



# Silicone Elastomers for Textile Coating Applications



## A LEADER IN SILICONES

Momentive Performance Materials is a global leader in silicones and advanced materials, delivering the science behind the solutions across a wide range of specialty performance applications in more than 100 countries worldwide.

Our 70+ year heritage of innovation and market firsts provides product portfolios and technical competencies that link customized technology platforms to opportunities for our customers.

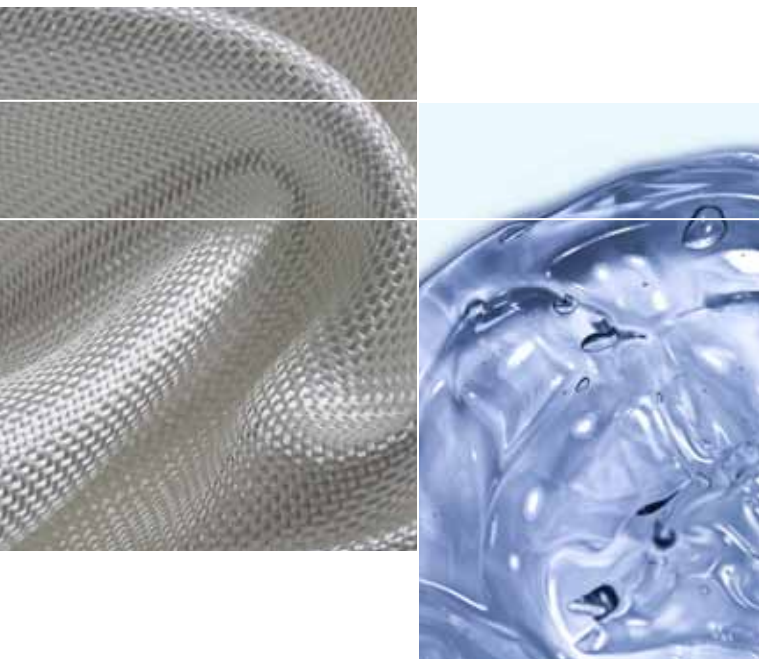
Momentive Silicone Elastomers are providing unique properties within the global rubber industry. Our silicones can provide excellent heat resistance and inertness towards the environment. Applications can be found in the Healthcare, Consumer Goods, Electronics and Automotive Industry.

### Silicones

Silicones are a remarkably versatile family of synthetic materials with hundreds of uses. Chemically they are related to  $\text{SiO}_2$  like quartz or sand but contain organic residues, which break down the inflexible three-dimensional network. The inorganic Si-O-Si backbone is the reason for the unique silicone properties. Methyl is the preferred substituent because of the weak interaction between the methyl groups and low proportion of organic material in the polymer.

Key benefits of silicone elastomers are:

- High temperature resistance and low temperature flexibility
- Stability against ageing by UV, ozone and harsh weather conditions
- Physiological inertness and applicability in food applications and skin contact
- High hydrophobicity and low surface energy
- Neutral odor, taste and color
- Solvent free
- Soft touch



Momentive Silicone Elastomers Product lines are:

- RTV - Room Temperature Vulcanizing: Consists of rubber and gel products developed for adhesion, sealing, coating, and encapsulation/potting applications. Momentive's versatile technology offers 1 and 2 component products, which utilize either atmospheric moisture or heat to cure. Chemically they are condensation cure or addition cure products.
- LSR - Liquid Silicone Rubber: This addition cure material is mainly designed for short cycle time injection molding and fully automatic processing. Coating grades are usually at the low end of the viscosity range. General Purpose LSR products can also be used for coating applications in diluted form.
- HCR - High Consistency Rubber: Typical processes include extrusion, calendering, molding (incl. compression, transfer and injection). Momentive Performance Materials supplies base materials for customers with their own compounding. We are also capable to supply ready-to-use-compounds including the peroxide cure or addition cure catalyst in 1 or 2 components. HCR products are diluted in solvents for coating applications.



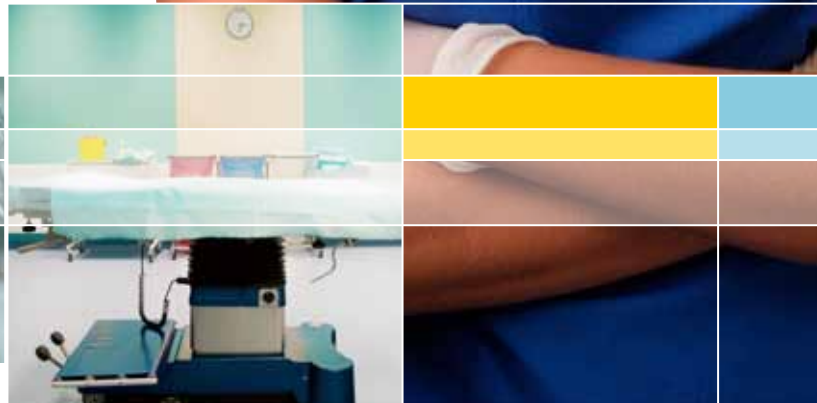
## Typical Key Features vs. Applications:

Features	Applications																				
	Air Bags	Bandages	Clothes	Conveyor Belts	Fiber Reinforcement	Fire Blankets	High Temperature Insulation	Lace Coating	Laminations	Mattress Cover	Medical Garments	Pressure Cushions	Protective Suit	Sails	Sleeving	Sport Shoes	Sports Mats	Tape Insulation	Tents	Textile Printing	
Abrasion Resistance	x			x									x	x	x	x	x	x	x	x	
Adhesion	x		x	x	x	x		x	x	x	x	x	x		x		x	x			x
Ageing			x		x	x	x				x			x	x		x	x	x		
Anti-blocking	x														x			x			
Dry Touch				x	x			x			x					x					
Easy Coloring			x					x			x			x		x	x	x	x	x	x
Fast Cure at Low Temperature			x	x				x							x	x					
Flame Retardent				x	x	x	x						x							x	
High Friction				x				x							x					x	
High Pressure	x						x					x									
High Temperature			x	x			x					x	x					x			
Hydrophobicity						x		x		x				x	x	x				x	
Mechanical Bond			x		x							x									
Mechanical Strength							x		x			x		x		x		x			x
Penetrates close-knit fabrics	x			x				x					x		x	x		x			x
Skin Contact		x	x					x			x										
Stain Resistance			x					x		x	x					x	x			x	
Sterilization Resistance		x									x										
Tacky Surface			x					x													
Weatherability			x										x	x		x				x	

## Silicone Materials for Textile Coating

Today addition cure is the preferred technology for coating of textiles with silicones. Solvents can usually be avoided and no by-products are generated during cure. The addition reaction is very fast and work life can be adjusted to the needs of the application. The curing conditions can vary between less than a minute at ambient temperature with 20 seconds pot life and several minutes at 150°C with a pot life of days. Even 1- part addition cure materials are possible.

- Both products RTV and LSR are based on the addition reaction. The designation as LSR or RTV is not always logical in textile coating because both product types are cured at elevated temperature. The naming is based on the product and application history.
- The Silicone Liquid Elastomers (SLE) products are resin type textile coatings. They are a very good choice when a smooth and non-blocking surface is required.
- HCR and RTV 1-part condensation cure products for coating are not included in this brochure. Information is available upon request.



## Elastomer Textile Coatings - Overview

(2 part addition cure)

Products	Appearance	Key Features	Application Examples
<b>High Mechanical Strength</b>			
Silopren* LSR 2530	Translucent	Flame retardant, high friction	Conveyor belts, protective suits, fiber glass, fabric sleeves , tents
Silopren LSR 2540	Translucent	Flame retardant, high friction	Conveyor belts, protective suits, fiber glass, fabric sleeves , tents
Silopren LSR 2560	Translucent	Mechanical strength, high friction	Conveyor belts, protective suits, fiber glass, fabric sleeves , tents
RTV 830	Translucent	High modulus, fast cure, high friction	Lace coating, conveyor belt, fabric coating
<b>Apparel/Clothes Coatings</b>			
RTV 833	Translucent	Tacky surface, fast cure at low temperatures	Lace coating, clothes, conveyer belt
RTV 834	Translucent	Tacky surface, fast cure at low temperatures	Lace coating, clothes, conveyer belt
SLE 7000	Translucent	Applied in thin films, cured rapidly, enhances physical strength	Nylon, kevlar, fiber glass, natrual and structural fabrics
XE-15 C4112	Translucent	Fast cure, short pot life	Cure to elastic rubber, clothes
XE-15 C4113HC	Translucent	Late cure, long pot life	Cure to elastic rubber, clothes
<b>High Technical Textiles</b>			
TC 5050	White	Flame retardant, dry touch	Fireblankets, fiber glass, insulation
TC 5060	White	Flame retardant	Fiber glass, insulation
<b>High Temperature Coatings</b>			
RTV 850	Gray	High temperature, high pressure, mechanical bond	Pressure cushions
<b>Special Friction Coatings</b>			
SLE 5300	White	Penetrates closely knit fabric, low viscosity	Industrial & structural fabrics, sleeving, belting, tape insulation, protective blankets
SLE 5600	Beige	High viscosity, mechanical strength, abrasion resistance	Industrial & structural fabrics, sleeving, belting, tape insulation, protective blankets
SLE 5700-D1	Translucent	Easy to pigment for bright colors, excellent adhesion to fabrics, antiblocking	Industrial & structural fabrics, sleeving, belting, tape insulation, protective blankets
<b>Self Bonding</b>			
SLE 5401	Hazy	Excellent adhesion, antiblocking, abrasion resistance	Industrial & structural fabrics, sleeving, belting, tape insulation, protective blankets, gloves
<b>Textile &amp; Screen Printing</b>			
XE-15 B0344	White	Variety application technologies, long pot life, excellent adhesion	Lamination, bonding, silicone to silicone bonding
XE-15 C4542	Milky white	Long pot life, excellent strength	Printing
XE-15 C3974	Translucent	High strength elastomer, fast cure	Printing, yoga matt
LSR 1640	Milky white	Longer pot life, low viscosity, excellent strength	Textile Coating
LSR Top Coat HE	Matte	Physical properties subject to the substrate used.	
<b>Adhesive Coating</b>			
RTV 820	Translucent	High strength adhesion	Lamination, silicone to silicone bonding

Typical data are average data and actual values may vary.  
Typical data shall not be used as product specifications.

\*Silopren is a trademark of Bayer AG, used under license.

FDA <sup>1</sup>	USP CLASS VI <sup>2</sup>	UL 94 HB	Easy to Pigment	Mix Ratio	Pot Life at RT	Viscosity (Pa·s)	Density (g/cm <sup>3</sup> )	Hardness Shore A	Tensile Strength (MPa)	Tear Strength ASTM D624B (N/mm)	Elongation (%)
X		X	X	1 : 1	3 days	60	1.08	30	4	10	300
X		X	X	1 : 1	3 days	100	1.08	40	6.5	25	500
X			X	1 : 1	3 days	110	1.08	60	7	10	300
			X	1 : 1	2 hours	85	1.05	26	4.4	25	540
			X	1 : 1	2 hours	100	1.05	25 (Shore 00)	0.7		480
			X	1 : 1	2 hours	110	1.05	40 Shore 00)	2		500
			X	1 : 1	8 hours	200	1.06	34			375
				100 : 1	3 hours	26	1.06	20	5.5	11	590
				100 : 1	10 hours	35	1.06	23	5	8	500
				100 : 6.5	3 days	45	1.15	50	5.2	6	
				100 : 6.5	3 days	44	1.17	57	5.7	5.7	
				1 : 1	4 days	20	1.21	48	5		200
				10 : 1	2 days	16	1.16	33			185
X				1 : 1	2 days	150	1.27	58	5.5		220
			X	1 : 1	2 days	20	1.01	40	5	16	200
X			X	1 : 1	8 hours	25	1.01	48	5.5		200
				10 : 1	8 hours	180	1.1	33	5.4	23	460
				100 : 0.3	3 days	160	1.11	36	6.6	20	580
				10 : 1	2 days	34	1.06	40	6.3	16	350
				1 : 1	3 days	100	1.1	36	6	20	400
	X			1 : 1	3 days	500					
			X	1 : 1	3 days	320	1.07	35	7		600

<sup>1</sup> FDA Indirect Food Contact - Rubber Articles Intended for Repeated Use - FDA Reg 21CFR177.2600

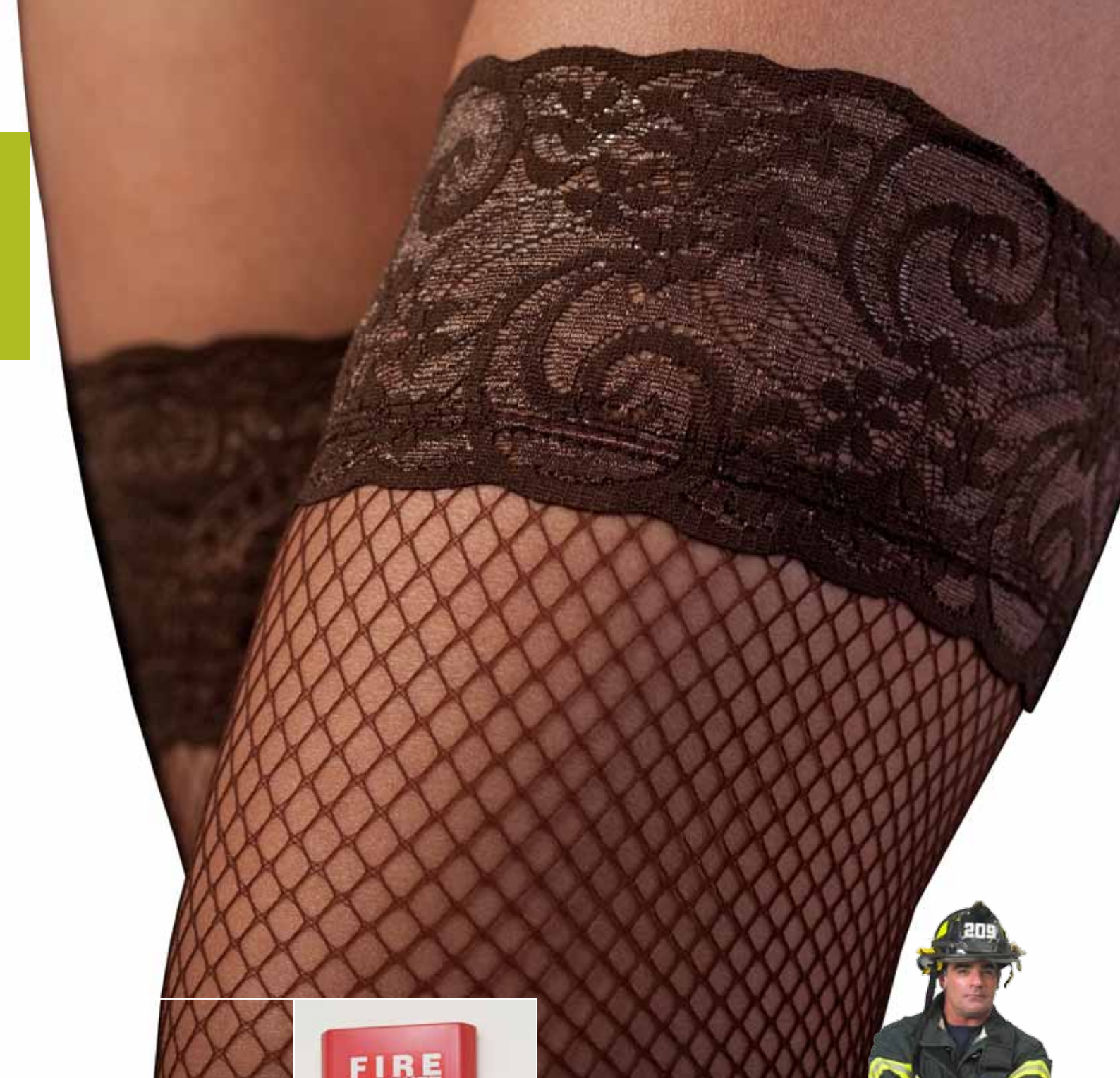
<sup>2</sup> USP Class VI equivalent tests were tested according to USP Class VI methods: Intramuscular implantation, intracutaneous injection, & systemic injection

General Purpose LSR products can also be used for coating applications in diluted form.

Note: All of the aforementioned test results, are based on single lots of material. Although lot-to-lot variance would not be expected to show different test results, these data should not be construed as a warranty of fitness for use. Prior to use for any application, the user has sole responsibility for determination of the suitability and safety of any Momentive material in its end use application.

Additional information may be contained on the technical datasheet.

For custom opportunities, please contact your local Momentive sales representative.





## Color Pastes and Additives

Color pastes are available to pigmenting addition cure productions such as LSR's. The recommended quantity of color to add is 0.5% to 2.0% depending on the desired depth of color. The use of Momentive's color additives should not affect the performance properties of our products. Additional information may be found on the color paste technical datasheet.

Momentive's portfolio contains:

### LSR Color Pastes

	maize yellow RAL approx. 1007 approx. 1.00 g/cm <sup>3</sup> BfR IX		yellow RAL approx. 1016 approx. 1.15 g/cm <sup>3</sup> BfR IX		vermillion RAL approx. 2002 approx. 1.02 g/cm <sup>3</sup> BfR IX
	orange new RAL approx. 2004 approx. 1.03 g/cm <sup>3</sup> BfR IX		reddish brown RAL approx. 3011 approx. 1.14 g/cm <sup>3</sup> BfR IX		red RAL approx. 3020 approx. 1.02 g/cm <sup>3</sup> BfR IX
	wine red RAL approx. 3027 approx. 1.05 g/cm <sup>3</sup> BfR IX		ultramarine blue RAL approx. 5002 approx. 1.18 g/cm <sup>3</sup> BfR IX		blue RAL approx. 5005 approx. 1.05 g/cm <sup>3</sup> BfR IX
	green RAL approx. 6010 approx. 1.16g/cm <sup>3</sup> BfR IX		light green RAL approx. 6010 approx. 1.12 g/cm <sup>3</sup> BfR IX		grey RAL approx. 7000 approx. 1.16g/cm <sup>3</sup> BfR IX
	light grey RAL approx. 7040 approx. 1.14g/cm <sup>3</sup> BfR IX		light grey RAL approx. 7040 approx. 1.10 g/cm <sup>3</sup> BfR IX		white RAL approx. 9010 approx. 1.14g/cm <sup>3</sup> BfR IX
	black RAL approx. 9005 approx. 1.10 g/cm <sup>3</sup> BfR IX				

If you have further questions regarding additives ex. primers more information is available upon your request

Additional information may be contained on the technical datasheet.

For custom opportunities, please contact your local Momentive sales representative.

## Patent Status

Technical subject matter in this publication is described and protected by one or more pending US patent applications.

## Product Safety, Handling and Storage

Customers considering the use of this product should review the latest Material Safety Data Sheet and label for product safety information, handling instructions, personal protective equipment if necessary, and any special storage conditions required. Material Safety Data Sheets are available at [www.momentive.com](http://www.momentive.com) or, upon request, from any Momentive Performance Materials representative. Use of other materials in conjunction with Momentive Performance Materials products may require additional precautions. Please review and follow the safety information provided by the manufacturer of such other materials.

## Limitations

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

## Emergency Service

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Momentive Performance Materials maintains an around-the-clock emergency service for its products. The American Chemistry Council (CHEMTREC) and CareChem24 International also maintain an around-the-clock emergency service for all chemical products:

<u>Location</u>	<u>Momentive Performance Materials Products</u>	<u>All Chemical Products</u>
Mainland U.S., Puerto Rico	518.233.2500	CHEMTREC: 800.424.9300
Alaska, Hawaii	518.233.2500	CHEMTREC: 800.424.9300
Canada	518.233.2500	CHEMTREC: 800.424.9300
Europe	+518.233.2500 (Albanian, Czech, Danish, Dutch, English, Finnish, French, German, Greek, Hungarian, Italian, Lithuanian, Norwegian, Polish, Portuguese, Romanian, Russian, Serbo-Croatian, Slovak, Spanish, Swedish, Turkish, Ukrainian)	+44.(0)208.762.8322 (UK)
Middle East, All countries, except Israel	+518.233.2500	+961.3.487.287 (Lebanon)
Middle East, Israel	+518.233.2500	+44.(0)208.762.8322 (UK)
Latin America, Asia/Pacific, all other locations worldwide	+518.233.2500	CHEMTREC: +1-703.527.3887 (collect)
At sea	Radio U.S. Coast Guard, which can directly contact Momentive Performance Materials at 518.233.2500 or CHEMTREC at 800.424.9300.	

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DO NOT WAIT. Phone if in doubt. You will be referred to a specialist for advice.



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