Information About HS III RTV High Strength Moldmaking Silicone Rubber Product Line

DOW CORNING

DOW CORNING® HS III RTV HIGH STRENGTH MOLDMAKING SILICONE RUBBER PRODUCT LINE

Type	Low-viscosity, two-part elastomer
Physical Form	Pourable liquid
Special Properties	Low durometer; high tear strength and elongation; excellent mold release
Special Features	Three unique catalysts and a special thixotropic additive
Primary Uses	High-strength, flexible silicone rubber molds; fabrication of parts

DESCRIPTION

DOW CORNING® HS III RTV high strength moldmaking silicone rubber is a two-part, low-viscosity elastomer.

DOW CORNING HS III RTV high strength moldmaking silicone rubber was developed especially for the detailed reproduction of figurines and other artistic masters using a range of liquid casting materials, such as plastic, polyurethane and polyester resins.

The DOW CORNING HS III RTV high strength moldmaking silicone rubber product line features DOW CORNING HS III RTV high strength moldmaking silicone rubber with three special catalysts that offer a ranges of hardness. It is compatible with DOW CORNING® HS II thixotropic additive:

- DOW CORNING® HS III 10-1 clear catalyst: lower durometer (8-12 Shore A); clear catalyst allows custom coloring by end user
- DOW CORNING® HS III 10-1 colored catalyst: lower durometer (8-12 Shore A); pink dye aids inspection for uniform blending and avoids pigment settling problems
- DOW CORNING® HS III 10-1 clay catalyst: lower durometer (12-16 Shore A); excellent for curing against both ROMA™[1] plastilina and CHAVANT™[2] plastelina clays; green pigment aids inspection for uniform blending
- DOW CORNING HS II thixotropic additive: a liquid additive that, when mixed with catalyzed DOW CORNING HS III RTV high strength moldmaking silicone rubber, converts the mixture to a nonflowable paste ideal for producing skin molds or casting against a vertical object

Benefits of the DOW CORNING HS III RTV high strength moldmaking silicone rubber product line include:

- Low to medium hardness
- Excellent detail reproduction
- Outstanding tear strength and toughness
- Excellent thin section cure
- Low mixed viscosity (easier to deair)

HOW TO USE – GENERAL

To ensure maximum reliability and performance, the following information should be read carefully.

Preparation

The original from which the mold is to be made should be thoroughly cleaned to remove dirt and all contaminants. When a solvent is used, care should be taken to ensure that it is compatible with the original, and sufficient time should be allowed for the solvent to evaporate fully. If required, the original and the holding box should be coated with a release agent. This is particularly important with porous substrates. Suitable release agents are solvent solutions of petroleum jelly or aqueous soap solutions.

When the original is a sulfur-containing clay, DOW CORNING HS III 10-1 clay catalyst is recommended. When casting DOW CORNING HS III RTV high strength moldmaking silicone rubber with DOW CORNING HS III 10-1 clay catalyst in thick section (1/4-inch thickness or greater) against sulfur-containing clays such as ROMA plastilina or CHAVANT plastelina clays, no surface treatment is required. However, when casting in thin sections (less than 1/4-inch in thickness), ROMA plastilina clays #1 and #2 may require minimal surface treatment.

Mixing

DOW CORNING HS III catalyst should be mixed into the base material just before use (with either manual or mechanical stirring). It is always good practice to stir/shake both the base

[1]"ROMA" is a trademark of Sculpture House, Inc.

[2]"CHAVANT" is a trademark of Chavant, Inc.

TYPICAL PROPERTIES

These values are not intended for use in preparing specifications.

As Supplied – HS III Base

Color	White
Specific Gravity	1.16
Nonvolatile Content, percent	98
Viscosity, cps	30,000

	10:1 Clear Catalyst	*10:1 Colored Catalyst*	*10:1 Clay Catalyst*
As Supplied			
Color	Clear	Pink	Green
Viscosity, cps	24	24	30
As Catalyzed			
Specific Gravity	1.15	1.15	1.15
Viscosity, cps	16,000	16,000	18,000
Working Time, approximate hours	2.0	2.0	1.0
As Cured – 7 Days at Room Temperature 25 C (77 F)			
Durometer Hardness, Shore A	8-12	8-12	12-16
Tensile Strength, psi	500	500	425
Elongation, percent	500	500	400
Tear Strength, die B, ppi	130	130	125
Circle Shrink, percent			
after 24 hours at 25 C (77 F)	0.23	0.20	0.01
after 7 days at 25 C (77 F)	0.48	0.48	0.21

Specification Writers: Please obtain a copy of the Dow Corning Sales Specification for this product, and use it as a basis for your specifications. It may be obtained from any Dow Corning Sales Office, or from Dow Corning Product Information in Midland, MI. Call (517) 496-6000.

and the catalyst prior to use. This is especially true with DOW CORNING HS III 10-1 clay catalyst to ensure suspension of the pigment.

Mixing should be complete within 2 minutes and the temperature should not exceed 35 C (95 F). Hand mixing is satisfactory, but care should be taken to avoid entrapping too much air or splashing the catalyst.

Deairing

To ensure void-free molds and to obtain the maximum pot life, it is important that the catalyzed mixture is deaired prior to use.

Deair the mixture under a vacuum of 26 to 29 inches of mercury and hold until it completely expands and recedes to the original level (3 to 5 minutes maximum).

CAUTION: Deairing for more than 3 to 5 minutes can cause a slower cure and deep section cure problems. The container should have at least 5 times the mixture volume to allow for the expansion.

Pouring the Mixture

Depending on catalyst selection, the catalyzed mixture has a working time[1] of 1 to 2 hours under normal working temperatures. It should be poured carefully to avoid entrapping air and should be allowed to flow from one corner of the mold to fill the required volume. DO NOT SCRAPE the sides of the container holding the catalyzed mixture.

Cure

The catalyzed mixture will cure to a flexible rubber within 24 hours, after which it can be demolded. Optimum mechanical properties are developed within 7 days.

The cure rate can be accelerated with heat but the temperature cannot exceed 43.3 C (110 F). Optimum properties are not achieved by varying the base to catalyst mixing ratio from the recommended ratios.

[1]Time when catalyzed mixture becomes nonflowable (usually tripling the initial viscosity).

HOW TO USE – THIXOTROPIC ADDITIVE

The substrate from which a mold will be made should first be cleaned, and, if necessary, coated with a release agent (petroleum jelly, PTFE spray, or soap solution are suitable). This is particularly important for porous substrates.

The substrate should then be coated with a thin precoat (print coat) of catalyzed DOW CORNING HS III RTV high strength moldmaking silicone rubber and DOW CORNING HS III 10-1 clay catalyst (100 parts base plus 10 parts catalyst). Once the print coat has started to cure, a second coat may be applied. These coatings can be applied by either brushing or spraying. To ensure a void-free coating, the mixture should be deaired prior to use.

Once this layer has started to cure but is still tacky, the thixotropic mixture should be prepared by thoroughly mixing together DOW CORNING HS III RTV high strength moldmaking silicone rubber base, DOW CORNING HS III 10-1 clay catalyst and DOW CORNING HS II thixotropic moldmaking additive in the ratio of 100:10:1 (base:catalyst:additive) parts by weight. It is not necessary to deair this mixture.

This mixture should be applied over the precoat with a spatula. The addition of a pigment to the thixotropic mixture aids in identifying the areas to be coated. Suitable pigments can be obtained from the Ferro Corporation, 1301 N. Flora Street, Plymouth, Indiana 46563, (210) 936-5131.

The pigments are used at a level of 0.5 part by weight. If necessary, more than one layer of the thixotropic additive can be applied to achieve a thick coating. To ensure optimum adhesion between the layers, the next layer should be applied before the previous one has fully cured and is still tacky.

Full cure is achieved within 24 hours, after which demolding can take place. For large or complicated molds, it is recommended to back the silicone mold with plaster or polyester prior to removal.

HANDLING PRECAUTIONS

With DOW CORNING HS III RTV high strength moldmaking silicone rubber base, direct eye contact may cause temporary discomfort. Otherwise,

TYPICAL PROPERTIES – DOW CORNING HS II RTV THIXOTROPIC ADDITIVE
These values are not intended for use in preparing specifications.

As Supplied	
Appearance	Off-white, translucent liquid
Viscosity, cps	350
Specific Gravity	1.04
As Mixed[1] With Catalyzed DOW CORNING HS III RTV High Strength Moldmaking Silicone Rubber[2]	
Working Time, minutes	45
Cure Time, hours	24
Slump on Cure, 8-mm thick coating, mm	4

[1]Recommended mixing ratio is 100:10:1 (base:catalyst:additive), by weight.

[2]The mechanical properties are similar to DOW CORNING HS III RTV high strength moldmaking silicone rubber.

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DOW CORNING HS III RTV high strength moldmaking silicone rubber base is nonhazardous and nonflammable. DOW CORNING HS III RTV high strength moldmaking silicone rubber catalysts are eye and skin irritants, and their vapors may be harmful. They are also flammable (flash point 29.4 C [85 F]), so appropriate precautions must be taken.

DOW CORNING HS II RTV thixotropic moldmaking additive is noncorrosive and should present no health or safety hazard when used as recommended.

Safe handling instruction sheets for DOW CORNING HS III RTV high strength moldmaking silicone rubber base and catalysts are available from your nearest Dow Corning sales office.

STORAGE AND SHELF LIFE

When stored in original, unopened containers at 25 C (77 F), DOW CORNING HS III RTV high strength moldmaking silicone rubber base and catalysts have a shelf life of 6 months from date of shipment.

When stored in closed containers at 25 C (77 F), DOW CORNING HS II RTV thixotropic moldmaking additive has a shelf life of 12 months. When stored below 20 C (68 F), it may solidify. The product can be readily reliquified by the application of heat.

Base and catalysts are moisture sensitive. Care should be taken to ensure that containers are tightly closed after use.

PACKAGING

DOW CORNING HS III RTV high strength moldmaking silicone rubber is sold separately from the catalysts. The base is packaged in 9-, 45- and 440-lb (4.1-, 20.4- and 199.6-kg) containers. DOW CORNING HS III 10-1 clear catalyst, DOW CORNING HS III 10-1 colored catalyst and DOW CORNING HS III 10-1 clay catalyst are packaged in 0.9-, 4.5- and 44-lb (408-g, 2- and 20-kg) containers. A 1.1-lb (0.5-kg) kit with base and DOW CORNING HS III 10-1 colored catalyst is also offered.

DOW CORNING HS II RTV thixotropic additive is available in a 1-lb (454-g) container.

SAFE HANDLING INFORMATION

ATTENTION: PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED. BEFORE HANDLING, READ PRODUCT AND MATERIAL SAFETY DATA SHEETS AND CONTAINER LABELS FOR SAFE USE, PHYSICAL AND HEALTH HAZARD INFORMATION. THE MATERIAL SAFETY DATA SHEET IS AVAILABLE FROM YOUR DOW CORNING REPRESENTATIVE, OR DISTRIBUTOR, OR BY WRITING TO DOW CORNING CUSTOMER SERVICE, OR BY CALLING (517) 496-6000.

LIMITED WARRANTY – PLEASE READ CAREFULLY

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