RTV133

Description

RTV133 black, one-component, ready-to-use, silicone rubber adhesive sealant is an excellent candidate to consider for use in applications in the electronic, aerospace, appliance, transportation and other industries where resistance to burning of the finished product is a significant design consideration. On exposure to moisture in the air at room temperature, this adhesive sealant cures to a tough, durable, resilient silicone rubber. It utilizes an atomospheric moisture cure system, which releases an alcohol vapor from the sealant surface during cure. RTV133 sealant offers generally low odor cure with virtually no unpleasant smell or pungent cure by-products. It is, however, somewhat slower curing both in tack-free time and cure-through time than many atmosheric moisture cure silicone adhesive sealants that give off acetic acid vapors as a cure by-product.

Because RTV133 sealant has a paste-like consistency and will flow only with external pressure, it may be considered for use on horizontal, vertical and overhead surfaces in thicknesses to 6mm (¼ in.). It has sufficient uncured body to typcially adhere to small objects while cure is taking place. For applications requiring sealant thickness greater than 6mm (¼ in.), Momentive Performance Materials one-component, addition cure or two-component silicone rubber compounds with similar properties are available for consideration.

Typical applications include coatings for electronic and integrated circuits and semi-conductors and connections on electronic parts assemblies. Because of the typically low odor of its cure by-product, RTV133 sealant may be considered for mechanical applications in confined work areas where the odor of other moisture vapor cure sealants might be objectionable.

Key Features and Typical Benefits

- One-component product
- Thixotropic paste consistency
- Low flammability-has a UL rating of V-0 or V-1 using UL-94 test
- Capability to cure at room temperature and ambient humidity conditions
- Self adhesion properties
- Resistance to high temperatures
- Low temperature flexibility
- Excellent weatherability and ozone and chemical resistance
- Excellent electrical insulation properties
- Non-halogen flame retardants

Typical Physical Properties

Typical Uncured Properties	**RTV133**
Color	black
Consistency	soft, spreadable paste
Specific Gravity	1.23
Application Rate, gm/min.	650
Tack-Free Time, hours	1
Typical Cured Properties	**RTV133**
Mechanical:	
Hardness, Shore A	45
Tensile Strength, kg/cm^2(lb/in^2)	46 (650)
Elongation, %	250
Shear Strength, kg/cm^2($1b/in^2$)(1)	12 (170)
Flammability (UL94), 3.38mm (1/8 in.) thick(2)	V-0
Electrical:(3)	
Dielectric Strength, kv/mm(v/mil)	20 (500)
Dielectric Constant @ 100 Hz	2.8
Dissipation Factor @ 100 Hz	0.001
Volume Resistivity, ohm-cm	$3x10^{15}$
Thermal:(3)	
Brittle Point, °C (°F)	< -60 (< -75)
Thermal Conductivity, W/mK (cal/sec, cm^2, °C/cm)	0.21 (0.0005)
Coefficient of Expansion, cm/cm, °C (in/in, °F)	< $27x10^{-5}$ (< $15x10^{-5}$)

(1) At 100% cohesive failure.
(2) This numerical flame spread rating is not intended to reflect hazards presented by this or any other material under actual fire conditions.
(3) Information is provided for customer convenience only. Properties are not tested on a routine basis.

Typical properties are average data and are not to be used as or to develop specifications.

Processing Considerations
RTV133 silicone rubber adhesive sealant may be considered for industrial applications where reduced flammability characteristics of the finished product are important.

Surface Preparation
RTV133 silicone rubber adhesive sealant will bond to many clean surfaces without the aid of a primer. These surfaces normally include many metals, glass, ceramic, silicone rubber and some rigid plastics. The adhesive sealant product will also produce fair bonds to some organic rubber and flexible plastics not

containing fugitive plasticizers (which migrate to the surface impairing adhesion). An evaluation should be made to determine bond strength for each specific application. For difficult-to-bond substrates, use of a primer is suggested. SS4004, SS4044 and SS4179 primers may be considered for use with this sealant. Complete information and usage instructions for these primer products are contained in a separate product data sheet.

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 must be observed.

Cure Time Cycle
RTV133 adhesive sealant may be applied directly to a clean or primed substrate. The adhesive sealant begins to cure on exposure to moisture in the air at room temperature. Where broad surfaces are to be mated, the sealant should be applied in a thin, less than 6mm (¼ in.) diameter, bead or ribbon around the edge of the surface to be bonded.

The cure process begins with the formation of a skin on the exposed surface of the sealant and progresses inward through the material. At 25°C (77°F) and 50% relative humidity, this product will form a surface skin that is tack-free to the touch typically in 3 to 5 hours. Once the tack-free skin has begun to form, further tooling of the adhesive sealant is not advisable.

Generally, higher temperatures and high humidity will accelerate the cure process while low temperatures and low humidity will slow the cure rate.

As the adhesive sealant cures, alcohol vapors are released from the sealant surface. This by-product of cure has a slight, but generally non-objectionable odor that will diminish as the cure progresses.

A 3mm (1/8 in.) section of adhesive sealant typically will cure through in approximately 48 hours at 25°C (77°F) and 50% relative humidity. Since cure time increases with thickness, use of RTV133 sealant should be limited to section thicknesses of 6mm (¼ in.) or less.

Bond Strength Development
In addition to the effects of temperature and relative humidity, development of maximum bond strength will depend on joint configuration, degree of confinement, sealant thickness and substrate porosity. Typically, sufficient bond strength will develop in 24 to 48 hours to permit handling of parts. Minimum stress should be applied to the adhesive bond until full adhesive strength is developed. Always allow maximum cure time available for best results.

Packaging and Dispensing
RTV133 adhesive sealant is supplied ready-to-use in plastic caulking cartridges and in bulk containers.

The sealant may be dispensed from caulking cartridges by using simple mechanical caulking guns or air-operated guns. Air-operated guns may allow greater control and application speed.

Note: Do not exceed 45 psig when used in air-powered caulking guns.

Bulk dispensing systems are air-operated extrusion pumps coupled to hand or automated dispensing units. Pumps that are specifically designed for pumping one-component RTV silicone rubber have TEFLON® seals, packings and TEFLON® lined hoses to prevent moisture permeation and pump cure problems.

Cleanup and Removal
Before cure, solvent systems such as naphtha or methyl ethyl ketone (MEK) are typically effective.

After cure, selected chemical strippers that will remove the silicone rubber are available from other manufacturers. Specific product information may be obtained on request.

TEFLON is a Registered Trademark of DuPont.

Flammability
Underwriters Laboratories Inc., Standard 94 describes a vertical burning test to be performed under laboratory conditions. In this test, specimens are placed in the flame of a laboratory burner, and the ability of the substance to sustain a flame over a specified period of time upon removal of the source of the flame is determined. When tested by this procedure in the Momentive Performance Materials laboratory, RTV133 sealant has exhibited burning characteristics for a classification of 94V-O(2). Potential users of RTV133 sealant should refer to UL-94 for details of the test and the classification limits.

Each potential user should determine for himself/herself whether this test procedure is meaningful for his/her particular application and should run independent tests to determine whether RTV133 sealant is suitable for such particular application.

The above test, claims, representations and descriptions regarding the flammability of the product described are based on a standard small scale laboratory test and as such are not reliable for determining, evaluating, predicting or describing the flammability or burning characteristics of this product under actual fire conditions, whether this product is used alone or in combination with other products.

UL STATUS
RTV133 adhesive sealant is recognized by Underwriters Laboratories, Inc. under the Component Recognition Program (UL File No. E36952).

FDA STATUS
This product is not suitable for FDA regulated applications.

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 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.

Copyright 2009-2013 Momentive Performance Materials Inc. All rights reserved.

Contact Information

For product prices, availability, or order placement, contact our customer service at Momentive.com/CustomerService/

For literature and technical assistance, visit our website at: www.momentive.com

DISCLAIMER:

THE MATERIALS, PRODUCTS AND SERVICES OF MOMENTIVE PERFORMANCE MATERIALS INC. AND ITS SUBSIDIARIES AND AFFILIATES (COLLECTIVELY "SUPPLIER"), ARE SOLD SUBJECT TO SUPPLIER'S STANDARD CONDITIONS OF SALE, WHICH ARE INCLUDED IN THE APPLICABLE DISTRIBUTOR OR OTHER SALES AGREEMENT, PRINTED ON THE BACK OF ORDER ACKNOWLEDGMENTS AND INVOICES, AND AVAILABLE UPON REQUEST. ALTHOUGH ANY INFORMATION, RECOMMENDATIONS, OR ADVICE CONTAINED HEREIN IS GIVEN IN GOOD FAITH, SUPPLIER MAKES NO WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, (i) THAT THE RESULTS DESCRIBED HEREIN WILL BE OBTAINED UNDER END-USE CONDITIONS, OR (ii) AS TO THE EFFECTIVENESS OR SAFETY OF ANY DESIGN INCORPORATING ITS PRODUCTS, MATERIALS, SERVICES, RECOMMENDATIONS OR ADVICE. EXCEPT AS PROVIDED IN SUPPLIER'S STANDARD CONDITIONS OF SALE, SUPPLIER AND ITS REPRESENTATIVES SHALL IN NO EVENT BE RESPONSIBLE FOR

ANY LOSS RESULTING FROM ANY USE OF ITS MATERIALS, PRODUCTS OR SERVICES DESCRIBED HEREIN. Each user bears full responsibility for making its own determination as to the suitability of Supplier's materials, services, recommendations, or advice for its own particular use. Each user must identify and perform all tests and analyses necessary to assure that its finished parts incorporating Supplier's products, materials, or services will be safe and suitable for use under end-use conditions. Nothing in this or any other document, nor any oral recommendation or advice, shall be deemed to alter, vary, supersede, or waive any provision of Supplier's standard Conditions of Sale or this Disclaimer, unless any such modification is specifically agreed to in a writing signed by Supplier. No statement contained herein concerning a possible or suggested use of any material, product, service or design is intended, or should be construed, to grant any license under any patent or other intellectual property right of Supplier covering such use or design, or as a recommendation for the use of such material, product, service or design in the infringement of any patent or other intellectual property right.

Momentive and the Momentive logo are trademarks of Momentive Performance Materials Inc.