

Crosspolymer

Treatment - TTB

Silicone-treated pigments are very hydrophobic and easy to disperse in Silicone fluids; however, because they are not lipophilic, they disperse poorly in esters and oils. On the other hand, Titanate Treatment is known for its lipophilicity but is not as hydrophobic. To capture the advantages of both coatings in one single treatment and minimize their drawbacks, Kobo has introduced a Crosspolymer Treatment (TTB): Titanate is used to react the Silicone compound-branched Dimethicone to the surface of pigments or powders.

Due to this unique chemistry, a broader range of materials can be coated with TTB Treatment than with previous treatments. They also improve particle size control.

Superdispersible & Multimedia:

The very nature of the Crosspolymer Treatment is to be both hydrophobic and lipophilic. This makes treated powders superdispersible in esters and hydrocarbons as well as with Silicones. TTB Treatment exhibits the highest degree of dispersibility (see viscosity measurements below).

pH stability:

TTB Treatment is very stable over a wide range of pHs (between 3 and 9).

Skin Affinity:

Due to the presence of fatty groups, Crosspolymer-treated pigments and powders have a better affinity for the skin than Silicone-treated equivalents.

Colorguard SPF Foundation

Formula KLF-022D

Est.
SPF 15

Part 1

- **KOBOGUARD® 5400 IDD** - Kobo Products: *Hydrogenated Polycyclopentadiene (and) Isododecane* 14.29%
- **Soltrol 130** - Chevron-Phillips: *C10-13 Isoparaffin* 5.71%
- **Covi-ox® T-70** - Cognis: *Tocopherol* 0.25%

Part 2

- **LUCENTITE SAN-P** - Kobo Products: *Quaternium-18 Hectorite* 2.00%
- **Ethyl Alcohol 39C (95%)** - Warner Graham: *SD Alcohol-39C* 1.00%

Part 3

- **BTD-TTB2** - Kobo Products: *Titanium Dioxide (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone* 10.00%
- **PM9P50M170** - Kobo Products: *Titanium Dioxide (And) Isododecane (And) Alumina (And) Methicone(And) Polyhydroxystearic Acid* 10.00%
- **SF1540** - Momentive/Kobo Products: *Cyclopentasiloxane (And) PEG/PPG- 20/15 Dimethicone* 6.80%
- **Soltrol 130** - Chevron-Phillips: *C10-13 Isoparaffin* 4.42%
- **TOSPEARL 2000B** - Momentive/Kobo Products: *Polymethylsilsesquioxane* 3.50%
- **Permethyl 99A** - Presperse: *Isododecane* 2.83%

- **KTZ® INTERFINE GOLD** - Kobo Products: *Mica (And) Titanium Dioxide* 0.75%
- **SP-10L** - Toray/Kobo Products: *Nylon-12* 0.75%
- **KTZ® INTERFINE RED** - Kobo Products: *Mica (And) Titanium Dioxide* 0.75%

- **BGYO-TTB2** - Kobo Products: *Iron Oxides (C.I. 77492) (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone* 0.51%
- **GMS-11S2** - Kobo Products: *Mica (And) Triethoxycaprylsilane* 0.50%
- **Covi-ox® T-70** - Cognis: *Tocopherol* 0.25%

- **BGRO-TTB2** - Kobo Products: *Iron Oxides (C.I. 77491) (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone* 0.21%
- **BGBO-TTB2** - Kobo Products: *Iron Oxides (C.I. 77499) (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone* 0.06%

- **Crill 6** - Croda: *Sorbitan Isostearate* 0.75%
- **Arlacel 80** - Croda: *Sorbitan Oleate* 0.75%
- **Propyl Paraben NF** - International Sourcing: *Propylparaben* 0.10%

- **Part 5**
- **Deionized Water** 17.00%
- **Sodium Chloride - Morton Salt: Sodium Chloride** 1.00%
- **Methyl Paraben NF - International Sourcing: Methylparaben** 0.10%

Part 5

- **Part 6**
- **Syncrowax HGL-C** - Croda: *C18-36 Triglycerides* 1.65%
- **Syncrowax BB-4** - Croda: *Synthetic Beeswax* 1.10%
- **dl-alpha Tocopherol - Roche: dl-alpha Tocopherol** 0.25%

Part 6

- **Part 7**
- **Velvesil 125** - Momentive/Kobo Products: *Cyclopentasiloxane (And) C30-45 Alkyl Cetearyl Dimethicone Crosspolymer* 10.00%

Part 7

- **Part 8**
- **Phenoxyethanol** - Clariant: *Phenoxyethanol* 0.10%
- **Vanillin FCC** - Citrus & Allied Essence: *Vanillin* 0.02%

Part 8

- **Part 9**
- **Deionized Water** 2.00%
- **dl-Panthenol** - Roche: *dl-Panthenol* 0.35%
- **Germall® 115** - ISP: *Imidazolidinyl Urea* 0.25%

Part 9

Manufacturing Procedure
Use explosion-proof mixers and equipment during batching process

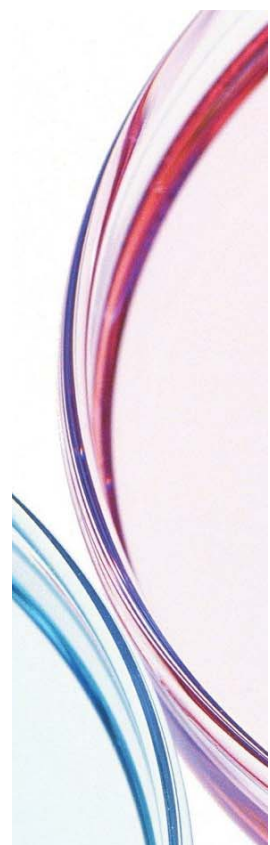
1. Add Part 1 raw materials to a beaker under a fume hood.
2. Mix until homogenous at room temperature until dissolved.
3. Add the Lucentite SAN-P to Part 1 and disperse for 20 minutes. Add the alcohol and continue dispersing for a minimum of 30 minutes or until gelled.
4. Combine and add pre-dispersed Part 3 to gel mixture and homogenize for 15 minutes. Add Part 4 raw materials.
5. Combine the water and Sodium Chloride. Add the Methylparaben.
6. Add the aqueous Part 5 very slowly to the external phase.
7. Heat batch to 77-80°C. Add waxes (Part 6) at 75-80°C. Begin cooling the batch to 60°C.
8. At 60°C add Part 7.
9. Add Germall® 115 solution to the batch at 42°C and continue mixing and cooling to 25°C. Fill into appropriate containers.

Description

This long wear foundation combines Kobo's Titanium Dioxide Dispersion, PM9P50M170, with Koboguard® 5400 IDD, a long wear resin, to achieve an Estimated SPF 15. Lucentite SAN-P and Velvesil 125 create a smooth-feeling gel when combined with a high level of Microspheres, SP-10L and Tospearl 2000B. The Crosspolymer-Treated Pigments are complemented by a complex of iridescent KTZ® Pearls to provide just a slight shimmer to the sunscreen foundation. SF1540 emulsifier provides an excellent W/O emulsion.

Active Ingredients:

Titanium Dioxide 14.00%



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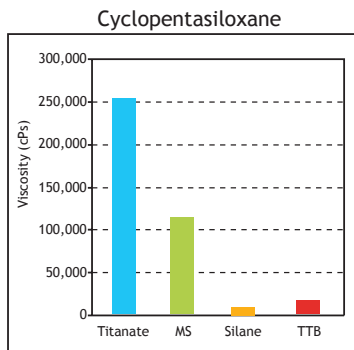
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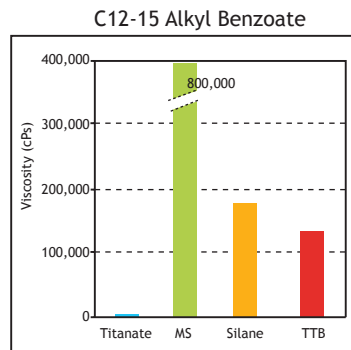
Crosspolymer Treatment

Trade Name	INCI Name	Product Type
BGRO-TTB2	Iron Oxides (C.I. 77491) (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone	Red Iron Oxide
BGYO-TTB2	Iron Oxides (C.I. 77492) (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone	Yellow Iron Oxide
BGBO-TTB2	Iron Oxides (C.I. 77499) (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone	Black Iron Oxide
RBTD-TTB2	Titanium Dioxide (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone	Pigmentary Titanium Dioxide
Red 6BA S-TTB2	Red 6 Lake (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone	D&C Red 6 Barium Lake
Red 7CA C-TTB2	Red 7 Lake (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone	D&C Red 7 Calcium Lake
Yellow 5AL S-TTB2	Yellow 5 Lake (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone	FD&C Yellow 5 Aluminum Lake
Yellow 6AL C-TTB2	Yellow 6 Lake (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone	FD&C Yellow 6 Aluminum Lake
Mica S-TTB2	Mica (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone	Mica
GMS-TTB4	Mica (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone	Sericite
TTO-TTB7	Titanium Dioxide (And) Isopropyl Titanium Triisostearate (And) Alumina (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone	Attenuation Grade Titanium Dioxide

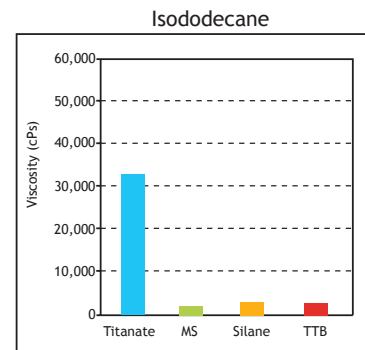
Comparison of the viscosity of 75% anatase TiO₂ dispersions



In Cyclopentasiloxane, Methicone and Silane treatments give better compatibility (lower viscosity) than lipophilic titanate treatment. TTB is similar to silane.



Titanate is the most compatible treatment with esters. TTB is similar to Titanate.



TTB Treatment shows again its versatility in Isododecane, with very low viscosity, similar to Methicone and Silane.