

CAB-O-SIL MULTIFUNCTIONAL EXCIPIENTS FOR PHARMACEUTICALS

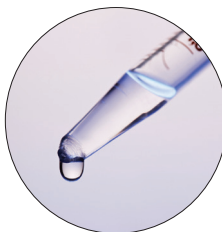
APPLICATION GUIDE

CAB-O-SIL® FUMED SILICA IN SOLID DOSAGE FORMS



FREE FLOW

Improves flow for tableting and capsule filling, impacting production yields and tablet weight uniformity.



DRY CARRIER, FLAVOR MASKING AGENT

Adsorbs liquids to produce dry powders. At higher concentrations, it may act as a flavor masking agent for chewable tablets.



MOISTURE ADSORPTION

Can facilitate the stabilization of moisture-sensitive drugs. In granulation processes, it enables uniform particle-size distribution by breaking up large wet agglomerates and redistributing the moisture in the mixture.



TABLET COATING

Stabilizes highly concentrated pigment suspensions in liquid tablet coatings. It can be added to build-up powders to improve flow and promote fast drying.



SPRAY DRYING AID

Can reduce clogs in the spray dryer atomizer and decrease the amount of product sticking to the walls. Can lead to increased throughput by facilitating lower spray dryer outlet temperatures.



CAPSULE ANTI-BLOCKING

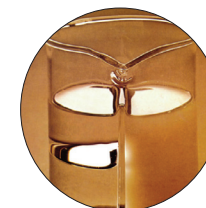
Can be added to the capsule shell wall to modify the surface structure of the film and reduce its frictional properties, enabling high-speed filling.



TABLET DISINTEGRATION & SUSTAINED DRUG RELEASE

Due to its hydrophilic nature, it can create a path for liquid to penetrate the tablet, facilitating tablet disintegration. Can act as a rheological modifier to influence the hydrophilic-lipophilic balance of some active ingredients, contributing to a sustained release profile.

LIQUID AND SEMI-SOLID FORMS



STABILIZATION, ANTI-SETTLING

Enables the stabilization of dispersions of solids in liquids and the prevention of the formation of sediments in liquid suspensions.



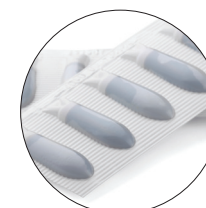
THICKENING

Can convert non-polar liquids into spreadable gels. The gels will not melt at body temperature, enabling applications where precise area-dosing is required.



TRANSPARENCY

Clear gels can be formulated if the refractive index of the product matches that of CAB-O-SIL fumed silica (1.46)



STABILITY AND UNIFORM DISTRIBUTION

Improves the consistency and stability of a suppository. It increases the softening point without affecting the melting point.



SPRAYING AID

Helps to reduce clogs in the atomizer and helps prevent the formation of sediments in topical aerosol products.

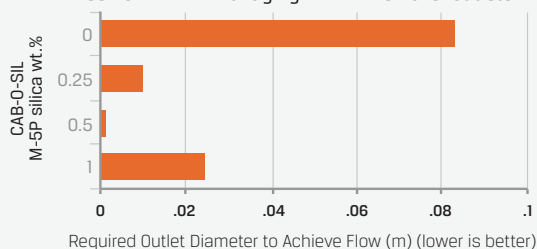
SELECTION GUIDE

CAB-O-SIL fumed silica	Surface Area	Tapped Density	Differences
M-5P	200 m ² /g	~ 40 g/l	Easier to disperse
M-5DP	200 m ² /g	~ 80 g/l	Easier handling

PERFORMANCE

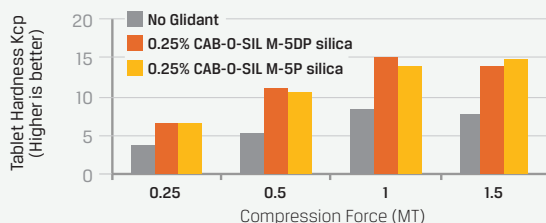
Microcrystalline Cellulose Powder Flow

- ✓ Improved free flow
- ✓ Reduced bridging
- ✓ Flow through smaller outlets



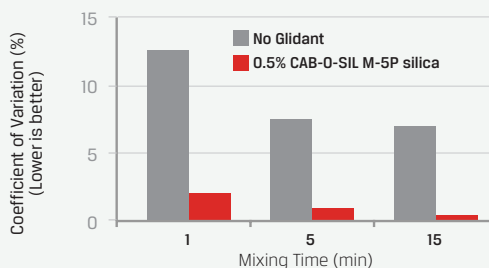
Acetaminophen Tablet Hardness

- ✓ Harder tablets at lower compression forces
- ✓ Less wear on equipment
- ✓ Fewer tablets broken



Content Variation in Acetaminophen Tablets

- ✓ API content uniformity
- ✓ Greater tablet weight uniformity



HEALTH AND SAFETY

- Cabot manufacturing plants (Rheinfelden, Tuscola) are ISO 9001:2008 and Kosher certified. HACCP and Halal certificates are available for Rheinfelden plant.
- The plants where Cabot manufactures pharmaceutical grades have open customer audit days.

REGULATORY COMPLIANCE

CAB-O-SIL M-5P and M-5DP fumed silica are in compliance with:

- USP/NF colloidal silicon dioxide monograph.
- EP silica colloidal anhydrous monograph.
- JP light anhydrous silicic acid monograph*.

*Note: CAB-O-SIL M-5DP silicon dioxide meets USP and EP requirements, but it does not meet the JP pharmacopeia volume test due to its higher density.

SUMMARY OF CAB-O-SIL® PHARMA-GRADE FUMED SILICA BENEFITS

Product/Process	Function/Benefit	Typical Loading (wt.%)
Powders handling	Improved powder flow and dispensability	0.25 - 1.0
Flavors/Fragrances/Active Ingredients	Dry carrier, adsorbent, encapsulant	20 - 40
Spray drying	Improved process efficiency	0.2 - 1.5
Tablet compression	API content uniformity, improved tablet weight and hardness, lower compression forces	0.25 - 1.0
Tablet Coating	Stabilizes pigment suspensions, build-up powders flow	0.5 - 2.0 System-dependent
Capsule handling	Anti-blocking	System-dependent
Drug release	Faster tablet dissolution, sustained release	System-dependent
Suspensions/Emulsions	Stabilization/Anti-settling	0.5 - 1.5
Lotions/Gels/Ointments	Rheology Control: Thickening/Gelling	1.0 - 3.0
Suppositories	Stability, uniform distribution, softening	0.5 - 2.0
Topical Aerosols	Reduces clogs in atomizer, stabilization	0.5 - 5.0%



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