

RTV9950

Description

Several different curing agents are available for two-component RTV silicone rubber compounds to provide a choice of cure speed, mixing ratio, or deep section cure. DBT (dibutyl tin dilaurate) and STO (stannous tin octoate) are clear, easily pourable liquids. RTV9950 is a white paste, RTV9910 is a beige paste, and RTV9811 is a beige pourable paste. All are based on metal soaps. These curing agents are appropriate to use with the following Momentive Performance Materials products: RTV11, RTV21, RTV31, RTV41, RTV60, RTV88, RTV511, RTV560, and RTV577.

Key Features and Benefits

DBT and STO

- Simple handling procedures and equipment for easy use and low processing cost.
- Adjustable work time and cure rate obtainable through choice of curing agent and level used.

RTV9910

- Paste version of DBT.
- Convenient 10:1 mixing ratio for use in automatic dispensing or hand operations.
- Excellent color contrast with red RTV base compounds provides visual evidence of complete mixing.
- Provides extended pot life over RTV9950.

RTV9950

- Paste version of DBT.
- Convenient 10:1 mixing ratio for use in automatic dispensing or hand operations.
- Excellent color contrast with red RTV base compounds provides visual evidence of complete mixing.

RTV9811

- Convenient 10:1 mixing ratio for use in automatic dispensing or hand operations.
- Good color contrast with RTV base compounds provides visual evidence of complete mixing.
- Good cure in deep sections eliminates need for multiple pours and long cure times.
- Inhibitor to prevent copper corrosion permits use with sensitive metals.

Typical Properties

| | DBT | STO | RTV9910 | RTV9950 | RTV9811 |
|---------------------------|-----------------|-----------------|----------------|----------------|----------------|
| Color | Clear to amber | Clear to amber | Beige | White | Light beige |
| Consistency | Easily pourable | Easily pourable | Paste | Paste | Pourable paste |
| Viscosity (cps) | 100 | 250 | - | 350,000 | 25,000 |
| Specific Gravity | 1.05 | 1.26 | 1.80 | 1.74 | 1.50 |
| Typical Level Used (wt %) | 0.1 - 0.5 | 0.2 -0.5 | 10 | 5 - 10 | 5 - 10 |
| Cure Speed | Moderate | Fast | Slow | Moderate | Moderate |

Typical Cure Rates for Two Component RTV Silicone Rubber Compounds at 25°C (77°F) and 50% RH

| RTV Base Compound | DBT Concentration | | | | | |
|-------------------|----------------------------------|---------------------------------------|----------------------------------|----------------------------------|---------------------------------------|----------------------------------|
| | 0.1% | | | 0.5% | | |
| | Work Time (hours) ⁽¹⁾ | Tack Free Time (hours) ⁽²⁾ | Firm Time (hours) ⁽³⁾ | Work Time (hours) ⁽¹⁾ | Tack Free Time (hours) ⁽²⁾ | Firm Time (hours) ⁽³⁾ |
| RTV11 | 3-6 | 8-12 | 48 | 1-4 | 3-5 | 24 |
| RTV21 | 3-5 | 5-10 | 24+ | 1-3 | 1-4 | 24 |
| RTV41 | 3-6 | 5-10 | 24+ | 1-3 | 1-4 | 24 |
| RTV31 | 4-5 | 7-10 | 18-24 | 1-2 | 2-3 | 12-24 |
| RTV60 | 3-5 | 8-12 | 24+ | 1-3 | 3-6 | 24 |
| RTV88 | 4-6 | 8-12 | 24 | 1-2 | 4-6 | 16-24 |
| RTV511 | 6-9 | 14-18 | 72-84 | 1-3 | 2-3.5 | 24 |
| RTV577 | 6-9 | 8-11 | 36-40 | 1-3 | 2-4 | 24 |
| RTV560 | 4-6 | 6-8 | 36-40 | 1-2 | 1.5-2.5 | 16-24 |

⁽¹⁾ Work Time (also called Pot Life, Work Life, or Application Time) is the length of time between curing agent addition and cessation of compound flow. It is the measure of the time available to apply the material after curing agent has been added.

⁽²⁾ Tack Free Time is the time after which surface tack is eliminated.

⁽³⁾ Firm time is when the product is set, but full physical property development may not have been achieved.

Potential Applications

DBT(dibutyl tin dilaurate) is the liquid curing agent generally preferred for most applications. Used in concentrations from 0.1 to 0.5% by weight, DBT provides adequate work time and moderate cure speed. The effects of varying DBT concentration are shown in the table of typical cure rates. Varying the concentration within the limits shown has little or no effect upon the final cured properties of the RTV silicone rubber compound.

STO (stannous tin octoate) is the fastest of the commonly used curing agents and is especially useful where cure times of one hour or less are required. Normally concentrations up to 0.5% by weight are used. Because of the short work time and rapid curing action, RTV silicone rubber compounds catalyzed with STO should be

applied immediately after thorough mixing.

RTV9910 and RTV9950, pre-blended pastes based on DBT, are designed for use at a level of ten percent by weight of the RTV base compound. This ratio makes this product especially useful where automatic mixing and dispensing is needed for production line or large volume operations. At the ten percent level RTV9950 provides the equivalent of 0.5% DBT. The use of RTV9910 at ten percent will result in a longer work life than RTV9950.

RTV9811 has been specially designed for thorough cure of RTV silicone rubber compounds in thick section. This curing agent is also used at a level of ten percent by weight of the RTV base compound and is suggested for general use because of the easy mixing ratio, good color contrast, and ability to cure in deep sections.

Patent Status

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Product Safety, Handling and Storage

CAUTION! DBT, STO, RTV9910, RTV9950, and RTV9811 curing agents cause eye irritation and may cause skin irritation. Avoid contact with skin and eyes. In case of eye contact, flush with water for 15 minutes and see a physician. For skin contact, wash with soap and water. Clothing contaminated with DBT or STO should be removed and laundered before reuse.

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Processing Recommendations

Mixing

Select a mixing container 4-5 times larger than the volume of RTV silicone rubber compound to be used. Weigh out the silicone rubber base compound and add the appropriate amount of curing agent. With clean tools, thoroughly mix the RTV base compound and the curing agent, 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 over-heating of the mixture, resulting in shorter pot life.

Measuring Guide for Curing Agent Addition

| Weight of RTV Base Compound | Amount of Curing Agent to be Added | | | |
|-----------------------------|------------------------------------|------------|----------|------------|
| | DBT | | STO | |
| | 0.1% | 0.5% | 0.1% | 0.5% |
| 100 grams | 5 drops* | 25 drops | 4 drops | 20 drops |
| 454 grams (1lb) | 23 drops | 2.27 grams | 21 drops | 2.27 grams |

* For conventional medicine dropper.

Deaeration

Air entrapped during mixing should be removed to eliminate voids in the cured product. Expose the mixed material to a vacuum of at least 22mm (29 in.) of mercury. The material will expand, crest, and recede to about the original level as the bubbles break. Degassing is usually complete about two minutes after frothing ceases. When using RTV silicone rubber for potting, a deairing 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 operations.

Limitations

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