

HEV/Blue Light Blockers

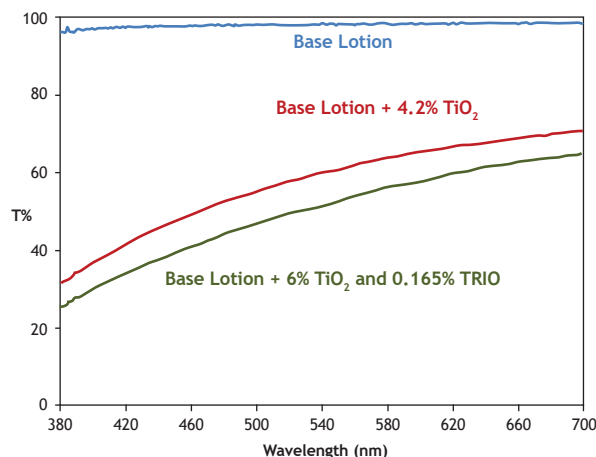


High Energy Visible (HEV) light, or Blue Light (380 to 500 nm wavelength) can reach the hypodermis in our skin, further down than UV light does. Studies have shown it can generate large amounts of reactive oxygen species, making it potentially damaging to the skin: like UVA, HEV light could be another silent, long term skin ageing factor. The increasing use of electronic devices like computer screens and portable phones which emit HEV light further raises the safety concern.

Titanium dioxide (TiO_2) is commonly used as a sunscreen agent. Depending on its particle size, TiO_2 can scatter primarily UVB light (small size) or UVB and UVA (medium size). One of our recent studies has shown that TiO_2 of about 35 nm (primary particle size) can also block HEV very effectively. However, TiO_2 causes whitening or bluing when its particle size is too large. Transparent red iron oxide used at a very low level was shown to neutralize this whitening / bluing, enabling a higher TiO_2 use level without impairing the aesthetics of the final formulation. As a result, 40% or more of HEV attenuation can be achieved.

Kobo now offers three easy-to-use dispersions in an ester carrier: one with a 35nm TiO_2 , a second one with a transparent red iron oxide (TRIO), that can be mixed with the former to

achieve the desired effect, and finally a mixture of TiO_2 and TRIO (the latter at a very small concentration), ready to use for formulations designed to protect against HEV/Blue Light.



Transmittance curves of a base lotion (no sunscreen agent), the same lotion with 4.2% of the 35nm TiO_2 added and the lotion with 6% TiO_2 and 0.165% TRIO added. The latter still has an aesthetically pleasing appearance on the skin despite the additional TiO_2 because of the TRIO.

Trade Name	INCI Name	Active %	Primary Part. Size (nm)	EU Compliance	Viscosity
TNP45TEL	Titanium Dioxide (And) C12-15 Alkyl Benzoate (And) Stearic Acid (And) Silica (And) Alumina (And) Polyhydroxystearic Acid	40	35	Compliant	Paste
TNP45TELR	Titanium Dioxide (And) C12-15 Alkyl Benzoate (And) Stearic Acid (And) Silica (And) Alumina (And) Polyhydroxystearic Acid (And) Iron Oxides (CI 77491)	40	35	Compliant	Paste
TNP55TRR	Iron Oxides (CI 77491) (And) C12-15 Alkyl Benzoate (And) Triethoxycaprylylsilane (And) Polyhydroxystearic Acid	-	-	-	-

This chart was prepared to assist formulators using these dispersions. The information contained herein is believed to be accurate at the time of printing and represents typical values, but should not be used as a substitute for product specification sheets.

The TiO_2 Dispersions listed in this flyer are Non-Nano; they have been tested by light scattering method, according to the Cosmetics Europe Nano Guidance Package; Part II: Interpretation of the Definition of the Term "nanomaterial" according to the EU Cosmetic Regulation 1223/2009, published on May 24, 2019.

The following information is listed:

- Active content (TiO_2 %)
- Primary Particle Size (nm) of the TiO_2 pigment used
- EU Compliance: These TiO_2 comply with the conditions for Titanium Dioxide (nano) as set forth in the Annex VI to Regulation (EC) No 1223/2009
- Viscosity

We recommend that customers make their own assessment when using particle size data for the purpose of identifying nanomaterials in their finished formulations.

Please contact our team at techservice@koboproductsinc.com for additional information on this subject.

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KFL-181B

Daily Facial Correcting Cream with HEV/Blue Light Protection

Part 1

- Deionized Water - Water 62.30%
- Natrosol™ Plus 330CS - Ashland: *Cetyl Hydroxyethylcellulose* 0.55%

Part 2

- Butylene Glycol - Ruger Chemical: *Butylene Glycol* 3.00%
- Glycerin U.S.P. F.C.C. 96% - Ruger Chemical: *Glycerin* 1.00%
- D-Panthenol - BASF: *Panthenol* 0.30%
- ALLANTOIN - RITA: *Allantoin* 0.15%
- Dermofeel® PA-3 - Dr. Straetmans/Kinetik: *Sodium Phytate (And) Alcohol* 0.15%
- Trisodium Citrate Dihydrate - Jungbunzlauer: *Sodium Citrate* 0.05%

Part 3

- Lecinol S-10 - Barnet: *Hydrogenated Lecithin* 0.30%

Part 4

- **TNP45TELR** - Kobo Products: *Titanium Dioxide (And) C12-15 Alkyl Benzoate (And) Stearic Acid (And) Silica (And) Alumina (And) Polyhydroxystearic Acid (And) Iron Oxides (CI 77491)* 8.60%
- **SunBoost ATB** - Kobo Products: *Argania Spinosa Kernel Oil (And) Tocopheryl Acetate (And) Bisabolol* 3.50%
- Dermol 25B - Alzo Chemical: *C12-15 Alkyl Benzoate* 2.00%
- Lanette® 22 - BASF: *Behenyl Alcohol* 0.50%
- Lipocol® C - Vantage: *Cetyl Alcohol* 0.50%
- Tegin® M Pellets - Cosmotec: *Glyceryl Stearate* 0.40%
- Plurol Diisostearique CG - Gattefosse: *Polyglyceryl-3 Diisostearate* 0.10%

Part 5

- Silwax® D02 - Siltech LLC: *Ethyl Methicone* 4.75%
- **MSS-500W** - Kobo Products: *Silica* 1.50%
- TMF-1.5 - Shin-Etsu: *Methyl Trimethicone* 1.50%

Part 6

- **CSG-1001** - Avantor/Kobo Products: *Water (And) Dimethicone (And) Dimethicone/Vinyl Dimethicone Crosspolymer (And) Dimethiconol (And) Butylene Glycol (And) Carbomer (And) Phenoxyethanol (And) Sodium Hydroxide* 4.00%
- **SILICA SHELLS** - Kobo Products: *Silica* 0.30%

Part 7

- Jeechem 400 - Jee International: *PEG-8* 1.70%
- AE Preserve® PCG - AE Chemie: *Phenethylalcohol (And) Caprylhydroxamic Acid (And) Glycerin* 1.00%
- **Gs-PCOG** - Kobo Products: *Water (And) Palmitoyl Hydroxypropyltrimonium Amylopectin/Glycerin Crosspolymer (And) Vitis Vinifera (Grape) Seed Extract (And) Phenoxyethanol (And) Parabens (And) Hydrogenated Lecithin* 0.25%

Part 8

- Simulgel® INS-100 - Seppic: *Hydroxyethyl Acrylate / Sodium Acryloyldimethyl Taurate Copolymer (And) Isohexadecane (And) Polysorbate 60* 1.50%
- CE-181459 Foundation Essence Powdery - Custom Essence: *Fragrance* 0.10%

Manufacturing Procedure

1. In the main vessel, sprinkle Natrosol™ Plus into the deionized water (Part 1) with fast speed propeller mixing. While mixing, add Part 2 ingredients, one at a time, while heating to 75-80°C.
2. When Parts 1 and 2 reach 75-80°C, mix for 15 to 20 minutes. Then cool to 60-65°C. At 60-65°C, sprinkle Part 3 into Parts 1 and 2. Fast speed propeller mix for 15 minutes.
3. Heat Part 4 to 75-80°C with moderate stirring. Mix well until all ingredients are dissolved and phase is uniform.
4. Pre-mix Part 5 with fast speed propeller mixing. Mix well until the phase is completely smooth and uniform.
5. Mix Part 5 into Part 4 while maintaining temperature at 75°C.
6. Add Parts 4 and 5 to Parts 1, 2 and 3 with slow to moderate speed homogenization. Begin to ambient cool batch.
7. When batch is uniform, add Part 6, one at a time, with slow homogenization. Mix until uniform. Transfer batch to a fast sweep or moderate speed propeller.
8. When temperature of batch reaches 45°C, add premixed Part 7.
9. Transfer batch back to the homogenizer and add pre-mixed Part 8 to batch.
10. Sweep batch to 35-40°C.

Description

This Facial Correcting Cream is a tinted (BB) cream that spreads easily, leaving skin moisturized with minimal whitening. **TNP45TELR** provides HEV/Blue Light protection with a slight tint to minimize skin whitening. SunBoost ATB provides skin soothing properties. The combination of MSS-500W and CSG-1001 gives the product a smooth application and nice after feel. SILICA SHELLS provides oil control properties. Gs-PCOG provides the anti-aging properties of Grapeseed PCOs (procyranidolic oligomers).