# IOPP50TISJ, IOPP60ZH3J

## Attenuation Grade UV Dispersions

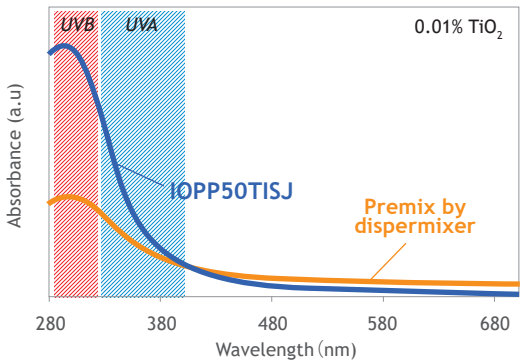


Titanium Dioxide and Zinc Oxide are mineral UV filters. However, when formulated, they form aggregates of primary particles; the degree of aggregation is a function of the primary particle size and manufacturing process. Large aggregates reduce the protection of the formula against UV light and scatter visible light which increases skin whitening when the formula is applied. Kobo uses its extensive experience to offer $TiO_2$ and ZnO dispersions that combine excellent UV shielding capability with high transparency by dispersing $TiO_2$ and ZnO stably.

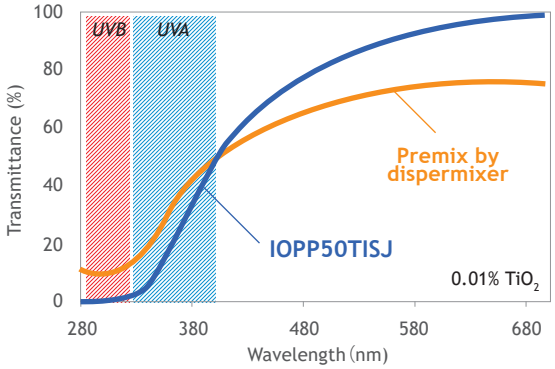
### Feature of IOPP50TISJ and IOPP60ZH3J

| | |
|---|---|
| **Excellent UV Shielding Capability** | By controlling particle size of $TiO_2$ and ZnO and dispersing them uniformly, development of sunscreen with high UV shielding capability is possible. |
| **High Transparency** | By dispersing $TiO_2$ and ZnO powders stably in oil, they do NOT aggregate. |
| **Improvement of Work Environment and Efficiency** | The dispersions can prevent unwanted ingredient contamination and solve poor handling of powders. |

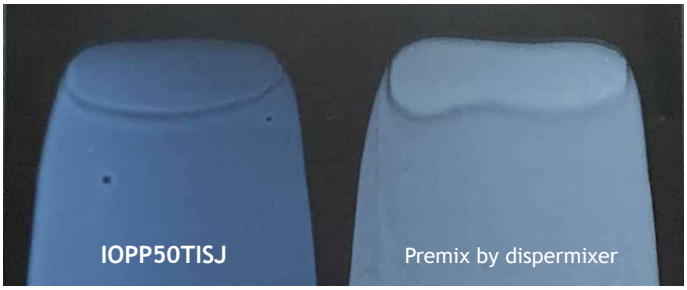
| Product Name | INCI Name | Solid % ($TiO_2$ or ZnO) | Primary Part. Size (nm) | Viscosity |
|---|---|---|---|---|
| **IOPP50TISJ** | *Titanium Dioxide (And) Ethylhexyl Palmitate (And) Aluminum Hydroxide (And) Isostearic Acid (And) Polyhydroxystearic Acid* | 50 | 15 | Pourable |
| **IOPP60ZH3J** | *Zinc Oxide (And) Ethylhexyl Palmitate (And) Polyhydroxystearic Acid (And) Hydrogen Dimethicone* | 60 | 35 | Pourable |



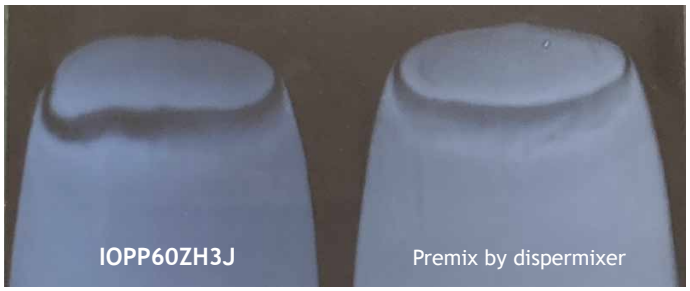

*These absorbance curves compare two $TiO_2$ samples with different particle sizes (PS). Smaller PS show higher UVB attenuation and cause less whitening than larger PS.*




*These transmittance curves illustrate the UV shielding capability and transparency of $TiO_2$ dispersions prepared by different methods. Even within the same formulation, IOPP50TISJ shows less whitening than the premix.*




*These pictures compare the whitening effect of $TiO_2$ dispersions (at 20% concentration) of different preparation method.*




*These pictures compare the whitening effect of ZnO dispersions (at 20% concentration) of different preparation method.*

KSL-611B-AP

# O/W Hybrid Sunscreen with IOPP

SPF 53 PFA 17

**Part 1**

| | |
|---|---|
| • Deionized water | 53.60% |
| • Concentrated Glycerin - I.T.O: *Glycerin* | 3.00% |
| • 1,3-BG - Daicel Corporation: *Butylene Glycol* | 2.00% |

**Part 2**

| | |
|---|---|
| • Pemulen™ TR-1 - Lubrizol Corporation: *Acrylates/C10-30 Alkyl Acrylate Crosspolymer* | 0.30% |
| • NOMCORT® ZZ - Nisshin Oillio: *Xanthan Gum* | 0.10% |

**Part 3**

| | |
|---|---|
| • **IOPP60ZH3J** - Kobo Dispatek: *Zinc Oxide (And) Ethyhexyl Palmitate (And) Polyhydroxystearic Acid (And) Hydrogen Dimethicone* | 20.00% |
| • FineNeo™-iPSE - Nippon Fine Chemical: *Diisopropyl Sebacate* | 5.00% |
| • Neo Heliopan® 303 - Symrise: *Octocrylene* | 5.00% |
| • Neo Heliopan® BMT - Symrise: *Bis-Ethylhexyloxyphenol Methoxyphenyl Triazine* | 3.00% |
| • **SunBoost ATB** - Kobo Products: *Argania Spinosa Kernel Oil (And) Tocopheryl Acetate (And) Bisabolol* | 3.00% |
| • NIKKOL SI-10RV - Nikko Chemicals: *Sorbitan Isostearate* | 0.50% |
| • NIKKOL TO-10V - Nikko Chemicals: *Polysorbate 80* | 0.50% |

**Part 4**

| | |
|---|---|
| • SIMULGEL™ EG QD - Seiwa Kasei: *Sodium Acrylate/Sodium Acryloyldimethyl Taurate Copolymer (and) Isohexadecane (and) Polysorbate 80* | 1.00% |

**Part 5**

| | |
|---|---|
| • **KOBOGUARD® 50AMP** - Kobo Products: *Acrylates/Ethylhexyl Acrylate Copolymer (And) Water (And) Aminomethyl Propanol* | 1.00% |
| • **MSS-500W** - Kobo Products: *Silica* | 1.00% |
| • SymDiol® 68 - Schulke: *1,2-Hexanediol (And) Caprylyl Glycol* | 1.00% |

## Manufacturing Procedure

1. Pre-mix Part 1 using a propeller mixer at 200-300 rpm in a side beaker until uniform.
2. Add Part 2 to Part 1 using a propeller mixer at 250-350 rpm. Mix until unform.
3. Mix Part 3 in main beaker while heating to 70-80°C. Mix until homogeneous.
4. Cool main beaker to room temperature and add Part 4 to main beaker while continuously stirring at low rpm. Mix at 3000 rpm until homogeneous.
5. Add side beaker to main beaker slowly using homogenizer while continuously stirring at low rpm (1500 rpm). Once smooth, mix at high shear until homogeneous (7000 rpm, 3 min).
6. Add Part 5 one by one while stirring at low rpm (2500 rpm) and mix at high sheer (5000rpm) until homogeneous.

## Description

A fresh, lightweight sunscreen that spreads smoothly and evenly on the skin. The combination of mineral and chemical UV filters gives a non-whitening effect. This formula features IOPP60ZH3J, Attenuation Grade Zinc Oxide dispersion. This Zinc Oxide dispersion contributes to high UV protection and non-whitening effect. SunBoost ATB contains a proprietary ratio of antioxidant, anti-irritant and anti-inflammatory agents tofurther boost SPF and PFA. KOBOGUARD® 50AMP is a flexible water phase film former that contributes to long wear. MSS-500W adds slip and spreadability on the skin.