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## RTV615

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*RTV615, RTV655, RTV656  
High Strength  
Transparent Silicone Rubber Compounds*

**Product Description** RTV615, RTV655 and RTV656 silicone rubber compounds are clear liquids which cure at room temperature to high strength silicone rubber with the addition of curing agents. These two-component products are supplied with curing agent in matched kits which are designed for use at a convenient 10:1 ratio by weight.

These compounds are clear and colorless but differ in low temperature flexibility. All three are low viscosity, easily pourable liquids with nominal viscosities ranging between 3000 and 7000 cps. RTV655 and RTV656 silicone rubber compounds have the capability of remaining flexible at temperatures -115°C (-175°F).

RTV615, RTV655 and RTV656 silicone rubber compounds have been used for protection of electronic components and assemblies against shock, vibration, moisture, ozone, dust, chemicals, and other environmental hazards by potting or encapsulation of the components and assemblies.

The optical clarity of these silicone rubber compounds suggests evaluation for applications such as potting solar cells for maximum light transmission and electronic assemblies where component identification is necessary or desirable. RTV655 and RTV656 silicone rubber compound are preferred where flexibility at temperatures down to -115°C (-175°F) is required.

**Key Performance  
Properties**

- Convenient 10:1 mixing ratio for use in automatic dispensing or hand operations
- Low viscosity allows easy flow in and around complex parts, providing excellent electrical insulation and shock resistance
- Cure rate can be accelerated by heat
- Will cure in deep sections or enclosed assemblies without exotherm and with low shrinkage
- Chemical composition contains no solvents for ease of use on production lines
- Reversion resistance and hydrolytic stability permit use in high humidity environments at elevated temperatures
- Clarity permits visual inspection for easy identification and repair of encapsulated parts
- Retention of elastomeric properties at temperatures up to 204°C (400°F)

## Typical Product Data

| <b>UNCURED PROPERTIES</b>                         | <b>RTV615A</b>     | <b>RTV615B</b>     | <b>RTV655A</b>      | <b>RTV655B</b>     | <b>RTV656A</b>      | <b>RTV656B</b>     |
|---|--------------------|--------------------|---------------------|--------------------|---------------------|--------------------|
| Color   | Clear<br>Colorless | Clear<br>Colorless | Clear<br>Colorless  | Clear<br>Colorless | Clear<br>Colorless  | Clear<br>Colorless |
| Consistency                                       | Easily<br>Pourable | Easily<br>Pourable | Easily<br>Pourable  | Easily<br>Pourable | Easily<br>Pourable  | Easily<br>Pourable |
| Viscosity, cps                                    | 4300               | ?                  | 5700                | ?                  | 5000                | ?                  |
| Specific Gravity                                  | 1.02               | ?                  | 1.04                | ?                  | 1.03                | ?                  |
| <b>UNCURED PROPERTIES WITH CURING AGENT ADDED</b> |                    |                    | <b>RTV615</b>       | <b>RTV655</b>      | <b>RTV656</b>       |                    |
| Color   |                    |                    | Clear,<br>Colorless | Clear, Colorless   | Clear,<br>Colorless |                    |
| Consistency                                       |                    |                    | Easily<br>Pourable  | Easily<br>Pourable | Easily<br>Pourable  |                    |
| Viscosity, cps                                    |                    |                    | 4000                | 5200               | 5000                |                    |
| Work Time @ 25°C (77°F), hrs                      |                    |                    | 4                   | 4                  | 4                   |                    |
| <b>CURED PROPERTIES (Cured 1 hr. @ 100C/212F)</b> |                    |                    | <b>RTV615</b>       | <b>RTV655</b>      | <b>RTV656</b>       |                    |
| <b>Mechanical</b>                                 |                    |                    |                     |                    |                     |                    |
| Hardness, Shore A Durometer                       |                    |                    | 44                  | 45                 | 44                  |                    |
| Tensile Strength, kg/cm <sup>2</sup> (psi)        |                    |                    | 65 (920)            | 65 (920)           | 65/(920)            |                    |
| Elongation, %                                     |                    |                    | 120                 | 120                | 100                 |                    |
| Shrinkage, %                                      |                    |                    | 0.2                 | 0.2                | 0.2                 |                    |
| Refractive Index                                  |                    |                    | 1.406               | 1.430              | 1.430               |                    |

## Typical Product Data

| <b>Electrical</b>   |   |   |   |
|---|---|---|---|
| Dielectric Strength, kv/mm (v/mil) (1.9 mm thick)   | 19.7 (500)  | 19.7 (500)  | 19.7 (500)  |
| Dielectric Constant @ 1000 Hz   | 2.7   | 2.69  | 2.69  |
| Dissipation Factor @ 1000 Hz  | 0.0006  | 0.0004  | 0.0004  |
| Volume Resistivity, ohm-cm  | 1.8 x 10 <sup>15</sup>                              | 1.2 x 10 <sup>15</sup>                              | 1.2 x 10 <sup>15</sup>                              |
| <b>Thermal</b>  |   |   |   |
| Useful Temperature Range, °C (°F)   | -60 to 204<br>(-75 to 400)                          | -115 to 204<br>(-175 to 400)                        | -115 to 204<br>(-175 to 400)                        |
| Thermal Conductivity, gm-cal/sec, cm <sup>2</sup> , °C/cm (Btu/hr, ft <sup>2</sup> , °F/ft) | 0.00045<br>(0.11)                                   | 0.00045<br>(0.11)                                   | 0.00045<br>(0.11)                                   |
| Coefficient of Expansion, cm/cm, °C (in/in, °F)   | 27 x 10 <sup>-5</sup><br>(15.3 x 10 <sup>-5</sup> ) | 33 x 10 <sup>-5</sup><br>(18.3 x 10 <sup>-5</sup> ) | 33 x 10 <sup>-5</sup><br>(18.3 x 10 <sup>-5</sup> ) |
| Specific Heat, cal/gm, °C (Btu/lb, °F)  | 0.3<br>(0.3)  | 0.3<br>(0.3)  | 0.3<br>(0.3)  |

**Specifications FDA STATUS**

RTV615 silicone rubber compound and SS4120 silicone primer may be used in food contact applications where [FDA](#) regulations apply.

**Instructions for Use Compatibility**

RTV615, RTV655 and RTV656 silicone rubber compounds will cure in contact with most clean, dry surfaces. However, certain materials, such as butyl and chlorinated rubber, sulfur-containing materials, amines, and certain metal soap-cured RTV silicone rubber compounds, can cause cure inhibition. Cure inhibition is characterized by a gummy appearance of the RTV silicone rubber compound at the interface between it and the substrate.

It is recommended that a sample patch test be performed with RTV615, RTV655 and RTV656 silicone rubber compounds to determine if a barrier coating or other inhibition-preventing measures are necessary before pouring the material.

**Mixing**

Select a mixing container 4-5 times larger than the volume of RTV silicone rubber compound to be used. Weigh out ten parts of the A component and one part of the B component. Since RTV615, RTV655 and RTV656 silicone rubber compounds are kit-matched, work time (or pot life), cure time, and final properties of the cured RTV silicone rubber compound can be assured only if the A component is used with the B component from the same kit.

With clean tools, thoroughly mix the A and B components together, scraping the sides and bottom of the container carefully to produce a homogeneous mixture. When using power mixers, avoid excessive speeds which could entrap large amounts of air or cause overheating of the mixture, resulting in shorter pot life.

**Deaeration**

Air entrapped during mixing should be removed to eliminate voids in the cured product. Expose the mixed material to a vacuum of about 25 mm (29 in.) of mercury. The material will expand, crest, and recede to approximately the original level as the bubbles break. Degassing is usually complete approximately two minutes after frothing ceases. When using the RTV silicone rubber compound for potting, a deaeration step may be necessary after pouring to avoid capturing air in complex assemblies.

Automatic equipment designed to meter, mix, deaerate, and dispense two-component RTV silicone rubber compounds will add convenience to continuous or large volume operations. For additional information refer to Momentive Performance Materials equipment guide (1758).

**Curing**

RTV615, RTV655 and RTV656 silicone rubber compounds will cure sufficiently in 24 hours at 25C (77F) to permit handling. To achieve optimum properties an elevated temperature cure or a cure time of 7 days at room temperature is required. The table below illustrates the effect of temperature on cure time:

| Temperature, °C (°F) | Cure Time* |
|----------------------|------------|
| 25 (77)              | 6-7 days   |
| 65 (149)             | 4 hrs.     |

|           |         |
|-----------|---------|
| 100 (212) | 1 hr.   |
| 125 (257) | 45 min. |
| 150 (302) | 15 min. |

\* Cure times are only approximate. The actual time is affected by the mass of the unit and the time required to reach the desired temperature.

### **Bonding**

These silicone rubber compounds require a primer to bond to non-silicone surfaces. RTV656 is tested for adhesion and will typically outperform RTV656 when a very low temperature adhesive/encapsulant is needed. All of these products do require a primer for bonding as stated herein.

Thoroughly clean the substrate with a non-oily solvent such as naphtha or methyl ethyl ketone and allow to dry. Then apply a uniform thin film of SS4155 silicone primer and allow the primer to air dry for one hour or more. Finally, apply freshly catalyzed RTV silicone rubber compound to the primed surface and cure as recommended. When dry, SS4155 silicone primer exhibits a white haze which will show through RTV615, RTV655 and RTV656 silicone rubber compounds. If the appearance of the surface to be bonded must be unchanged, SS4120 silicone primer (which dries to an invisible film) may be used. For more details on priming and adhesion, refer to Momentive Performance Materials data sheet on silicone primers (1873).

### **Handling and Safety**

Material Safety Data Sheets are available upon request from Momentive Performance Materials. Similar information for solvents and other chemicals used with Momentive Performance Materials products should be obtained from your suppliers. When solvents are used, proper safety precautions must be observed.

### **Caution**

RTV615B, RTV655B and RTV656B curing agents can generate flammable hydrogen gas upon contact with acidic, basic, or oxidizing materials. Such contact should be avoided.

### **Storage and Warranty Period**

The warranty period is 12 months from date of shipment from Momentive Performance Materials if stored in the original unopened container at a temperature of 27°C (80°F) or below.

### **Availability**

RTV615, RTV655 and RTV656 silicone rubber compounds may be ordered from Momentive Performance Materials, Waterford, NY, 12188, the Momentive Performance Materials sales office nearest you or an authorized Momentive Performance Materials silicone product distributor.

### **Government Requirement**

Prior to considering use of a Momentive Performance Materials product in fulfilling any Government requirement, please contact the Government and Trade Compliance office at 413-448-4624.

CDS1870

### **Patent Status**

Nothing contained herein shall be construed to imply the nonexistence of any relevant patents or to constitute the permission, inducement or recommendation to practice any invention covered by any patent, without authority from the owner of the patent. Patent Information to be determined for product by client.

### **Product Safety, Handling and Storage**

Customers considering the use of this product should review the latest Material Safety Data Sheet and label for product safety information, handling instructions, personal protective equipment if necessary, and any special storage conditions required. Material Safety Data Sheets are available at [www.momentive.com](http://www.momentive.com) or, upon request, from any Momentive Performance Materials representative. Use of other materials in conjunction with Momentive Performance Materials products (for example, primers) may require additional precautions. Please review and follow the safety information provided by the manufacturer of such other materials.

**Limitations**

Customers must evaluate Momentive Performance Materials products and make their own determination as to fitness of use in their particular applications.

Typical product data values should not be used as specifications.

Assistance and specifications are available by contacting

Momentive Performance Materials:

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