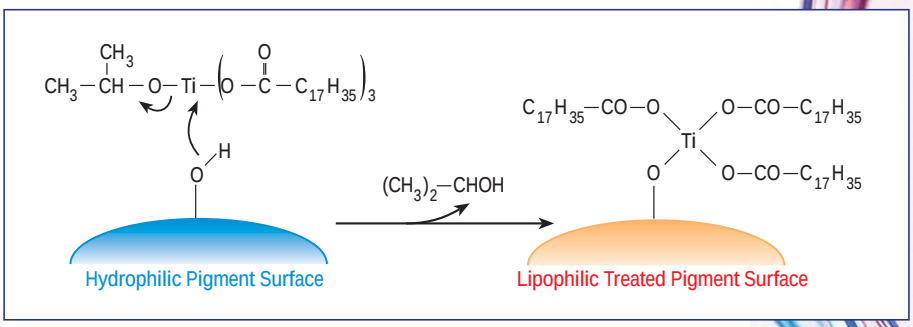
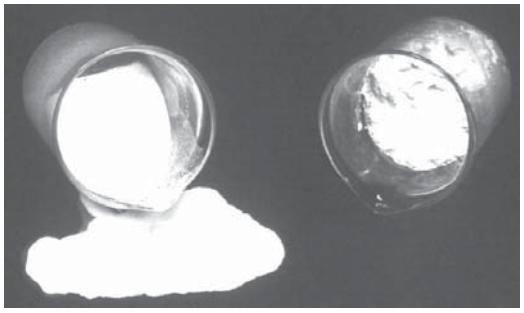
Titanate
TREATMENT-ITT

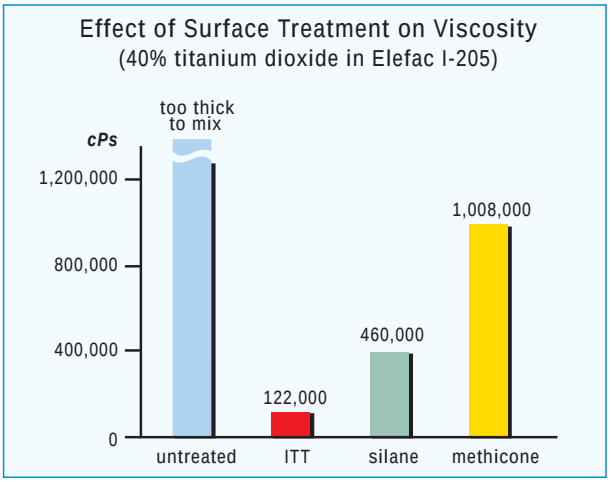
Isopropyl Titanium Triisostearate (ITT) surface treatment is one of Kobo's patented technologies (US Pat. 4,877,604 - M.L. Schlossman).
Since the O-Ti bond is very liable to the attack of hydroxyl groups and the isopropoxy group can be easily removed, ITT is very reactive to almost all pigments and forms a uniform coating of lipophilic isostearate groups. There are abundant fatty ester groups on the treated surface; therefore, the titanate treated pigments can be easily wetted by and dispersed in organic vehicles, like esters, mineral oils or petrolatum. Oil absorption is substantially reduced and loading of the pigments in the formula can thus be increased.
The unique properties of titanate treatment are clearly demonstrated by dispersing a treated pigmentary TiO_2 in an ester: the viscosity is dramatically reduced compared to non-treated pigment or to pigments treated either with methicone or silane (see picture below).



Titanate-treated pigments and powders are dispersible in many esters, natural oils, and hydrocarbons at over 70% solids; optimizing the percent solids of the dispersion will fully develop pigment properties.
Since these treated pigments disperse so well and have an excellent affinity to the skin, they are used to develop dry (non-greasy) feeling cream to powder formulas, one-step make-ups and to create new types of liquid foundations, cheek color, eye-shadow and sunscreen formulations.



Viscosity is reduced by ITT treatment: while a dispersion of non-treated pigment in an ester (40% solids in Elefac I-205) is unable to flow, the same amount of ITT-treated pigment dispersed in the same ester gives a liquid dispersion.



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Titanate Treatment

A solid surface can be wetted spontaneously by a liquid consisting of a lower surface energy. Compared with silicones or fluorinated coating, ITT has a much higher surface energy. This makes pigments containing ITT Surface Treatment much easier to be wetted by esters and oils .

There is a lot of interest in formulating high pigment products for today's market, especially lipsticks. Kobo has the technology to produce extremely high percentage pigment dispersions using our patented ITT treatment, which can contribute to end products of high intensity shades. INBP (Ester) and SW (Synthetic Wax) dispersions containing ITT treatment offer full color development and ease of manufacturing. Lipstick formula KLP-024C (see below) offers intense color using 18% pigment from only 30% dispersions, leaving more room for additional pigment or other ingredients, if desired. If formulated with conventional dispersions of about 28% pigment, this formula would need at least 64% of dispersion to achieve the 18% pigment. The same intensity and feel would not be achievable.

High Impact Color Lipstick

Formula KLP-024C

Part 1

- Castor Oil - Alzo International Inc.: *Ricinus Communis (Castor) Seed Oil* 17.80%
- **INBP45R7C** - Kobo Products: *Red 7 Lake (And) Isononyl Isononanoate (And) Isopropyl Myristate (And) Stearalkonium Hectorite (And) Isopropyl Titanium Triisostearate (And) Propylene Carbonate (And) Polyhydroxystearic Acid* 15.00%
- **INBP75ER** - Kobo Products: *Iron Oxides (C.I. 77491) (And) Isononyl Isononanoate (And) Isopropyl Myristate (And) Stearalkonium Hectorite (And) Polyhydroxystearic Acid (And) Isopropyl Titanium Triisostearate (And) Propylene Carbonate* 15.00%
- Softisan® 645 - Sasol: *Bis-Diglyceryl Polyacyladipate-1* 12.00%
- Wickenol 155 - Alzo International Inc.: *Ethylhexyl Palmitate* 11.00%
- Candelilla Wax SP 75 - Strahl & Pitsch: *Euphorbia Cerifera (Candelilla) Wax* 6.00%
- Ozokerite Wax White SP 1020 - Strahl & Pitsch: *Ozokerite* 4.50%
- Lipowax® D - Lipo Chemicals: *Cetearyl Alcohol (And) Ceteareth-20* 3.00%
- Shea Butter - Cognis Corp: *Shea Butter* 3.00%
- Microcrystalline Wax SP-89 - Strahl & Pitsch: *Microcrystalline Wax* 2.00%
- **MSS-500/3H** - Kobo Products: *Silica* 1.00%
- BHT Food Grade Crystal - Protameen: *BHT* 0.10%
- Propyl Paraben NF - International Sourcing: *Propylparaben* 0.10%

Part 2

- **KOBOGUARD® 5400 CCT** - Kobo Products: *Hydrogenated Polycyclopentadiene (And) Caprylic/Capric Triglyceride* 5.00%
- **KTZ® CLASSIC WHITE-I2** - Kobo Products: *Mica (And) Titanium Dioxide (And) Isopropyl Titanium Triisostearate* 5.00%

Manufacturing Procedure

1. In main tank equipped with propeller agitation, combine Part 1 ingredients and heat to 80°C - 85°C.
2. Continue mixing for 20 minutes and add Part 2.
3. Once shade is adjusted, begin force cooling batch. Continue cooling to 78°C - 80°C.
4. Pour into molds at 78°C - 80°C.

Description

This high impact color lipstick contains Kobo's Pigmentary Dispersions, INBP75ER and INBP45R7C, which are used for their high percentage of color. They also help to improve wear and formula aesthetics. KTZ® Classic White is treated with ITT for optimal glide and creates a shimmering, frosted effect. Kobo's Microsphere, MSS-500/3H, is used to achieve better application and helps to reduce sweating. Koboguard® 5400 CCT gives gloss to the formula and helps to provide long wear properties.

Titanate Treatment

Trade Name	INCI Name	Product Type
BRO-I2	Iron Oxides (C.I. 77491) (And) Isopropyl Titanium Triisostearate	Red Iron Oxide
BYO-I2	Iron Oxides (C.I. 77492) (And) Isopropyl Titanium Triisostearate	Yellow Iron Oxide
BBO-I2	Iron Oxides (C.I. 77499) (And) Isopropyl Titanium Triisostearate	Black Iron Oxide
BCO-I3	Chromium Oxide Greens (And) Isopropyl Titanium Triisostearate	Green Chromium Oxide
BHG-I3	Chromium Hydroxide Greens (And) Isopropyl Titanium Triisostearate	Green Chromium Hydroxide
BFF-I2	Ferric Ammonium Ferrocyanide (And) Isopropyl Titanium Triisostearate	Blue Ferric Amm. Ferrocyanide
BUO/JE-I2	Iron Oxides (And) Talc (And) Isopropyl Titanium Triisostearate	Umber Oxide
BMV-I2	Manganese Violet (And) Isopropyl Titanium Triisostearate	Maganese Violet
BUB-I2	Ultramarines (And) Isopropyl Titanium Triisostearate	Ultramarine Blue
BUP-I2	Ultramarines (And) Isopropyl Titanium Triisostearate	Ultramarine Purple
BUV-I2	Ultramarines (And) Isopropyl Titanium Triisostearate	Ultramarine Violet
BTD-401	Titanium Dioxide (And) Isopropyl Titanium Triisostearate	Pigmentary Titanium Dioxide
RBTD-I2	Titanium Dioxide (And) Isopropyl Titanium Triisostearate	Pigmentary Titanium Dioxide
RED 6BA C-I2	Red 6 Lake (And) Isopropyl Titanium Triisostearate	D&C Red No. 6 Barium Lake
RED 7CA E-I2	Red 7 Lake (And) Isopropyl Titanium Triisostearate	D&C Red No. 7 Calcium Lake
RED 27AL-I2	Red 27 Lake (And) Isopropyl Titanium Triisostearate	D&C Red No. 27 Aluminum Lake
New Red28AL U-I3	Red 28 Lake (And) Isopropyl Titanium Triisostearate	D&C Red No. 28 Aluminum Lake
RED 40AL-I2	Red 40 Lake (And) Isopropyl Titanium Triisostearate	D&C Red No. 40 Aluminum Lake
YELLOW 5AL-I2	Yellow 5 Lake (And) Isopropyl Titanium Triisostearate	FD&C Yellow 5 Aluminum Lake
YELLOW 6AL C-I2	Yellow 6 Lake (And) Isopropyl Titanium Triisostearate	FD&C Yellow 6 Aluminum Lake
BLUE 1AL-I2	Blue 1 Lake (And) Isopropyl Titanium Triisostearate	FD&C Blue 1 Aluminum Lake
TiO2 STT-65S-I3	Titanium Dioxide (And) Isopropyl Titanium Triisostearate	Attenuation Grade Titanium Dioxide
TiO2 KQ-I4	Titanium Dioxide (And) Aluminum Hydroxide (And) Isopropyl Titanium Triisostearate	Attenuation Grade Titanium Dioxide
MZO-35-I3	Zinc Oxide (And) Isopropyl Titanium Triisostearate	Attenuation Grade Zinc Oxide
ZNO-USP1-I2	Zinc Oxide (And) Isopropyl Titanium Triisostearate	Attenuation Grade Zinc Oxide
BPA-5I5	Polymethylmethacrylate (And) Isopropyl Titanium Triisostearate	PMMA Microsphere
NYLON 10-I2	Nylon 12 (And) Isopropyl Titanium Triisostearate	Nylon Microsphere
MICA S-I2	Mica (And) Isopropyl Titanium Triisostearate	Mica
GMS-I2	Mica (And) Isopropyl Titanium Triisostearate	Sericite
SERICITE O-I3	Mica (And) Isopropyl Titanium Triisostearate	Sericite
BTS-CO1	Talc (And) Isopropyl Titanium Triisostearate	Talc
TALC N-I2	Talc (And) Isopropyl Titanium Triisostearate	Talc
ASO-I2	Aluminum Starch Octenylsuccinate (And) Isopropyl Titanium Triisostearate	Aluminum Starch Octenylsuccinate

Titanate Treatment

Crème-to-Powder Foundation

Formula KCP-002B

Part 1

- **BTD-401** - Kobo Products: *Titanium Dioxide (and) Isopropyl Titanium Triisostearate* 20.40%
- **BYO-I2** - Kobo Products: *Iron Oxides (C.I. 77492) (and) Isopropyl Titanium Triisostearate* 1.00%
- **BRO-I2** - Kobo Products: *Iron Oxides (C.I. 77491) (and) Isopropyl Titanium Triisostearate* 0.85%
- **BBO-I2** - Kobo Products: *Iron Oxides (C.I. 77499) (and) Isopropyl Titanium Triisostearate* 0.25%
- **SERICITE GMS-4C** - Kobo Products: *Mica* 22.50%

Part 2

- Carolane - Barnet Products: *Squalane* 10.00%
- **Element14 PDMS 5-A** - Momentive/Kobo Products: *Dimethicone* 17.00%
- Wickenol 171 - Alzo: *Octyl Hydroxystearate* 7.00%
- Emerest 2452 - Henkel: *Polyglycerol-3 Diisostearate* 3.00%
- Kaydol - Witco: *Mineral Oil* 3.00%
- SP 89 - Strahl & Pitsch: *Microcrystalline Wax* 7.00%

Part 3

- **SPCAT-I2** - Kobo Products: *Talc (and) Ethylene/Methacrylate Copolymer (and) Isopropyl Titanium Triisostearate* 8.00%

Manufacturing Procedure

1. Micronize Part 1 until the color is fully developed.
2. Heat Part 2 with stirring to 195 - 200˚F.
3. Continue to stir for 1/2 hour.
4. Add Part 1 to Part 2 and mix until homogeneous.
5. Cool to 180˚F.
6. Add Part 3 and mix until homogeneous.
7. Pour into pans at 165 - 170˚F.
8. Imprint with Taffeta.

Description

This foundation formula incorporates a combination of Kobo's Sericite GMS-4C and ITT-treated starch and pigments to provide a basis for the crème-to-powder texture. Kobo's ITT-Treated Pigments provide color consistency and disperse easily which aids in ease of manufacturing. The silicone base imparts excellent slip while SPCAT-I2 gives a lightweight feel and helps the formula go immediately into a creamy powder texture when applied on the skin.

Oil-Absorbing Pressed Powder

Formula KPP-005D

Part 1

- **TALC A-CL3** - Kobo Products: *Talc (And) Lecithin* 81.75%
- **BTD-401** - Kobo Products: *Titanium Dioxide (And) Isopropyl Titanium Triisostearate* 3.00%
- **BYO-I2** - Kobo Products: *Iron Oxides (C.I. 77492) (and) Isopropyl Titanium Triisostearate* 0.88%
- **BRO-I2** - Kobo Products: *Iron Oxides (C.I. 77491) (and) Isopropyl Titanium Triisostearate* 0.76%
- **BBO-I2** - Kobo Products: *Iron Oxides (C.I. 77499) (and) Isopropyl Titanium Triisostearate* 0.36%
- Methyl Paraben NF - International Sourcing: *Methylparaben* 0.15%
- Propyl Paraben NF - International Sourcing: *Propylparaben* 0.10%

Part 2

- PE48 - Trivent Chemical Co.: *Pentaerythritol Tetraoctanoate* 8.00%
- **MSS-500/3H** - Kobo Products: *Silica* 5.00%

Manufacturing Procedure

1. Pass the premixed Part 1 through pulverizer until color is fully developed.
2. Add Part 2 and blend well. Do not overheat.

Description

This Oil-Absorbing Pressed Powder features MSS-500/3H which controls 'oil breakthrough' by absorbing skin oils, while imparting a glide-on application. Kobo's ITT-treated pigments and Lecithin-treated Talc provide superior application and compatibility to the skin.

High Shine Lipstick

Formula KLP-023H

Part 1

- Eutanol® G 16 - Cognis Corp.: *Hexyldecanol* 42.30%
- Performacol 425 - New Phase: *C20-C40 Alcohols* 9.00%
- Nexbase 2006 - New Phase: *Hydrogenated Polydecene* 8.00%
- Performa V 825 - New Phase: *Synthetic Wax* 8.00%
- **PM WAX 82** - Toray/Kobo Products: *Polyethylene (And) Microcrystalline Wax* 5.00%
- Shebu Refined - Rita Corp.: *Butyrospermum Parkii (Shea Butter)* 3.50%
- Jojoba Oil - Desert Whale Jojoba Co., Inc.: *Simmondsia Chinensis (Jojoba) Seed Oil* 3.00%
- Performalene 400 - New Phase: *Polyethylene* 3.00%
- Rita SAO - Rita Corp.: *Carthamus Tinctorius (Safflower) Seed Oil* 3.00%
- Vitamin E Acetate - Rita Corp.: *Tocopheryl Acetate* 2.00%
- Algae oil - ESP Products: *Algae Oil* 1.00%
- Methyl Paraben NF - International Sourcing: *Methylparaben* 0.30%
- Propyl Paraben NF - International Sourcing: *Propylparaben* 0.10%
- BHT Food Grade Crystal - Protameen: *BHT* 0.05%

Part 2

- **KTZ® CLASSIC WHITE-I2** - Kobo Products: *Mica (And) Titanium Dioxide (And) Isopropyl Titanium Triisostearate* 8.00%
- **KOBOGUARD® 5400 IDD** - Kobo Products: *Hydrogenated Polycyclopentadiene (And) Isododecane* 2.00%
- **SW40R7C** - Kobo Products: *Synthetic Wax (And) Red 7 Lake (And) Isopropyl Titanium Triisostearate* 1.25%
- **SW60ER** - Kobo Products: *Synthetic Wax (And) Iron Oxides (C.I. 77491) (And) Isopropyl Titanium Triisostearate* 0.50%

Manufacturing Procedure

Use explosion-proof mixers and equipment during batching process.

1. In main tank equipped with propeller agitation, combine Part 1 ingredients and heat to 80ºC.
2. When main tank has reached temperature add Part 2 ingredients. Mix and check shade.
3. Once shade is adjusted, pour into mold and begin force-cooling batch.

Description

This polymer-based lipstick combines natural oils with a synthetic base to deliver an emollient film of lasting color. KTZ® Classic White Pearl is treated with ITT for optimal glide and creates a shimmering, frosted effect. This lipstick is also enhanced by ITT-treated colors in the dispersions SW40R7C and SW60ER. Vitamin E Acetate and Shea Butter provide protection and help to soothe the lips. Koboguard® 5400 IDD improves the adhesion of the colors. Non-polar PM Wax 82 enhances rub resistance and balances the effect of the more polar natural oils.