



SOLESPHERE

**Microspherical Silica
for Cosmetic Applications**



AGC

Your Dreams, Our Challenge



Microspherical Silica as an Alternative to Microplastics

RESiFA™ SOLESPHERE™ are environmentally safe, non-plastic, non-petroleum ingredients that enhance the performance of skincare and cosmetics. These microspheres can be used in oil-in-water, water-in-oil and anhydrous formulations to provide UV boost, reduce greasiness and stickiness, blur pores, absorb oil and perspiration, improve spreadability and provide a matte appearance.



Lipsticks

RESIFA™ SOLESPHERE™ could be applied for both shiny and matte lipsticks. It adds a long-lasting effect by absorbing sweat and sebum. In addition, it also improves the formulation stability of the lipstick. It could also be an alternative for microplastics.

Grade	Particle Size (μm)	Oil Absorption Capacity (mL/100 g)	Appearance	
			Gloss	Matte
H-51	5	150	low	medium
H-52	5	300	no	high
H-53	5	400	no	high
H-121	12	150	no	high
NP-30	3	30	medium	no
NP-100	10	35	low	medium



Formulation Sample for Lipstick (MC-002)

Phase	Trade Name	INCI Name	wt (%)
A	Salacos 5418V	Pentaerythrityl Tetraistearate	20.00
	Cosmol 43V	Polyglyceryl-2 Triisostearate	15.38
	Cosmol 222	Diisostearyl Malate	15.00
	CERESIN #810	Ceresin	10.00
	Sunwhite P-200	Petrolatum	10.00
	Nomcoat HP-30	Hydrogenated Polydecene	10.00
	Paraffin wax 125	Paraffin	5.00
	Multiwax W-445	Microcrystalline Wax	3.20
	Tocopherol 100	Tocopherol	0.05
	MEKKINS-P	Propylparaben	0.05
B	DK-PGT PASTE R7	Polyglyceryl-2 Triisostearate, Red 7 (CI 15850)	0.60
	DK-PGT PASTE Ti	Titanium Dioxide, Polyglyceryl-2 Triisostearate	0.40
	TAROX IRON OXIDE R-516P	Iron Oxides	0.30
	DK-PGT PASTE B1L	Polyglyceryl-2 Triisostearate, Blue 1 Lake (CI 42090)	0.02
C	SOLESPHERE	Silica	10.00



Procedure:

1. Mix A by a disper mixer and heat it to 90°C
2. Add B to A, heat it to 90°C, and stir it by a disper mixer until it becomes homogeneous
3. Add C to AB while stirring AB by a disper mixer and keep stirring ABC until it becomes homogeneous
4. Remove the bubbles contained in ABC by a vacuum pump
5. Heat it to 90°C and pour it into a lipstick container
6. Cool it at room temperature until it solidifies (about 5 min)
7. Cool it in a freezer for 15 min

Photographing conditions: Substrate: BIOSKIN plate #BIO (Beaulax Co., Ltd), Sample density: 2.0mg/cm², Camera: STYLUS TG 4 Tough, Mode: i Auto, Flash: Off, Zoom: 2x, Shooting distance: 30cm, Camera position: Taken from the front of coating film



Pressed Powders & Foundations

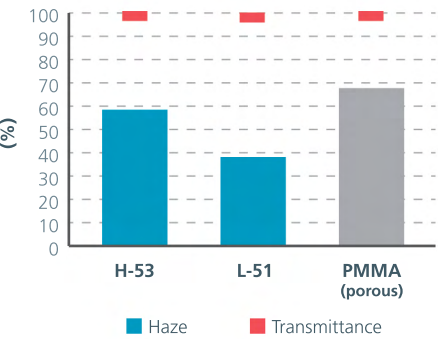
	SOLESPHERE H-121	SOLESPHERE H-53	SOLESPHERE L-51	PMMA (porous)
Particle size (μm)	12	5	5	3~8
Oil absorption (ml/100g)	150	400	150	No data
Coating film				

SOLESPHERE Benefits

- Blurring effect
- Soft feeling
- Smoothness
- Rolling effect
- Spreadability

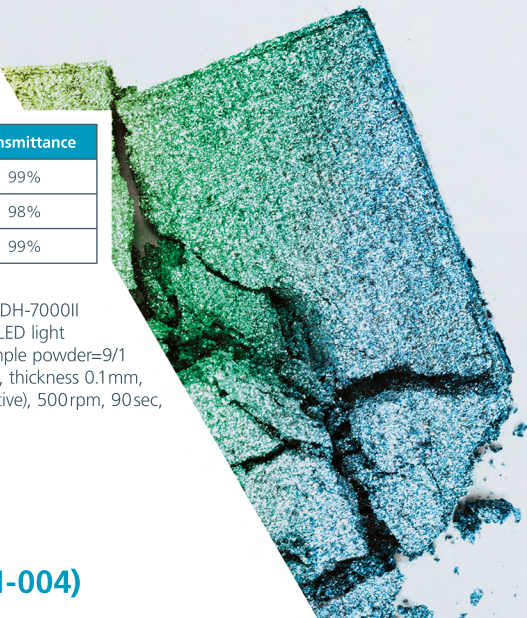
Measurement methods:
 Coating liquid: Silicone resin KF-7312/sample powder=9/1 (0.45g/0.05g); Substrate: OHP film IT-125PF (PLUS, thickness 0.1mm, PET); Coating method: Spin coater ACT-300A (Active), 500rpm, 90sec, drying 50°C, 30min.

Haze and Transmittance Comparison



	Haze	Transmittance
SOLESPHERE H-53	58%	99%
SOLESPHERE L-51	38%	98%
PMMA (porous)	68%	99%

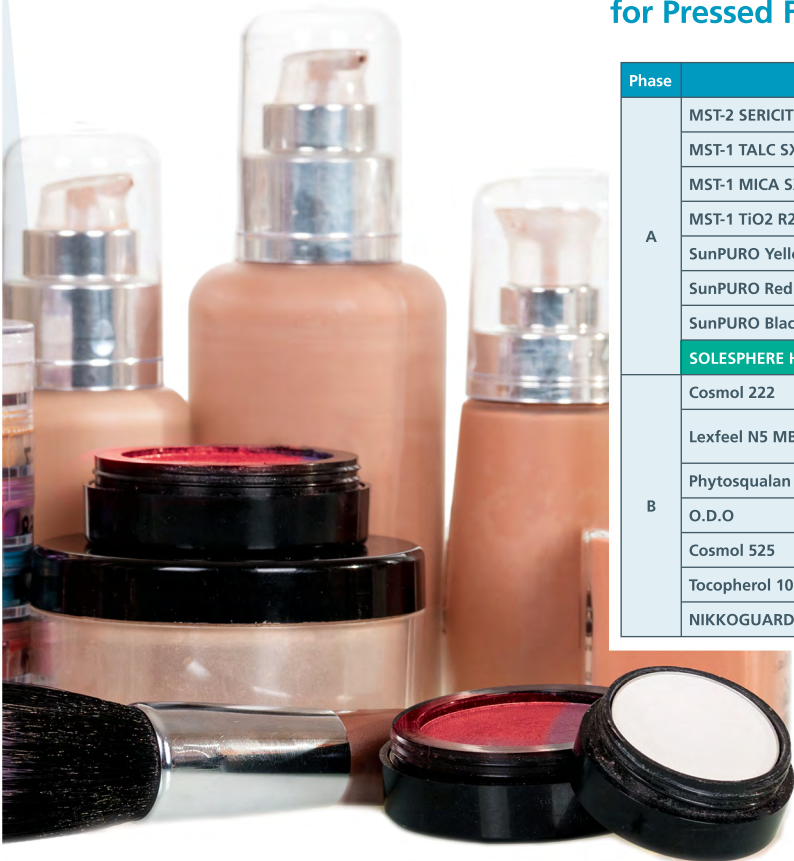
Conditions: JIS K 7136; Equipment: Hazemeter NDH-7000II (NIPPON DENSHOKU INDUSTRIES Co, LTD, white LED light source); Coating liquid: Silicone resin KF-7312/sample powder=9/1 (0.45g/0.05g); Substrate: OHP film IT-125PF (PLUS, thickness 0.1mm, PET); Coating method: Spin coater ACT-300A (Active), 500rpm, 90sec, drying 50°C, 30min.



Formulation Sample for Pressed Foundation (A1-004)

Phase	Trade Name	INCI Name	wrt (%)
A	MST-2 SERICITE S	Mica, Magnesium Stearate	40.00
	MST-1 TALC SX	Talc, Magnesium Stearate	28.72
	MST-1 MICA SX	Mica, Magnesium Stearate	8.90
	MST-1 TiO2 R250	Titanium Dioxide and Magnesium Stearate	8.90
	SunPURO Yellow Iron Oxide C339001	Iron Oxides	1.78
	SunPURO Red Iron Oxide C338001	Iron Oxides	0.36
	SunPURO Black Iron Oxide C33700	Iron Oxides	0.14
	SOLESPHERE H-52	Silica	1.50
B	Cosmol 222	Diisostearyl Malate	3.24
	Lexfeel N5 MB	Diheptyl Succinate, Capryloyl Glycerin/Sebacic Acid Copolymer	1.73
	Phytosqualan	Squalane	2.62
	O.D.O	Caprylic/capric Triglyceride	0.88
	Cosmol 525	Isotridecyl Isononanoate	0.87
	Tocopherol 100	Tocopherol	0.01
	NIKKOGUARD 88	Ethylhexylglycerin, Glyceryl Caprylate	0.35

- Procedure:**
1. Mix A with Henschel mixer (Hanil mixer) until it becomes homogenous
 2. Mix B with spatula until it becomes homogeneous
 3. Add B to A and mix with Henschel mixer until it becomes homogenous
 4. Sieve AB (mesh size 850 μm) with spatula
 5. Weigh 13g on the metal cup and press by 0.4 MPa



Scrubs

SOLESPHERE Benefits

- Particles do not break
- Stable in formulation
- Spherical particles provide gentle feeling
- Low collapsibility enables long-lasting scrubbing effect

Specification

Item		Spec	Method
Average Particle Size	D-200L	100~300 µm	Laser Scattering
	D-300L	-*	
Loss on Drying		≤ 13.0%	1 g, 105°C, 2Hr
pH		≥ 4.0	10% Slurry

* 200~400 µm as reference value

Formulation Sample for Massage Gel (A1-010)

Phase	Trade Name	INCI Name	wt (%)
A		Water	64.9
	1,3-Butylene Glycol[1,3-BG]	Butylene Glycol	15.0
	Malbit	Maltitol, Water	10.0
	Glycerin (86%)	Glycerin	5.0
	Phenoxyethanol-S	Phenoxyethanol	0.3
B	SIMULGEL EG QD	Sodium Acrylate/Sodium Acryloyldimethyl Taurate Copolymer, Isohexadecane, Polysorbate 80, Water	1.5
C		Lavendula Angustifolia (Lavender) Oil	0.3
D	SOLESPHERE D-300L, D-200L	Silica	3.0

Procedure:

1. Heat A to 80°C
2. While stirring A, add B
3. Cool 2 to room temperature
4. Add C and D, and stir the mixture



SOLESPHERE

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