

Silica Selection Guide

SOLESPPHERE™ silica microsphere silica gels can be used in oil-in-water, water-in-oil and anhydrous formulations to provide SPF boost, reduce greasiness and stickiness, minimize pores, absorb oil and perspiration, improve spreadability and provide a matte appearance. Product recommendations for each emulsion type can be found below.

Available Grades

Grade		Mean Particle Size (µm)	Specific Surface Area (m ² /g)	Pore Volume (mL/g)	Pore Diameter (nm)	Oil Absorption (mL/100g)
H-Series Normal Type	H-31	3	800	1	5	150
	H-51	5	800	1	5	150
	H-121	12	800	1	5	150
	H-201	20	800	1	5	150
H-Series High Absorption Type	H-32	3	700	2	10	300
	H-52	5	700	2	10	300
	H-122	12	700	2	10	300
	H-33	3	700	2	11	400
	H-53	5	700	2	11	400
L-Series	L-31	3	300	1	13	150
	L-51	5	300	1	13	150
NP-Series	NP-30	4	40	0.05	-	30
	NP-100	10	50	0.1	-	35
	NP-200	20	100	0.1	-	40



O/W Formulations

SOLESPPHERE™ H-121 offers the most functionality for O/W emulsions. **H-33**, **H-51**, and **H-53** can be considered for selective properties. The **H-53** provides excellent SPF boosting in O/W emulsion formulations.

H-121

- Reduces greasiness
- Reduces sliminess
- Reduces stickiness
- Mattifying
- Blurring
- Pore minimizing

H-33

- Reduces sliminess
- Blurring

H-51

- Pore minimizing
- Blurring

H-53

- Reduces greasiness
- Reduces stickiness
- SPF Boosting

W/O Formulations

SOLESPPHERE™ H-33 provides the best performance for W/O emulsions followed by **H-121**, **H-51**, and **H-53** depending on the desired property. For SPF boosting, **H-33** and **H-53** provide good SPF boosting for W/O emulsions.

H-33

- Reduces sliminess
- Reduces greasiness
- Increases absorption
- SPF boost

H-121

- Mattifying
- Blurring
- Pore minimizing

H-51

- Pore minimizing
- Blurring

H-53

- SPF Boost

Anhydrous Formulations

For emulsion types not defined by W/O or O/W, **SOLESPPHERE™ H-33**, **H-121**, **H-51**, and **H-53** each provide a variety of properties to the formulation.

H-33

- Leaves skin feeling:
 - Smooth

H-121

- Mattifying
- Leaves skin feeling:
 - Hydrated
 - Smooth

H-51

- Reduced greasy feeling
- Leaves skin feeling:
 - Hydrated
 - Smooth

H-53

- Reduced greasy feeling
- Leaves skin feeling:
 - Hydrated
 - Smooth
 - Glowing

SPF Boosting

SOLESPHERE™ silica provides very good SPF boosting performance in both O/W and W/O emulsions. In addition to the SPF boost, SOLESPHERE™ also reduces the greasiness/sliminess often found in W/O emulsions.



O/W SPF Boosting

H-53: Best performance across many formulations.

H-52: Provides good/better SPF boosting in certain formulations.

W/O SPF Boosting

H-33: Best for W/O emulsions.

H-52: Best performance across many formulations.

Formulating with SOLESPHERE™ Silica

SOLESPHERE™ provides excellent formulation flexibility as it can be added to any phase of the formulation. Through product and application testing, it has been shown SOLESPHERE™ silica provides the same effects in the formulation regardless of whether they are added to the water phase/aqueous phase, oil phase, or even if added at the very end.

- The effects of the silicas will show with just 1% added, however, adding more can increase benefits. 2-2.5% is the typical loading level.
- It is not recommended to add more than 3-4% in total silica content. This can result in the formulation appearing "chunky."
- Multiple SOLESPHERE products can be added to a formulation to achieve different desired goals, but it is important to not go over the 3-4% total.
- Significant SPF boosting with H-53 and H-52 will show with just 1-2% added.

Applications

Target	Aim	Effect	Applicable Grades
Skin care / Foundation	Texture improvement	Slippery	H-121, H-32, H-51
		Smoothness	H-121, H-32, H-51, NP-30
		Transparency	NP-30, NP-100
		Matte effect (Foundation)	H-121
	Sweat & sebum absorption	Long lasting effect	H-121, H-51, H-33
		Anti-oily feeling	H-53, H-52
	Coverage of wrinkle	Soft focus	H-121, H-33, H-51
Lip stick	Defined features	Stereoscopic effect	H-121, H-51
	Sweat & sebum absorption	Long lasting effect	H-121, H-33, H-53
	Rheology control	Solidifying agent	H-33, H-52, H-53
Mascara	Volume up	Bulking agent	H-121, NP-200
Sunscreens	SPF boost & sweat absorption	SPF Boost	H-53, H-52, H-33
		Long lasting effect	H-53, H-52, H-33
Body Washes	Texture improvement	Smoothness	H-121, H-33, H-51
		Long lasting effect	H-121, NP-30, NP-100
Deodorants	Sweat absorption	Long lasting effect	H-33, NP-30
		Solidifying agent	H-33, NP-30
Cream Cleansers	Texture improvement	Slippery	H-121, H-33, H-51, H-53
		Smoothness	H-121, H-33, H-51
Body Scrubs	Texture improvement	Exfoliation	D-200L

For more information and formulation guides, please visit our website at www.agcchem.com/products/fine-silicas-for-cosmetics-skincare/



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