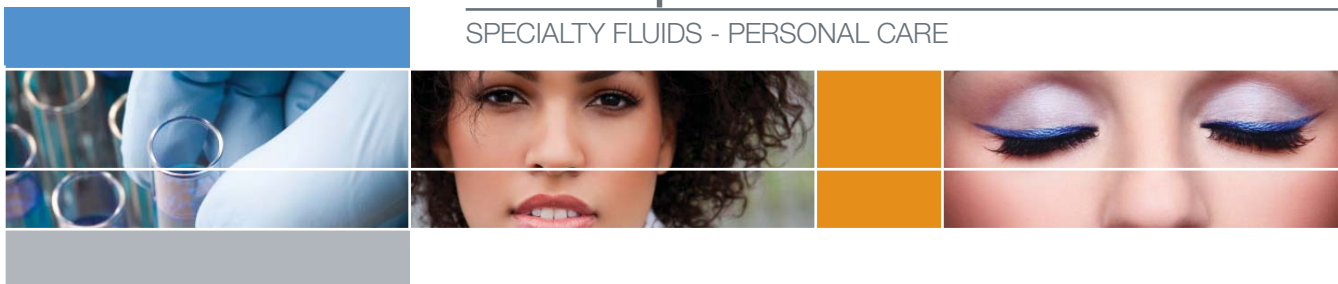


TOSPEARL* 150KA microspheres

SPECIALTY FLUIDS - PERSONAL CARE



A new silicone resin powder, Tospearl 150KA microspheres, has a spiky surface that may allow the delivery of enhanced soft focus benefits in skin care and color cosmetics products. In addition, this powder also offers the outstanding natural silkiness, characteristic of Momentive's Tospearl microsphere technology.

Key Features and Typical Benefits

Tospearl 150KA mono-disperse, micro-spherical silicone resin particles have a three-dimensional network structure; its spiky surface is made of the same silicone resin. The spikes on the surface of Tospearl 150KA microspheres cause increased scattering of light which enhances the line blurring and soft focus properties of this material. The main performance benefits of Tospearl 150KA microspheres, *i.e.*, outstanding natural silkiness and superior line blurring, may make it an ideal candidate for the formulation of skin care, and color cosmetics products such as foundation, lipstick, eye shadow, mascara, anti-aging products, and sunscreens.

When applied to skin it may give a more clear appearance than other Tospearl microspheres products and may also prevent the agglomeration of pigments.

Potential Applications

Color Cosmetics

Eye Shadow, Foundation, Pressed Powder, Mascara, Concealer, Lipstick and Eyeliner

Sunscreens

Creams, Sprays, Mousses

Skin Care

Creams, Masks, Anti-Aging products



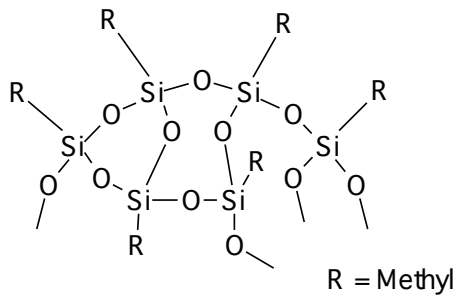
Typical Physical Properties

Appearance	White powder
Particle Shape	Spiky spherical
Average Diameter (micron)	5
Bulk Density (g/ml)	0.4
Specific Gravity	1.3

INCI name: *Polymethylsilsesquioxane*

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Chemical Structure

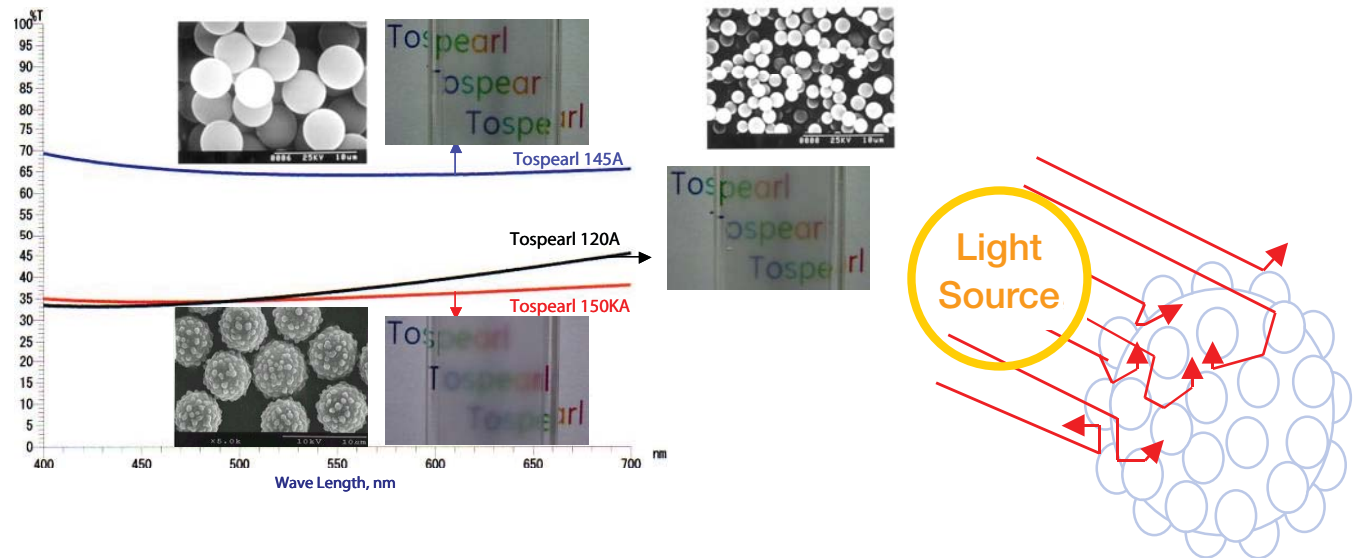


A Tospearl 150KA mono-disperse, micro-spherical silicone resin particle consists of a three-dimensional network structure.

Performance Data

Tospearl 150KA microspheres may provide superior optical benefits (enhanced soft focus with natural appearance) while offering high smoothness and slip, with a different soft touch feel compared to Tospearl 145A microspheres.

Light Scattering Property in 350cSt Dimethicone (1% wt): Soft-Focus



*Tospearl is a trademark of Momentive Performance Materials Inc.

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Performance Data (continued)

Tospearl 150KA microspheres provide the lowest direct transmittance and therefore the highest diffuse transmittance, which is a prerequisite for an excellent light scattering effect (“Soft Focus” effect) while providing superior smoothness and slipperiness compared to Tospearl 120A microspheres.

A Tospearl 120A microspheres mono-disperse particle is a 2-micron diameter particle.

Light Transmittance on PET Film (%)

	Total Light Transmission	Diffused Light Transmission	Haze
Tospearl 150KA microspheres	90.3	88.3	98
Tospearl 145A microspheres	78.1	75.2	96

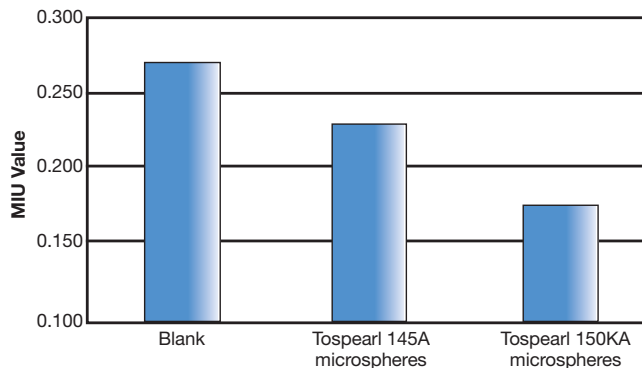
Light transmittance on a PET film was measured by a haze meter. Samples were uniformly coated on transparent PET film at 15 micrometer in thickness. Tospearl 150KA microspheres showed higher values in both “Total Light Transmission” and “Diffuse Light Transmission”, which suggest superior performance in Soft Focus effect. They are likely to give a more natural appearance, due to lower reflectance of light.

Light Reflection (Matte finish)

	Reflectance
Tospearl 150KA microspheres	2.21
Tospearl 145A microspheres	2.83

Luster was measured using a Goniospectrophotometer with angles of incident of light of 0° and -45°. Tospearl 150KA microspheres showed lower luster than Tospearl 145A microspheres, which suggests superior matte finish on skin.

Average Coefficient of Friction (Smoothness)



MIU = Mean coefficient of Friction

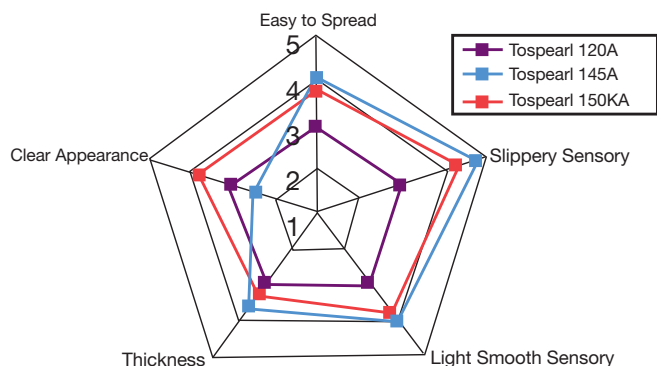
MIU values are a measure of friction. The lower the value, the smoother the sensory. The surface of synthetic skin samples (protein leather supplied by Idemitsu Technofine Co., Ltd) were uniformly coated with the Tospearl products. Friction was measured using the friction tester (KES-FB-4 by KATO Tech Co., Ltd)

Results show that Tospearl 150KA microspheres have a lower coefficient of friction compared to Tospearl 145A microspheres, which may correlate with increased smoothness and slip observed in a sensory study.

TOSPEARL* 150KA Microspheres

Performance Data (continued)

Panel Test Result on Sensory and Appearance



Tospearl 150KA microspheres provide similar smoothness and slip sensory properties to Tospearl 145A microspheres while having a more clear appearance on the skin. The small spherical particles on the surface of Tospearl 150KA microspheres give it a different kind of “natural” soft feel compared to the smooth surface of the other Tospearl microspheres.

However, Tospearl 150KA microspheres are most differentiated from Tospearl 145A microspheres with respect to optical properties and with respect to its packing and interactions with other particulates, such as pigments, inorganic sunscreens and opacifiers.

Formulations

(1) Milky Sunscreen Lotion

This sunscreen is W/O type of milky lotion. Water and oil resistance is given by adding XS66-B8226. This sunscreen spreads easily on the skin. Rich texture is obtained by adding Velvesil* 125 silicone copolymer network, Tospearl 150KA microspheres and Silsoft* 034 organosilicone fluid.

Ingredients	INCI Name	% WT
Part A		
XS66-B8226	Trifluoropropyltrimethylsilyloxydimethylsiloxane (and) Cyclopentasiloxane (and) Hydrogenate Polyisobutene (proposed INCI name)	4.0
SF1540 ⁽¹⁾	Cyclopentasiloxane (and) PEG/PPG-20/15 Dimethicone	0.8
SF1202	Cyclopentasiloxane	30.0
Velvesil 125 silicone copolymer network ⁽¹⁾	Cyclopentasiloxane (and) C30-45 Alkyl Cetearyl Dimethicone Crosspolymer	4.0
Silsoft 034 organosilicone fluid ⁽¹⁾	Caprylyl Methicone	0.7
Nomcort Tab ⁽²⁾	Ethylhexyl Methoxycinnamate	7.0
Cosmol 82 ⁽²⁾	Sorbitan Sesquioleate	1.0
Tocopherol 100 ⁽²⁾	Tocopherol	0.1
Part B		
Tospearl 150KA microspheres	Polymethylsilsesquioxane	4.0
MZY303S ⁽³⁾	Zinc Oxide	9.0
Part C		
EDTA-2Na	EDTA	0.1
NaCl	NaCl	0.4
1,3-Butylene Glycol	Butylene Glycol	2.0
Water	Water	ad 100
Ethanol	Alcohol	5.0
Preservative	-	q.s. [†]

† quantum sufficit (as much as suffices)

Procedure

- Mix Part A, and melt at approx. 80°C.
- Add Part B into Part A and disperse the content.
- Mix Part C at approx. 80°C. Add to Part A + Part B slowly and homogenize.
- Cool to room temperature with moderate mixing.

Suppliers

- Momentive Performance Materials
- Nisshin-Oillio
- TAYCA

*Tospearl, Velvesil and Silsoft are trademarks of Momentive Performance Materials Inc.

TOSPEARL* 150KA Microspheres

Formulations (continued)

(2) Skin Cream

This is a W/O type cream. This skin cream spreads easily on the skin. Rich texture is obtained by adding Velvesil* DM silicone, Tospearl 150KA microspheres and Silsoft* 034 organosilicone fluid.

Ingredients	INCI Name	% WT
Part A		
SF 1540 ⁽¹⁾	Cyclopentasiloxane (and) PEG/PPG 20/15 Dimethicone	3.0
Silsoft 034 organosilicone fluid ⁽¹⁾	Caprylyl Methicone	5.0
Velvesil DM silicone ⁽¹⁾	Dimethicone (and) Cetearyl Dimethicone Crosspolymer	4.0
Isopropyl Palmitate	Isopropyl Palmitate	9.0
Cosmol 222 ⁽²⁾	Diisostearyl Malate	8.0
Part B		
Tospearl 150KA microspheres ⁽¹⁾	Polymethylsilsesquioxane	3.0
Part C		
1,3-Butylene Glycol	Butylene Glycol	3.0
NaCl	NaCl	1.0
Water	Water	ad 100
Fragrance	-	q.s. [†]
Preservative	-	q.s. [†]

† quantum sufficit (as much as suffices)

Procedure

1. Mix the components of Part A at approx. 80°C.
2. Add Part B into Part A and disperse the content.
3. Mix Part C at approx. 80°C. Add to Part A + Part B slowly and homogenize.
4. Cool to room temperature with moderate mixing; add fragrance into cream at approx. 60°C.

Suppliers

- (1) Momentive Performance Materials
- (2) Nisshin-OilliO

TOSPEARL* 150KA Microspheres

Patent Status

Nothing contained herein shall be construed to imply the nonexistence of any relevant patents or to constitute the permission, inducement or recommendation to practice any invention covered by any patent, without authority from the owner of the patent.

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TOSPEARL* 150KA Microspheres

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