

# 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.

Patent #W0/2005/099651

## Concealer with TTB-Treated Pigments

Formula KCC-001C

### Part 1

- SF1202 - Momentive/Kobo Products: *Cyclopentasiloxane* 5.04%
- SF96-20 - Momentive/Kobo Products: *Dimethicone* 3.50%
- Crill 6 - Croda: *Sorbitan Isostearate* 1.00%
- Liposorb® O - Lipo Chemicals: *Sorbitan Oleate* 1.00%
- SF1528 - Momentive/Kobo Products: *Cyclopentasiloxane (And) PEG/PPG-20/15 Dimethicone* 1.00%
- Propyl Paraben NF - International Sourcing: *Propylparaben* 0.10%

### Part 2

- SF1528 - Momentive/Kobo Products: *Cyclopentasiloxane (And) PEG/PPG-20/15 Dimethicone* 22.50%
- BTD-TTB2 - Kobo Products: *Titanium Dioxide (And) Isopropyl Titanium Triisostearate (And) Triethoxysilyl ethyl Polydimethylsiloxyethyl Dimethicone* 20.00%
- GMS-TTB4 - Kobo Products: *Mica (And) Isopropyl Titanium Triisostearate (And) Triethoxysilyl ethyl Polydimethylsiloxyethyl Dimethicone* 10.00%
- BGYO-TTB2 - Kobo Products: *Iron Oxides (C.I. 77492) (And) Isopropyl Titanium Triisostearate (And) Triethoxysilyl ethyl Polydimethylsiloxyethyl Dimethicone* 1.05%
- SP-10 - Toray/Kobo Products: *Nylon-12* 0.50%
- BGRO-TTB2 - Kobo Products: *Iron Oxides (C.I. 77491) (And) Isopropyl Titanium Triisostearate (And) Triethoxysilyl ethyl Polydimethylsiloxyethyl Dimethicone* 0.42%
- KGB0-TTB2 - Kobo Products: *Iron Oxides (C.I. 77499) (And) Isopropyl Titanium Triisostearate (And) Triethoxysilyl ethyl Polydimethylsiloxyethyl Dimethicone* 0.12%

### Part 3

- Propylene Glycol - RITA Corp.: *Propylene Glycol* 5.00%
- Keltrol F - CP Kelco: *Xanthan Gum* 0.10%
- Methyl Paraben NF - International Sourcing: *Methylparaben* 0.10%

### Part 4

- Deionized Water 16.47%
- Sodium Chloride - Morton Salt: *Sodium Chloride* 1.25%

### Part 5

- Candelilla Wax - Frank B. Ross: *Candelilla Wax* 1.00%
- SP 422P- Strahl & Pitsch, Inc.: *White Beeswax* 0.85%

### Part 6

- VELVESIL 125 - Momentive/Kobo Products: *Cyclopentasiloxane (And) C30-45 Alkyl Cetearyl Dimethicone Crosspolymer* 7.50%

### Part 7

- KTZ® INTERVAL RED - Kobo Products: *Mica (And) Titanium Dioxide* 1.50%

## Manufacturing Procedure

\*Use explosion-proof mixers and equipment during batching process\*

1. Add Part 1 raw materials and mix with a homogenizer. Combine Part 2 ingredients, add to Part 1, and homogenize for 30 minutes.
2. Combine the Methylparaben and Propylene Glycol. Stir until dissolved. Slurry in the Xanthan Gum.
3. Combine the water and Sodium Chloride to form the salt solution.
4. Combine Parts 3 and 4 to form the aqueous part.
5. Add the aqueous Parts 3 and 4 very slowly to the Silicone Pigment Parts 1 and 2 using the homogenizer. Add Part 5 to Parts 1, 2 and 3 at 75° C - 80° C. Cool the batch to 60° C.
6. At 60° C add Part 6 to Parts 1, 2, 3, 4 and 5. Continue homogenizing to 25° C.
7. Add Part 7 slowly - hand side sweep.

## Description

This concealer provides high coverage without 'chalkiness', achieved by using Kobo's Crosspolymer-Treated GMS-TTB4, and Crosspolymer-Treated Pigments. KTZ® Interval Red neutralizes dark circles (Red cuts Blue) underneath the eye area. Velvesil 125 promotes a creamy, gel texture to the product, and SP-10L gives a creamy slip during application. SF1528 is an excellent W/O emulsifier, and SF96-20 provides even spread on application.

# KOBO

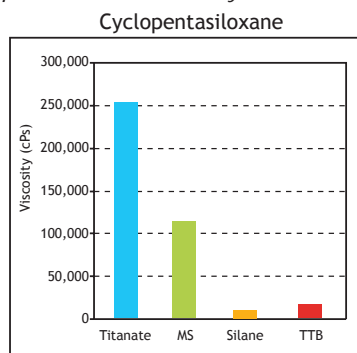
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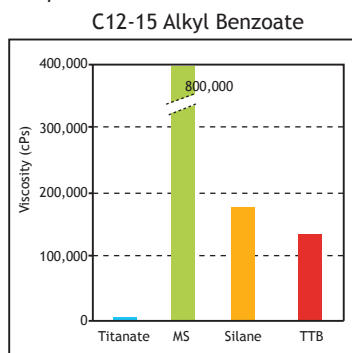
# Crosspolymer Treatment

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
<small>New</small> Red 30AL-TTB2	Red 30 Lake (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone	D & C Red 30 Aluminum 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

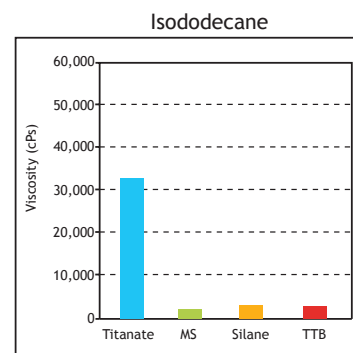
Comparison of the viscosity of 75% anatase TiO<sub>2</sub> dispersions



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 silane.



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