



Technical Data Sheet

DOWSIL™ 3-6548 Silicone RTV Foam

Silicone RTV foam for fire-resistant penetration seals

Features & Benefits

- Room-temperature cure
- Reversion resistance
- Noncorrosive
- Fire resistance
- Approved for railway standard EN 45545-2, R22/R23/R24 – HL3

Composition

- Medium-density, two-part silicone

Applications

DOWSIL™ 3-6548 Silicone RTV Foam is formulated to have fire resistance properties and can be used for preparing fire-resistant penetration seals as evidenced by the results of fire endurance testing as defined in ASTM E 814 “Standard Method of Fire Test for Through-Penetration Firestops”.

Typical Properties

Specification Writers: These values are not intended for use in preparing specifications.

| Test ¹ | Property | Unit | Result |
|---------------------------------------|---|---------|------------------|
| As Supplied – Physical, Part A | | | |
| CTM 0176 | Appearance | | Black liquid |
| CTM 0097 | Specific Gravity at 25°C (77°F) | | 1.05–1.11 |
| CTM 0050 | Viscosity, Brookfield Model HAF Spindle No. 3 at 10 rpm | poise | 40–60 |
| CTM 0052 | Flash Point | °C (°F) | > 243 (> 470) |
| CTM 0052 | Fire Point | °C (°F) | > 344 (> 650) |
| As Supplied – Physical, Part B | | | |
| CTM 0176 | Appearance | | Off-white liquid |
| CTM 0097 | Specific Gravity at 25°C (77°F) | | 1.05–1.11 |
| CTM 0050 | Viscosity, Brookfield Model HAF Spindle No. 3 at 10 rpm | poise | 50–75 |
| CTM 0006 | Flash Point | °C (°F) | > 133 (> 271) |
| CTM 0006 | Fire Point | °C (°F) | > 199 (> 390) |

1. CTM: Corporate Test Method, copies of CTM's are available on request.

ASTM: American Society for Testing and Materials.

Note: Some properties will vary depending on the cured density of the foam.

Typical Properties (Cont.)

| Test | Property | Unit | Result |
|--|--|---|---|
| As Cured – Physical² | | | |
| CTM 0176 | Appearance | | Dark gray-black elastomeric film |
| CTM 092A | Snap Time ³ | percent | 1–2 |
| CTM 0812 | Density ⁴ | g/cm ³ lb/ft ³ | 0.22–0.32 14–20 |
| CTM 0826 | Cell Structure ⁵ , Closed Cell | percent | 50 |
| ASTM D 3574 | Tensile Strength | N/m ² psi | 2.28 x 10 ⁵ 33.0 |
| CTM 0525 | Compression Deflection At 20% Compression | N/m ² psi | 3.59 x 10 ⁴ 5.2 |
| | At 40% Compression | N/m ² psi | 6.96 x 10 ⁴ 10.1 |
| | At 60% Compression | N/m ² psi | 1.46 x 10 ⁵ 21.2 |
| CTM 069 | Thermal Conductivity ⁶ | cal/sec cm·°C | 9.8 x 10 ⁻⁴ |
| ASTM C 518 | K ⁷ , 0.27 g/cm ² (17 lb/ft ²) foam | W/(m·K) BTU/hr·ft·°F | 0.1338 0.0773 |
| CTM 0585 | Linear Coefficient of Thermal Expansion -25 to 150°C -13 to 302°F | cm/cm·°C in/in·°F | 3.2 x 10 ⁻⁴ 1.78 x 10 ⁻⁴ |
| As Cured – Flammability⁸ | | | |
| CTM 0316A | Flammability, Vertical Burn | | |
| | Time in Flame | seconds | 15 60 |
| | Average Time Flame-glow Out | seconds | 7.2 15.6 |
| | Average Weight Loss | percent | 1.3 13.5 |
| CTM 0780 | Limiting Oxygen Index | LOI rating | 39 |
| ASTM E 84-79A | Flame Spread Rating ⁹ | | 6.7 |
| As Cured – Electrical¹⁰ | | | |
| CTM 0114 | Dielectric Strength | volts/mil | 165 |
| CTM 0112 | Dielectric Constant, 100 Hz | | 1.95 |
| CTM 0112 | Dissipation Factor, 100 Hz | | 0.00505 |
| CTM 0249 | Volume Resistivity | ohm-cm | 2.24 x 10 ¹⁵ |

2. One part A thoroughly mixed with one part B and cured at 25°C (77°F) for 24 hours.

3. Time to nonpour condition. Also, time to begin foam rise.

4. Power mixed for 30 seconds and cured in nonconfined condition.

5. Breathability method

6. Cenco Fitch method

7. Cured foam sample thickness of 2.54 cm (1 inch).

8. Tests, claims, representations and descriptions regarding flammability are based on standard small-scale laboratory tests. Such tests may not be reliable for determining, evaluating, predicting or describing the flammability or burning characteristics of the product under actual fire conditions, whether the product is used alone or in combination with other products.

9. Test report available upon request.

10. Cured foam sample thickness of 0.317 cm (0.125 inch).

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DOWSIL™ 3-6548 Silicone RTV Foam

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Description

DOWSIL™ 3-6548 Silicone RTV Foam is a medium-density, two-part product supplied as A and B liquid components. The A component is black and the B component is off-white for easy identification and inspection of mix. When the A and B components are thoroughly mixed in a 1:1 ratio by either weight or volume, the product will expand and cure to a foamed elastomer at room temperature. A mild exotherm is exhibited during the curing reaction.

Note: Various silicone foams have different fire resistance properties. The use of the generic term “silicone foam” should be avoided when referencing this product or this data. This test data pertains to this product by its specific name and number designation (DOWSIL™ 3-6548 Silicone RTV Foam).

Approvals / Specifications

- Listed in UL's Fire Resistance Directory for use in Through-Penetration Firestop Systems

How to Use

Preparatory Work

The penetration opening and all related surfaces must be clean of dirt, dust and loose impediments. Surfaces must also be free of water, oil or other free liquids.

Damming the Penetration

Damming the penetration is required to prevent the liquid foam mixture from running out before it foams. Damming materials may also contribute to the fire resistant properties of particular system configurations. Check system design to ensure that proper damming materials and techniques are used.

CAUTION: When components A and B of DOWSIL™ 3-6548 Silicone RTV Foam are mixed, the foam generates hydrogen gas during cure. Forced air ventilation is necessary if the work area has less than two cubic feet of free air space for each pound of liquid mixture being foamed.

Additional information is provided in the section entitled “Handling Precautions”.

Mixing the Components

Prior to use, Part A and Part B components must be thoroughly stirred in their original containers to uniformly disperse any fillers or pigments that may have settled. When mixing, use clean containers and mixing equipment. If stirred containers stand for more than four hours, re-stir.

At time of installation, material temperature should be between 18 and 27°C (65 and 81°F). (Materials can be warmed by placing them in a room at these temperatures for 12 hours.) Please check material temperature prior to use if there is a possibility it is outside this range

To properly catalyze DOWSIL™ 3-6548 Silicone RTV Foam, add Part A to Part B in a 1:1 ratio (by weight or volume). Mix vigorously and thoroughly for 30 to 60 seconds by hand or with power mixing. The mixed product will begin to foam shortly after mixing; therefore, it should be dispensed in the penetration as soon as mixing is completed. For large-volume applications, the use of suitable automatic mixing, metering and dispensing equipment is recommended.

How to Use (Cont.)

Mixing the Components (Cont.)

The type and degree of mixing can significantly affect the cell structure and density of the final foam product. Mixing with a 198 g (7 oz) Semco cartridge will generally result in a slightly higher density than mixing by hand. Hand mixing, in turn, will result in a higher density than power mixing by automatic mixing, metering and dispensing equipment.

Likewise, the expansion ratios of foam volume to liquid volume can vary from 2:1 to 4:1, depending on the type and degree of mixing and degree of confinement. If foam rise is restricted or confined during foam cure, densities as high as 0.48 g/cm³ (30 lb/ft³) can result.

Working Time

As supplied and properly mixed, DOWSIL™ 3-6548 Silicone RTV Foam has a snap time (working time) of one to two minutes at 25°C (77°F). The snap time is dependent upon the temperature of the A and B components just before and after they are mixed.

Installation

DOWSIL™ 3-6548 Silicone RTV Foam typically expands from two to four times its liquid volume during cure. DOWSIL™ 3-6548 Silicone RTV Foam should not be dispensed in liquid layers thicker than 2.54 cm (1 inch) at any given spot. Allow at least 15 minutes between applications of each foam layer. If the opening is not filled to the desirable level when the cured foam has completed its expansion, repeat the injection and cure procedure until the desired fill rate is attained. To permit a clear view when filling a wall cavity, damming materials are built up gradually. The top of the opening is dammed for the final shot of foam.

After the foam is installed, damming materials are left in place 24 hours to allow the penetration seal to cure fully.

Inspection

After 24 hours, the penetration seal must be completely inspected by removing the damming materials. Curing foam should completely fill the penetration, providing a tight, compressive fit. The seal should then be reinspected after an additional 24 hours. Damming materials that are part of a specific system design must be replaced and properly secured in their appropriate positions.

Quality Control

There is a two-step quality control check that can be performed on the site quickly and easily. It should be performed at least once daily and upon changing to a new lot of material to ensure the performance of both dispensing equipment and foam product prior to installing least once daily and upon changing to a new lot of material to ensure the performance easily. It should be performed at least once daily and upon changing to a new lot of material to ensure the performance of both dispensing equipment and foam product prior to installing penetration seals. (The quality control check is shown in Table 1.)

Follow the equipment manufacturer's instructions for maintaining product component ratios.

Table 1: Quality Control Requirements for Checking DOWSIL™ 3-6548 Silicone RTV Foam and Dispensing Equipment

| Test | Unit | Result |
|--------------------------------|----------------------------|-------------------|
| Snap Time ¹ | minutes | 1–2 |
| Free Foam Density ¹ | g/cm (lb/ft ³) | 0.22–0.32 (14–20) |

1. Standard procedures for measuring snap time and free foam density are available. Totally unconfined, density values as low as 0.22 g/cm³ (14 lb/ft³) may be obtained. Values shown are typical for field installation.

How to Use (Cont.)

Cleanup

Excess cured foam around the penetration seal can be removed with a sharp knife or blade. Spills of Part A and Part B liquid components can be removed with high-flash-point mineral spirit solvent.

CAUTION: Consult solvent material data sheet for safe handling information. Follow state, federal and local environmental regulations.

Repairability

Once cured in place, DOWSIL™ 3-6548 Silicone RTV Foam can be removed, repaired or changed, and the repaired area reformed in place with additional product. Because this product develops good adhesion to itself, the repaired region will become an integral part of the original foam.

Adhesion

Maximum adhesion is obtained when foaming against a freshly exposed foam surface, free of dust, dirt, moisture and other contaminants.

Handling Precautions

Immediately upon mixing the A and B components of DOWSIL™ 3-6548 Silicone RTV Foam, a chemical reaction takes place that results in the generation of hydrogen gas. Appropriate caution should be exercised. Keep away from sparks and open flame.

When using DOWSIL™ 3-6548 Silicone RTV Foam to seal large penetration openings, exercise care to avoid gas entrapment. Provide adequate ventilation to prevent hydrogen gas build-up. Forced air ventilation is necessary if the work area has less than two cubic feet of free air space for each pound of liquid mixture being foamed. Adequate ventilation must be provided to prevent build-up of hydrogen at explosive levels.

While the gas generation is essentially completed during the first three minutes after the A and B components are mixed, hydrogen gas will continue to be released from the foam for at least 24 hours. Most of the evolved gas is initially retained in each foam cell and is not immediately released to the surrounding atmosphere, because the foam is 50 percent closed cell. The gas is released over time by diffusion. The rate of release is dependent on penetration sizes, sealing designs and ambient temperatures. The amount of gas generated is dependent on the amount of foam used.

Waste materials must be considered with regard to these precautionary measures during disposal and storage. Waste materials should not be sealed in such things as plastic bags or similar containers that could trap hydrogen gas.

Handling Precautions (Cont.)

The liquid Part B components of DOWSIL™ 3-6548 Silicone RTV Foam in contact with bases or catalytic oxidizing materials could generate hydrogen gas. A bulged Part B component container may indicate hydrogen gas pressurization, and appropriate caution should be exercised. If this occurs, contact your representative.

PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED IN THIS DOCUMENT. BEFORE HANDLING, READ PRODUCT AND SAFETY DATA SHEETS AND CONTAINER LABELS FOR SAFE USE, PHYSICAL AND HEALTH HAZARD INFORMATION. THE SAFETY DATA SHEET IS AVAILABLE ON THE DOW WEBSITE AT DOW.COM, OR FROM YOUR DOW SALES APPLICATION ENGINEER, OR DISTRIBUTOR, OR BY CALLING DOW CUSTOMER SERVICE.

Usable Life and Storage

The Part A and Part B components of DOWSIL™ 3-6548 Silicone RTV Foam are delivered in separate containers. When stored in unopened containers at or below 32°C (90°F), DOWSIL™ 3-6548 Silicone RTV Foam has a shelf life of 12 months from date of shipment. Refer to product packaging for "Use By" date.

Partially used containers should be sealed tightly and stored in a similar manner.

Packaging Information

DOWSIL™ 3-6548 Silicone RTV Foam is supplied in 198 g, 0.9, 7.25, 36.3 and 409 kg (7 oz, 2, 16, 80 and 900 lb) kits, net weight.

Limitations

This product is neither tested nor represented as suitable for medical or pharmaceutical uses.

Inhibition of Cure¹

Certain materials, chemicals, curing agents and plasticizers can inhibit the cure of DOWSIL™ 3-6548 Silicone RTV Foam. The most notable include:

- Organotin and other organometallic compounds
- Silicone rubber containing organotin catalyst
- Sulfur, polysulfides, polysulfones and other sulfur-containing materials
- Amines, urethanes and amine-containing materials
- Unsaturated hydrocarbon plasticizers

Painting or Coating

Most coatings/paints do not adhere to this product.

1. If a substrate or material is questionable with regard to causing potential inhibition of cure, it is recommended that a small scale compatibility test be run to ascertain suitability in a given application. The presence of liquid or uncured product at the interface between the questionable substrate and the cured DOWSIL 3-6548 Silicone RTV Foam would indicate incompatibility and inhibition of cure.

Disposal Information

Please review and analyze the appropriate disposal requirements (local, state and federal) for waste streams, used product, etc. Should you have specific questions about the waste characteristics of this product, contact your representative.

Shipping Limitations

DOWSIL™ 3-6548 Silicone RTV Foam Part B cannot be shipped by air.

Health and Environmental Information

To support customers in their product safety needs, Dow has an extensive Product Stewardship organization and a team of product safety and regulatory compliance specialists available in each area.

For further information, please see our website, dow.com or consult your local Dow representative.

Disposal Considerations

Dispose in accordance with all local, state (provincial) and federal regulations. Empty containers may contain hazardous residues. This material and its container must be disposed in a safe and legal manner.

It is the user's responsibility to verify that treatment and disposal procedures comply with local, state (provincial) and federal regulations. Contact your Dow Technical Representative for more information.

Product Stewardship

Dow has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with Dow products - from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Customer Notice

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