

# COMPOSITE ACT-50

## Non-Nano Composite UV Powder

Nano sized Titanium Dioxide (TiO<sub>2</sub>) has been widely used as effective inorganic UV filters. However, their safety has been questioned due to potential skin penetration and bio-accumulation. In light of recent regulations on nanomaterials, efforts have been made to address these concerns.

Composite powders are among the most promising technologies developed to solve this problem. Ultrafine TiO<sub>2</sub> can be entrapped within a polymer matrix having a particle size of 8.5 µm, much larger than the limit of nanomaterial range (100 nanometers).

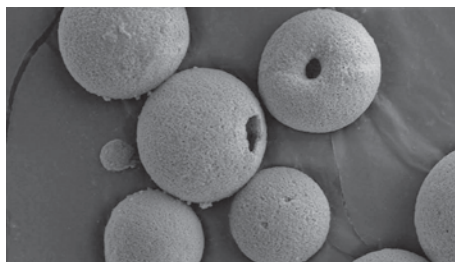
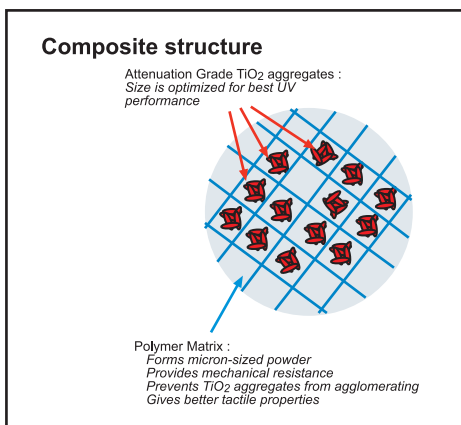
Kobo offers a new patent pending product; COMPOSITE ACT-50. This composite powder contains dispersed attenuation grade TiO<sub>2</sub>

at a level of 47-55%, entrapped within a micron size Acrylates Copolymer matrix. Kobo's process reduces the agglomeration of TiO<sub>2</sub> aggregates which enables us to create a product that can offer high SPF efficacy, low whitening effect and better tactile properties.

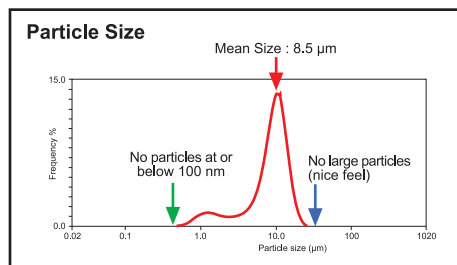
In lotions, COMPOSITE ACT-50 can provide similar SPF values and a higher critical wavelength than non-entrapped TiO<sub>2</sub> of a similar particle size. It has also been shown to boost SPF in formulas containing organic sunscreens. In addition, it can provide SPF and add to good skin feel in pressed powders.

Patent Pending # US 13/231,110  
Matrix Containing Metal Oxide Sunscreen Particles

**INCI:** Titanium Dioxide (And) Acrylates Copolymer (And) Hydrated Silica (And) Algin (And) Aluminum Hydroxide



SEM of COMPOSITE ACT-50



## Elegant W/O White Sunscreen Lotion

in vivo  
SPF 17

### Formula KSL-199A

#### Part 1

• Deionized Water	62.74%
• MgSO <sub>4</sub> ·7H <sub>2</sub> O - Du Pont Chemicals: Magnesium Sulphate Heptahydrate	1.00%
• Sodium Chloride - Morton Salt: Sodium Chloride	1.00%
• Methyl Paraben NF - International Sourcing: Methylparaben	0.20%
• Propyl Paraben NF - International Sourcing: Propylparaben	0.06%

#### Part 2

• <b>COMPOSITE ACT-50</b> - Kobo Products: Titanium Dioxide (And) Acrylates Copolymer (And) Hydrated Silica (And) Algin (And) Aluminum Hydroxide	12.00%
• Panalene® L-14E - Vantage: Hydrogenated Polyisobutene	10.00%
• Plurol Diisostearate - Gattefosse: Triglycerol Diisostearate	5.00%
• Fitoderm® - Centerchem: Squalane	3.00%

#### Part 3

• SF1202 - Momentive: Cyclopentasiloxane	4.00%
• Jeesilc PS-VHBF - Jeen International: Isododecane (And) Bis Vinyl Dimethicone/Dimethicone Copolymer	1.00%

#### Manufacturing Procedure

1. Combine Part 1 ingredients and heat to 70 °C.
2. Combine Part 2 ingredients and heat to 70 °C.
3. Add Part 2 to Part 1 with heavy mixing.
4. Homogenize batch while cooling.
5. Add Part 3 to Parts 1 and 2 while cooling.

#### Description

This elegant W/O Sunscreen features Kobo's new COMPOSITE ACT-50. This material is a powder containing dispersed attenuation grade TiO<sub>2</sub>, entrapped within a micron size polymer matrix. In the composite the optical properties of the Titanium Dioxide are maintained plus an improved skin feel during application is obtainable.

#### Active Ingredient:

Titanium Dioxide = 6.41%

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# COMPOSITE ACZ-50

## Non-Nano Composite UV Powder

This material is part of Kobo Product's Composite AC series. This is a patent pending technology used to create a particle suitable for the attenuation of UV light. This product features a micron sized acrylates copolymer matrix serving as the encapsulation medium of Zinc Oxide (ZnO) active material. The resulting material is a 7-15 µm sized powder with an active ZnO content ranging from 45-55%.

By limiting the aggregates of the active material throughout processing, Kobo can offer a product with high efficacy, stability in formulation, and minimal whitening at a concentration of ZnO (15%). The outer polymeric matrix functions to ensure the product is non-nano, it aids in enhanced feel in formulation, and it also gives mechanical resistance to the material during use. Additionally, this material can be combined effectively with organic sunscreens for versatile options for formulators.

**INCI:** Zinc Oxide (And) Acrylates Copolymer (And) Kaolin (And) Sodium Polyacrylate



A comparison of a formulation containing COMPOSITE ACZ-50 and a formulation containing a traditional ZnO dispersion at a 15% concentration of ZnO applied on the skin

Patent Pending # US 13/231,110  
Matrix Containing Metal Oxide Sunscreen Particles

## Pressed Powder with COMPOSITE ACZ-50

Formula KPP-065A

### Part 1

- **TALC AJM** - Kobo Products: Talc 50.01%
- **GMS/MM3** - Kobo Products: Mica (And) Magnesium Myristate 26.24%
- **COMPOSITE ACZ-50** - Kobo Products: Zinc Oxide (And) Acrylates Copolymer (And) Kaolin (And) Sodium Polyacrylate 15.00%
- **BYO/MM3** - Kobo Products: Iron Oxides (C.I. 77492) (And) Magnesium Myristate 1.80%
- **BRO/MM3** - Kobo Products: Iron Oxides (C.I. 77491) (And) Magnesium Myristate 1.20%
- **BBO/MM3** - Kobo Products: Iron Oxides (C.I. 77499) (And) Magnesium Myristate 0.55%
- Methyl Paraben NF - International Sourcing: Methylparaben 0.10%
- Propyl Paraben NF - International Sourcing: Propylparaben 0.10%

### Part 2

- Jeescreeen OMC - Jeen International: Ethylhexyl Methoxycinnamate 5.00%

### Manufacturing Procedure

1. Micropulverize Part 1 until color is fully developed.
2. Add Part 2 to Part 1.
3. Blend well.
4. Press at 300 psi.

### Description

This powder features Kobo's COMPOSITE ACZ-50 containing entrapped ZnO inside a micron size acrylates copolymer matrix. It provides UVA protection with an even coverage, that helps pressability and offers uniform product payoff. Kobo's Magnesium Myristate-treated pigments and fillers provide great feel and even application while improving the adherence of the pressed powder to the skin, resulting in long-wear. Kobo's TALC AJM is an odorless, fine, white powder with anti-caking properties to improve feel.

### Active Ingredients:

Ethylhexyl Methoxycinnamate = 5%  
Zinc Oxide = 7.59%



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