                               | Flowable    |                |                            | P. 26          |
|      | RTV6136   | Heat / Room temperature cure capable | Gel            | High strength, fast cure, tough gel         | Flowable    |                |                            | P. 26          |
|      | RTV6156   | Heat / Room temperature cure capable | Gel            | Low temperature resistant gel               | Flowable    |                | •                          | P. 26          |
|      | RTV6166   | Heat / Room temperature cure capable | Gel            | General purpose gel                         | Flowable    |                |                            | P. 26          |
|      | RTV6186   | Heat                                 | Gel            | Fast cure, tough gel with extended pot life | Flowable    |                |                            | P. 26          |
|      | RTV6188   | Heat                                 | Gel            | Fast cure, tough gel with extended pot life | Flowable    |                |                            | P. 27          |
|      | RTV6196   | Heat / Room temperature cure capable | Gel            | Fast cure, low viscosity gel                | Flowable    |                |                            | P. 27          |
|      | TSE3051   | Heat                                 | Gel            | One-part, fast cure gel                     | Flowable    |                |                            | P. 27          |
|      | TSE3051FR | Heat                                 | Gel            | One-part, fast cure gel                     | Flowable    | UL94 V-1       |                            | P. 27          |
|      | TSE3053   | Heat                                 | Gel            | One-part, fast cure gel                     | Flowable    |                |                            | P. 27          |
|      | TSE3067   | Heat / Room temperature cure capable | Gel            | Thixotropic gel                             | Flowable    |                |                            | P. 27          |
|      | TSE3070   | Heat / Room temperature cure capable | Gel            | High elongation gel                         | Flowable    |                |                            | P. 27          |

Product Selector Guide: InvisiSil\* LED & Optoelectronics Encapsulants

| Type   | Grade   | Cure Chemistry | Cured Property | Feature                   | Performance |                |
|--|---------|----------------|----------------|---------------------------|-------------|----------------|
|  |         |                |                |                           | Flowability | Product Detail |
| InvisiSil LED & Optoelectronics Encapsulants | IVS4012 | Heat           | Gel            | Optically clear gel       | Flowable    | P. 28          |
|  | IVS4312 | Heat           | Rubber         | Optically clear elastomer | Flowable    | P. 28          |
|  | IVS4632 | Heat           | Rubber         | Optically clear elastomer | Flowable    | P. 28          |
|  | IVS5022 | Heat           | Gel            | Optically clear gel       | Flowable    | P. 28          |
|  | IVS5332 | Heat           | Rubber         | Optically clear elastomer | Flowable    | P. 28          |

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Product Selector Guide: Silicone Liquid Elastomers (SLEs)

| Type                       | Grade   | Cure Chemistry | Cured Property | Feature   | Performance   |               | Product Detail |
|----------------------------|---------|----------------|----------------|---|---------------|---------------|----------------|
|                            |         |                |                |   | Flowability   | FDA Compliant |                |
| Silicone Liquid Elastomers | SLE5300 | Heat           | Rubber         | Lowest viscosity, lowest durometer                | Flowable      |               | P. 28          |
|                            | SLE5500 | Heat           | Rubber         | High viscosity, low durometer                     | Flowable      | •             | P. 28          |
|                            | SLE5401 | Heat           | Rubber         | Excellent adhesion to synthetic fibers            | Flowable      |               | P. 28          |
|                            | SLE5600 | Heat           | Rubber         | High strength and abrasion resistance             | Semi-flowable | •             | P. 28          |
|                            | SLE5700 | Heat           | Rubber         | Enhances physical strength of engineered textiles | Flowable      |               | P. 29          |
|                            | SLE7000 | Heat           | Rubber         | Rapid cure in thin films                          | Semi-flowable |               | P. 29          |
|                            | SLE8000 | Heat           | Rubber         | Rapid cure  | Semi-flowable |               | P. 29          |



Product Selector Guide: Foams

| Type  | Grade      | Cure Chemistry | Cured Property | Feature   | Performance |                | Product Detail |
|-------|------------|----------------|----------------|---|-------------|----------------|----------------|
|       |            |                |                |   | Flowability | UL Recognition |                |
| Foams | D1-RTF7000 | Condensation   | Foam           | Variable foam densities                             | Flowable    |                | P. 30          |
|       | RTF762     | Condensation   | Foam           | Medium density foam                                 | Flowable    | UL94 V-0       | P. 30          |
|       | RTF8510    | Condensation   | Foam           | Medium density foam                                 | Flowable    |                | P. 31          |
|       | RTF5308    | Condensation   | Rubber / Foam  | Expandable Silicone Foam per GM2224M2D2CF1, Type II | Flowable    |                | P. 31          |

Product Selector Guide: Primers

| Type    | Grade   | Feature  | FDA Compliant | Product Detail |
|---------|---------|--|---------------|----------------|
| Primers | SS4004P | General purpose  |               | P. 37          |
|         | SS4044P | Transparent general purpose; FDA compliant                                       | •             | P. 37          |
|         | SS4120  | Transparent; For use with addition cure RTVs; FDA compliant                      | •             | P. 37          |
|         | SS4155  | General purpose  |               | P. 37          |
|         | SS4179  | Transparent; For use with difficult-to-bond to plastic substrates; FDA compliant | •             | P. 37          |

Product Selector Guide: Mold Making Grades and Accessories

| Type                               | Grade      | Cure Chemistry | Cured Property  | Feature   | Performance    |                 |                   |               | Product Detail |
|------------------------------------|------------|----------------|---|---|----------------|-----------------|-------------------|---------------|----------------|
|                                    |            |                |   |   | Flowability    | Color           | Catalysts Options | FDA Compliant |                |
| Mold Making Grades and Accessories | RTV421     | Condensation   | Rubber  | Low durometer; Excellent resistance to polyurethane resins                    | Flowable       | Pink            |                   |               | P. 32          |
|                                    | RTV426     | Condensation   | Rubber  | Flexible catalyst system; Excellent resistance to polyurethane resins         | Flowable       | Green           | •                 |               | P. 32          |
|                                    | RTV430     | Condensation   | Rubber  | Flexible catalyst system; High durometer                                      | Flowable       | Pink / Lt. Blue | •                 |               | P. 32          |
|                                    | RTV630     | Heat curable   | Rubber  | High tear resistance; Excellent durability                                    | Semi-flowable  | Blue            |                   |               | P. 34          |
|                                    | RTV662     | Heat curable   | Rubber  | Highest durometer and long work life  | Semi-flowable  | Blue            |                   |               | P. 34          |
|                                    | RTV664     | Heat curable   | Rubber  | High durometer and good dimensional stability; FDA compliant                  | Semi-flowable  | Blue            |                   | •             | P. 34          |
|                                    | RTV668     | Heat curable   | Rubber  | High durometer and good dimensional stability                                 | Flowable       | Blue            |                   |               | P. 34          |
|                                    | RTV7888-10 | Condensation   | Rubber  | Flexible catalyst system; Low durometer; Excellent resistance to polyester    | Flowable       | Pink / White    | •                 |               | P. 33          |
|                                    | RTV7888-20 | Condensation   | Rubber  | Flexible catalyst system; Medium durometer; Excellent resistance to polyester | Flowable       | Pink / White    | •                 |               | P. 33          |
|                                    | RTV866     | Heat curable   | Rubber  | Low durometer; Excellent inhibition resistance                                | Flowable       | Green           |                   |               | P. 34          |
|                                    | RTV868     | Heat curable   | Rubber  | Fast demold time; Excellent inhibition resistance                             | Semi-flowable  | Lt. Blue        |                   |               | P. 34          |
|                                    | TSE3453    | Heat curable   | Rubber  | Easy flow; Low durometer; Good resistance to urethanes                        | Flowable       | Lt. Blue        |                   |               | P. 35          |
|                                    | TSE3453T   | Heat curable   | Rubber  | Translucent; Low durometer; Good resistance to urethanes                      | Flowable       | Translucent     |                   |               | P. 35          |
|                                    | TSE3455T   | Heat curable   | Rubber  | Lowest viscosity; Excellent resistance to polyurethane                        | Flowable       | Translucent     |                   |               | P. 35          |
|                                    | TSE3456T   | Heat curable   | Rubber  | High flexibility and tear; Superior resistance to polyurethane                | Flowable       | Translucent     |                   |               | P. 35          |
|                                    | TSE3457T   | Heat curable   | Rubber  | Medium durometer; Good dimensional stability                                  | Flowable       | Translucent     |                   |               | P. 35          |
|                                    | TSE3466    | Heat curable   | Rubber  | High durometer, low viscosity   | Flowable       | Translucent     |                   |               | P. 35          |
|                                    | BETA 5     | Catalyst       | NA  | High temperature resistant  | Flowable       | Red             |                   |               | P. 32          |
|                                    | BETA 11    | Catalyst       | NA  | General use   | Flowable       | Blue            |                   |               | P. 32          |
|                                    | BETA 16    | Catalyst       | NA  | Suitable for use with sulfur-based clays                                      | Flowable       | Red             |                   |               | P. 32          |
| BETA 17                            | Catalyst   | NA             | Suitable for use with sulfur-based clays              | Flowable  | Translucent    |                 |                   | P. 32         |                |
| BETA 18                            | Catalyst   | NA             | Suitable for use with sulfur-based clays              | Flowable  | Red            |                 |                   | P. 32         |                |
| BETA 26                            | Catalyst   | NA             | Designed for polyurethane casting resins              | Flowable  | Green          |                 |                   | P. 32         |                |
| SS4171P                            | Fluid      | NA             | Release agent for addition cure Mold Making compounds | Flowable  | Blue           |                 |                   | P. 33         |                |
| SF1188A                            | Fluid      | NA             | Thixotropic agent                                     | Flowable  | Clear to Straw |                 |                   | P. 33         |                |
| SF97-50                            | Fluid      | NA             | Dilutant  | Flowable  | Translucent    |                 |                   | P. 33         |                |

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