

## RTV615 and RTV655

### Transparent Silicone Rubber Compounds

#### Product Description

RTV615 and RTV655 silicone rubber compounds are clear liquids, which cure at room temperature to 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 colourless but differ in low temperature flexibility. Both are low viscosity, easily pourable liquids with nominal viscosities ranging between 3000 and 7000 mPa·s. RTV655 silicone rubber compound has the capability of remaining flexible at temperatures 55 °C lower than its companion product.

RTV615 and RTV655 silicone rubber compounds are being 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 silicone rubber compound is preferred where flexibility at temperatures down to -115 °C is required.

#### Key Performance Properties

- Convenient 10:1 mixing ratio 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 200 °C.



**Typical Product Data**

Uncured Properties		RTV615A	RTV615B	RTV655A	RTV655B
Colour		Clear, colourless	Clear, colourless	Clear, colourless	Clear, colourless
Consistency		Easily pourable	Easily pourable	Easily pourable	Easily pourable
Viscosity	mPa·s	4300	-	5700	-
Specific Gravity	g/cm <sup>3</sup>	1.02	-	1.04	-
Uncured properties with curing agent added			RTV615	RTV655	
Mix ratio			10:1	10:1	
Colour			Clear, colourless	Clear, colourless	
Consistency			Easily pourable	Easily pourable	
Viscosity			mPa·s	4000	5200
Work time @ 25 °C			hrs	4	4

Cured properties		(Cured 1 hr @ 100 °C)		
Mechanical		RTV615	RTV655	
Hardness	Shore A	44	45	
Tensile strength	MPa	6.5	6.5	
Elongation	%	120	120	
Shrinkage	%	0.2	0.2	
Refractive index		1.406	1.430	
Electrical				
Dielectric strength	kV/mm	19.7	19.7	
Dielectric constant @ 1 kHz		2.7	2.7	
Dissipation factor @ 1 kHz		0.0006	0.0004	
Volume resistivity	ohm · cm	1.8 x 10 <sup>15</sup>	1.8 x 10 <sup>15</sup>	
Thermal				
Useful Temp. range	°C	-60 to 200	-115 to 200	
Thermal conductivity	W/m · K	0.2	0.2	
Coefficient of expansion	m/m · K	27 x 10 <sup>-5</sup>	33 x 10 <sup>-5</sup>	
Specific heat	J/g · K	1.3	1.3	

## Specifications

Typical product data values should not be used as specifications. Assistance and specifications are available by contacting Momentive performance materials Technical Service RTV1 and RTV2.

### **FDA STATUS**

RTV615 silicone rubber compound and SS4120 silicone primer may be used in food contact applications where FDA regulations apply.

## Instruction for Use **Compatibility**

RTV615 and RTV655 silicone rubber compounds will cure in contact with most clean, dry surfaces. However, certain materials, such as butyl and chlorinated rubber, sulphur-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 and RTV655 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 and RTV655 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. Exposing the material to an absolute pressure of 10-30 mbar can do this. The material will expand, crest, and recede to 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.

### **Curing**

RTV615 and RTV655 silicone rubber compounds will cure sufficiently in 24 hours at 25 °C 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	Cure Time*
25 °C	6-7 days
65 °C	4 hrs.
100 °C	1 hr.
125 °C	45 min.
150 °C	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.

Thoroughly clean the substrate with a non-oily solvent such as iso-propanol or methyl-ethyl-ketone 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 and RTV655 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.

### Handling Safety

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

### Caution

RTV615B and RTV655B 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 warranted shelf life will be indicated by the 'use before date' on the associated documents with a minimum of 4 months when stored in the original unopened container below 27 °C.

### Availability

RTV615 is available as kits in 500g and 5 kg, 20 kg and 200 kg.

RTV655 is available in 4.5 kg kits.



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