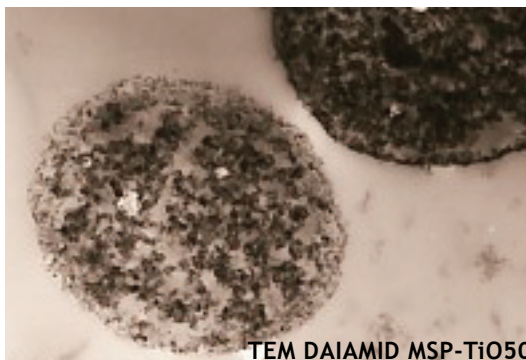


# Spherical Non-Nano UV Filters

Kobo offers **Spherical Non-Nano UV Filters**. These powders consist of a large size microsphere (**over 100nm**) with attenuation grade Titanium Dioxide or Zinc Oxide on the inside. The following benefits can be achieved:

- High UVA/B attenuation
- No whitening effect
- Improved physical and chemical stability
- Excellent sensorial feel
- Easily dispersed without homogenization



TEM DAIAMID MSP-TiO50

## DAIAMID MSP-TiO50 & DAIAMID MSP-ZnO50

These Nylon-12 spheres are created by a unique plastic compounding technology making it possible to load them with 50% Titanium Dioxide (DAIAMID MSP-TiO50) or 50% Zinc Oxide (DAIAMID MSP-ZnO50). They offer UVA/B protection along with the luxurious feel of polyamide-12.

Trade Name	INCI Name	Outside Particle Size	Inside pps
DAIAMID MSP-TiO50	Nylon-12 (And) Titanium Dioxide (And) Aluminum Hydroxide (And) Stearic Acid	6µm	15nm
DAIAMID MSP-ZnO50	Nylon-12 (And) Zinc Oxide (And) Methicone	6µm	35nm

## Hybrid Sunscreen

### Formula KSL-1380

#### Part 1

- Deionized Water - Water 44.10%
- Liposorb® L-20 - Lipo Chemicals: Polysorbate 20 1.00%

#### Part 2

- Propylene Glycol - Symrise: Propylene Glycol 1.50%
- Keltrol® CG - CP Kelco: Xanthan Gum 0.30%

#### Part 3

- Neo Heliopan® HMS - Symrise: Homosalate 15.00%
- **DAIAMID MSP-TiO50** - Daicel-Evonik/Kobo Products: Nylon-12 (And) Titanium Dioxide (And) Aluminum Hydroxide (And) Stearic Acid 11.80%
- Neo Heliopan® OS - Symrise: Ethylhexyl Salicylate 10.00%
- Lipo® GMS 450 - Lipo Chemicals: Glyceryl Stearate 3.00%
- Neo Heliopan® BB - Symrise: Benzophenone-3 3.00%
- Neo Heliopan® 357 - Symrise: Butyl Methoxydibenzoylmethane 3.00%
- Lipomulse® 165 - Lipo Chemicals: Glyceryl Stearate (And) PEG-100 Stearate 2.00%
- Ceraphyl® 368 - ISP: Ethylhexyl Palmitate 2.00%
- Lipowax® D - Lipo Chemicals: Cetearyl Alcohol (And) Ceteareth-20 0.50%
- Covi-ox® T-50 - Cognis Corp.: Tocopherol 0.50%
- Liposorb® TS - Lipo Chemicals: Sorbitol Tristearate 0.30%

#### Part 4

- Botanistat PF-64 - DD Chemco: Phenoxyethanol (And) Caprylyl Glycol (And) Ethylhexylglycerin (And) Hexylene Glycol 1.00%

#### Part 5

- Aculyl™ 44- Rohm & Haas: PEG-150/Decyl Alcohol/SMDI Copolymer 1.00%

### Manufacturing Procedure

1. In main kettle, combine Part 1 ingredients and heat to 78-80°C.
2. Add Part 2 to Part 1 and mix until uniform.
3. Combine Part 2 ingredients and heat to 80°C. Mix until uniform using propeller mixer.
4. Combine Part 3. Heat to 80°C and add to batch with propeller mixing.
5. Add Part 4 while cooling.
6. Homogenize for approximately 2 minutes at 4000 rpm.
7. Add Part 5 to batch.
8. Homogenize for approximately 1 minute at 4000 rpm.
9. Cool batch to 30°C.

### Description

This high SPF and high PFA sunscreen contains DAIAMID MSP-TiO50, which has ultrafine Titanium Dioxide entrapped in a Nylon-12 sphere for SPF and and great feel.

Active Ingredient(s)	
Homosalate	15.00%
Benzophenone-3	3.00%
Titanium Dioxide	4.37%
Ethylhexyl Salicylate	10.00%
Butyl Methoxydibenzoylmethane	3.00%

SPF/PA Testing: In vivo on 3 subjects

in vivo SPF 47  
PFA 21

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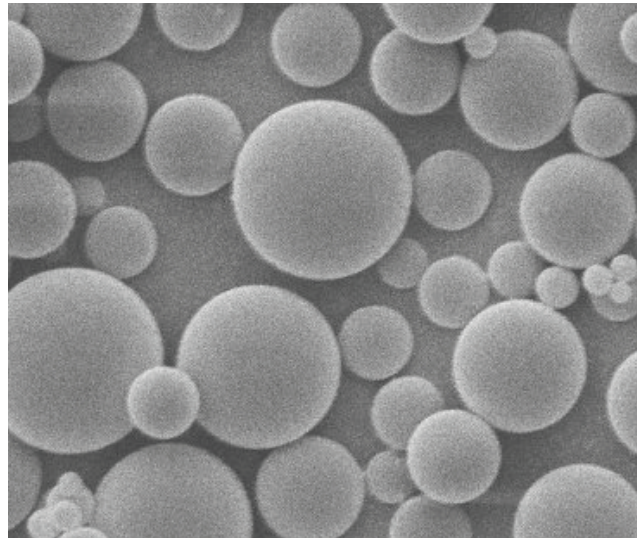
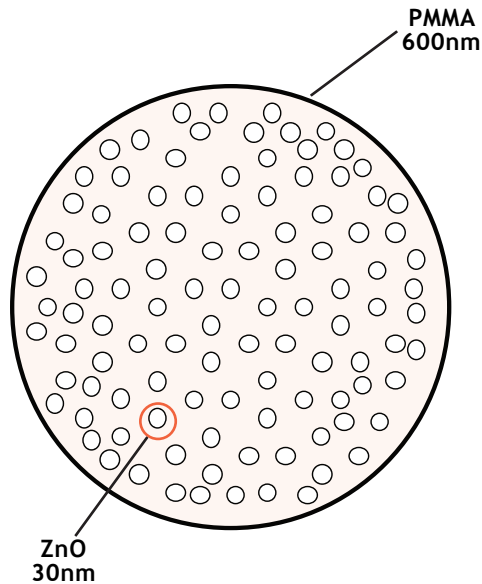
[www.koboproducts.com](http://www.koboproducts.com)

# Spherical Non-Nano UV Filters

## HMZ-50

This Polymethyl Methacrylate sphere contains 50% Zinc Oxide.

Trade Name	INCI Name	Outside Particle Size	Inside pps
HMZ-50	Polymethyl Methacrylate (And) Zinc Oxide	600nm	30nm



SEM HMZ-50, picture supplied by Sumitomo Osaka Cement  
**UNDER DEVELOPMENT**

## Inorganic Sunscreen With HMZ-50 & DAIAMID MSP-TiO50

Formula KSL-172

**in vivo SPF 17.45**  
**in vitro SPF 18**  
**PFA 5.95**

### Part 1

- **HMZ-50** - Sumitomo Osaka Cement/Kobo Products: Polymethyl Methacrylate (And) Zinc Oxide 18.50%
- Salacos 99 - Ikeda Corporation: Isononyl Isononanoate 15.90%
- **DAIAMID MSP-TiO50** - Daicel-Evonik/Kobo Products: Nylon-12 (And) Titanium Dioxide (And) Aluminum Hydroxide (And) Stearic Acid 5.00%
- ABIL® WE 09 - Evonik: Polyglyceryl-4 Isostearate (And) Cetyl PEG/PPG-10/1 Dimethicone (And) Hexyl Laurate 5.00%
- **SILSOFT 034** - Momentive/Kobo Products: Caprylyl Methicone 3.00%
- **ELEMENT14 PDMS 350** - Momentive/Kobo Products: Dimethicone 1.00%
- **LUCENTITE SAN-P** - Kobo Products: Quaternium-18 Hectorite 1.00%
- Crill 3 NF - Croda: Sorbitan Isostearate 0.50%
- Propylene Carbonate - Spectrum Chemical Mfg. Corp: Propylene Carbonate 0.10%

### Part 2

- Deionized Water - Water 46.50%
- Sodium Chloride - Morton Salt: Sodium Chloride 1.00%
- Germaben® II - ISP: Propylene Glycol (And) Diazolidinyl Urea (And) Methylparaben (And) Propylparaben 1.00%

- Aculyn™ 44- Rohm & Haas: PEG-150/Decyl Alcohol/SMDI Copolymer 1.00%
- Liposorb® L-20 - Lipo Chemicals: Polysorbate 20 0.50%

### Manufacturing Procedure

1. In main kettle, combine Part 1 ingredients and heat to 60-65°C.
- 2 Mix Part 2 ingredients until uniform and add to Part 1 under propeller. Mix until uniform.
3. Cool to 28°C and pour.

### Description

This Sunscreen uses entrapped physical sunscreens HMZ-50 and DAIAMID MSP-TiO50 to be non nano. The spheres also give protection to the sunscreen and give excellent application and drydown. This non nano sunscreen is also non whitening on skin.

### Active Ingredient(s) :

Titanium Dioxide	1.85%
Zinc Oxide	9.28%

SPF/PA Testing: In vivo on 3 subjects

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