

TNSS Dispersions

To aid the chemist to create sunscreen products providing a high protection against UVA radiation, a huge trend in the current market, Kobo Products offers two new dispersions of zinc oxide in ethylhexyl methoxycrylene.

TNSS75MZCM is a dispersion of ZnO in non-nano form with a primary particle size exceeding 100 nm (measurements acquired through image analysis). This dispersion provides excellent protection against long wavelength UVA. Second, TNSS60MZSI, a dispersion of ZnO with a primary particle size around 35 nm, provides high UVB protection, in addition to UVA, and is minimally whitening.

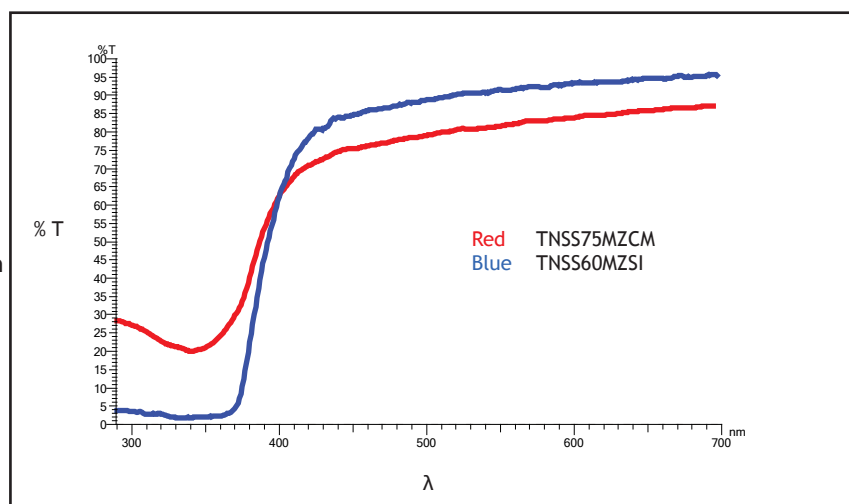
The carrier, ethylhexyl methoxycrylene, is being marketed as a photo stabilizer, and an outstanding vehicle for inorganic UV filters. It boosts the UVA protection itself (EC 340 = 8,000). These dispersions can also be used with other sun boosters and organic UV absorbers to create sunscreen products with a high protective effect.

Kobo's dispersion technology containing ZnO are excellent for limited whitening and a pleasant skin feel upon application. These dispersions can also boost critical wavelength over using ZnO on its own.

Formula Reference	Actives	In Vivo SPF	PFA	% Boost on SPF	% Boost on PFA
KSL-265	TiO ₂ 3.54% ZnO 7.15%	33	11	Control	
KSL-271	TiO ₂ 3.54% *ZnO 7.15%	66	21	100%	91%

*Active Ingredient in TNSS75MZCM

Transmittance Curve
Conditions:
Concentration of ZnO:
0.005%
Solvent: Chloroform
Sonication: 10s in water bath
Measured using integrated sphere



Product Name	INCI Name	Primary Part. Size	Particle Size*	ZnO Content	Viscosity
New TNSS75MZCM (Non-Nano ZnO active)	Zinc Oxide (and) Ethylhexyl Methoxycrylene (and) C12-15 Alkyl Benzoate (and) Polyhydroxystearic Acid (and) Hydrogen Dimethicone	265 nm	271 nm	72%	Paste
New TNSS60MZSI (Attenuation Grade ZnO active)	Zinc Oxide (and) Ethylhexyl Methoxycrylene (and) C12-15 Alkyl Benzoate (and) Polyhydroxystearic Acid (and) Triethoxycaprylylsilane	35 nm	171 nm	58%	Paste

*Note: Some liquid separation in these dispersions is characteristic and does not impact their performance in formulations

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TNSS Dispersions

W/O Sunscreen with TNSS75MZCM and SunBoost ATB™

in vivo SPF 60
in vivo UVA-PF 19
CW 378

Formula KSL-277A

Part 1	
• Deionized Water	29.20%
• Aculyn™ 44 - Rohm & Haas: PEG-150/DecylAlcohol/SMDI Copolymer	0.50%
• Sodium Chloride - Morton Salt: Sodium Chloride	0.50%
• Allantoin - DSM Nutritional Products: Allantoin	0.20%
Part 2	
• Butylene Glycol - Ruger Chemical Co., Inc.: Butylene Glycol	2.00%
• KELTROL® CG - CP Kelco: Xanthan Gum	0.10%
Part 3	
• TNP50T7 - Kobo Products: C12-15 Alkyl Benzoate (And) Titanium Dioxide (And) Alumina (And) Polyhydroxystearic Acid (And) Methicone	32.00%
• TNSS75MZCM - Kobo Products: Zinc Oxide (And) Ethylhexyl Methoxycrylene (And) C12-15 Alkyl Benzoate (And) Polyhydroxystearic Acid (And) Hydrogen Dimethicone	25.60%
• SunBoost ATB™ - Kobo Products: Argania Spinosa Kernel Oil (And) Tocopheryl Acetate (And) Bisabolol	3.60%
• ABIL® EM 90 - Evonik: Cetyl PEG/PPG-10/1 Dimethicone	3.00%
• SF1214 - Momentive: Cyclopentasiloxane (And) Dimethicone	2.00%
• Tocopherol - BASF: Tocopherol	0.30%
• Methyl Paraben NF - International Sourcing: Methylparaben	0.15%
• Propyl Paraben NF - International Sourcing: Propylparaben	0.10%

Part 4	
• MSS-500W - Kobo Products: Silica	0.75%

Description

Kobo's Non-Nano Zinc Oxide dispersion, TNSS75MZCM, is featured in this W/O sunscreen. This dispersion contains Ethylhexyl Methoxycrylene to maintain the integrity of the UV filter and boost critical wavelength. Also featured is Kobo's Titanium Dioxide Dispersion, TNP50T7. SunBoost ATB™, a proprietary ratio of anti-oxidants, anti-irritant and anti-inflammatory agents, helps boost SPF and PFA. MSS-500W Spherical Silica gives slip during application and reduces shine on the skin.

Manufacturing Procedure

1. Combine Part 1 and heat to 70° C.
2. Premix Part 2.
3. Add Part 2 to Part 1.
5. Combine Part 3 and heat to 70° C.
6. Combine Parts 1 and 2 to Part 3 while propeller mixing. Homogenize.
7. Add Part 4 while cooling and homogenizing.

Active Ingredients

Titanium Dioxide	12.32%
Zinc Oxide	18.69%

SPF testing: in vivo on 3 subjects

O/W Sunscreen with TNSS75MZCM

in vivo SPF 66
in vivo UVA-PF 21
CW 380

Formula KSL-271

Part 1	
• Deionized Water	45.70%
Part 2	
• Niacinamide USP, FCC Powder - EMD Chemicals Inc.: Niacinamide	5.00%
• Liposorb® L-20 - Lipo Chemicals: Polysorbate 20	1.00%
• Methyl Paraben NF - International Sourcing: Methylparaben	0.20%
Part 3	
• Glycerin U.S.P. Natural 96% - Cognis Corp.: Glycerin	4.00%
• KELTROL® CG - CP Kelco: Xanthan Gum	0.20%
Part 4	
• TNSS75MZCM - Kobo Products: Zinc Oxide (And) Ethylhexyl Methoxycrylene (And) C12-15 Alkyl Benzoate (And) Polyhydroxystearic Acid (And) Hydrogen Dimethicone	9.80%
• Dermol 25B - Alzo International Inc.: C12-15 Alkyl Benzoate	9.50%
• HBP45TEL - Kobo Products: Butyloctyl Salicylate (And) Titanium Dioxide (And) Alumina (And) Silica (And) Stearic Acid (And) Polyhydroxystearic Acid	8.65%
• SunBoost ATB™ - Kobo Products: Argania Spinosa Kernel Oil (And) Tocopheryl Acetate (And) Bisabolol	5.00%
• Lipopeg® 100-S - Lipo Chemicals: PEG-100 Stearate	2.45%
• Lipo® GMS 450 - Lipo Chemicals: Glyceryl Stearate	1.00%
• Shea Butter - Cognis Corp: Shea Butter	0.40%
• Propyl Paraben NF - International Sourcing: Propylparaben	0.10%

Part 5	
• MSS-500W - Kobo Products: Silica	3.00%
• Sepigel™ 305 - ChemyUnion/SEPPIC: Polyacrylamide (And) C13-14 Isoparaffin (And) Laureth-7	1.00%
Part 6	
• DAITOSOL 5000AD - Daito/Kobo Products: Acrylates Copolymer (And) Water	3.00%

Description

This O/W Sunscreen features Kobo's Non-Nano Titanium Dioxide Dispersion, HBP45TEL, to help achieve high SPF while offering minimal whitening without using a nanoparticle. Also featured is TNSS75MZCM, Kobo's Non-Nano Zinc Oxide dispersion, that contains Ethylhexyl Methoxycrylene to maintain the integrity of the UV filter and boost critical wavelength. SunBoost ATB™, which contains a proprietary ratio of anti-oxidants, anti-irritant and anti-inflammatory agents, helps boost SPF and PFA. To give water resistant properties DAITOSOL 5000AD, a transparent type of film former, is used in this sunscreen. Kobo's spherical silica Microsphere, MSS-500W, gives slip during application and reduces shine on the skin.

Manufacturing Procedure

1. Combine Parts 1 and 2 and heat to 70° C.
2. Combine Part 3 ingredients into a slurry and add to Parts 1 and 2 while mixing.
3. Combine Part 4 and heat to 70° C.
4. Combine Parts 1 and 2 with Part 3 under homogenization.
5. Add Parts 4, 5 and 6 while cooling.
7. Add Part 4 while cooling and homogenizing.

Active Ingredients

Titanium Dioxide	3.54%
Zinc Oxide	7.15%

SPF testing: in vivo on 3 subjects

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