

ZnO Powders

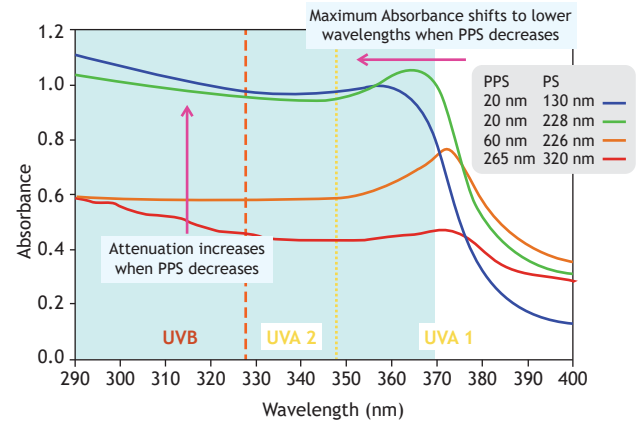
For Sunscreen Applications



Zinc Oxide (ZnO) is a mineral UV filter available in a range of primary particle sizes (PPS) and varying optical properties. Because of its relatively low reflective index, large particle size ZnO can be used in formulas without causing significant whitening. It is ideal for formulating mild or hypoallergenic sun care products with UVA/UVB protection for babies and people with sensitive skin.

To improve dispersion in formulas and performance as a UV filter, ZnO can be surface treated with various organic compounds. Kobo ZnO powders are all “Non-Nano” as measured according to the last Nano Guidance from Cosmetics Europe (Interpretation of the Definition of the Term “Nanomaterial” according to the EU Cosmetic Regulation 1223/2009, May 24, 2019).

Kobo also offers a unique Non-Nano grade, ZnO-C, with a primary particle size distribution curve above 100nm as measured with Image Analysis. This ZnO-C also complies with Cosmetics Europe interpretation for non-nano material (see separate flyer).



Absorbance curves of four ZnO of different Primary Particle Sizes. Small PPS show higher UVB attenuation but lower UVA attenuation than larger PPS.



KSL-420A-BR Natural Sunscreen



Part 1

- Deionized Water - Water 23.40%
- Glicerina Bi-Destilada U.S.P. - Synth: Glycerin 1.50%
- Cloreto de Sódio - CAAL: Sodium Chloride 0.60%

Part 2

- NHP55STS - Kobo Products: Titanium Dioxide (And) C13-15 Alkane (And) Stearic Acid (And) Aluminum Hydroxide (And) Polyhydroxystearic Acid 22.50%
- Tegosoft® CT - Cosmotec: Caprylic/Capric Triglycerides 20.00%
- ZNO-750-NJE7 - Kobo Products: Zinc Oxide (And) Jojoba Esters 19.00%
- Emulium® Illustro - Gattefossé/MCassab: Polyglyceryl-6 Polyhydroxystearate (and) Polyglyceryl-6 Polyricinoleate 3.50%
- SunBoost ATB Natural - Kobo Products: Argania Spinosa Kernel Oil (And) Tocopheryl Acetate (And) Bisabolol 2.00%
- Olivem® 900 - HallStar/QuantiQ: Sorbitan Olivate 1.50%
- Tecwax Abelha - Cosmotec: Beeswax 0.60%
- SALACOS® HS-6C - Ikeda/Kobo Products: Polyhydroxystearic Acid 0.40%

Part 3

- Lexgard® Natural - Inolex: Glyceryl Caprylate (and) Glyceryl Undecylenate 1.00%

Part 4

- MSS-500/3H - Kobo Products: Silica 2.50%
- FLORITE PS-10 - Kobo Products: Calcium Silicate 1.50%

Manufacturing Procedure

1. Combine Part 1 and heat to 75 °C.
2. Combine Part 2. Mix until full dispersion of Zinc Oxide and heat to 75 °C.
3. Add Part 1 to Part 2 slowly under stirring. Mix until homogeneous.
4. Cool to 60 °C and add Part 3. Mix until homogeneous.
5. Cool to 25 °C and add Part 4. Mix until homogeneous.

Description

Natural Sunscreen, composed of only mineral UV filters, leaves minimal white residue. It features the Natural Origin filters NHP55STS, a TiO₂ dispersion in the light emollient C13-15 Alkane, and ZNO-750-NJE7, a ZnO powder treated with Jojoba Ester, to provide UVB and UVA protection. SunBoost ATB Natural is a proprietary ratio of antioxidant, anti-irritant and anti-inflammatory agents, that boosts SPF and PFA. SALACOS® HS-6C, helps in sunscreen dispersion. Calcium silicate microsphere FLORITE PS-10 and silica microsphere MSS-500/3H contribute with a non-oily after feel, while MSS-500/3H also imparts creaminess.

Active Ingredients

Titanium Dioxide	9.96%
Zinc Oxide	17.58%

Testing

SPF: in vivo on 3 subjects
UVA-PF: in vivo on 3 subjects

Notes

CW: 371nm; tested using ISO 24443: 2012 methodology



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Product Name	INCI Name	Active %	Primary Part. Size (nm)	EU Compliance
ZNO XZ-11S3L	Zinc Oxide (And) Triethoxycaprylylsilane	97	20 - 30	Compliant
ZnO-660SS-11S5	Zinc Oxide (And) Triethoxycaprylylsilane	95	20 - 30	Compliant
MZO-35-11S5	Zinc Oxide (And) Triethoxycaprylylsilane	95	35	Compliant
New MZO-35-NOE7 	Zinc Oxide (And) Hydrogenated Olive Oil Stearyl Estersostearate	93	35	Compliant
MZO-35-I3	Zinc Oxide (And) Isopropyl Titanium Triisostearate	93	35	-
ZnO-750-NJE7 	Zinc Oxide (And) Jojoba Esters	92	35	Compliant
ZNO-750-ASG5 	Zinc Oxide (And) Stearoyl Glutamic Acid	95	35	Compliant
ZNO FSF-11S4	Zinc Oxide (And) Triethoxycaprylylsilane	96	60	Compliant
KOBO ZnO-B 	Zinc Oxide	100	90	Compliant
A120-ZNO-11S3	Zinc Oxide (And) Triethoxycaprylylsilane	97	120	-
ZnO-USP1-I2	Zinc Oxide (And) Isopropyl Titanium Triisostearate	98	120	-

This table was prepared to assist in formulating with Zinc Oxide Powders. The information contained herein is believed to be accurate at the time of printing and represents typical values, but should not be used as a substitute for product specification sheets.

The Non-Nano Powders listed in this flyer have been tested by light scattering method, according to the Cosmetics Europe Nano Guidance Package; Part II: Interpretation of the Definition of the Term “nanomaterial”

according to the EU Cosmetic Regulation 1223/2009, published on May 24, 2019.

We are also listing the primary particle size - PPS (nm) - for comparison purposes.

EU Compliance: These ZnO comply with the conditions for Zinc Oxide (nano) as set forth in the Annex VI to Regulation (EC) No 1223/2009.

We recommend that customers make their own assessment when using particle size data for the purpose of identifying nanomaterials in their finished formulations.

Please contact our team at techservice@koboproductsinc.com for additional information on this subject.

US 20180235855A1, WO 2007048057A3

Zinc Oxide powder blends, their production and use

US 9949904B2

Method of formulating Zinc Oxide powder blends for balanced UVA/UVB attenuation

US 8623386B2, WO 2009126859, JP 8506995

Natural ester, wax or oil treated pigment, process for production thereof, and cosmetic made therewith

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