

Hybrid TREATMENT - TTB

Silicone treated pigments are exceptionally hydrophobic and readily dispersed in silicone fluids. Due to the lack of lipophilic properties, materials treated with solely silicone disperse poorly in esters and oils. Conversely, the titanate treatment is known for its lipophilic properties but is simultaneously not as hydrophobic. To encompass the attributes of both coatings, one single treatment has been developed to minimize the individual component drawbacks. Kobo offers a Hybrid Treatment (TTB) where titanate is used to react the silicone compound branched dimethicone to the surface of pigments or powders. This unique chemistry allows for a broader range of materials available to be effectively coated with the TTB treatment than with other treatments. TTB also allows for improved particle size control.

Superdispersible & Multimedia:

The inherent nature of this Hybrid Treatment is to impart hydrophobic and lipophilic properties on a substrate surface. This makes treated powders super-dispersible in esters and hydrocarbons as well as in silicones. When compared to other treatments in various media, the TTB treatment exhibits the highest degree of dispersibility (figure 1).

pH stability:

The TTB treatment is very stable over a wide range of pH (between 3 and 9).

Skin Affinity:

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

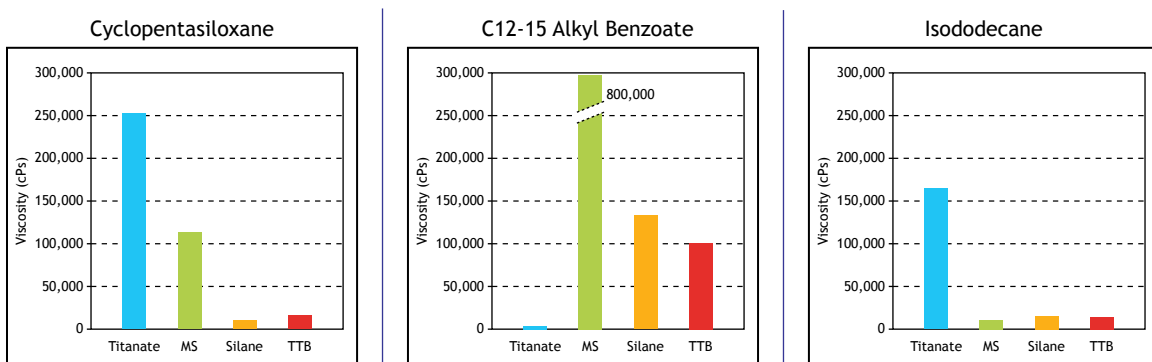
Applications:

TTB treated powders exhibit water resistance and can be used in esters, oils, silicones and hydrocarbons. Notably powders altered with this surface treatment wear up to 12 hours in a lipstick and up to 24 hours in powders, W/O emulsions, and an anhydrous blush. These treated materials are excellent for producing finished formulations of foundations and concealers. Additionally the TTB treatment is excellent in pressed/loose powder, and anhydrous type applications.

TTB in Cyclopentasiloxane dispersions is easily dispersed in a W/Si system resulting in full color development. The color is not only fully dispersed but also remains stable in a silicone based emulsion.

Patent Pending #W0/2005/099651
Hybrid Coated Cosmetic Powders and
Methods of Making and Using Same

Figure 1: 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.



KOBO

Kobo Products, Inc.
3474 So. Clinton Ave.
So. Plainfield, NJ 07080
USA
tel +1 (908) 757-0033
fax +1 (908) 757-0905

Kobo Products, SAS
135 Rue Buissonniere
Quartier Bouysset
31670 LABEGE
France
tel +33 (0)5-62-88-77-40
fax +33 (0)5-62-88-77-49

Kobo Brasil Ltda.
Rua Bamboré n.41
Ipiranga - São Paulo/SP
04278-060
Brasil
tel +55 (11) 5062-0634

www.koboproducts.com

Hybrid Treatment - TTB

Trade Name	INCI Name	Product Type
BGBO-TTB2	Iron Oxides (CI 77499) (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone	Black Iron Oxide
BGRO-TTB2	Iron Oxides (CI 77491) (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone	Red Iron Oxide
BGYO-TTB2	Iron Oxides (CI 77492) (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone	Yellow Iron Oxide
BTD-TTB2	Titanium Dioxide (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone	Pigmentary Titanium Dioxide
RBTD-TTB2	Titanium Dioxide (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone	Pigmentary Titanium Dioxide
BGCO-TTB2	Chromium Oxide Greens (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone	Green Chromium Oxide
BLUE 1AL S-TTB6	Blue 1 Lake (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone	FD&C Blue No. 1 Aluminum Lake
RED 6BA S-TTB2	Red 6 Lake (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone	D&C Red No. 6 Barium Lake
RED 7CA C-TTB2	Red 7 Lake (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone	D&C Red No. 7 Calcium Lake
RED 30AL-TTB2	Red 30 Lake (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone	D&C Red No. 30 Aluminum Lake
YELLOW 5AL S-TTB2	Yellow 5 Lake (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone	FD&C Yellow No. 5 Aluminum Lake
YELLOW 6AL C-TTB2	Yellow 6 Lake (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone	FD&C Yellow No. 6 Aluminum Lake
New BFF-TTB6	Ferric Ammonium Ferrocyanide (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone	Blue Ferric Ammonium Ferrocyanide
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
TALC N-TTB2	Talc (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone (And) Isopropyl Titanium Triisostearate	Talc
TTO-TTB7	Titanium Dioxide (And) Isopropyl Titanium Triisostearate (And) Alumina (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone	Attenuation Grade Titanium Dioxide

Cyclopentasiloxane Dispersions

Trade Name	INCI Name	Product Type
FAS50YTB	Iron Oxides (CI 77492) (And) Cyclopentasiloxane (And) PEG/PPG-18/18 Dimethicone (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone (And) Distearidimonium Hectorite (And) Tocopheryl Acetate	Yellow Iron Oxide
FAS65RTB	Iron Oxides (CI 77491) (And) Cyclopentasiloxane (And) PEG/PPG-18/18 Dimethicone (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone (And) Distearidimonium Hectorite (And) Tocopheryl Acetate	Red Iron Oxide
FAS65UTB	Titanium Dioxide (And) Cyclopentasiloxane (And) PEG/PPG-18/18 Dimethicone (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone (And) Distearidimonium Hectorite (And) Tocopheryl Acetate	Pigmentary Titanium Dioxide
FAS70BTB	Iron Oxides (C.I. 77499) (And) Cyclopentasiloxane (And) PEG/PPG-18/18 Dimethicone (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone (And) Distearidimonium Hectorite (And) Tocopheryl Acetate	Black Iron Oxide

Non-D5 Dispersions

Trade Name	INCI Name	Product Type
FADM55RTB	Iron Oxides (CI 77491) (And) Dimethicone (And) PEG/PPG-18/18 Dimethicone (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone (And) Tocopheryl Acetate	Red Iron Oxide
FADM55YTB	Iron Oxides (CI 77492) (And) Dimethicone (And) PEG/PPG-18/18 Dimethicone (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone (And) Tocopheryl Acetate	Yellow Iron Oxide
FADM60BTB	Iron Oxides (CI 77499) (And) Dimethicone (And) PEG/PPG-18/18 Dimethicone (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone (And) Tocopheryl Acetate	Black Iron Oxide
FADM65UTB	Titanium Dioxide (And) Dimethicone (And) PEG/PPG-18/18 Dimethicone (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone (And) Tocopheryl Acetate	Pigmentary Titanium Dioxide

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Hybrid Treatment - TTB

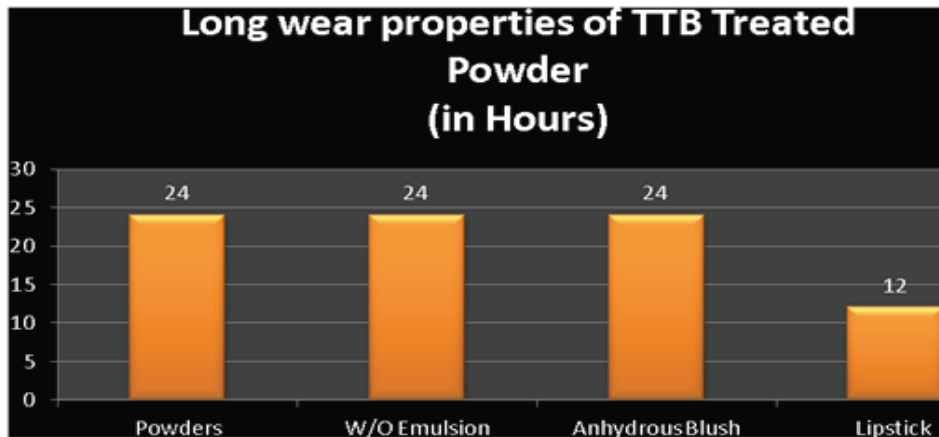


Figure 2: Screening test showing long wear properties of color cosmetics made with TTB-Treated products

Wear Test (Figure 2)

Objective: To determine how long a product is wearing on the skin.

Method: Apply Test product as usual. Using slightly water dampened Q-tip, swab product area at 8, 12, 16, and 24 hours. If there is product transfer on the Q-tip, continue on to the next hour mark for testing.

Note: If the product transfers to the Q-tip from the skin it is considered to be in an active state of “wearing” on the skin.

Lipstick Emulsion with TTB

KLP-101A

Part 1

- Xiameter PMX-200 Silicone Fluid 1000CS - Dow Corning: Dimethicone 8.08%
- **RED 7CA C-TTB2** - Kobo Products: Red 7 Lake (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone 8.06%
- Xiameter PMX-200 Silicone Fluid 50CS - Dow Corning: Dimethicone 6.18%
- **RED 6BA S-TTB2** - Kobo Products: Red 6 Lake (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone 5.67%
- **YELLOW 5AL S-TTB2** - Kobo Products: Yellow 5 Lake (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone 0.47%
- **BLUE 1AL S-TTB6** - Kobo Products: Blue 1 Lake (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone 0.04%

Part 2

- SF1202 - Momentive: Cyclopentasiloxane 16.20%
- Parsol® MCX - DSM Nutritional Products: Ethylhexyl Methoxycinnamate 7.50%
- SF1528 - Momentive: Cyclopentasiloxane (And) PEG/PPG-20/15 Dimethicone 5.00%
- SunBoost ATB™ - Kobo Products: Argania Spinosa Kernel Oil (And) Tocopheryl Acetate (And) Bisabolol 5.00%
- SS4230 - Momentive: Cyclopentasiloxane (And) Trimethylsiloxyethylsilicate 2.50%
- SF1555 - Momentive: Bis-Phenylpropyl Dimethicone 1.00%
- SFE839 - Momentive: Cyclopentasiloxane (And) Dimethicone/Vinyl Dimethicone Crosspolymer 0.50%

Part 3

- Deionized Water - Water 25.10%
- Ethyl Alcohol E1028 - VWR Scientific Products: Ethyl Alcohol 5.00%
- Glycerin U.S.P. Natural 96% - Cognis: Glycerin 1.20%
- Butylene Glycol - Ruger Chemical: Butylene Glycol 1.00%
- Paragon® MEPB - McIntyre Group, Ltd.: Phenoxyethanol (And) Methyl Paraben (And) Ethyl Paraben (And) Propyl Paraben (And) Butyl Paraben 0.60%
- Sodium Chloride - Morton Salt: Sodium Chloride 0.60%
- Liposorb® L-20 - Vantage: Polysorbate 20 0.30%

Manufacturing Procedure

1. Premix the TTB pigments and Dimethicone in Part 1. Mix until uniform with homogenization.
2. Premix Part 2 in the main beaker. Homogenize and add in Part 1. Homogenize at 4500 rpm.
3. Premix Part 3. Slowly add Part 3 into Parts 1 and 2 under homogenizer.

Note: Keep batch in cool water bath while homogenizing due to over heating.

Description

This TTB Lipstick emulsion glides onto lips effortlessly with lush, vivid color. Kobo's TTB-Treated Organic Pigments show their ease of use in this formula. SunBoost ATB™ is a proprietary blend of antioxidant, anti-irritant, and anti-inflammatory agents used in this formula for moisturizing effects.

Active Ingredient:

Ethylhexyl Methoxycinnamate 7.50%

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Hybrid Treatment - TTB

Foundation with TTB-Treated Pigments

KLF-056A

Part 1

- Permethyl® 101A - Presperse: *Isohexadecane* 18.18%
- Finsolv® TN - Finetex: *C12-15 Alkyl Benzoate* 15.00%
- **BTD-TTB2** - Kobo Products: *Titanium Dioxide (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone* 7.00%
- KF-6040 - Shin Etsu: *Cyclopentasiloxane (And) PEG/PPG-18/18 Dimethicone* 4.40%
- **BGYO-TTB2** - Kobo Products: *Iron Oxides (CI 77492) (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone* 2.20%
- KF-6017 - Shin Etsu: *PEG-10 Dimethicone* 2.00%
- Thixcin® R - Elementis Specialties: *Trihydroxystearin* 1.20%
- **BGRO-TTB2** - Kobo Products: *Iron Oxides (CI 77491) (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone* 0.70%
- **BGBO-TTB2** - Kobo Products: *Iron Oxides (CI 77499) (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone (And) Isopropyl Titanium Triisostearate* 0.25%
- Vitamin E Acetate Oil USP, FCC - BASF: *Tocopheryl Acetate* 0.12%

Part 2

- Deonized Water 39.30%
- Butylene Glycol - Ruger Chemical Co., Inc.: *Butylene Glycol* 3.50%
- Glycerin U.S.P. Natural 96% - Univar USA Inc.: *Glycerin* 1.25%
- Germaben® II - ISP: *Propylene Glycol (And) Diazolidinyl Urea (And) Methylparaben (And) Propylparaben* 1.00%

- Sodium Chloride - Morton Salt: *Sodium Chloride* 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%

Part 3

- **MSS-500W** - Kobo Products: *Silica* 2.00%

Manufacturing Procedure

1. Combine Thixcin® R with Permethyl® 101A and heat to 55-60°C. Homogenize for 20 minutes while maintaining the temperature at 55-60°C to allow full activation. Cool to below 35°C with low to medium stirring. Add the remaining ingredients in Part 1 and homogenize until the color is fully developed.
2. Combine Part 2 ingredients and propeller mix.
3. Slowly add Part 2 to Part 1 while homogenizing.
4. Slowly add Part 3 while homogenizing with paddle mixing.

Description

This W/O liquid foundation features Kobo's TTB Treated Pigments (Isopropyl Titanium Triisostearate and Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone). The TTB-Treated Pigments help to prevent color change during the day, and improve the smoothness of application. Microsphere, MSS-500W, helps impart an elegant feel in application and a soft focus effect.

Pressed Powder with TTB Treatment

KPP-067A

Part 1

- **GMS-TTB4** - Kobo Products: *Mica (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone* 70.48%
- **BTD-TTB2** - Kobo Products: *Titanium Dioxide (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone* 7.00%
- **BN18-I2** - Kobo Products: *Boron Nitride (And) Isopropyl Titanium Triisostearate* 5.00%
- **MST-203** - Kobo Products: *Polymethylsilsesquioxane* 5.00%
- **ZINC MYRISTATE** - Kobo Products: *Zinc Myristate* 2.00%
- **BGYO-TTB2** - Kobo Products: *Iron Oxides (CI 77492) (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone* 1.00%
- **BGRO-TTB2** - Kobo Products: *Iron Oxides (CI 77491) (And) Isopropyl Titanium Triisostearate (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone* 0.86%
- **BGBO-TTB2** - Kobo Products: *Iron Oxides (CI 77499) (And) Triethoxysilylethyl Polydimethylsiloxyethyl Dimethicone (And) Isopropyl Titanium Triisostearate* 0.46%
- Methyl Paraben NF - International Sourcing: *Methylparaben* 0.10%
- Propyl Paraben NF - International Sourcing: *Propylparaben* 0.10%

Part 2

- Lexol® PG-865 - Inolex Chemical Company: *Propylene Glycol Dicaprylate/Dicaprate* 2.50%
- Xiameter® PMX-200 Silicone Fluid 20CS - Dow Coming: *Dimethicone* 2.50%
- Xiameter® PMX-200 Silicone Fluid 350 CS -Dow Coming: *Dimethicone* 2.00%
- SS4267 - Momentive: *Dimethicone (And) Trimethylsiloxy silicate* 1.00%

Manufacturing Procedure

1. Combine Part 1 in blender. Blend until color is fully developed.
2. Combine Part 2 and mix well.
3. Add Part 2 to Part 1 and blend well.
4. Press at 500 psi.

Description

This pressed powder features Kobo's TTB-Treated Pigments to show how they enhance formula wear. This treatment is both hydrophobic and lipophilic. Boron Nitride, BN18-I2, enhances the formula with increased slip and creamy feel. It imparts superior softness and tactility, superb spreadability, excellent adherence, long lasting effect and good coverage. MST-203 gives slip and a great creamy feel. ZINC MYRISTATE also contributes to great feel, adherence on the skin, and acts as part of the formula's dry binder system.

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