

# Composite ACT-50

## Non-Nano Composite UV Powder



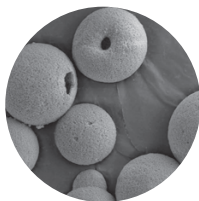
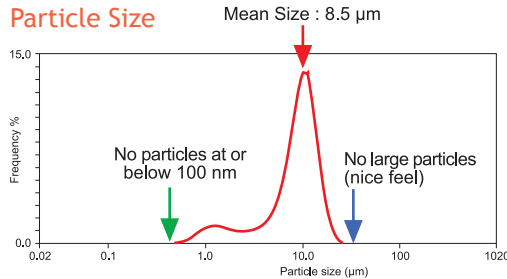
Nano sized Titanium Dioxide (TiO<sub>2</sub>) has been widely used as effective inorganic UV filters. However, their safety has been questioned due to potential skin penetration and bio-accumulation. In light of recent regulations on nanomaterials, efforts have been made to address these concerns.

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

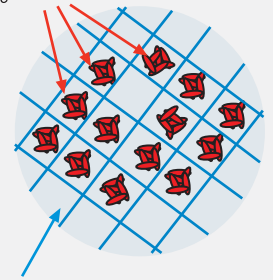
SPF values and a higher critical wavelength than non-entrapped TiO<sub>2</sub> of a similar particle size. It has also been shown to boost SPF in formulas containing organic sunscreens. In addition, it can provide SPF and add to good skin feel in pressed powders.



SEM of COMPOSITE ACT-50

### Composite Structure

Attenuation Grade TiO<sub>2</sub> aggregates :  
Size is optimized for best UV performance



**Polymer Matrix :**  
Forms micron-sized powder  
Provides mechanical resistance  
Prevents TiO<sub>2</sub> aggregates from agglomerating  
Gives better tactile properties

### INCI Name:

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

**Patent Pending # US 13/231,110**

*Matrix Containing Metal Oxide Sunscreen Particles*



## KSL-310A-BR Dry Touch Sunscreen



### Part 1

- Deionized Water - Water 27.00%
- Glicerina - CAAL: Glicerina 2.00%
- Cloreto de Sódio - CAAL: Cloreto de Sódio 1.00%

### Part 2

- TNSS75MZCM - Kobo Products: Zinc Oxide (And) Ethylhexyl Methoxycrylene (And) C12-15 Alkyl Benzoate (And) Polyhydroxystearic Acid (And) Hydrogen Dimethicon 18.10%
- INP60T7 - Kobo Products: Titanium Dioxide (And) Isononyl Isononanoate (And) Alumina (And) Hydrogen Dimethicone (And) Polyhydroxystearic Acid 13.50%
- SALACOS® 99 - Ikeda/Kobo Products: Isononyl Isononanoate 4.00%
- SunBoost ATB - Kobo Products: Argania Spinosa Kernel Oil (And) Tocopheryl Acetate (And) Bisabolol 3.60%
- SALACOS® 913 - Ikeda/Kobo Products: Isotridecyl Isononanoate 3.00%
- ABIL® EM 90 - Evonik: Cetyl PEG/PPG-10/1 Dimethicone 2.50%
- Bentone Gel® VS 5 PCV - Cosmotec: Cyclopentasiloxane (and) Distearidimonium Hectorite (and) Propylene Carbonate 2.00%
- Optiphen - Ashland: Caprylyl Glycol (And) Phenoxethanol 1.00%
- COSMOL™ 182V - Ikeda/Kobo Products: Sorbitan Sesquiosostearate 0.80%
- Abil® EM 180 - Evonik: Cetyl PEG/PPG-10/1 Dimethicone 0.50%

### Part 3

- Xiameter® PMX-0245 - Dow Corning: Cyclopentasiloxane 12.00%
- MSS-500/3H - Kobo Products: Silica 2.00%

### Part 4

- **COMPOSITE ACT-50** - Kobo Products: Titanium Dioxide (And) Acrylates Copolymer (And) Hydrated Silica (And) Algin (And) Aluminum Hydroxide 5.00%
- SESQ-ML5 - Kobo Products: Polymethylsilsesquioxane 2.00%

### Manufacturing Procedure

1. Combine Part 2 and mix at 800 rpm until complete dispersion of the sunscreens.
2. Combine Part 1 and add to Part 2 slowly while mixing at 800 rpm.
3. Combine Part 3 and add to Parts 1 and 2.
4. Add Part 4 and mix at 600 rpm.

### Description

This sunscreen has a light texture and a dry feel. It features a combination of Kobo's ingredients to achieve high and balanced UV protection: INP60T7 (Titanium Dioxide dispersion with light ester and minimal whitening), TNSS75MZCM (Non-nano Zinc Oxide dispersion in ethylhexyl methoxycrylene, a photo stabilizer), **COMPOSITE ACT-50** (a powder containing dispersed attenuation grade TiO<sub>2</sub> entrapped within a micron size polymer matrix) and SunBoost ATB (a proprietary ratio of anti-oxidant, anti-irritant and anti-inflammatory agents that provides a high SPF). COSMOL™ 182V improves formula stability and contributes to pigment dispersion. It also has SALACOS® 99 and SALACOS® 913, light esters that can improve skin feel. To absorb oil and also give a smooth feel on skin, this sunscreen has SESQ-ML5 and MSS-500/3H.

**KOBO**

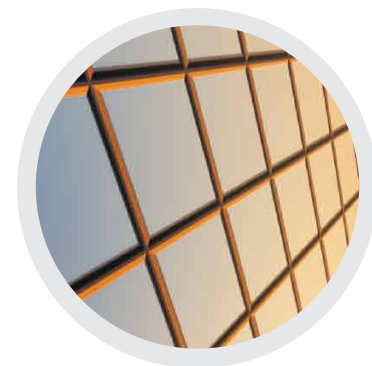
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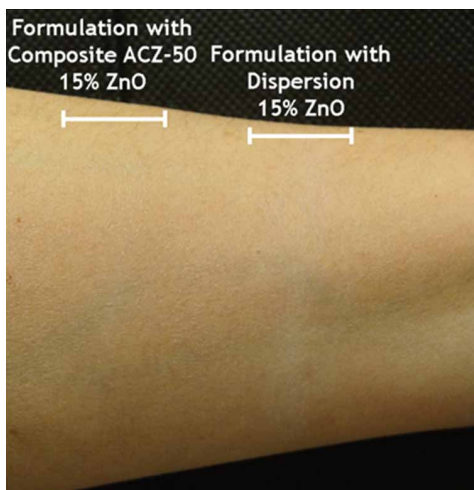
# Composite ACZ-50

## 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.



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

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

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



KPP-065A

### Pressed Powder with COMPOSITE ACZ-50

#### Part 1

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

#### Part 2

• Jeescreeen OMC - Jeen International: <i>Ethylhexyl Methoxycinnamate</i>	5.00%
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#### 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:	5.00%
Zinc Oxide:	7.59%

**KOBO**

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