

RTF7000

Description

The RTF7000 variable density foam system is a multi-component product which allows end-users to design finished foam products with a wide range of density, cell structure and physical properties based on the requirements of the end-use application. The system consists of a base, a crosslinker, and an additive that are mixed in various combinations and ratios to yield a cured silicone foam over a density range of 5 to 16 pounds per cubic foot. The RTF7000 variable density silicone foam system can be considered for a variety of applications where fire retardancy, thermal insulation and low density are key considerations.

Key Features and Benefits

- Variable density between 5 and 16 pounds per cubic foot
- Non-halogenated fire retardant foam
- Low smoke generation
- Low toxicity combustion by-products
- Room temperature process capable
- Foam develops without use of CFCs

Typical Physical Properties

Unmixed Properties

The RTF7000 variable density silicone foam system contains the following components:

RTF7000 (Base) - Contains reactive catalyst and must be used in all formulations.

	RTF7000
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Color	White
Viscosity, cps (25°C)	65,000
Specific Gravity	1.23

SS4300C (Crosslinker/Blowing Agent) - Reacts with the RTF7000 base to form medium density foam and must be used in all formulations.

	SS4300C
Color	Clear
Viscosity, cps (25°C)	15
Specific Gravity	1.00

Methanol (Low Density Additive) - Optional additive that is used to obtain minimum densities.

	Methanol
Color	Clear
Viscosity, cps (25°C)	1
Specific Gravity	0.79

Mixed Properties

The mixed working time of the RTF7000 variable density silicone foam system depends upon the mix ratio selected. In general, increasing the amounts of methanol low density additive will produce a longer work life/slower curing system as shown below:

Mix Ratio (parts by weight)			Work Life ⁽¹⁾	Rise Time ⁽²⁾
RTF7000	SS4300C	Methanol	(minutes)	(minutes)
100	7.5	-	1	5
100	7.5	0.4	3	15
100	7.5	1.0	4	23 at 22°C

⁽¹⁾ Work life is the amount of time the material will react until it is no longer flowable (nominally 20% of rise time).

⁽²⁾ Rise time is that time at which the material has reached its fully expanded height.

Both work life and rise time are dramatically affected by temperature. The higher the

ambient temperature conditions the shorter the work life and rise time. Rise time can be significantly shortened by using an oven to cure the mixed foam. Oven temperatures should not exceed 40°C until the foam has reached its maximum expansion height.

Cured Properties

Density Properties

The RTF7000 variable density silicone foam system is a flexible system which allows the user to achieve densities from 5 to 16 pounds per cubic foot. This density variation is controlled by both the components which are used and the mix ratio at which those components are used. Some typical formulations are as follows:

Mix Ratio (parts by weight)			Target Density (pcf)
RTF7000	SS4300C	Methanol	
100	7.5	-	16
100	7.5	0.5	12
100	7.5	0.8	9
100	7.5	1.2	7
100	7.5	1.6	5

The above densities were obtained from unskinned core samples cut from blocks of cured foam. The foam was produced utilizing a meter-mix-dispense system with both static and dynamic mixing. Different results may be obtained with hand mixing or if density determinations are made on skinned samples.

Mechanical Properties (0.75 ft. thick skinned samples at 7 pcf density)

		Postbake	Postbake
	No Postbake	15m/100°C	5m/100°C
Tensile Strength (psi)	11	4	4
(ASTM D3574)			
Elongation (%)	40	42	47
(ASTM D3574)			
Tear Strength (lb/in)	0.8	1.1	1.2
(ASTM D3574)			
Compression (psi) @ 25%	0.2	0.6	0.7
Deflection	0.7	2.5	2.6
(ASTM D3574) @ 65%			

Thermal Properties (0.75 in. Thick skinned samples at 7 pcf density)

Continuous Operating Temperature Range	°C	52°C to 162°C
	°F	-60°F to 350°F
Thermal Conductivity	cal/sec/cm/°C	1.2 x 10 ⁻⁴
	W/m K	0.05

Flammability Properties(0.75 in. thick skinned samples at 7 pcf density)

FAR 25.8538 - Vertical Flammability	Pass
FMVSS 302 Horizontal Burn	Pass
OSU Rate of Heat Release	
2 Minute Integral Peak (kW/m ²)	89
Peak (kW/m ²)	62

ASTM E662 (NFPA 258) Smoke Density

	Flaming	Non-Flaming
Optical Density - 90 seconds	7	11
Optical Density - 4 minutes	17	25
D max	140	120

The preceding claims, representations and descriptions regarding the flammability of the product described as based on standard small scale laboratory tests. Such tests may not be reliable for predicting the flammability or burning characteristics of the product under actual fire conditions, whether the product is used alone or in combination with other products. Each potential user should determine for him/herself whether a particular test procedure is meaningful for a particular application and should run independent tests to determine whether the product is suitable for any application.

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

WARNING

THIS PRODUCT EXPANDS BY THE EVOLUTION OF HYDROGEN GAS. MIXING AND HANDLING OF CATALYZED MATERIAL SHOULD BE DONE IN WELL VENTILATED AREAS AWAY FORM SPARKS, FLAMES, OR OTHER SOURCES OF IGNITION IN AND ABOVE THE WORKING AREA.

CAUTION

SS4300C crosslinker/blowing agent can generate flammable hydrogen gas upon contact with acidic, basic, or oxidizing materials. Such contact should be avoided.

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.

Processing Recommendations

Compatibility

The RTF7000 variable density silicone foam system will cure in contact with most clean and dry surfaces. However, certain materials, such as butyl and chlorinated rubber, sulfur-containing materials, amines, and certain metal soap cured RTV silicone rubber compounds can cause cure inhibition. Cure inhibition is characterized by a lack of cure of the silicone foam at the interface between it and other materials. Compatibility tests should be performed on all materials which may come in contact with the uncured foam, including painted surfaces.

Mixing

RTF7000, SS4300C, and methanol should be mixed at the desired ratio in a non-porous container large enough to accommodate the volumetric expansion of the foam (2-4 times by volume depending on formulation).

For small batches (less than 200 grams), hand mixing can be used. When doing so, use a clean, flat-bladed spatula or paint stirrer. Material clinging to the sides and bottom of the container shall be thoroughly folded into the main contents. A 45 second (maximum) vigorous mix cycle should be used.

For larger batches, a power mixer can be used. Care must be taken not to splatter the low viscosity components out of the container. A maximum 45 second mix cycle should be used. Mixing speed should not be too high as this will cause a quick build-up of heat and significantly reduce the work life of the catalyzed mixture.

Automatic dispensing machines designed to meter, mix, and dispense silicone foam materials will reduce the necessary preparation steps and are strongly recommended

for use where volume is sufficient to justify the required capital investment. The RTF7000 variable density silicone foam system is unique in its processing characteristics. Automated equipment designed to run liquid urethane foams will not work well with the RTF7000 system. Modification of the equipment will usually be required.

Limitations

Customers must evaluate Momentive Performance Materials products and make their own determination as to fitness of use in their particular applications.

Availability

RTF7000 and SS4300C may be ordered from Momentive Performance Materials or from an authorized Momentive Performance Materials product distributor.

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