



Technical Data Sheet

DOWSIL™ VM-2270 Aerogel Fine Particles

INCI NAME: Silica Silylate

Features & Benefits

- White free-flowing powder
- Capable of absorbing non-polar and polar oils
- Thickening agent for organic oils and silicone fluids
- Superior oil and sebum absorption
- Highly efficient viscosity enhancement of oil phase
- Fragrance retention

Applications

- Antiperspirants/deodorants
- Skin care
- Fragrance
- Hair care

Typical Properties

Specification Writers: These values are not intended for use in preparing specifications.

Property	Unit	Result
Appearance		White, free-flowing, powder
Bulk density	kg/m ³	40–100
Average particle size	microns	5–15
Surface area	m ² /g	600–800
Porosity	%	> 90
Cyclotetrasiloxane (D4) content	%	< 0.1
Cyclopentasiloxane (D5) content	%	< 0.1

Description

The DOWSIL™ VM-2270 Aerogel Fine Particles are supplied as a white free flowing powder. The particles are completely hydrophobic providing a vehicle for thickening oil phase materials, reducing the volatility of many volatile fluids and the absorption of many lipophilic materials including sebum.

**Description
(Cont.)**

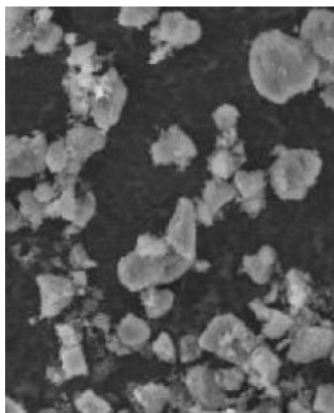


Figure 1: S.E.M of DOWSIL VM-2270 Aerogel Fine Particles

How To Use

It is recommended to first disperse the DOWSIL VM-2270 Aerogel Fine Particles into a low molecular weight silicone or organic fluid and then add this pre-mix to the formulation with high shear mixing to break up any agglomerated particles.

When making an emulsion with the DOWSIL VM-2270 Aerogel Fine Particles, incorporate the particles into the oil phase and mix with high shear to break up any agglomerate particles.

Premixing the oil phase is preferred over post addition of the particles after the emulsion is made.

Recommended use level is 0.5 to 5%.

**Handling
Precautions**

PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED IN THIS DOCUMENT. BEFORE HANDLING, READ PRODUCT AND SAFETY DATA SHEETS AND CONTAINER LABELS FOR SAFE USE, PHYSICAL AND HEALTH HAZARD INFORMATION. THE SAFETY DATA SHEET IS AVAILABLE ON THE DOW WEBSITE AT WWW.CONSUMER.DOW.COM, OR FROM YOUR DOW SALES APPLICATION ENGINEER, OR DISTRIBUTOR, OR BY CALLING DOW CUSTOMER SERVICE.

**Usable Life And
Storage**

When stored at or below 40°C (104°F) in the original unopened containers, this product has a usable life of 24 months from the date of production.

**Packaging
Information**

This product is available in 10 kg box.

Samples are available in 1 liter bottles.

Limitations

This product is neither tested nor represented as suitable for medical or pharmaceutical uses.

**Health And
Environmental
Information**

To support customers in their product safety needs, Dow has an extensive Product Stewardship organization and a team of product safety and regulatory compliance specialists available in each area.

Health And Environmental Information (Cont.)

For further information, please see our website, www.consumer.dow.com or consult your local Dow representative.

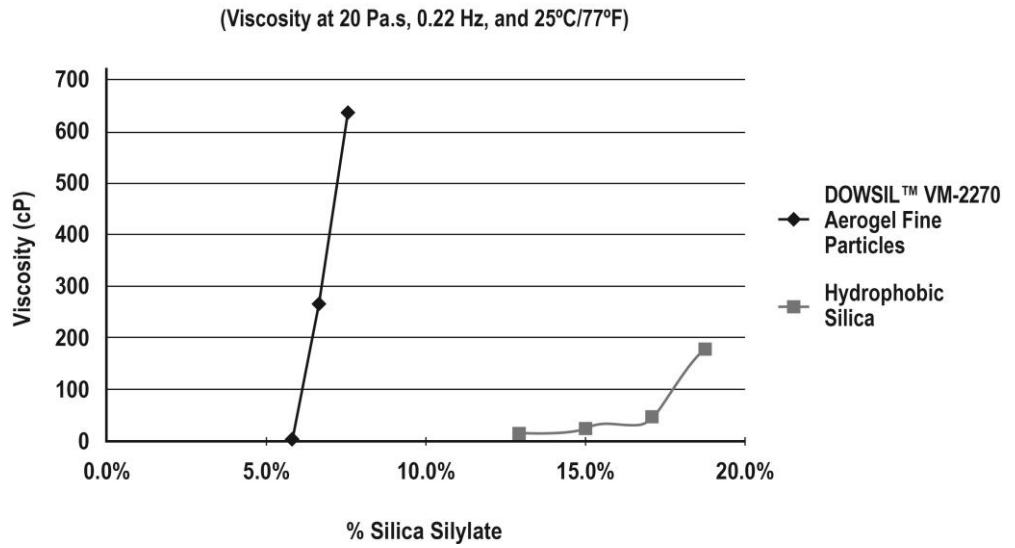


Figure 2: Thickening Effect in Mineral Oil¹

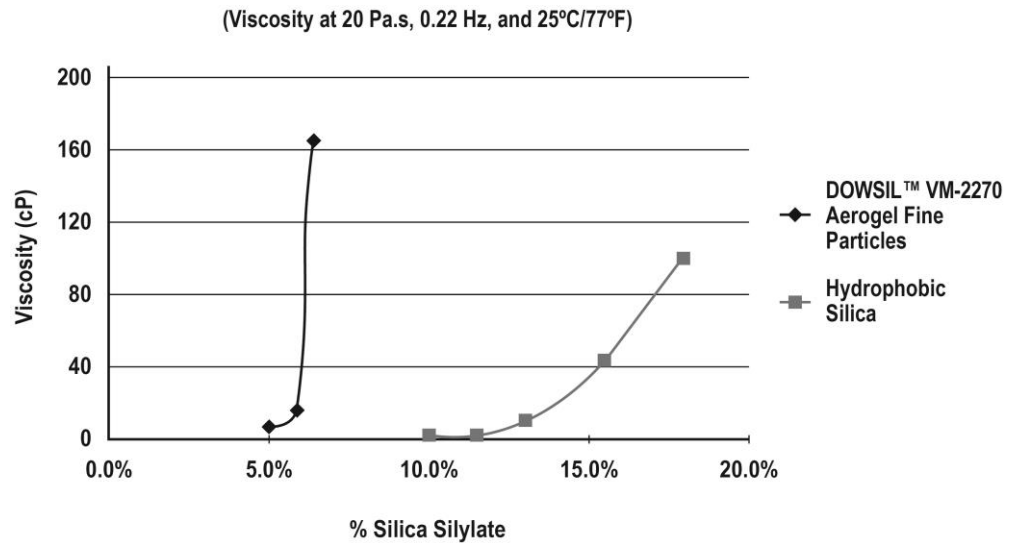


Figure 3: Thickening Effect of Dimethicone (10 cSt)¹

¹Data generated using Carrimed Rheometer

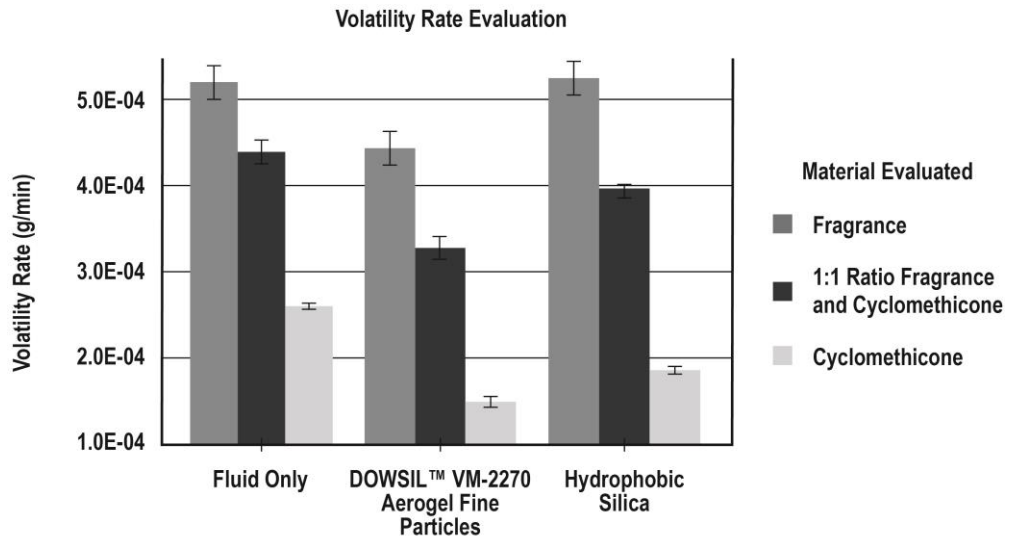


Figure 4: Volatility Reduction Evaluation¹

(Results significant at 95% confidence level.)

¹Weight loss measured at 20°C (68°F), 41% R.H. Fluids tested: XIAMETER™ PMX-0245 Cyclopentasiloxane and Fragrance Oil provided by Givaudan (Lot L400329).

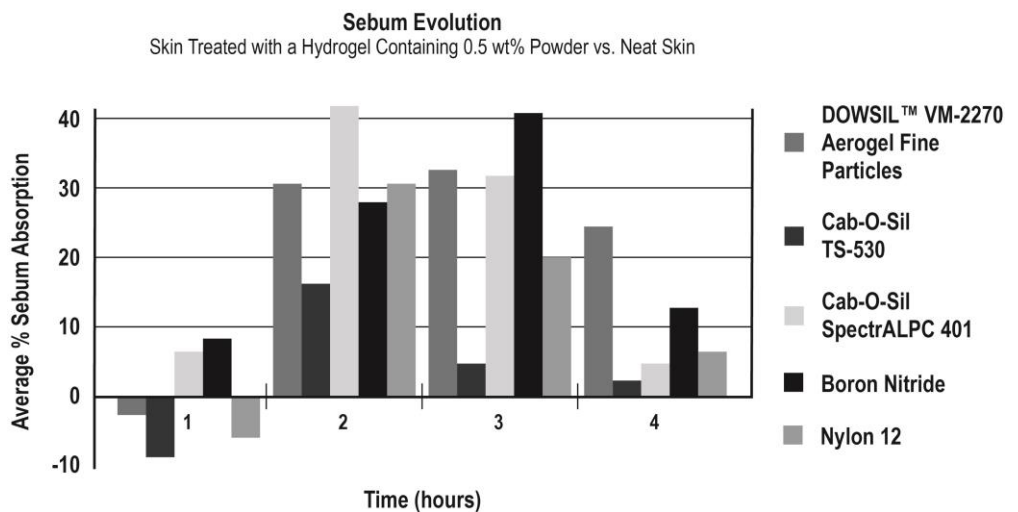


Figure 5: Sebum Absorption²

²Data generated using Sebumeter SM 810

Table 1: Fluid Absorption Properties

Ingredients	Absorption Results (g fluid/g Aerogel)
Solvents	
Water	Not Compatible
Glycerin	Not Compatible
Esters	
Octyl palmitate	> 15
Isopropyl myristate	> 15
Oils	
Essential oil (lavender)	> 10
Fragrance	7–10
Jobba oil	8
Castor oil	6
Sunflower oil	> 15
Mineral oil	> 15
Retinyl palmitate	> 10
Hydrocarbons	
Hydrogentate polyisobutylene	> 10
Isododecane	> 15
Silicones	
XIAMETER™ PMX-0245 Cyclopentasiloxane	> 15
DOWSIL™ 5562 Carbinol Fluid	8–9
XIAMETER™ PMX-200 Silicone Fluid, 10 cSt	10

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DOWSIL™ VM-2270 Aerogel Fine Particles

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Table 2: Prototype Formulations

Hydrogel

Ingredients	INCI NAME	Weight %	Supplier
Carbomer gel (1% in water)	Carbomer	50.0	Noveon Inc.
Water		38.5	
Propylene glycol	Propylene glycol	5.0	
DOWSIL VM-2270 Aerogel Fine Particles	Silica Silylate	0.5	The Dow Chemical Company
XIAMETER™ PMX-0345 Cyclosiloxane Blend	Cyclopentasiloxane (and) Cyclohexasiloxane	6.0	The Dow Chemical Company

Procedure

- A. Prepare the carbomer gel (1% water) and neutralize it with NaOH (10% solution).
- B. Put the carbomer gel in a beaker, add water and mix (1200 rpm) using the carbomer propeller.
- C. Add propylene glycol and mix (1200 rpm) until the batch becomes homogeneous.
- D. In a separate vessel, add XIAMETER PMX-0345 Cyclosiloxane Blend to the powder and mix.
- E. When it is homogeneous, add the blend to the hydrogel and mix until complete homogenization.

Antiperspirant

Ingredients	INCI NAME	Weight %	Supplier
DOWSIL™ 9040 Silicone Elastomer Blend	Cyclopentasiloxane (and) Dimethicone Crosspolymer	30.0	The Dow Chemical Company
XIAMETER PMX-200 Silicone Fluid, 10 cSt	Dimethicone	15.0	The Dow Chemical Company
XIAMETER PMX-0245 Cyclopentasiloxane	Cyclopentasiloxane	29.0	The Dow Chemical Company
Aluminum Chlorhydrate (Reach 103)	Aluminum Chlorohydrate	25.0	SummitReheis Inc.
DOWSIL VM-2270 Aerogel Fine Particles	Silica Silylate	1.0	The Dow Chemical Company

Procedure

- A. Mix all ingredients together and mix for 5 minutes at 500 rpm, using a strong mixer (carbomer mixer).

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<http://www.consumer.dow.com>

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