

**DOWSIL™ XTI-1003 RTV Silicone Rubber Insulation**

High-strength silicone rubber insulating material for use on subsea energy production equipment

**Features & Benefits**

- High tensile strength
- High elongation
- Thermally stable
- Low thermal conductivity
- Two-part, Room Temperature Vulcanizing (RTV) silicone rubber
- Durable and flexible material with excellent insulating properties
- Excellent silicone to silicone adhesion for creating strong joints
- Material is easy to apply with good working time
- Addition cure reaction with no by-products

**Composition**

- Two-part silicone rubber supplied as a pourable liquid which cures to a flexible translucent or yellow rubber depending on selection of curing agent

**Applications**

- Thermal insulation and protective coating for application on subsea equipment components subjected to deep-water immersion

**Typical Properties**

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

Property	Unit	Result
Appearance (as cured)		Yellow
Viscosity (base)	cP	55,000
Viscosity (curing agent)	cP	300
<b>As catalyzed 10:1 ratio, by weight</b>		
Working time at 25°C (77°F)	minutes	90
Cure time at 25°C (77°F)	hours	12
<b>As cured – physical properties</b>		
Specific gravity		1.08
Durometer hardness, Shore A		40
Tensile strength	MPa	5.5
Elongation	%	325
Thermal conductivity (dry 0°C to 100°C)	W/mK	0.17
Thermal conductivity (aged wet)	W/mK	0.17
Specific heat CP at 135°C	J/g°C	1.70
Tm	°C	-46

## **Description**

DOWSIL™ XTI-1003 RTV Silicone Rubber Insulation is a two-part silicone rubber designed as a flexible material which maintains excellent stability even in extreme conditions. This high-strength silicone rubber cures at room temperature through an addition-reaction cure in unlimited thickness, regardless of part configuration or degree of confinement.

## **How to Use**

### **Casting Preparation**

The mold should be thoroughly cleaned using an appropriate solvent to remove any grease, oil or other surface contamination. Certain contaminants can inhibit or even prevent DOWSIL™ XTI-1003 RTV Silicone Rubber Insulation from curing so care should be used to insure all surfaces are cleaned including corners and crevices.

A light “blow over” with compressed air is advised should the mold have convoluted draws or undercuts.

A mold release agent should then be wiped or sprayed on the surface to facilitate easy demolding. It is recommended that areas where material will be over cast silicone to silicone (making a joint) not have a release agent so as to not reduce the ability of the material to bond to itself.

If additional bonding is necessary to improve adhesion to corrosion coating or other substrate, it is recommended that a primer be used. Contact your local Dow representative for primer recommendations appropriate to the desire substrate to be bonded with.

### **Addition of the Curing Agent**

DOWSIL™ XTI-1003 RTV Silicone Rubber Insulation Base and DOWSIL™ XTI-1003 RTV Silicone Rubber Insulation Curing Agent are produced as a two part system to be used in a 10:1 mix ratio. It should be noted that varying the ratio of the DOWSIL™ XTI-1003 RTV Silicone Rubber Insulation Curing Agent will not hasten or slow the rate of cure appreciatively. It can however, result in lowering the physical properties of the cured rubber if gross errors in rationing occur. For best results and a consistent color when using DOWSIL™ XTI-1003 RTV Silicone Rubber Insulation Yellow Curing Agent it is necessary to mix prior to use so as to re-disperse the pigment. The curing agent should be added just before use with the use of mechanical mixing with little or no introduction of air into the system as this may cause voids in the finished insulation.

### **Casting Catalyzed Material**

When casting catalyzed DOWSIL™ XTI-1003 RTV Silicone Rubber Insulation it is best to pump material into the mold from the bottom up to avoid air entrapment. For large casts, it is necessary to include air vents at the top most portions of the mold to allow for proper venting of air. For intricate molds which have complex angles and joints, it may be necessary to have several air vents spaced along the tool.

### **Working Time**

Upon mixing the curing agent into the base, the DOWSIL™ XTI-1003 RTV Silicone Rubber Insulation remains pourable for up to 90 minutes after being mixed at room temperature.

## How to Use (Cont.)

### Curing

The cure of DOWSIL™ XTI-1003 RTV Silicone Rubber Insulation occurs by a reaction between the base polymer and the curing agent. This polymerization typically requires 12 hours after the addition of the curing agent at room temperature (23°C). For some applications, where applied in temperatures below RT, it is recommended to allow it to cure for 24 hours or until material reaches its final hardness before de-molding. This material will not revert or de-polymerize, even under conditions of elevated temperature and confinement. Vulcanization can be accelerated by heating the catalyzed material. The rate at which a thick section will cure depends on the size and shape of the piece and the ability for heat to penetrate when casting at elevated temperatures.

It may be necessary to apply a primer to the surface of the corrosion coating substrate to improve bonding of the DOWSIL™ XTI-1003 RTV Silicone Rubber Insulation in service use. Contact your Dow technical or sales representatives for further information.

### Inhibition of Cure

All addition-cure silicone elastomers are susceptible to cure inhibition when in contact with certain chemicals. Amines and sulfur containing materials are strong inhibitors for silicone elastomers such as these. It is strongly recommended that mixing equipment, mold construction materials, areas to be insulated and even some release agents be checked for any inhibition effects before use. Inhibition can be identified when a catalyzed elastomer is only partially cured after 12 hours, or has a sticky surface in contact with another material. If noted, clean the affected area with an appropriate solvent.

## Handling Precautions

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

DOWSIL™ XTI-1003 RTV Silicone Rubber Insulation Base and DOWSIL™ XTI-1003 RTV Silicone Rubber Insulation Curing Agent should be stored in closed containers below 50°C (122°F) for maximum stability. The materials have a shelf life of 18 months from the date of manufacture.

## Packaging Information

DOWSIL™ XTI-1003 RTV Silicone Rubber Insulation Base is supplied in 200 kg drums with DOWSIL™ XTI-1003 RTV Silicone Rubber Insulation Curing Agent supplied in 20 kg pails.

## Limitations

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

## 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](http://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**

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to ensure that Dow products are not used in ways for which they are not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support. Dow product literature, including safety data sheets, should be consulted prior to use of Dow products. Current safety data sheets are available from Dow.

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