

AEROSIL® fumed silica

Lubricating grease applications

The use of AEROSIL® fumed silica is recommended for lubricating greases used in industrial applications, automotive, electrical as well as food grade.

Electrical

Hydrophilic AEROSIL®

- High thixotropic effect
- High temperature stability
- Dielectric properties

Hydrophobic AEROSIL®

- Offers rheology control as well as water resistance

Industrial

Hydrophilic AEROSIL®

- High thixotropic effect
- High temperature stability
- Wear resistance
- Extreme pressure resistance

Hydrophobic AEROSIL®

- Offers rheology control as well as excellent oxidation resistance against water and chemicals

Automotive

Hydrophilic AEROSIL®

- High thixotropic effect
- High temperature stability
- Wear resistance
- Reduced friction

Hydrophobic AEROSIL®

- Offers rheology control as well as excellent oxidation resistance against water and chemicals

Food

Hydrophilic AEROSIL® are generally recognized as safe (GRAS; direct food contact)

- High thixotropic effect
- High temperature stability
- Wear resistance

Hydrophobic AEROSIL® (indirect food contact)

- Offers rheology control as well as water resistance

AEROSIL® fumed silica in lubricating greases

AEROSIL® fumed silica helps to build a stable matrix to increase viscosity and suppress oil separation in lubricating greases. It can be used in the following systems:

- In non-soap greases, used in high-temperature applications up to 230° C as well as for extreme-pressure and multipurpose greases.
- In soap greases, thickened by fatty acid soaps of lithium, calcium, sodium or aluminum, AEROSIL® fumed silica can be used to further improve the performance of the lubricating grease.
- Hydrophilic fumed silica provides optimized thickening effects in non-polar oils.
- Hydrophobic fumed silica provides viscosity control and increased water repellency in semi-polar to polar oils.
- The surface area of the silica and the volume fraction of the silica in the final mass play a role in the long term storage and heat stability.

AEROSIL® fumed silica for wire drawing & metal working fluids

AEROSIL® COK 84

- This product is a mixture of AEROSIL® 200 and a highly dispersed fumed aluminum oxide especially designed for aqueous, highly polar liquids.
- It is used in metal working fluids and wire drawing lubricants for rheology control (thixotropic effect) but it can also stabilize lubricating solid particles (e.g. MoS₂, graphite) and improve the metal surface in some applications.

AEROXIDE® Alu C

- This product is a fine particulate, pure aluminum oxide with high specific surface area.
- It is used in metal working fluids and wire drawing lubricants: The AEROXIDE® Alu C particles can improve the metal surface in some applications.



AEROSIL® fumed silica recommendation by base oil and required properties

Base oil	Hydrophobicity	Viscosity		Oil separation		Cone penetration		Dropping point	
		Good	Best	Good	Best	Good	Best	Good	Best
Mineral oil	Hydrophilic	AEROSIL® 200	AEROSIL® 300	Good with all types	Good with all types	Good with all types	Good with all types	No DP with all types	No DP with all types
	Hydrophobic	AEROSIL® R 106 ++	AEROSIL® R 974 +	AEROSIL® R 202 +++	AEROSIL® R 974 +	AEROSIL® R 202 +++	AEROSIL® R 974 +	AEROSIL® R 106 ++	AEROSIL® R 974 +
Polyalpha-olefin (PAO)	Hydrophilic	AEROSIL® 200	AEROSIL® 150	Good with all types	Good with all types	Good with all types	Good with all types	No DP with all types	No DP with all types
	Hydrophobic	AEROSIL® R 106 ++	AEROSIL® R 974 +	AEROSIL® R 106 ++	AEROSIL® R 974 +	AEROSIL® R 106 ++	AEROSIL® R 974 +	AEROSIL® R 106 ++	AEROSIL® R 974 +
Naphthenic oil	Hydrophilic	AEROSIL® 300	AEROSIL® 200	Good with all types	Good with all types	Good with all types	Good with all types	No DP with all types	No DP with all types
	Hydrophobic	AEROSIL® R 106 ++	AEROSIL® R 202 +++	AEROSIL® R 106 ++	AEROSIL® R 202 +++	AEROSIL® R 974 +	AEROSIL® R 202 +++	AEROSIL® R 805 +++	AEROSIL® R 816 +
Animal fat	Hydrophilic	AEROSIL® 200	AEROSIL® 150	Good with all types	Good with all types	Good with all types	Good with all types	No DP with all types	No DP with all types
	Hydrophobic	AEROSIL® R 106 ++	AEROSIL® R 974 +	AEROSIL® R 106 ++	AEROSIL® R 974 +	AEROSIL® R 106 ++	AEROSIL® R 974 +	AEROSIL® R 106 ++	AEROSIL® R 974 +
Silicone oil	Hydrophilic	AEROSIL® 300	AEROSIL® 200 HV	Good with all types	Good with all types	Good with all types	Good with all types	AEROSIL® 300	AEROSIL® 200 HV
	Hydrophobic	AEROSIL® R 974 +	AEROSIL® R 106 ++	AEROSIL® R 974 +	AEROSIL® R 106 ++	AEROSIL® R 974 +	AEROSIL® R 106 ++	No DP with all types	No DP with all types

+ = Low hydrophobicity ++ = Medium hydrophobicity +++ = High hydrophobicity

Premium product recommendations

- **AEROSIL® R 816:** Provides overall the best effects in most base oil systems and gives outstanding stability.
- **AEROSIL® R 805:** Provides excellent performance in oil separation and cone penetration due to high hydrophobicity as well as giving outstanding stability.

Evonik supports you in selecting the best suited AEROSIL® product and optimizing current formulations through our Application Technology Group.

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