

## RTV1473

### Silmate\* RTV1473

#### Description

Silmate RTV1473 silicone rubber is a black, one-component, ready-to-use sealant designed for formed-in-place gasketing applications where good oil resistance is a design consideration. RTV1473 silicone rubber has a paste-like consistency when initially dispensed and cures on exposure to atmospheric moisture at room temperature to form an elastomeric, resilient silicone rubber gasket.

The paste consistency of RTV1473 silicone rubber allows the product to flow only with external pressure. As a result RTV1473 silicone rubber can be applied to horizontal, vertical or overhead surfaces in thicknesses up to 6mm (1/4 in.).

RTV1473 silicone rubber utilizes a moisture vapor cure system which releases acetic acid vapors from the sealant surface as a by-product of cure.

RTV1473 silicone rubber exhibits flow characteristics for rapid dispensing with standard pumping equipment used in assembly line production systems.

Two types of formed-in-place gasketing applications can be selected: a wet bead method and a cured bead method.

The wet bead method involves mating parts before RTV1473 silicone rubber cure has been completed. This method provides the best seal but makes future disassembly more difficult.

In applications where easy disassembly/reassembly of parts is desired, the cured bead

method should be considered. This method involves dispensing the RTV1473 on one surface and allowing the RTV1473 silicone rubber to fully cure before mechanically joining the surfaces.

RTV1473 silicone rubber is not for use in delicate electrical and electronic applications in which corrosion of copper, brass or other sensitive metals is undesirable.

## IMPORTANT

SILMATE SILICONE RUBBER SHOULD NOT BE USED IN APPLICATIONS WHERE IT WILL BE IN CONSTANT CONTACT WITH GASOLINE, AS EXCESSIVE SWELL WILL OCCUR.

### Key Features and Benefits

- One-component product
- Thixotropic paste consistency
- Capability to cure at room temperature and ambient humidity conditions
- Primerless adhesion to many substrates
- Retains elastomeric properties for long periods at temperatures up to 204C (400F) and for short periods up to 260C (500F)
- Low temperature flexibility
- High quality weatherability and ozone and oil resistance
- Conforms to surface voids and irregularities to form a positive seal in mated surfaces
- Flow characteristics allow rapid dispensing with automated equipment

### Typical Physical Properties

<b>Uncured Properties</b>	<b>RTV1473</b>
Color	Black
Consistency	Soft Paste
Specific Gravity	1.06
Application Rate, gm/min	380
Tack Free Time, minutes 25C (77F)/50% R.H.	25
<b>Cured Properties</b>	<b>RTV1473</b>

Durometer, Shore A	30
Tensile Strength, kg/cm <sup>2</sup> (lb/in <sup>2</sup> )	31.5 (450)
Elongation, %	500
Tear Strength, kg/cm (lb/in)	8 (45)
Linear Shrinkage, %*	1.0
Shear Strength, kg/cm <sup>2</sup> (lb/in <sup>2</sup> )*	14 (200)
Brittle Point C (F)*	-60 (-75)
Maximum Recommended Continuous Service Temperature C (F)	204 (400)

\* Information provided for customer convenience only and is not tested on a routine basis.

## Processing Recommendations

### Surface Preparation

Silmate RTV1473 silicone rubber will bond to many clean surfaces without the aid of primers. These surfaces typically include many metals, glass, ceramic, silicone rubber and some rigid plastics. These adhesive sealant products may bond to organic rubber compounds and to some flexible plastics not containing fugitive plasticizers (which migrate to the surface, impairing adhesion). An evaluation should be made to determine whether bond strength may be adequate for the specific application. For difficult-to-bond substrates, use of a primer is suggested. Primers SS4004, SS4044 and SS4179 are recommended for use with these sealants. Complete information and usage instructions for these primers are contained in Momentive product data sheet (CDS1532).

Where adhesion is required, surfaces should be thoroughly cleaned with a suitable solvent to remove dirt, oil and grease. The surface should be dry before applying the adhesive sealant. When solvents are used, proper safety precautions and environmental disposal requirements must be observed. Consult the Material Safety Data Sheets available from the solvent manufacturer.

## CURE TIME CYCLE AND BOND STRENGTH DEVELOPMENT

The cure process begins with the formation of a skin on the exposed surface of the

RTV1473 and progresses inward through the material. At 25C (77F) and 50% relative humidity, RTV1473 will form a surface skin which is tack-free to the touch in 15 to 30 minutes.

Once the tack-free skin has begun to form, further tooling of the silicone rubber is not advisable.

Higher temperatures and humidity will accelerate the cure process low temperatures and low humidity will slow the cure rate.

As the silicone rubber cures, acetic acid vapors are released from the sealant surface. The odor of acetic acid will completely disappear when curing is completed.

A 3mm (1/8 in.) section of silicone rubber will cure through in approximately 24 hours at 25C (77F) and 50% relative humidity. Since cure time increases with thickness, use of these adhesive sealants should be limited to thicknesses of 6mm (1/4 in.) or less.

In addition to the effects of temperature and relative humidity, development of maximum bond strength will depend on joint configurations, degree of confinement, sealant thickness and substrate porosity. Normally, sufficient bond strength will develop in 12 to 24 hours to permit handling of parts. Minimum stress should be applied to the bonded joint until full adhesive strength is developed. Always allow maximum cure time available for best results.

TEFLON is a registered trademark of DuPont.

## **GASKETING TECHNIQUES**

With Silmate silicone rubber, parts may be assembled before or after cure is completed.

Where feasible, mating parts before cure will provide the best seal, since the silicone rubber will flow to conform to both mating surfaces. A continuous, thin bead of silicone rubber is applied to one mating surface, (for most applications a bead of 1/8 in. diameter or less is sufficient). The Silmate silicone rubber bead will hold its shape and will not sag or flow until pressure is applied. Mate flanges head on to avoid sliding and

smearing of the silicone rubber beyond flange surfaces.

The silicone rubber material will flow under pressure to fill voids and surface irregularities and will spread to seal the entire mating surface. Bolts may be immediately torqued to standard specifications. Unlike conventional gaskets, retorque is usually not necessary.

For subsequent field repairs or parts replacement, the Silmate silicone rubber gaskets can be cut through with a sharp knife. Scrape off excess material before reapplying the silicone rubber gasket material.

To use Silmate silicone rubber as a field replacement for prefabricated gaskets, scrape the old gasket from the flange surface. For best results, clean surfaces thoroughly and dry before applying the silicone rubber gasket material.

Where easy disassembly/reassembly of parts is required for field inspection or repair, an alternative method is to allow the bead to fully cure on one surface only before mating parts. Automated dispensing equipment is normally required to provide a properly positioned, uniform, continuous bead for reliable sealing performance and satisfactory appearance.

For optimum adhesion this one surface should be free of dirt, oil and grease. At room temperature, the dispensed bead will cure in place to form a permanent, elastomeric gasket bonded to this one surface only. The material should be allowed to cure through before mating parts.

A release agent such as TEFLON®, applied to the second surface, where adhesion is not desired, prior to mating can ease disassembly later.

## **PACKAGING AND DISPENSING**

RTV1473 silicone rubber from Momentive Performance Materials is supplied ready-to-use in collapsible squeeze tubes, caulking cartridges and bulk containers.

Collapsible tubes may be squeezed by hand or with the aid of mechanical wringers which allow more complete removal of material from the tube. Air-operated dispensing

guns may also be used with tubes and offer the advantages of improved control and faster application for production line use. The sealant may be dispensed from caulking cartridges, by using simple mechanical caulking guns or air-operated guns. Air-operated guns will allow greater control and application speed. Both tubes and cartridges are easy to use, can be put into production quickly and require minimal capital investment.

**CAUTION:** Do not exceed 45 psig when using in air-powered caulking guns.

Bulk containers require a larger initial investment in dispensing equipment, but offer the most economical packaging for volume production. Bulk dispensing systems are air-operated extrusion pumps coupled to hand or automated dispensing units. Pumps which are specifically designed for pumping one-component RTV silicone rubber have TEFLON® seals, packings and lined hoses to prevent moisture permeation and pump cure problems. Specific details on dispensing systems and manufacturers are available in a separate Momentive Performance Materials RTV Silicone Rubber Equipment Guide, (CDS1541).

## **CLEAN UP AND REMOVAL**

Before curing, solvent systems such as naphtha or methyl ethyl ketone (MEK) are effective in cleaning and removing RTV1473 silicone rubber. Refer to solvent use warning in the section on surface preparation. After cure selected chemical strippers which will remove the silicone rubber are available from other

## **Availability**

RTV1473 silicone rubber may be ordered from Momentive Performance Materials, Waterford, New York 12188, the Momentive Performance Materials sales office nearest you or an authorized Momentive Performance Materials product distributor.

## **General Considerations for Use**

While the typical operating temperature for silicone materials ranges from -45°C to 200°C, the long-term maintenance of its initial properties is dependent upon design related stress considerations, substrate materials, frequency of thermal cycles, and other factors.

### 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.

### Product Safety, Handling and Storage

Customers should review the latest Safety Data Sheet (SDS) and label for product safety information, safe handling instructions, personal protective equipment if necessary, emergency service contact information, and any special storage conditions required for safety. Momentive Performance Materials (MPM) maintains an around-the-clock emergency service for its products. SDS are available at [www.momentive.com](http://www.momentive.com) or, upon request, from any MPM representative. For product storage and handling procedures to maintain the product quality within our stated specifications, please review Certificates of Analysis, which are available in the Order Center. Use of other materials in conjunction with MPM 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.

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