

# Innovator of Zinc Oxide, SUNJIN

SUNJIN  
BEAUTY  
SCIENCE




**1**

**Transparency**

**ZnO 12.5%,  
White index <7.0**


**\* Formula #: SJF-2331**



**2**

**Ultimate Fluidity**

**ZnO solid content 75%  
<2,000cps**



**3**

**Ultra-Safe**

**Pb<1ppm**

# Zinc Oxide from SUNJIN

## Nano

	ZINA-AS	ZINA-SA	SUNZnO-NAS
ZnO Purity %	97%	97%	97%
ZnO Coating	Alkyl Silane	Stearic Acid	Alkyl Silane
Shape	Round	Round	Round
Transparency by White index	31.89	32.33	40.66
Remarks	SCCS Compliant Nano ZnO		SCCS Compliant Nano ZnO

## Unique Benefits of ZINA

1. **Ultimate Transparency**
2. Ultimate SPF, PA Efficacy
3. No Yellowness
4. Extremely Low Viscosity
5. Superior Dispersion Stability

## Non Nano

	SUNZnO-AS	SUNZnO-SA	SUNZnO-200AS	SUNZnO-200SA
ZnO Purity %	97%	95%	95%	95%
ZnO Coating	Alkyl Silane	Stearic Acid	Alkyl Silane	Stearic Acid
Shape	Round	Round	<b>Rod</b>	<b>Rod</b>
Transparency by White index		51.05		34.74
Remarks		COSMOS RSPO		COSMOS RSPO

## SUNZnO-200AS & 200SA

SUNZnO-200AS and 200SA are the world first 'non-nano'

**Rod shape** Zinc oxide with the benefits of nano like Transparency and UV performance.



It provides much **smoother & more creamy feel** as compared to conventional nano particles due to its rod shape morphology.

# Zina, Ultra-Safe: Heavy Metal(Pb) Content

The lowest lead levels among competitors

SUNJIN's ZnO, developed with advanced purity control technology

Company	Pb(ppm) <1ppm	Tl(ppm) <0.05ppm	Ni(ppm) <2ppm
SUNJIN	<b>0.024</b>	0.009	0.108
Company "E"	5.393	6.881	2.103
Company "B"	6.123	0.03	0.784
Company "A"	5.168	2.187	0.062
Company "C"	2.531	4.865	0.057
Company "D"	0.589	0.209	1.001



## Benefit3: Regulatory Limits on Heavy Metals

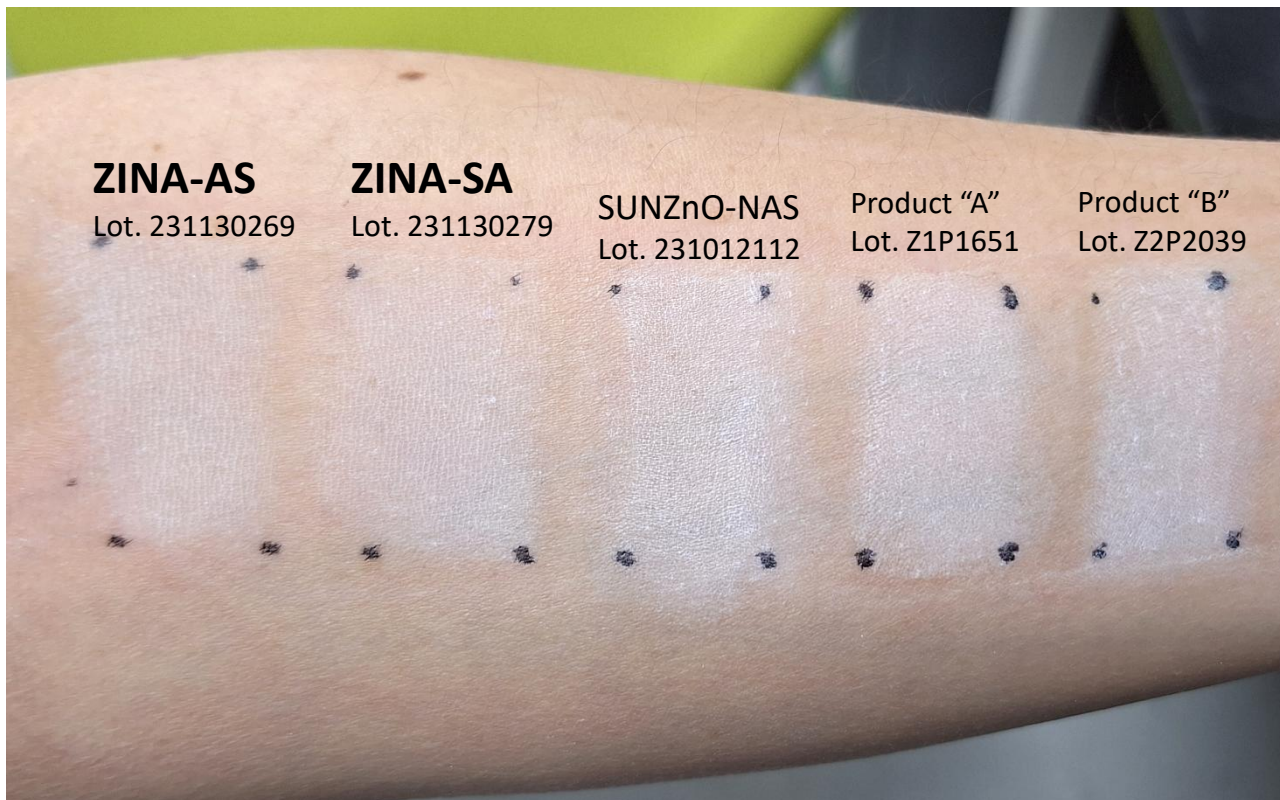
Heavy metal	Limits (max. ppm)				Remark
	US	EU (DE)	CN	KR	
Arsenic (As)	3	0.5	2	3	
Lead (Pb)	20	2	10	20	<ul style="list-style-type: none"> <li>10 for Lip care product (US)</li> <li>50 for clay powder ingredient (KR)</li> </ul>
Mercury (Hg)	1	0.1	1	1	
Chromium (Cr)	15	15	-	15	
Nickel (Ni)	-	10	-	10	<ul style="list-style-type: none"> <li>35 for Eye makeup (KR)</li> <li>30 for Color makeup (KR)</li> </ul>
Cadmium (Cd)		0.1	5	15	
Antimony (Sb)		0.5			

### Washington's New Law: HOUSE BILL 1047

**Pb < 1 ppm for cosmetic products**

January 23, 2023

# ZINA for Ultimately Transparency



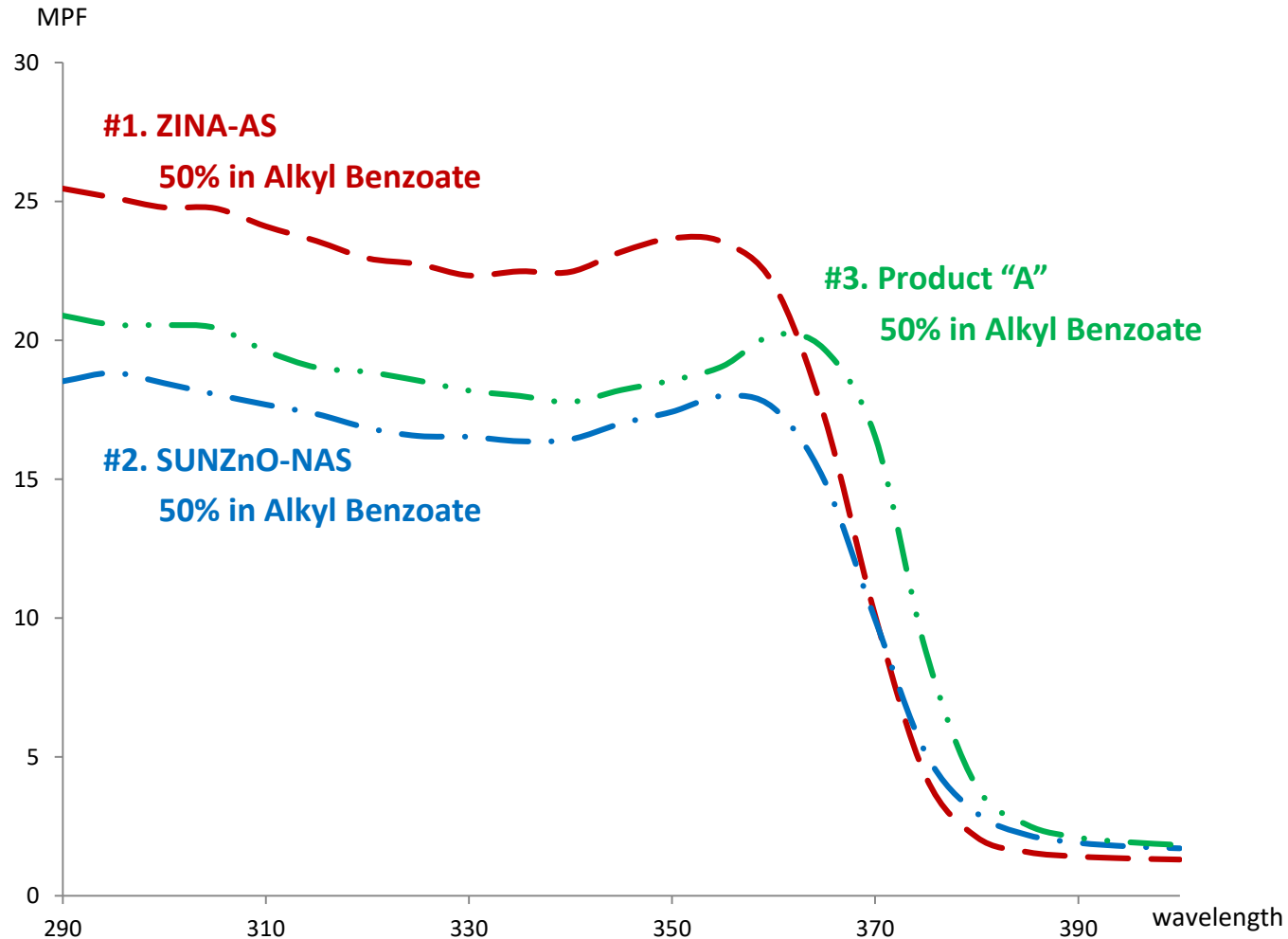
- Test Condition

Sample treatment:  $2.0 \text{ mg/cm}^2$

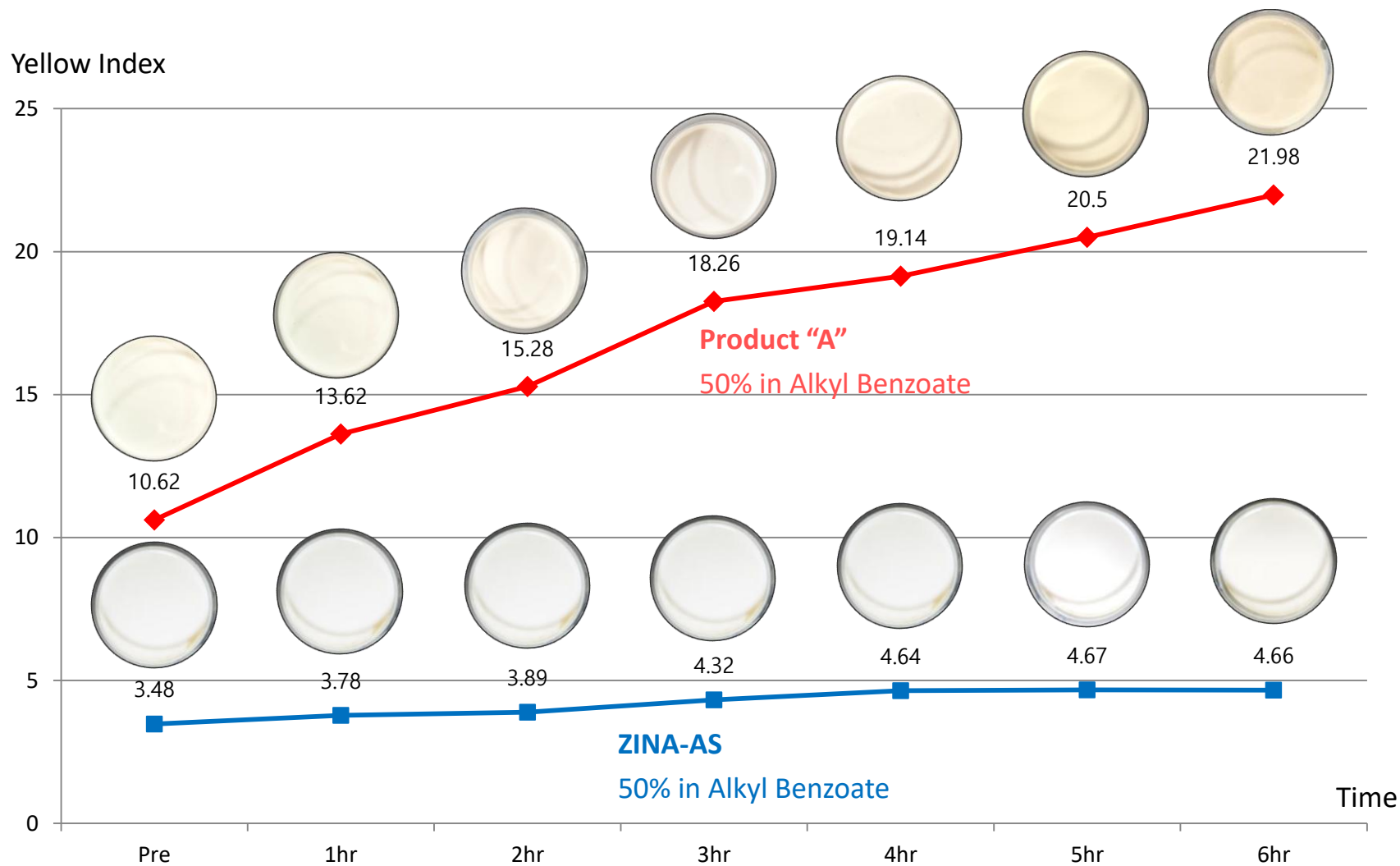
Skin area:  $1.5 \times 3.0 \text{ cm}^2$

# ZINA, Ultimate SPF/PA Efficacy

In-vitro test



# ZINA, No Yellowness



# ZINA, Ultimate formula stability

@60°C, 4 weeks



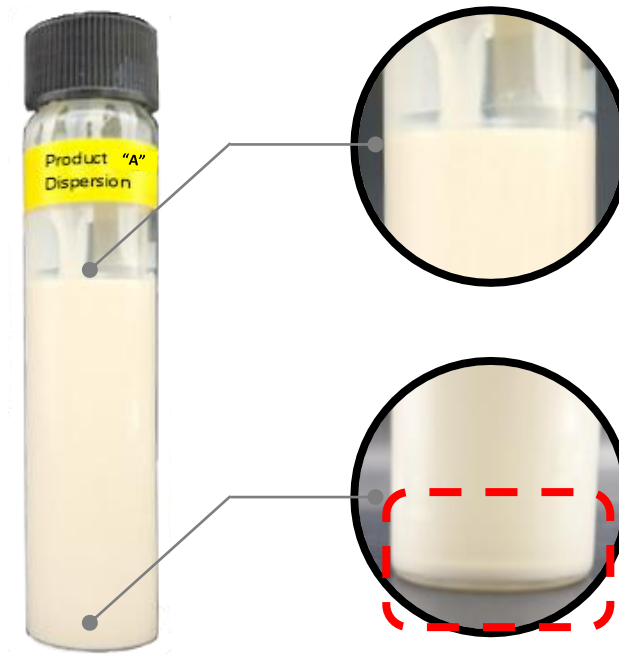
**Black Particle**

**ZINA-AS 50% in Alkyl Benzoate**



**No Sedimentation**

**Product "A" 50% in Alkyl Benzoate**



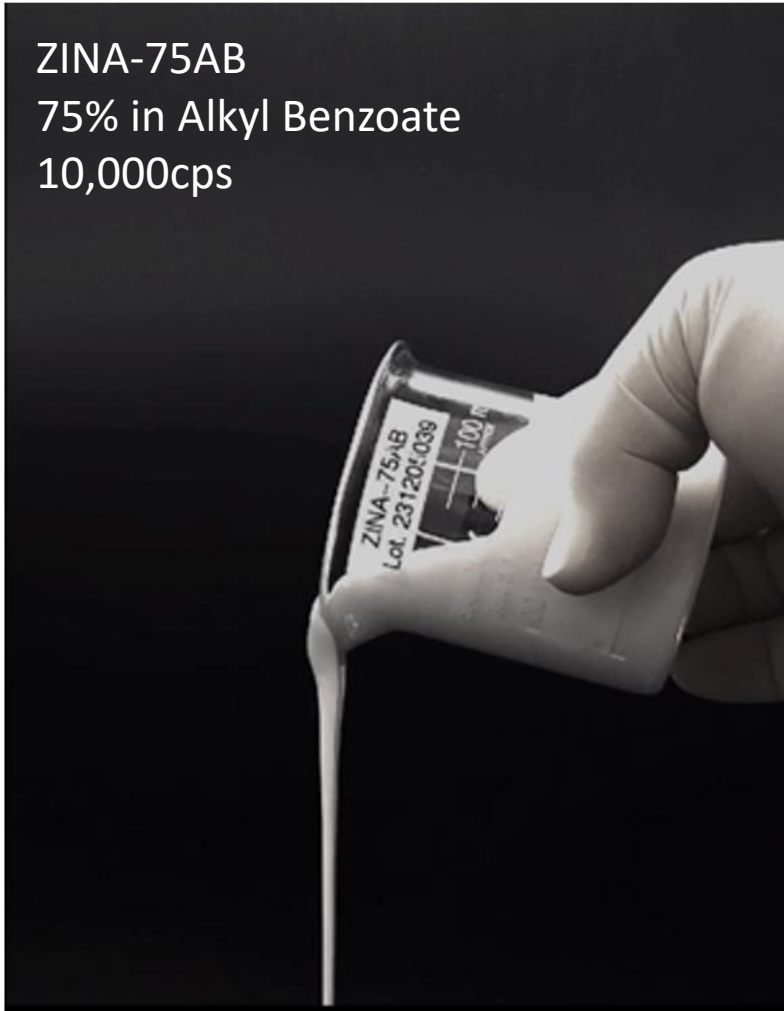
**Soft Sedimentation**



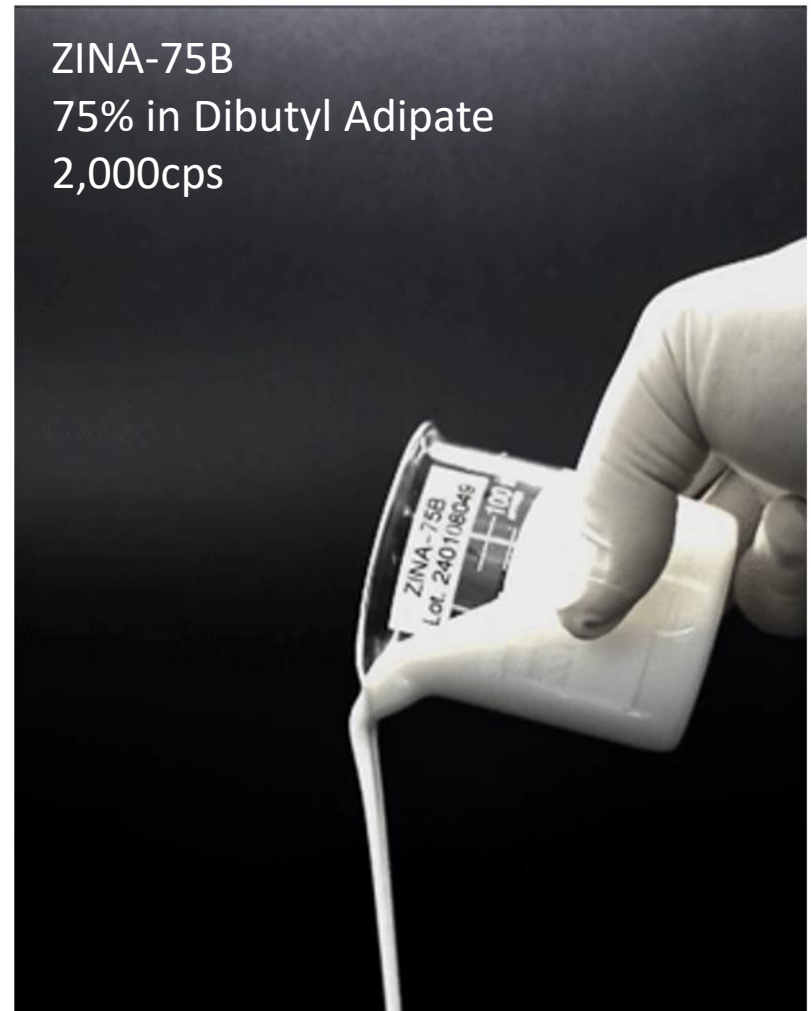
# ZINA, Extremely Low Viscosity

High Content ZnO Dispersion (Zinc Oxide content: **75%**)

ZINA-75AB  
75% in Alkyl Benzoate  
10,000cps



ZINA-75B  
75% in Dibutyl Adipate  
2,000cps



# ZnO Dispersion Overview

	ZINA -75CCTG	ZINA -75B	ZINA -75AB	ZINA -75C5	ZINA -75CC	ZINA -75D	OLEO -Z75C5C	Z65M	SUNCLEAR -Z65C5	Z75R -CCTG
Carrier	Caprylic/ Capric Triglyceride	Dibutyl Adipate	Alkyl Benzoate	Coco- Caprylate /Caprate	Dicaprylyl Carbonate	Dimethicone	Coco- Caprylate /Caprate	Caprylic/ Capric Triglyceride	Coco- Caprylate /Caprate	Caprylic/ Capric Triglyceride
Net ZnO %	72%	72%	72%	72%	74%	75%	72%	64%	62%	73%
Surface Treatment	Stearic Acid	Stearic Acid	Triethoxy caprylyl silane	Triethoxy caprylyl silane	Triethoxy caprylyl silane	Triethoxy caprylyl silane	Cetyl Alcohol	Triethoxy caprylyl silane	Triethoxy caprylyl silane	Triethoxy caprylyl silane
Dispersing agent	Polyhydroxy stearic Acid	Polyhydroxy stearic Acid	Polyhydroxy stearic Acid	Polyhydroxy stearic Acid	Polyhydroxy stearic Acid	PEG-9 Polydimethylsi loxyethyl	Polyglyceryl-6 Polyhydroxy stearate, Polyglyceryl-6 Polyricinoleat e	Polyhydroxy stearic Acid	Polyhydrox y stearic Acid	Polyhydroxy stearic Acid
Critical wavelength (nm)	370.9	369.4	368.4	370.6	370.9	370.2	383.8	376	379.2	374.5
Remarks	High solid Pourable						EWG COSMOS RSPO	Low emulsifier % O/W and W/O Workable Clean Beauty Concept		Cost Efficient RSPO

# SUNZnO-200SA

## Overview

The World-First Non-Nano

Rod Shape Zinc Oxide with Stearic Acid Coating

The Natural Origin index according to ISO 16128: 1

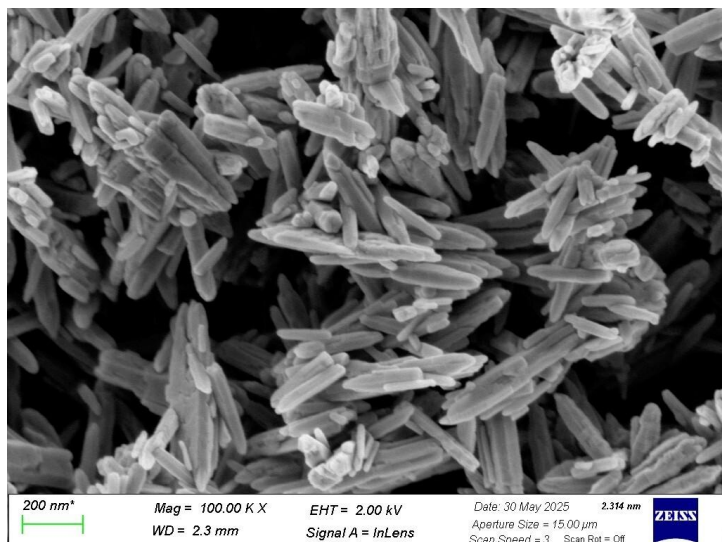
## SUNZnO-200SA

**ZnO** 95%

**Stearic Acid** 5%

## Particle Size

>200 nm, Rod Shape



Patent #: 1017687720000 / Korean Intellectual Property Office (KIPO)

## Why Rod Shape?

1. More Creamy Feeling
2. Better Spreadability
3. Better Transparency
4. Better UV performance

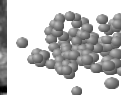
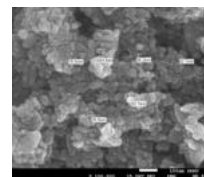
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## SUNZnO-NAS

30nm



Rough

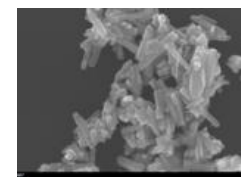


## SUNZnO-200SA

200nm



Creamy



# Why **Rod Shape** over spheroidal shape?

