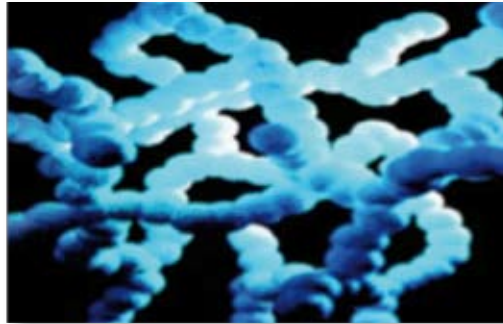


## FUMED SILICA FOR VARIOUS APPLICATIONS - PERFORMANCE BASED



Fumed silica for various applications- Performance based in the following-

- |                        |                           |
|------------------------|---------------------------|
| <b>Adhesives</b>       | ▶ <b>Cosmetics</b>        |
| <b>Sealants</b>        | ▶ <b>Polyester Resins</b> |
| <b>Inks</b>            | ▶ <b>Paints</b>           |
| <b>Coatings</b>        | ▶ <b>Greases</b>          |
| <b>Deformers</b>       | ▶ <b>Toner</b>            |
| <b>Silicone Rubber</b> | ▶ <b>Cable</b>            |

For  
Rheology control, Suspension and Stability behavior, Adsorbent, Free-flow of powders, Antisetting, Anti-sagging, Anti-blocking, Reinforcement, Pigment stabilization & dispersion, Print definition, Anti-setoff, Mechanical/Optical properties improvement, Thixotrophy, Thickening, Hydrophobicity control, and Improved processability.

### ***Benefits for Variety of Applications***

Versatile fine particles that delivers functionality to your most demanding application. Our CAB-O-SIL Fumed Silica provides exceptional performance benefits for a wide variety of applications and industries. We continue to advance our fine particle technologies to bring unique fumed silica that meet your individual requirements. Cabot manufacturing single and multiphase particle-composites for specific properties, such as dispersion, stability, hydrophobicity, and functionality. Due to their unique particle characteristics, and large surface area, fumed silica provides superior performance and benefits for many types of consumer and industrial applications including adhesives, plastics, sealants, coatings, inks, toner, cosmetics, food additives, and defoamers.



### ***Using CAB-O-SIL as a Thickener***

CAB-O-SIL thickening and thixotropic effects are largely dependent on the intensity and efficiency of dispersion. At least a dissolver should be used. Optimum dispersion is best achieved using rotor-stator type equipment, bead mills or triple roll mills. Choosing the most suitable method and dispersion equipment depends on the consistency of the system. It is sometimes advisable to produce a concentrate from part of the liquid or part of the formulation with the total quantity of CAB-O-SIL and then to disperse this with high shear. The remaining liquid or remaining part of the formulation should then be added to reduce the CAB-O-SIL content to the required level. In principle the thickening effect of CAB-O-SIL increases with decreasing primary particle size. However, as particles become increasingly fine; they necessitate higher shear levels to achieve the optimum thickening effect. An additional advantage worth noting is the high temperature stability of viscous systems thickened with CAB-O-SIL. The use of CAB-O-SIL for rheology control is very suited for coatings, plastics, printing inks, adhesives, lubricants, creams, ointments and in toothpastes.

### ***Suspension, Dispersion, Grinding***

#### ***CAB-O-SIL M5 (Fumed Silica)***

CAB-O-SIL prevents or delays the sedimentation of solids in liquid systems, such as pigmented coatings or resins containing fillers. This effect can be mainly explained by the formation of a yield point, which results from the use of CAB-O-SIL. Stability is achieved within the system when the weight of the filler or pigment particles is insufficient to overcome this yield point. Even in instances where settling is unavoidable, the sediment may be re-dispersed without problems. The agglomerates are deposited between the solid particles and have a loosening effect on the solid structure, which provides for an easy remixing

### ***Reinforcement of Elastomers***

Using CAB-O-SIL as reinforcing filler in elastomers produces a considerable improvement in their mechanical properties, such as tensile strength, elongation at break and tear resistance. CAB-O-SIL also helps to control the influence of temperature on mechanical properties. The level of improvement depends on the type of polymer and on the type and concentration of CAB-O-SIL used.

### ***Printer & Copier Toner***

CAB-O-SIL fumed silica can improve the flow characteristics and charge stability of toners, and performance enhancements such as improved resolution and print quality of laser beam printers or plain paper copiers. Driving the technological advancement is smaller particle sized – dry toner. The main effects of CAB-O-SIL in this application are to improve the flowability of the dry toner and to minimize the electrostatic charge variation of dry toner at different ambient conditions such as 85 % relative humidity, 40° C (summer) and 20 % relative humidity, 10° C (winter). As a general rule, the development of toners for clear, high-resolution copies by printers or plain paper copiers is made easier in any environment, using even the smallest particle size toners, by the use of small percentages of CAB-O-SIL.

### ***High Temperature Insulation***

CAB-O-SIL has outstanding thermal insulation properties due to the fact that amorphous silicon dioxide has a very low solid state conductivity. Furthermore, the space between the particles is in the same order as the mean free path dimensions for oxygen and nitrogen molecules. Thermal conductivity drops with decreasing average primary particle size.

### ***Electrostatic Charge Effect***

CAB-O-SIL has a tendency to acquire a negative triboelectric charge. This is because of the slightly acidic silanol groups on the particle surface, which result in an isoelectric point at approximately pH 2. This effect is particularly important in toners, where the negatively charged “powdered” printing ink has to adhere to a positively charged roller and produce a latent image. In plastic powders possessing a strong negative electrostatic charge, such as PVC, PE, PA or EP, CAB-O-SIL can reduce the tendency to acquire this charge and the unwelcome characteristics that are associated.

### Typical Properties

Typical Properties	CAB-O-SIL M5	TS-610	TS-720
B.E.T. Surface Area	200 m <sup>2</sup> /g	105–145 m <sup>2</sup> /g	105–130 m <sup>2</sup> /g
pH (4% aqueous slurry)	3.7 – 4.3	1:1 v/v > 4.0	**
Loss on Heating*	< 1.5%	0.5% max.	0.60%
Specific Gravity	2.2 g/cm <sup>3</sup>	2.2 g/cm <sup>3</sup>	1.8 g/cm <sup>3</sup>
Wt. per gallon	18.3 lb	18.3 lbs	15.0 lb
Refractive Index	1.46	1.461	1.452
X-ray Form	Amorphous	Amorphous	Amorphous
Assay (% SiO <sub>2</sub> )	> 99.8	**	**
Oil Adsorption	~350 g/100 g oil	**	**
Average Particle (Aggregate) Length	0.2 – 0.3 microns	0.2 – 0.3 microns	0.2 – 0.3 microns

### Packaging Options

CAB-O-SIL® fumed silicas are packaged in color-coded, multi-wall Kraft paper bags. Grade M-5 is packaged in 10/5 kg Bags. The bags are unitized and sized to provide product protection, facilitate efficient handling, and maximize payloads.

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