

# ALUMINUM-FREE MICRO TITANIUM DIOXIDE MT-500CST

This product is a 30 nm-sized Micro Titanium Dioxide, which is Aluminum-free yet has low photoactivity through controlling the particle size and shape. It provides protection not only against UVB but also UVA. Additionally, its uniform particle size minimizes less diffuse reflection of visible light, preventing the bluish-white color when applied to the skin. It is also compatible with water-soluble thickeners such as carbomers.

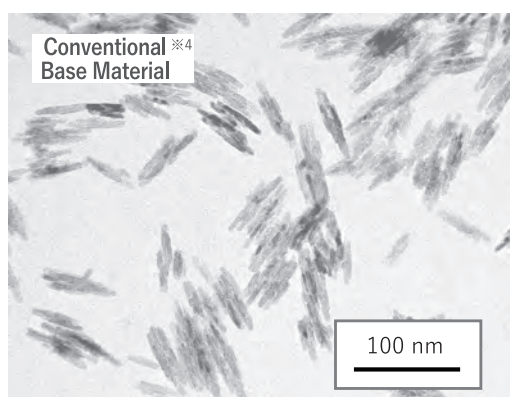
Grade	Primary Particle Size	INCI	EU ※1	China ※2	US ※3	Natural Origin Index
MT-500CST	30 nm	TITANIUM DIOXIDE STEARIC ACID	○	○	—	1.00

※1: Regulation (EC) No 1223/2009

※2: IECIC Registration Status

※3: Usability in U.S. OTC Sunscreens

## Mechanism of Low Photoactivity

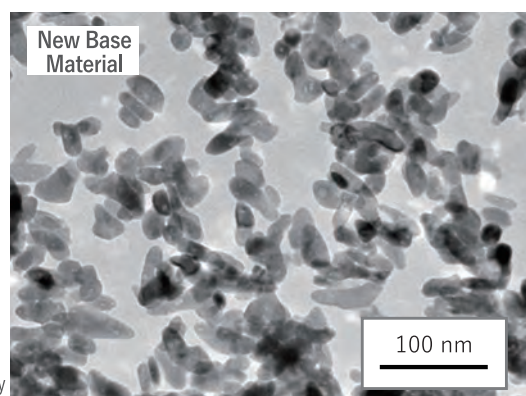


※4 Conventional Base Material: 15 nm

Particle Size  
and  
Shape Control



Spheroidization reduces particle aggregation. Enabling more precise processing and achieving low photoactivity even without aluminum

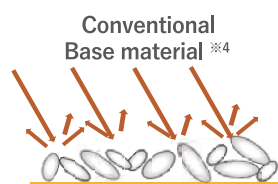


## SPF/UVAPF *in vitro*

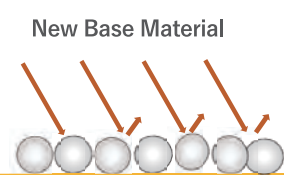
Dosage	3 %		5 %		10 %	
Grade	SPF	UVAPF	SPF	UVAPF	SPF	UVAPF
MT-500CST	10	8	16	8	31	9
Conventional ※5	7	4	11	4	23	5

Formulation : W/O Emulsion Application Amount : 1.3 mg/cm<sup>2</sup>  
Base : PMMA HD6 Measurement : SPF Analyzer UV-2000S

## Mechanism for Reducing Bluish-White Color



When the particle size is uneven, visible light is diffusely reflected and appears to be bluish-white color when applied.



Particle size control suppress diffuse reflections  
→ reduces bluish-white color

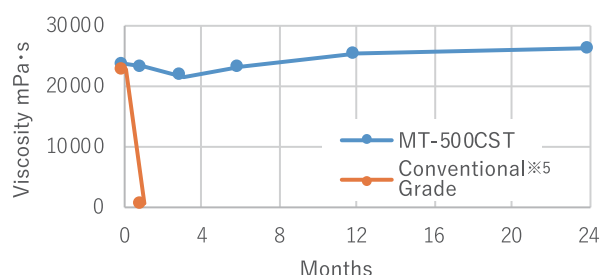
## Transparency

Conventional Grade ※5 MT-500CST



Formulation : W/O Emulsion  
Dosage : 7 % (as solid)  
Application Amount : 2 mg/cm<sup>2</sup>

## Viscosity Stability when Used with Carbomer



Formulation : O/W Gel Dosage : 10 % (as solid)  
Carbomer Concentration : 0.3 % Storage Temperature : 25 °C  
Measurement : B type Viscometer (12 rpm)

※5 Conventional Grade: Titanium Dioxide (15 nm) treated with Aluminum Hydroxide and Stearic Acid