

CAB-O-SIL[®] Fumed Silica for Silicone Elastomers





CAB-O-SIL® FUMED SILICA: EXPANDING POSSIBILITIES IN SILICONE ELASTOMERS

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For more than 50 years, Cabot Corporation has been delivering innovative material to silicone elastomers customers. As one of the world's leading providers of performance additives, Cabot is committed to delivering products of the highest quality, consistency, and performance. Our goal is to expand what is possible in silicone elastomers.

What are Silicone Elastomers?

Silicone elastomers are high performance polymeric materials.

The unique molecular structure of the silicone polymers, their interaction with reinforcing particles, and their crosslinking chemistry allows for formulations that can be tailored for a variety of applications.

Typical favorable properties of silicone elastomers are:

- Weather resistance
- Broad temperature range
- Excellent low temperature flexibility
- High level of biocompatibility
- Tunable electrical properties
- High strength and high elongation
- Broad hardness range

Silicone elastomers' broad range of physical properties enable them to be used in virtually every industry, including aerospace, automotive, medical, biotechnology, renewable energy, electronics, building and construction, textiles, oil and gas, personal care, and coatings.

Silicone elastomers are typically categorized by curing mechanism, end properties, and application. Major silicone elastomers categories are shown in the figure below. Cabot offers a variety of fumed silica products that can benefit virtually any silicone elastomers application.

RTV (Room Temperature Vulcanizing)		HTV (High Temperature Vulcanizing)	LSR (Liquid Silicone Rubber)
RTV-1	RTV-2		
Sealants, adhesives, potting, and encapsulants	Moldmaking, encapsulants, sealants, and adhesives	Compression-molding, transfer molding, and extrusions	Liquid injection-molding, and micro-moldings



The CAB-O-SIL Silica Difference

CAB-O-SIL fumed silica: Characteristics of Performance

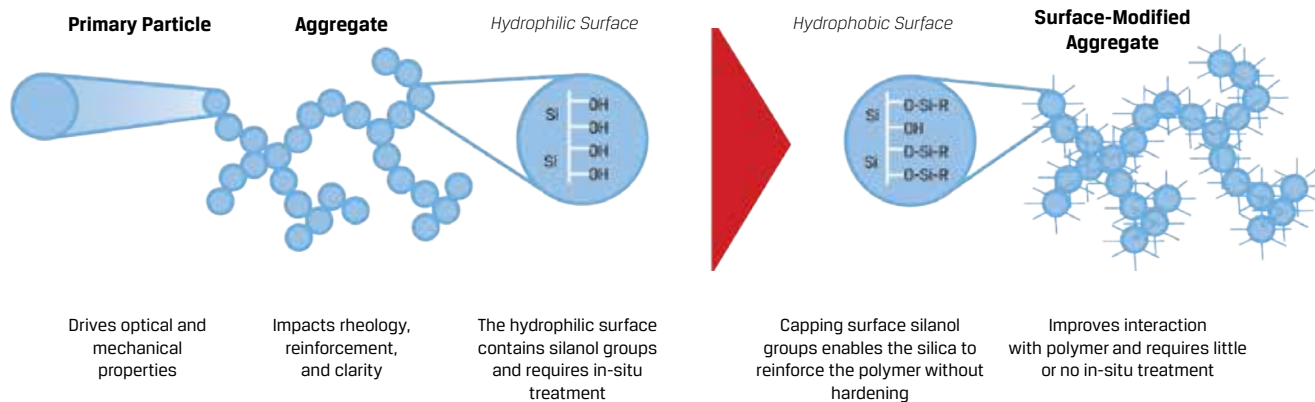
Fumed silica is one of the most efficient reinforcement and rheology control additives available for silicone elastomers. And due to its unique particle characteristics, fumed silica delivers superior reinforcement while having a relatively minor impact on transparency. The figure shows the key particle characteristics of CAB-O-SIL fumed silica. The ease of compounding and the end silicone elastomer performance are both impacted by the primary particle size, aggregate size and surface chemistry. Understanding and controlling these important characteristics, enables Cabot to provide our customers with formulation flexibility and superior performance.

At Cabot, we continue to focus on our fumed silica portfolio to expand what is possible in silicone elastomers.

Tensile Test



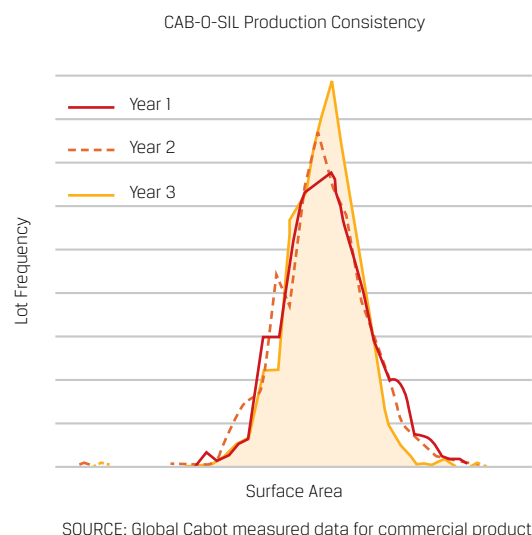
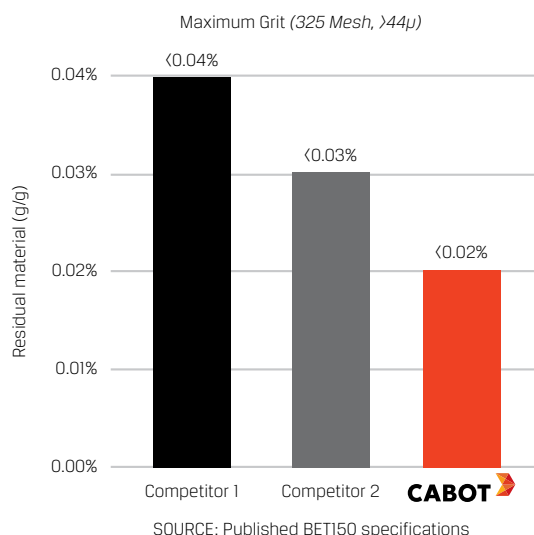
Features of Silica Particles



CAB-O-SIL fumed silica = Cleanliness + Consistency

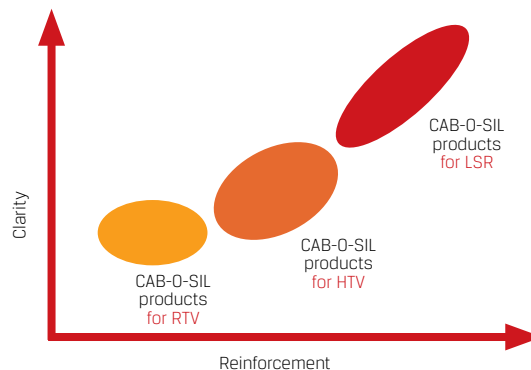
Superior performance in silicone elastomers is not only driven by final physical properties, but also by the consistency of properties for a given formulation. Cabot continuously invests in state-of-the-art processing and monitoring technology to ensure that we deliver consistently reliable products to our customers. In addition, our participation in the silicon wafer polishing industry has driven us to make improvements that deliver purity benefits across our fumed silica product portfolio. From lot to lot, month to month, and year to year, you can count on Cabot.

Cleanliness + Consistency = CAB-O-SIL fumed silica



Which CAB-O-SIL Product is Most Suitable for my Application?

We have worked with the world's largest silicones producers to develop a portfolio of products for every application possible, and we continue to develop products that expand possibilities in silicone elastomers.



CAB-O-SIL fumed silica for Silicone Sealants

RTV silicone sealants are used in most sealing, potting, and encapsulation applications that require weather resistance, thermal flexibility, and/or transparency. Cabot offers fumed silica products that drive the reinforcement, optical, and handling properties of the RTV sealant, allowing our customers to achieve the perfect balance of performance and value.

		Hydrophobicity	Reinforcement	Transparency	Extrusion	Processability	
CAB-O-SiL® product	RTV	L-90					
		LM-150					
		LM-150D					
		M-5					
		TS-610					
		TS-622					
		TS-530					
→ Lower Higher Comparison is for constant silica loading							



CAB-O-SIL fumed silica for Silicone Rubber

Global demand for HTV and LSR silicone rubbers is driven by customer demand for performance—whether it is high temperature performance for automotive turbocharger hoses, optical performance for LED lenses, or tear resistance for medical respirators. For critical applications, designers select silicone elastomers due to the unique performance characteristics that are enabled by CAB-O-SIL fumed silica.

CAB-O-SIL fumed silica for HTV

CAB-O-SIL fumed silica for HTV delivers consistent performance in HTV applications. Products can be selected based on customer requirements for mechanical reinforcement, optical clarity and ease of processing.

			Hydrophobicity	Reinforcement	Transparency	Processability
CAB-O-SIL product	HTV	M-5				
		M-7D				
		DURAMOLD™ 2150				
		MS-75D				
→ LowerHigher			Comparison is for constant silica loading			



CAB-O-SIL fumed silica for LSR

CAB-O-SIL fumed silica for LSR delivers high levels of mechanical reinforcement and transparency. Our products have been designed with high performance applications in mind, and we are continuing to develop additional products to satisfy requirements within specialized LSR applications.

		Hydrophobicity	Reinforcement	Transparency	Processability
CAB-O-SIL product	LSR ³				
	H-300 ¹	○	◐	◐	◐
	CLARUS™ 3160 ²	○	◐	●	◐
	S-17D	○	●	●	◐
	TS-530	◐	◐	◐	●

○ → ●
 Lower → Higher

Comparison is for constant silica loading

Note: (1) Alternate products with similar properties: H-5, HS-5

(2) Currently available in Asia-Pacific region only

(3) Additional products available from global portfolio for specialized applications



Building Success through a Commitment to Product, Service, and Support

High performance material is just a part of the value delivered by Cabot. We are committed to supporting our customers at every point of interaction, from product design and development, to order fulfillment, to logistics support. When you select Cabot, you receive much more than what's "in the bag."

Fumed Silica Handling and Packaging

In today's competitive environment, manufacturing and supply chain efficiency is essential to establish long term success. Cabot understands the critical role fumed silica handling plays in the silicone elastomer compounding process. That's why we offer easy-to-handle high-density products alongside our standard-density material. In addition to offering most of our products in 10lb and 10kg paper bags, we also supply product in batch-ready 150 kg FIBC bulk packaging. To maximize your level of process automation, Cabot offers FIBC unloading systems that can be integrated with your existing metering equipment.



Global Capability, Local Relationships

With five fumed silica manufacturing sites around the world, Cabot is a leading global producer of fumed silica. In addition, Cabot has invested in R&D and applications development facilities in the Americas, Europe, and Asia to better tailor products to meet specific regional requirements. At Cabot, we provide support during all phases of the product lifecycle, wherever our customers may be.



Safety and Environmental Stewardship: The Foundation of Everything We Do

As a responsible technology and manufacturing corporate citizen in communities across the globe, Cabot is committed to continuous improvement in safety, health, and environmental responsibility. We continue our drive toward zero environmental non-conformance, and our safety record is consistently near the top of our peer group.

Our global fumed silica operations are certified to ISO 9001 quality standards and our production facilities are individually certified to either ISO 14001 or RC 14001 environmental standards.



RESPONSIBLE CARE
FOR COMMITMENT TO SUSTAINABILITY

Cabot is a member of the American Chemistry Council.

Whether your silicone elastomers application requires transparency, controlled extrusion rate, extreme mechanical properties, or specific viscosity attributes, our technical specialists can help you find the right product for your application. If you have an emerging application that requires a new material, give us a call—chances are we are already working on a solution.

For more information, please go to www.cabotcorp.com/silicones or contact your Cabot sales representative, Cabot distributor, or the Cabot office in your region.

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