CONSUMER SOLUTIONS

Fluorosilicone rubber product selection guide

HOW CAN YOU EXPAND YOUR DESIGN OPTIONS?

DOW®

Why fluorosilicone rubber?

The fluid resistance of fluorosilicone rubber (FSR) is what sets this material apart from traditional silicone rubber and many organic elastomers. Even prolonged immersion in harsh engine oils, transmission and power steering fluids, and all grades of gasoline and jet fuels causes only slight swelling and has little effect on properties.

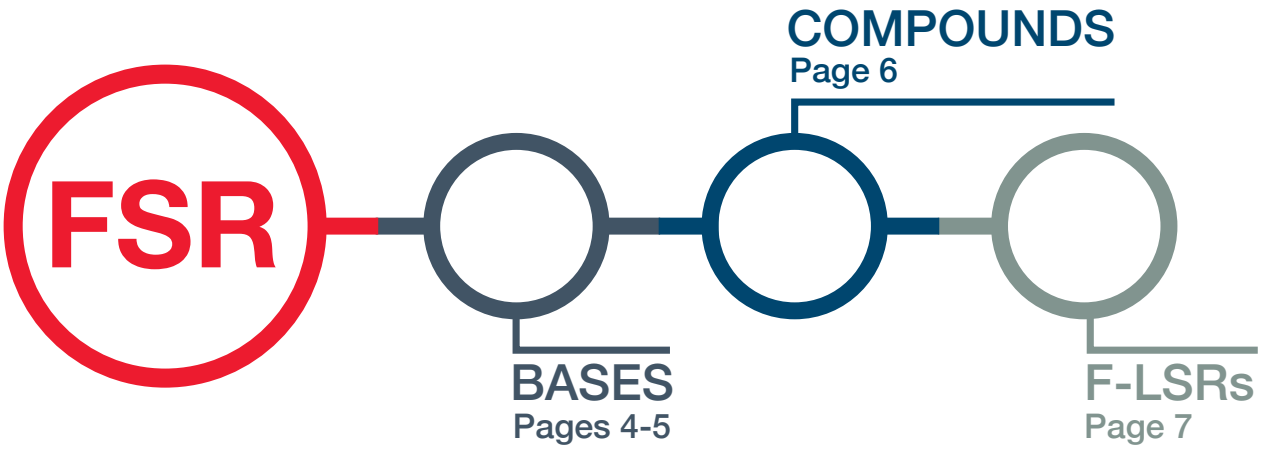
FSR can withstand repeated flexing without stress cracking. This feature, combined with FSR's relatively constant modulus over a wide temperature range, makes it an excellent material for many diaphragm applications.

In addition, FSR has good compression set resistance and maintains excellent tear and tensile strength when exposed to harsh fluids and temperature extremes. Experience in demanding applications has demonstrated that fluorosilicone parts remain flexible and rubbery; they don't turn leathery, brittle or mushy.

Fluorosilicone rubber offers the environmental stability inherent in dimethyl silicone elastomers, so it's able to function under conditions that would *literally destroy* many conventional materials.

SILASTIC™ Fluorosilicone Rubbers (FSRs) from Dow are silicone-based, highly fluorinated elastomers with excellent resistance to degradation from fuels, oils, solvents and harsh chemicals. These FSRs typically offer high performance in extreme heat and cold, across a wider service temperature range than carbon-based fluoroelastomers such as FKM.

This selection guide provides detailed technical information on the available products in our portfolio of SILASTIC™ FSRs



Fluorosilicone rubber options from Dow

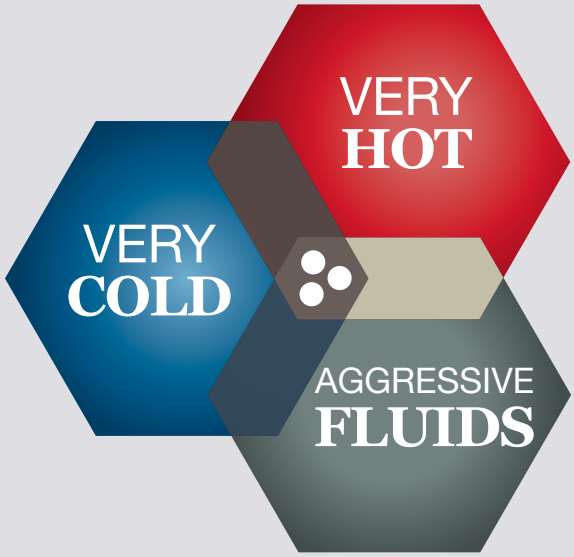
As today's global leader in fluorosilicone rubbers, Dow offers a variety of options in FSR materials to meet your performance and processing needs. These include:

- **SILASTIC™ Fluorosilicone Rubber (FSR) Bases** – crepelike solid materials for custom compounding with additives, modifiers, curing catalysts and color pigments to fit specific application requirements.
- **SILASTIC™ Fluorosilicone Rubber (FSR) Compounds** – high-consistency, ready-to-use, heat-cured fluorosilicone rubber compounds with key engineering properties to meet specific component design objectives.
- **SILASTIC™ Fluoro-Liquid Silicone Rubbers (F-LSRs)** – fully fluorinated elastomers combining the fluid resistance of fluorosilicone rubber with the processing ease of liquid silicone rubber using standard injection-molding equipment.

Impressive advantages

SILASTIC™ FSR engineered elastomers have been shown to combine excellent mechanical properties with environmental resistance that many organic elastomers cannot match. Key strengths expand your design options for improved component durability:

- Outperform a variety of organic rubbers when exposed to harsh fluids and extreme operating temperatures
- Maintain tensile and tear strength in challenging service environments
- Can be custom-compounded to meet specialized requirements for heat aging, fuel resistance and swelling
- Offer processing versatility with options for extruding, calendering, and injection or compression molding
- Can be easier to process than some fluorinated organic elastomers, such as FKM fluorocarbon rubber



Diverse applications

With successful, effective performance in challenging applications for more than 60 years, SILASTIC™ Fluorosilicone Rubber can enhance component reliability in harsh environments with heat, cold and aggressive fluids:

- **Automotive** components such as seals, O-rings, gaskets, diaphragms, membranes, flexible valves, quick-connect fuel line seals and turbocharger hose liners
- **Aerospace/aviation** parts including gaskets, seals, hoses, bellows and connectors
- **Oil, gas and petrochemical** components, such as sealing elements for pumps, valves and pipelines handling liquid or gas hydrocarbons, corrosive chemicals, or various processed fuels
- **Industrial** seals and gaskets exposed to oil or solvents and high temperatures

Curious which of your products might benefit from fluorosilicone rubber?

Let's talk. With in-depth application experience and broad technical support services, Dow can help identify the right SILASTIC™ Fluorosilicone Rubber to meet your challenging application requirements. Add us to your problem-solving team – and expand your design options.

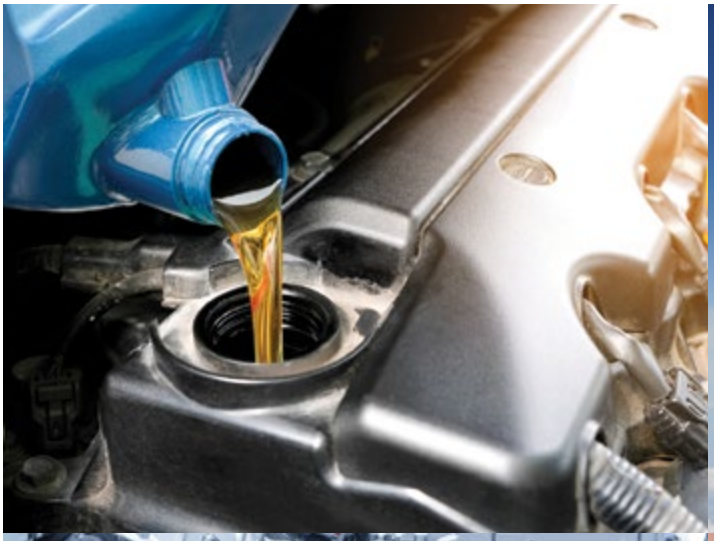
Fluorosilicone rubber bases

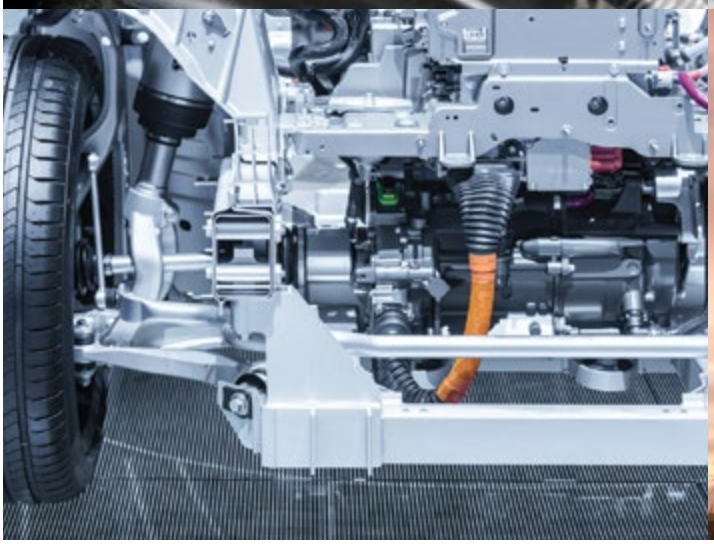
SILASTIC™ Fluorosilicone Rubber (FSR) Bases are high-consistency, uncatalyzed materials that can accept commercially available curing agents (catalysts), performance additives/modifiers, and coloring pigments. Various FSR bases can be blended together to achieve desired values for selected performance and/or processing properties. These FSR bases:

- Maintain excellent mechanical properties over a wide temperature range
- Offer excellent resistance to fuels, oils, solvents and aggressive fluids
- Easily pigmented; supplied as off-white or translucent materials

Feature/ application	Available products	Specific gravity ASTM D792	Shore A hardness @ 1 sec ASTM D2240	Tensile strength, MPa ASTM D412 DIE C	Tear strength, kN/m ASTM D624 DIE B	Elongation, % ASTM D412 DIE C	Compression set after 22 hr @ 177°C, % ASTM D395 Method B	Bashore resilience, % rebound ASTM D2632	Comments
General purpose	SILASTIC™ LS-2840 FSR	1.43	38	10.1	26.7	519	13	15	Designed to meet Mil-R-25988B, class 1, Grade 40
	SILASTIC™ LS 5-8754 FSR	1.50	53	8.7	37.8	270			
	SILASTIC™ LS-2860 FSR	1.46	58	10.0	31.2	361	13	19	Designed to meet Mil-R-25988B, class 1, Grade 60
High strength (tensile and tear)	SILASTIC™ LS 5-2040 FSR	1.43	40	12.1	38.5	528	20	19	Retains good properties after adding extending fillers
	SILASTIC™ LS 5-2060 FSR	1.47	58	10.6	46.4	474	17	17	
	SILASTIC™ LS-4940 FSR	1.40	39	10.7	44.9	591	18	12	
	SILASTIC™ LS-4960 FSR	1.47	60	10.8	33.0	388	14	16	
Low compression set	SILASTIC™ LS 4-9040 FSR	1.40	40	8.2	17.5	415	10	29	
	SILASTIC™ LS 4-9060 FSR	1.45	59	9.2	22.8	348	10	27	
	SILASTIC™ LS 4-9080 FSR	1.55	81	7.5	19.9	159	11	29	Designed to meet Mil-R-25988B, class 1, Grade 80
	SILASTIC™ LS 5-8761 FSR	1.45	66	9.9	29.1	342	17	26	
	SILASTIC™ LS-2940 U FSR[2]	1.40	41	9.1	12	344	7	34	
	SILASTIC™ LS-2970 U FSR[2]	1.46	69	10.8	21	241	12	26	
High modulus (hard)	SILASTIC™ LS 4-9080 FSR	1.55	81	7.5	19.9	159	11	29	Designed to meet Mil-R-25988B, class 1, Grade 80
Low modulus (soft)	SILASTIC™ LS 5-8725 FSR	1.41	25	9.4	29.3	676		20	
	SILASTIC™ LS 5-8750 FSR	1.41	31	9.4	21.0	548	12	21	
No-post-cure potential[1]	SILASTIC™ LS 4-9040 FSR	1.40	40	8.2	17.5	415	10	29	
	SILASTIC™ LS 4-9060 FSR	1.45	59	9.2	22.8	348	10	27	
	SILASTIC™ LS 4-9080 FSR	1.55	81	7.5	19.9	159	11	29	Designed to meet Mil-R-25988B, class 1, Grade 80

Typical properties measured after 10 min @ 171°C press-cure and 4 hours @ 200°C over post-cure.
[1]Refer to technical data sheets for no-post-cure properties.
[2]XIAMETER™ RBM-9001 Modifier already added to this base.
Specification writers: The values on this page are not intended for use in preparing specifications. Please contact your local Dow sales office before writing specifications on these products.






Fluid resistance

Available products	Fluid resistance, volume swell % ASTM D471		
	Reference Fuel B 24 hr @ 23°C	Reference Fuel C 70 hr @ 23°C	IRM 903 150°C
SILASTIC™ LS-2840 FSR	18%		
SILASTIC™ LS-2860 FSR	17%		
SILASTIC™ LS 5-2040 FSR	18%		
SILASTIC™ LS 5-2060 FSR	18%		
SILASTIC™ LS-4940 FSR	16%	21%	4%
SILASTIC™ LS-4960 FSR	15%	17%	3.5%
SILASTIC™ LS 5-8761 FSR	18%		
SILASTIC™ LS 5-8725 FSR	23%		
SILASTIC™ LS 5-8750 FSR	18%		
SILASTIC™ LS 4-9040 FSR	18%		
SILASTIC™ LS 4-9060 FSR	18%		
SILASTIC™ LS 4-9080 FSR	15%		
SILASTIC™ LS-2940 U FSR	19%	17%	
SILASTIC™ LS-2970 U FSR	21%	19%	

Specification writers: The values on this page are not intended for use in preparing specifications.
Please contact your local Dow sales office before writing specifications on these products.

Fluorosilicone rubber compounds

SILASTIC™ Fluorosilicone Rubber (FSR) Compounds are ready-to-use, heat-curable blends of high-consistency fluorosilicone rubber bases, fillers, modifiers, vulcanizing agents and coloring pigments.

Typical performance features of SILASTIC™ FSR Compounds are:

- Exceptional extreme-temperature (hot and cold) performance
- Excellent resistance to fuels, oils, solvents and aggressive fluids
- Acid-gas resistance
- Good balance of tensile, elongation and tear resistance

Processing flexibility

SILASTIC™ FSR Compounds offer versatile processability, enabling design efficiency and flexibility. They can be extruded, calendered or molded, making the materials easy for fabricators to work with.

- **Extruding:** Products such as tubing and profiles can be extruded easily.
- **Calendering:** Fluorosilicone rubber can be calendered into long, thin sheets of uniform thickness, either unsupported or fabric-reinforced. This makes them ideal for flat seals and bands.
- **Molding:** Parts can be produced in a variety of shapes and sizes by compression, transfer or injection molding.

Sustainability

SILASTIC™ FSR Compounds can help you meet goals related to:

- **Climate change**, with options suitable for turbocharger hoses and battery electric vehicles.
- **Waste and pollution**, as FSR is a fantastic sealing option. It is durable and long-lasting. FSR supports process containment and reduction of hazardous chemical leaks.

Application	Design needs	Available products	Processing method	Selection criteria
Engine: Turbocharger hoses	• Withstand a wide range of service temperatures • Good resistance to fuel, oil and exhaust gases • High mechanical strength	SILASTIC™ FCC 55-1047-FX FSR Red	Calendering	• Successful, effective performance compared with nonsilicone options
		SILASTIC™ FCC 40-4725 Black		
		SILASTIC™ FCE 50-4948 Silicone Rubber Red	Extrusion	
Engine: Fuel delivery quick-connector seals	• Fuel resistance • Good flexibility in heat/cold • Good permeation resistance • Good compression set resistance and stress relaxation properties • Low swell • High tear strength	SILASTIC™ 28075 Yellow Varox Silicone Rubber	Molded	• Compounds for fabricated parts • Options in viscosity, cure rates and hardness • Match performance properties to application requirements
		SILASTIC™ FCM 75-4955 LC Silicone Rubber Yellow		
		SILASTIC™ EFX70MLC00 Silicone Rubber Blue R5002		

Specification writers: The values on this page are not intended for use in preparing specifications.
Please contact your local Dow sales office before writing specifications on these products.

Fluoro-liquid silicone rubber

SILASTIC™ Fluoro-Liquid Silicone Rubber (F-LSR) combines the fluid resistance benefits of fluorosilicone rubber with the processing benefits of liquid silicone rubber. Parts fabricated with F-LSRs can withstand harsh environments involving fuel, oil or aggressive fluids, as well as extreme heat or cold. SILASTIC™ F-LSRs are supplied as solventless, two-part materials with a convenient 1:1 mix ratio, suitable for use in highly automated liquid-injection-molding processes.

Typical applications	Available products	Key features	Cure	Shore A hardness ASTM D2240	Elongation, % ASTM D412	Tensile strength, MPa ASTM D412	Tear strength, kN/m ASTM D624 DIE B	Specific gravity ASTM D792	Compression set (22 hr @ 175°C), % ASTM D395		Viscosity @ 10 s^{-1}, Pa.s CTM 1094	
									NPC[3]	PC[4]	Part A	Part B
• Solvent-resistant and chemically resistant parts • Thin, precision coatings • O-rings, gaskets and membranes for demanding sealing applications	SILASTIC™ FL 30-9201 F-LSR	• Fully (100%) fluorinated • Excellent resistance to fuels and oils • Retain elasticity at low temperatures (Tg -68°C) • Heat cure can be accelerated • Two-part with 1:1 mix ratio • Light yellow	[1]	30	550	9.4	16	1.44	21	10	520	340
	SILASTIC™ FL 40-9201 F-LSR		[1]	40	470	9.2	16	1.44	17	11	770	790
	SILASTIC™ FL 60-9201 F-LSR		[2]	60	220	6.5	14	1.42	21	11	850	850

Cure conditions denote parameters used to test rubber properties and do not reflect actual cure time in the injection-molding process.
[1]As molded 10 min @ 120°C; no post-cure. [2]As molded 10 min @ 120°C; post-cured 4 hr @ 200°C. [3]As molded 10 min @ 175°C; no post-cure.
[4]As molded 10 min @ 175°C; post-cured 4 hr @ 200°C.

Fluid resistance

Available products	Fluid resistance (168 hr), volume swell % ASTM D471					
	IRM 903 150°C	RME Biodiesel 49°C	Ref F Diesel 40°C	Ref C 60°C	FAM B 60°C	Dexron III 125°C
SILASTIC™ FL 30-9201 F-LSR	3	4	3	25	34	1
SILASTIC™ FL 40-9201 F-LSR	2	3	3	23	32	1
SILASTIC™ FL 60-9201 F-LSR	2	3	2	21	29	1

Specification writers: The values on this page are not intended for use in preparing specifications.
Please contact your local Dow sales office before writing specifications on these products.

Broad range of silicone elastomers

Dow offers a wide selection of SILASTIC™ Fluorosilicone Rubber (FSR and F-LSR) for fabricating elastomeric components that can withstand exposure to aggressive fluids over a wide service-temperature range. In addition, other high-performance engineered elastomers from Dow include SILASTIC™ Silicone Rubber (HCR) and SILASTIC™ Liquid Silicone Rubber (LSR). In addition to this guide, a selection guide is available for our liquid silicone rubber products (Form No. 45-1581).

Why work with Dow?

When you team up with us, you'll get total technical support. From the selection of materials – including pigments – through finished processing of parts, we'll answer your questions or put you in touch with people who can.

You'll get support around the globe, including testing and certification to help you meet industry or customer requirements. Our continued investment in fluorosilicone rubber technology and state-of-the-art processing and compounding equipment is proof of a long-term commitment to your needs.

Learn more: Contact us

Learn more about Dow's wide portfolio of high-performance engineered elastomers for design innovation and fabricating rubber parts and components that meet your process and application requirements. Rely on our materials innovation, application experience, broad technical services, and global supply capabilities with local support. Contact your Dow Technical Representative or visit **dow.com/elastomers**.

DOW®

Seek Together™

About Dow Performance Silicones

Dow Performance Silicones, a business unit of Dow, offers a portfolio of performance-enhancing options to serve the diverse needs of customers and industries around the world. The business uses innovative silicon-based technology to offer options and ingredients to customers in commercial construction and high-performance building, consumer goods, silicone elastomers, and pressure-sensitive industries. As a global leader in innovation and silicone technology, we are committed to bringing enhanced and successful options to the industry that do more for our customers and continue to improve the lives of consumers worldwide. Visit **dow.com** to learn more.

Images: Cover – dow_41988430648, dow_55799984976, dow_41959330660, AdobeStock_219240452; Page 2 – dow_40145808550; Page 3 – AdobeStock_270314689, dow_54417662963; Page 5 – dow_56386199288, dow_40716980580, dow_54947293772, dow_56369142830; Page 6 – dow_40254480915, dow_55764049165; Page 7 – dow_40176189487

S2D 94194/E27825

Form No. 45-1639-01 B