

Balanced UV Protection

The UV Balance concept was developed in order to ensure protection of the skin from both UVB and UVA rays. This concept suggests that for every 3 units of UVB protection there is also 1 unit of UVA protection being provided in an SPF product. When working with inorganic sunscreen ingredients such as micronized Titanium Dioxide or Zinc Oxide it is important to find the right combination of particle sizes in order to yield the 3:1 ratio for protection. In order to achieve these results, KOBO has developed both UV Balance Powders and Dispersions, as well as recommended use levels for specific combinations of dispersions.

For Sunscreens

While formulating with inorganic sunscreen ingredients, it is difficult to achieve a high SPF and UV Balanced Formula. TiO_2 is often too whitening while ZnO is not an efficient UVB agent. By combining TiO_2 and ZnO of correct particle sizes, balanced UV protection can be achieved. A combination of very fine ZnO and large ZnO can also give high SPF and provide UV Balanced Protection. The following dispersion combinations are recommended:

Combination of TiO_2 and ZnO for Balanced UV protection

For Oil Phase

	TNP50T7	$TiO_2\%$	TNP50ZSA	ZnO%
SPF 30	13	5.0	26	12.0
SPF 20	8.6	3.3	19.5	9.0
SPF 15	6.5	2.5	15.2	7.0

	IN65S4	$TiO_2\%$	INH73MZ	ZnO%
SPF 30 (KSL-024E)	11.3	6.0	17	12.0
SPF 20	8	4.25	12	8.5
SPF 15	6	3.2	9	6.35

For Silicone Phase

	CM3K40T4	$TiO_2\%$	CM3K50XZ4	ZnO%
SPF 30	22	7.0	25	12.0
SPF 20	15.6	5.0	19	9.0
SPF 15	12.5	4.0	14.6	7.0

Combination of ZnO for Balanced UV protection

	TNP50ZSI	ZnO%	TNC65FZS	ZnO%
SPF 30 (KSL-016C)	25	12.0	16	10.0
SPF 20	19	9.0	11.2	7.0

	INH73MZ	ZnO%
SPF 15 (KSL-016)	22	16.0

	CM3K50XZ4	ZnO%
SPF 15	32	15.0

	TNP50ZSA	ZnO%
SPF 15 (KSL-016B)	32	15.0

UV Balance Sunscreen featuring TNP50T7 and TNP50ZSA Formula KSL-143A

in vivo SPF 31.4
PFA 10.87

Part 1

- Deionized Water 31.93%
- Sodium Chloride - Morton Salt : Sodium Chloride 0.56%
- Allantoin - RITA Corp : Urea, (2,5-Dioxo, 4-Imidazolidinyl)- 0.20%

Part 2

- **TNP50ZSA** - Kobo Products : C12-15 Alkyl Benzoate (And) Zinc Oxide (And) Polyhydroxystearic Acid (And) Triethoxycaprylsilane 26.00%
- **TNP50T7** - Kobo Products : C12-15 Alkyl Benzoate (And) Titanium Dioxide (And) Alumina (And) Polyhydroxystearic Acid (And) Methicone 13.00%
- Hallbrite BHB - C.P. Hall Company : Butyloctyl Salicylate 3.00%
- Floraesters 15 - Floratech : Jojoba esters 3.00%
- Cetiol CC - Cognis Corp : Dicaprylyl Carbonate 3.00%
- Abil Wax 9801 - Evonik : Cetyl Dimethicone 3.00%
- Finsolv TN - Finetex : C12-15 Alkyl Benzoate 2.90%
- Arlacel P135 - Croda : PEG-30 Dipolyhydroxystearate 2.50%
- Abil WE 09 - Evonik : Polyglyceryl-4 Isostearate (And) Cetyl PEG/Ppg-10/1 Dimethicone (And) Hexyl Laurate 2.50%
- Cetiol SB-45 - Cognis Corp : Shea Butter 1.00%
- Argan Oil - Centerchem : Argan Oil 1.00%
- Rosemary Oleoresin HQ 3401 - Hilltech : Rosemary(Rosmarinus officinalis) Extract 0.20%
- Methyl Paraben NF - International Sourcing : Methylparaben 0.15%
- Propyl Paraben NF - International Sourcing : Propylparaben 0.06%

Part 3

- Iricalm - Centerchem : Water (And) Triticum Vulgare (wheat) extract (And) Saccharomyces cerevisiae Extract (And) Sodium Hyaluronate 3.00%
- Aculyn 44 - Rohm & Haas : PEG-150/Decyl Alcohol/Smdl Copolymer 3.00%

Manufacturing Procedure

1. In a double jacketed stainless steel tank equipped with a lightening type mixer, along with side sweep action, mix ingredients in Part 1 in the order listed.
2. Heat Part 1 to 75°C.
3. In a second double jacketed stainless steel tank equipped with a lightening type mixer, heat Part 2 to 75°C.
4. Add Part 1 to Part 2 very slowly with mixing using a lightening type mixer.
5. Cool product slowly down to about to 45°C.
6. Add Part 3 to main batch one ingredient at a time in the order listed.
7. Switch mixing to side sweep.
8. Cool emulsion further to 33°C with sweep action mixing.

Description

Elegant W/O off-white sunscreen lotion

Active Ingredient(s) :

Titanium Dioxide	5.13%
Zinc Oxide	12.61%

SPF testing : in vivo on 3 subjects
UVA testing: Critical wavelength = 368nm
Transpore Tape Method-Labsphere

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Balanced UV Protection

For Color Cosmetics

UV Balance Powder 100 consists of various primary particle sized hydrophobic TiO₂. When formulated correctly, this product offers good coverage on the skin while providing a 3:1 ratio.

UV Balance Pressed Powder

Formula KPP-014

in vivo SPF 15
PFA 6

Part 1

● TALC N/MM3 - Kobo Products : Talc (And) Magnesium Myristate	52.95%
● MICA S/MM3 - Kobo Products : Mica (And) Magnesium Myristate	16.00%
● UV BALANCE POWDER 100Y - Kobo Products : Titanium Dioxide (And) Alumina (And) Dimethicone/Methicone Copolymer (And) Iron Oxides (C.I. 77492)	6.00%
● UV BALANCE POWDER 100R - Kobo Products : Titanium Dioxide (And) Alumina (And) Dimethicone/Methicone Copolymer (And) Iron Oxides (C.I. 77491)	6.00%
● UV BALANCE POWDER 100 - Kobo Products : Titanium Dioxide (And) Alumina (And) Dimethicone/Methicone Copolymer	6.00%
● ZINC MYRISTATE - Kobo Products : Zinc Myristate	2.50%
● BYO-12 - Kobo Products : Iron Oxides (C.I. 77492) (And) Isopropyl Titanium Triisostearate	1.75%
● BRO-12 - Kobo Products : Iron Oxides (C.I. 77491) (And) Isopropyl Titanium Triisostearate	0.40%
● BBO-12 - Kobo Products : Iron Oxides (C.I. 77499) (And) Isopropyl Titanium Triisostearate	0.20%
● Methylparaben NF - International Sourcing : Methylparaben	0.10%
● Propylparaben NF - International Sourcing : Propylparaben	0.10%

Part 2

● Lexol PG-865 - Inolex : Propylene Glycol Dicaprylate/Dicaprate	2.80%
● SF96-20 - Momentive/Kobo Products : Dimethicone	2.40%
● SF96-350 - Momentive/Kobo Products : Dimethicone	2.40%
● SS4267 - Momentive/Kobo Products : Dimethicone (And) Trimethylsiloxysilicate	0.40%

Manufacturing Procedure

1. Micropulverize Part 1 until color is fully developed.
2. Spray Part 2 to Part 1.
3. Blend well and micropulverize.
4. Press @ 300 psi.

Description

This formulation combines UV balance powders to achieve an SPF 15 and a PFA 6. Kobo's surface treated pigments and powders provide an excellent application on the skin.

Active Ingredient(s):

Titanium Dioxide 15.38%

SPF Testing: in vivo on 3 subjects

UV Balance FAS60UVP100 dispersion consists of UV Balance Powder 100 dispersed in a silicone system. It offers excellent opacity and coverage on the skin while providing a 3:1 ratio.

UV Balance Foundation

Formula KLF-042C

in vivo SPF 15
PFA 5

Part 1

● SF1528 - Momentive / Kobo Products : Cyclopentasiloxane (And) PEG/Ppg-20/15 Dimethicone	12.00%
● LEXOL® PG-865 - Inolex Chemical Company : Propylene Glycol Dicaprylate/Dicaprate	2.50%
● Salacos 99 - Ikeda Corporation : Isononyl Isononanoate	2.50%
● SS4230 - Momentive / Kobo Products : Cyclopentasiloxane (And) Trimethylsiloxysilicate	2.50%
● LUCENTITE SAN-P - Kobo Products : Lithium Magnesium Sodium Silicate (And) Distearyltrimonium Chloride	2.00%
● SF1555 - Momentive / Kobo Products : Bis-Phenylpropyl Dimethicone	0.75%

Part 2

● Ethyl Alcohol E1028 - VWR Scientific Products : Ethyl Alcohol	1.00%
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Part 3

● UV BALANCE FAS60UVP100 - Kobo Products : Titanium Dioxide (And) Cyclopentasiloxane (And) PEG/Ppg-18/18 Dimethicone (And) Alumina (And) Dimethicone/Methicone Copolymer	17.50%
● SF1202 - Momentive / Kobo Products : Cyclopentasiloxane	7.03%
● FAS50EYSI - Kobo Products : Iron Oxides (C.I. 77492) (And) Cyclopentasiloxane (And) PEG/Ppg-18/18 Dimethicone (And) Triethoxycaprylylsilane	4.00%
● FAS70USI - Kobo Products : Titanium Dioxide (And) Cyclopentasiloxane (And) PEG/Ppg-18/18 Dimethicone (And) Triethoxycaprylylsilane	2.00%
● FAS55ERSI - Kobo Products : Iron Oxides (C.I. 77491) (And) Cyclopentasiloxane (And) PEG/Ppg-18/18 Dimethicone (And) Triethoxycaprylylsilane	0.80%
● FAS60EBSI - Kobo Products : Iron Oxides (C.I. 77499) (And) Cyclopentasiloxane (And) PEG/Ppg-18/18 Dimethicone (And) Triethoxycaprylylsilane	0.27%

Part 4

● Water	37.50%
● Butylene Glycol - Ruger Chemical : Butylene Glycol	3.50%
● GLYCERIN U.S.P. F.C.C. 96% - Ruger Chemical : Glycerin	1.25%
● GERMABEN® II - ISP : Propylene Glycol (And) Diazolidinyl Urea (And) Methylparaben (And) Propylparaben	1.00%
● Sodium Chloride - Morton Salt : Salt	0.90%
● Jeecide CAP-5 - Jeen International : Phenoxyethanol (And) Caprylyl Glycol (And) Potassium Sorbate (And) Water (And) Hexylene Glycol	0.50%
● TWEEN 20 - Croda : Polysorbate 20	0.50%

Manufacturing Procedure

1. Homogenize all ingredients of Part 1 until fully dispersed. Homogenize at least 20 minutes at 3000 RPM.
2. Add Part 2 to dispersed Part 1 at RT. Homogenize for 15 minutes.
3. Add Part 3 to dispersed Part 1 and part 2 at RT and homogenize until dispersed.
4. Add Part 4 ingredients together in separate tank and slowly add to Part 1, Part 2 and Part 3 with homogenization.

Description

UV Balance sheer foundation with excellent slip and playtime.

Active Ingredient(s):

Titanium Dioxide 9.27%

SPF Testing: In vivo on 3 subjects

UVA testing: Critical wavelength = 386nm

Transpore Tape Method-Labsphere

Trade Name	INCI Name	Product Type
UV BALANCE POWDER 100	Titanium Dioxide (And) Alumina (And) Dimethicone/Methicone Copolymer	Powder
UV BALANCE FAS60UVP100	Titanium Dioxide (And) Cyclopentasiloxane (And) PEG/Ppg-18/18 Dimethicone (And) Alumina (And) Dimethicone/Methicone Copolymer	Dispersion

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