



***Ultra Fine Titanium
Dioxide ST series
for Cosmetics***

Titan Kogyo ,Ltd.

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- Established June 1936
- Capital 3 billion Yen
- Location

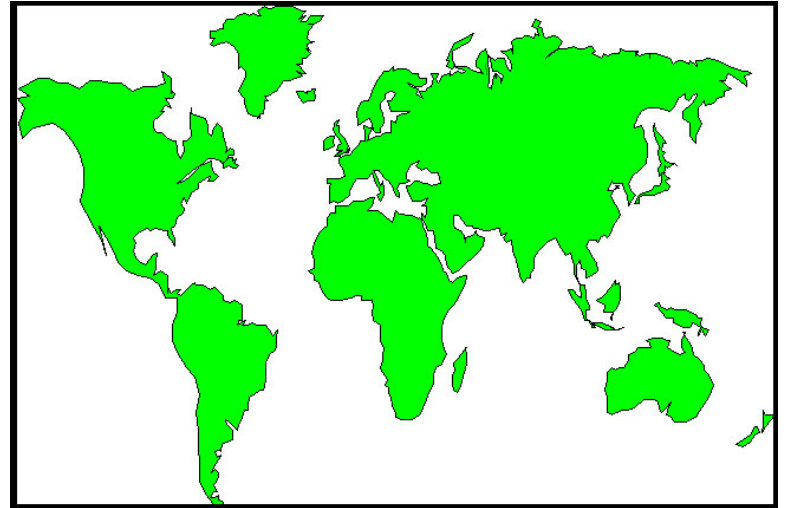
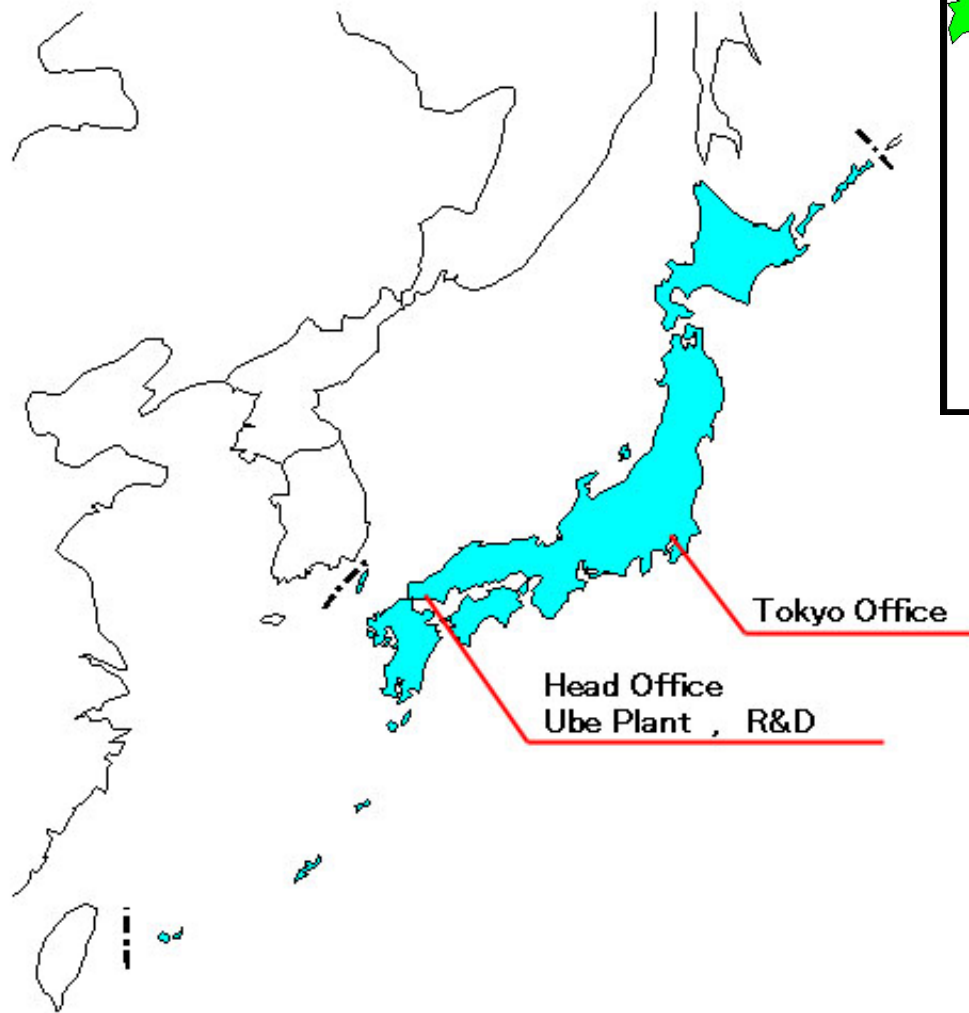
Head Office ▪ Plant ▪ R&D

Ube City, Yamaguchi Pref., Japan

Tokyo Office

Chuo-ku, Tokyo, Japan

Location





Brief History

- 1936 Founded to pioneer the production of Titanium Dioxide in Japan
- 1938 Commissioning of Ube-Plant, start of SUNTIOX Titanium Dioxide production
- 1965 Start of TAROX Synthetic Iron Oxide production
- 1969 Start of AUVICO Magnetic Iron Oxide production
- 1993 Start of Ube Technical center
- 2000 Acquired ISO9002 certification
- 2003 Acquired ISO14001 certification
- 2003 Acquired ISO9001 certification

Major Products

- **SUNTIOX Titanium Dioxide**
paper, paint, printing ink, plastics
synthetic fibers, condensers, etc
- **TAROX Iron Oxide**
paint, printing ink, cosmetics,
ferrite, magnetic toner, etc
- **AUVICO Magnetic Iron Oxide**
video tapes, audiotapes,
magnetic tickets, magnetic cards,
etc



Major Products

New Material

- Ultrafine Titanium Dioxide
- Electro-conductive Inorganic Oxides
- White Deodorants
- etc

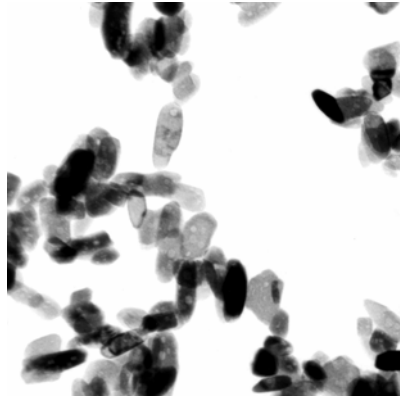


Ultra Fine Titanium Dioxide

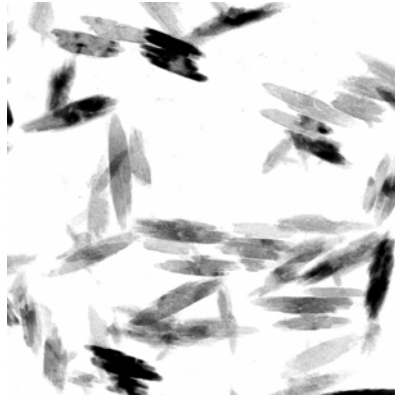
Features

- Enhanced Transparency
- Excellent light shielding capability in the UV region
- Consistent particle distribution
- Excellent dispersibility with minimizing particle agglomeration
- Various particle sizes and shapes are available
- All grades are surface-treated

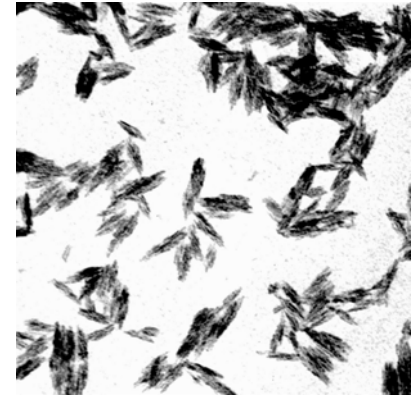
Variation of Particle Shape



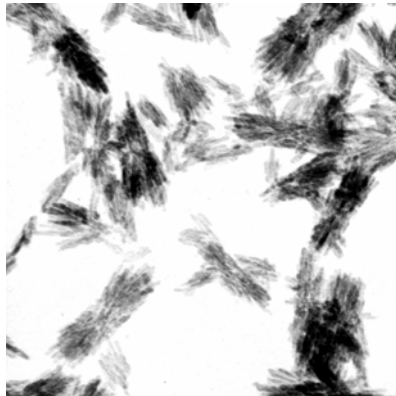
Rice-like



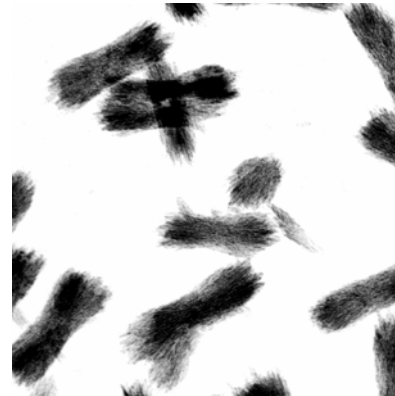
Spindle



Stick-like

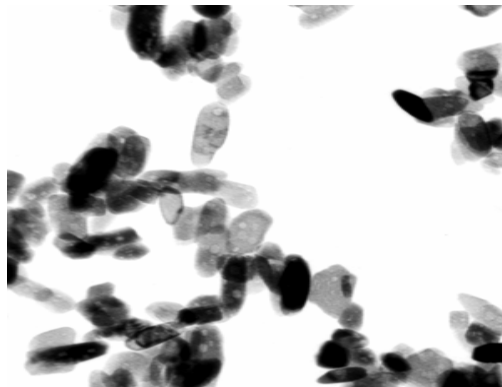


Bow tie-like



Butterfly

ST-410WB



Rice- like

Grade	ST- 410WB
Crystal Form	Rutile
Particle Size	Width 20~40nm Length 30~60nm
Inorganic Surface Treatment	Aluminum Hydroxide Silica
Organic Surface Treatment	
Feature	Good Light Stability

ST-455

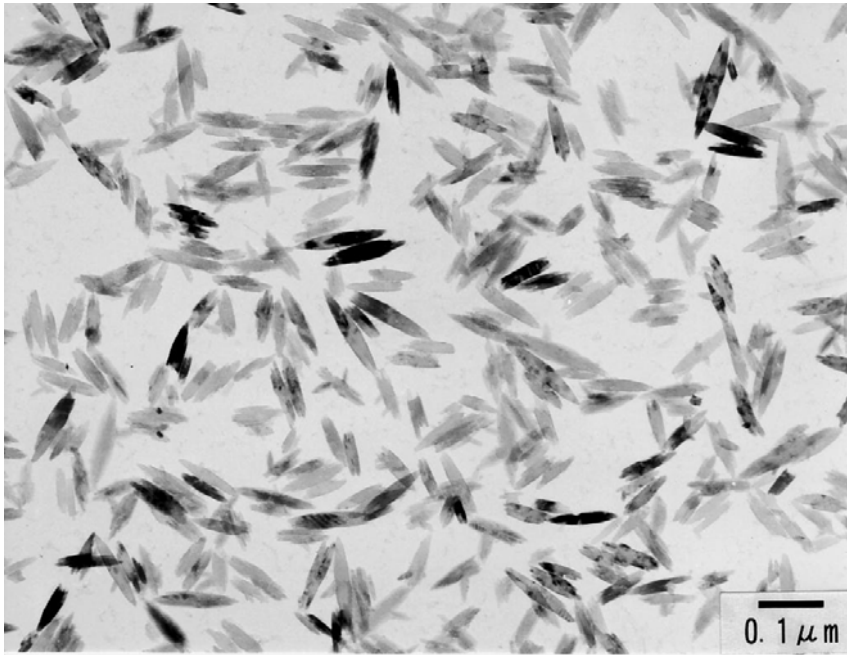


Spindle

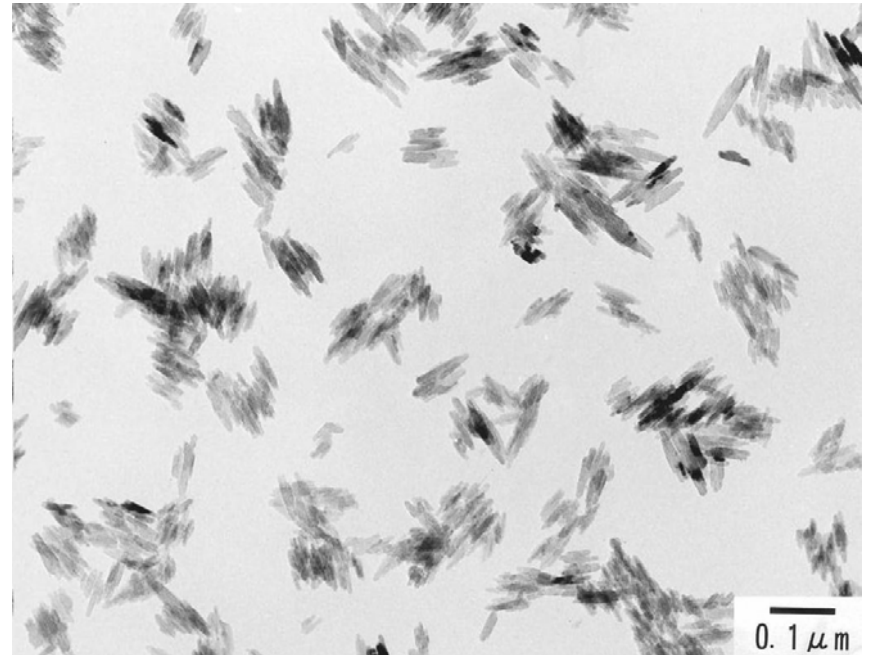
Grade	ST-455	ST-455EC※
Crystal Form	Rutile	Rutile
Particle Size	Width 10~30nm Length 50~150nm	Width 10~30nm Length 50~150nm
Inorganic Surface Treatment	Aluminum Hydroxide	Aluminum Hydroxide
Organic Surface Treatment	Stearic Acid	Methicone/Dimethicone Copolymer
Feature	Good Transparency	Excellent Dispersibility

※prototype

Electron Micrographs

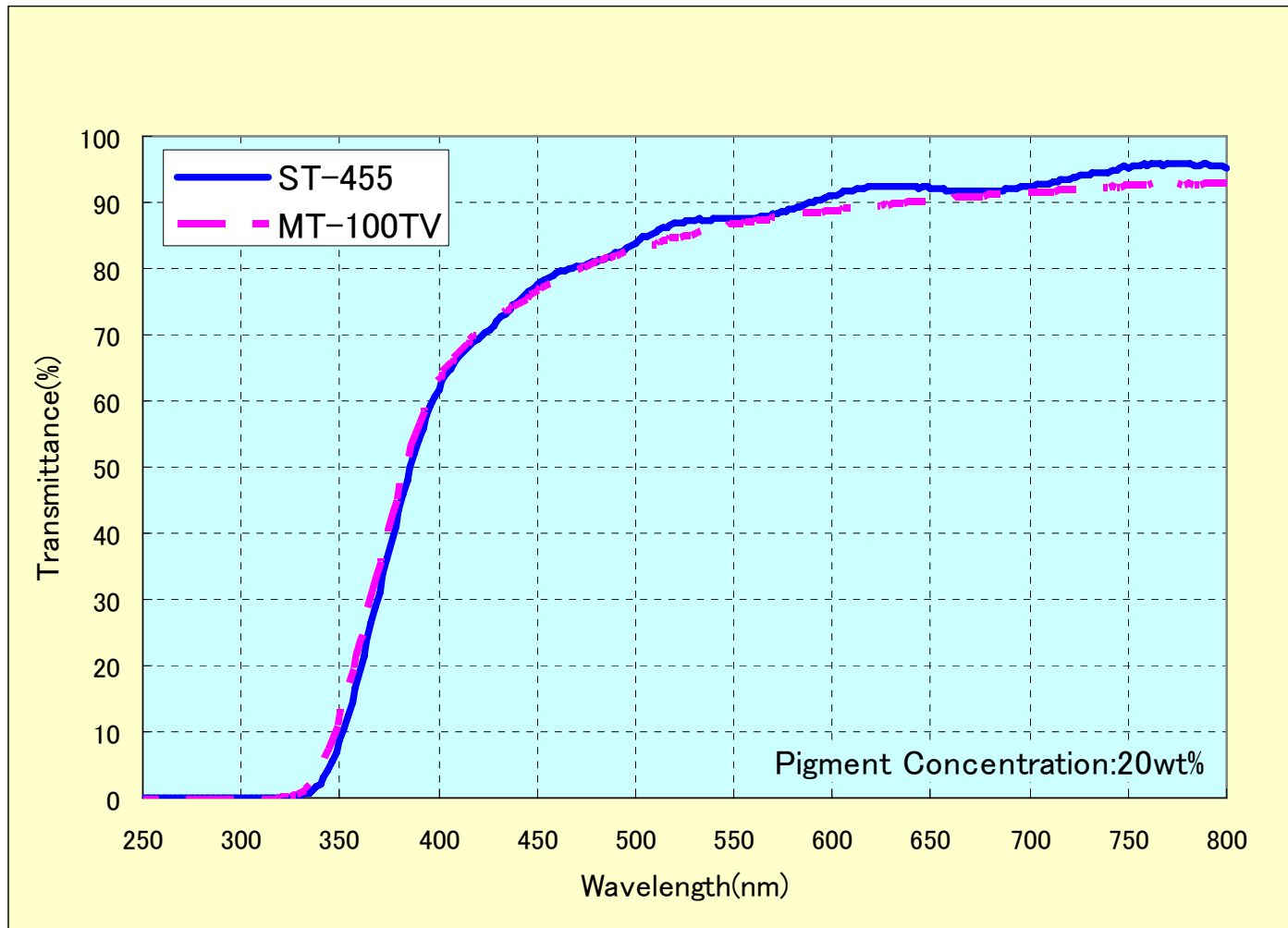


ST-455



MT-100TV

Light Transmittance Curve of W/O Sun Screen



ST-457SA and EC

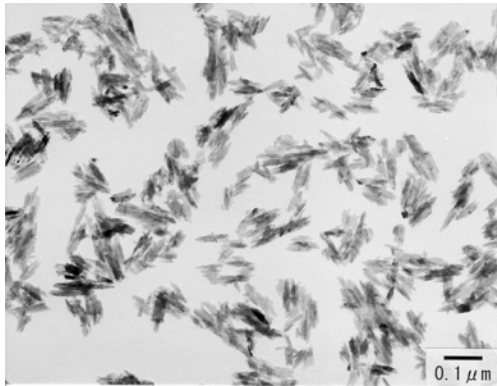


Spindle

Grade	ST- 457SA	ST- 457EC※
Crystal Form	Rutile	Rutile
Particle Size	Width 7~15nm Length 30~80nm	Width 7~15nm Length 30~80nm
Inorganic Surface Treatment	Aluminum Hydroxide	Aluminum Hydroxide
Organic Surface Treatment	Stearic Acid	Dimethicone/Methicone Copolymer
Feature	Excellent Transparency	Excellent Dispersibility

※prototype

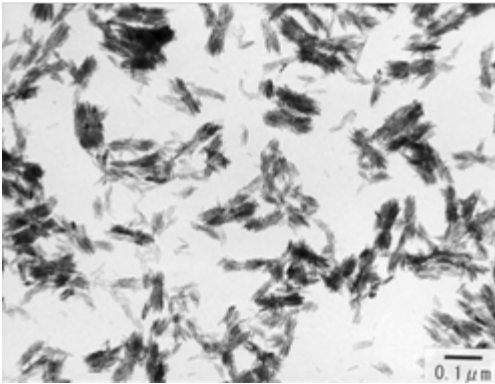
ST-485SA15



Stick-like

Grade	ST- 485SA15
Crystal Form	Rutile
Particle Size	Width 10~15nm Length 30~120nm
Inorganic Surface Treatment	Aluminum Hydroxide
Organic Surface Treatment	Stearic Acid
Feature	Excellent Transparency

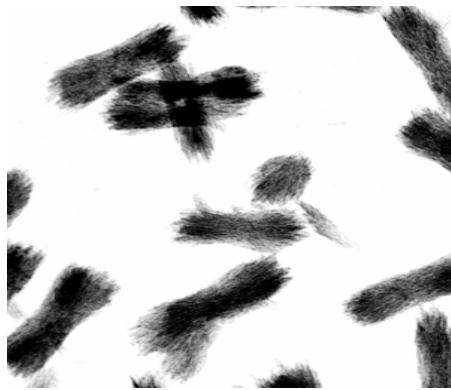
ST-486SA (prototype)



Bow tie-like

Grade	ST- 486SA
Crystal Form	Rutile
Particle Size	Width 20~50nm Length 30~120nm
Inorganic Surface Treatment	Aluminum Hydroxide
Organic Surface Treatment	Stearic Acid
Feature	Excellent dispersibility & low viscosity

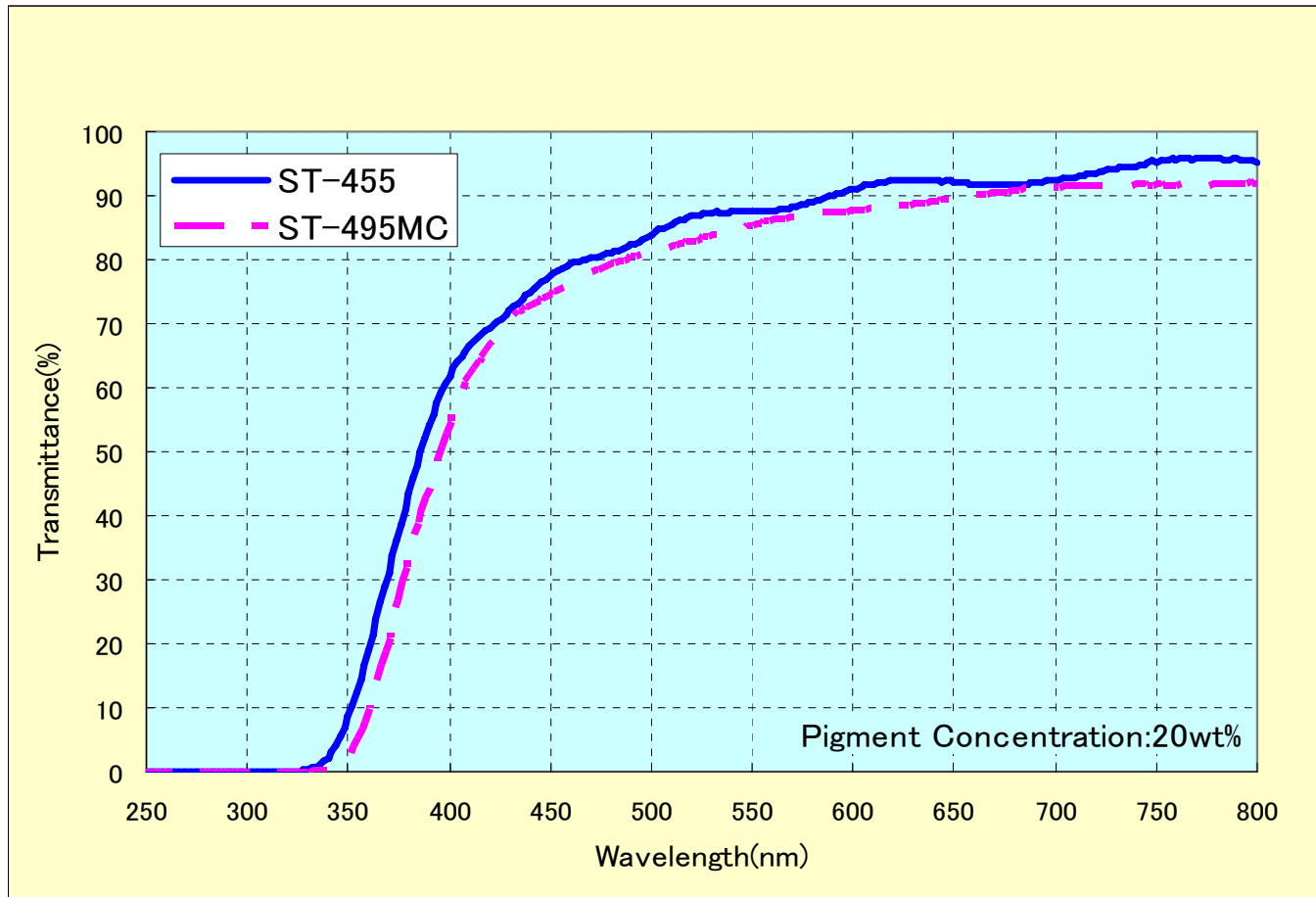
ST-495MC



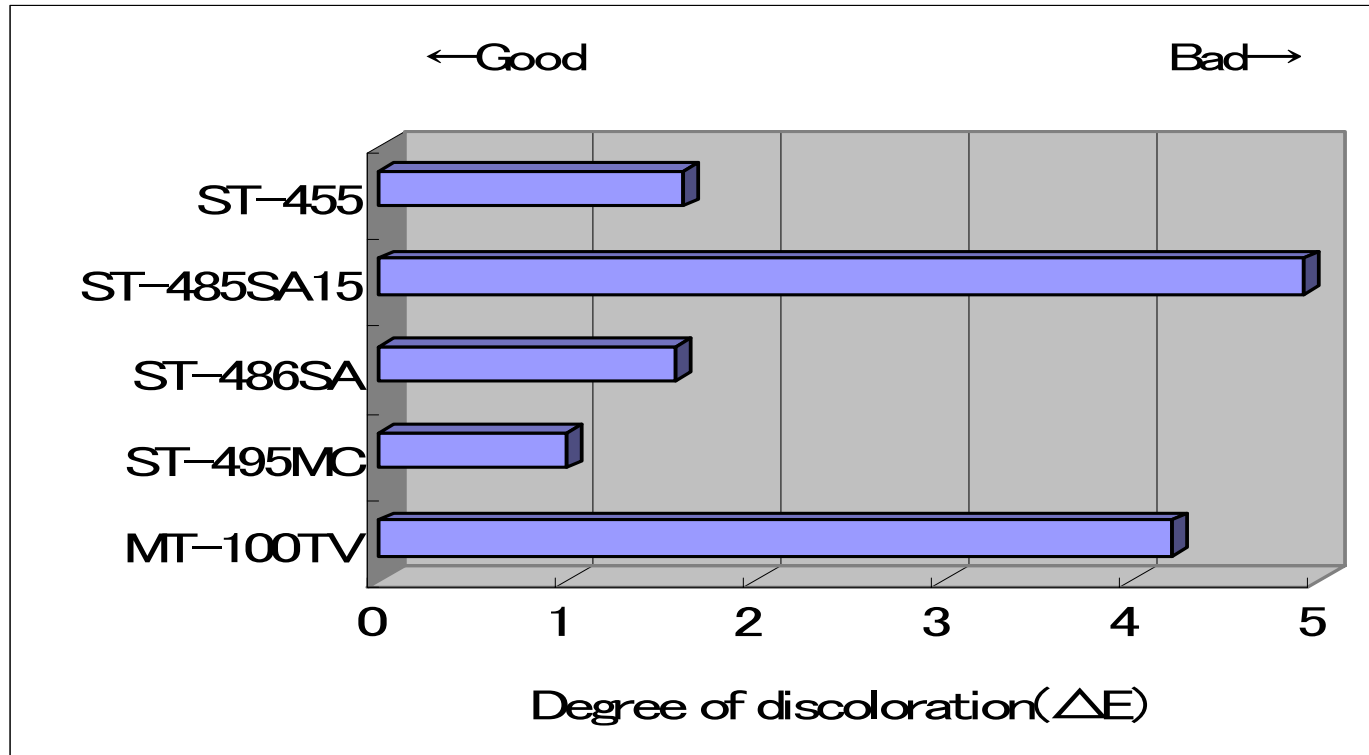
Butterfly

Grade	ST-495MC
Crystal Form	Rutile
Particle Size	Width 20~60nm Length 50~150nm
Inorganic Surface Treatment	Aluminum Hydroxide Silica
Organic Surface Treatment	Lauric Acid
Feature	Good UVA-shielding

Light Transmittance Curve of W/O Sun Screen



Light Stability



Measuring method

Sample : C12-15 Alkyl Benzoate / TiO₂ = 3.5 / 3 by weight

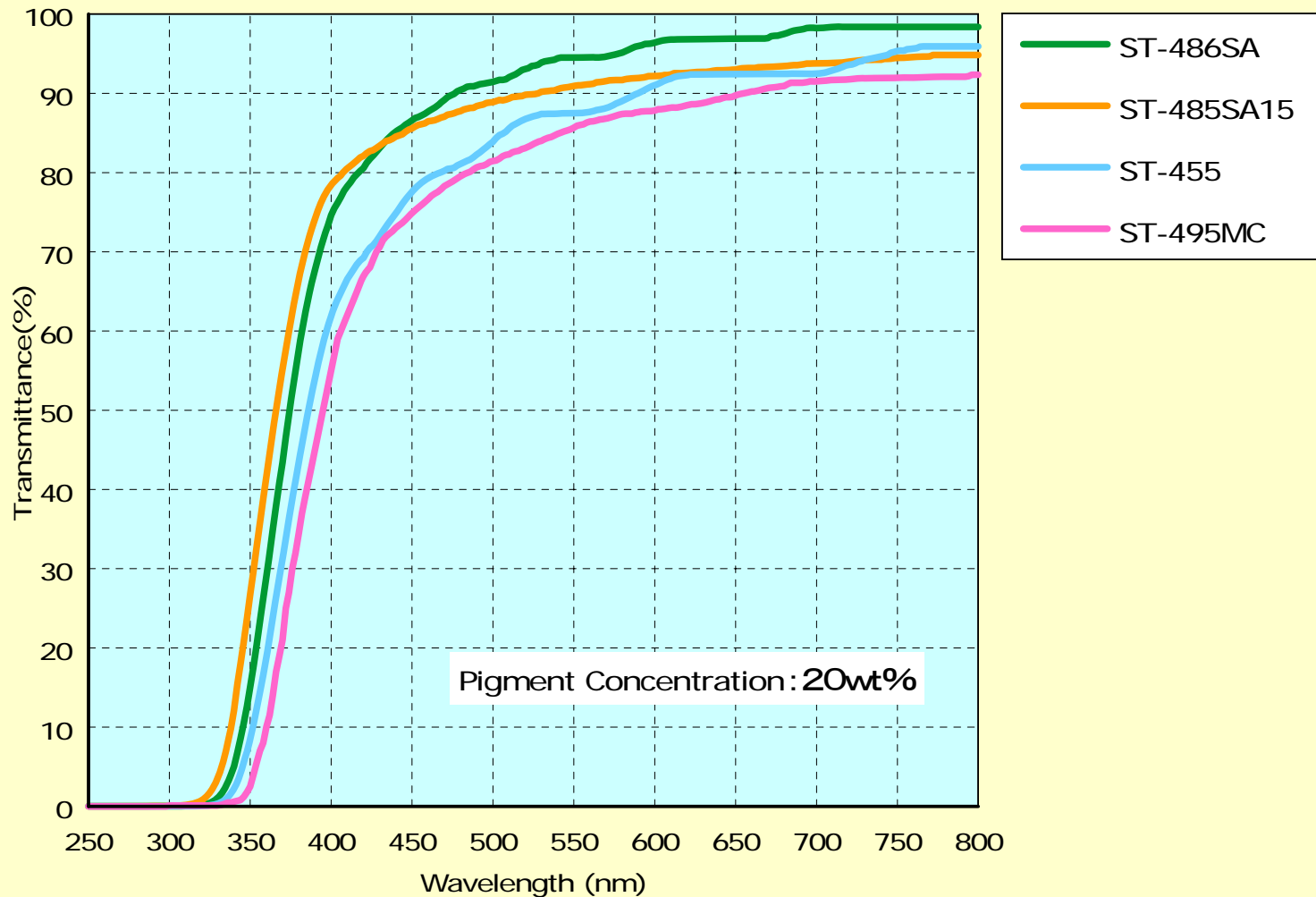
Mixing : 3minutes

Exposure : 1mW/cm² UV fluorescent lamp 1hour

Measurement : L, a, b

Degree of discoloration : $\Delta E = (\Delta L^2 + \Delta a^2 + \Delta b^2)^{1/2}$

Light Transmittance Curve of W/O Sun Screen

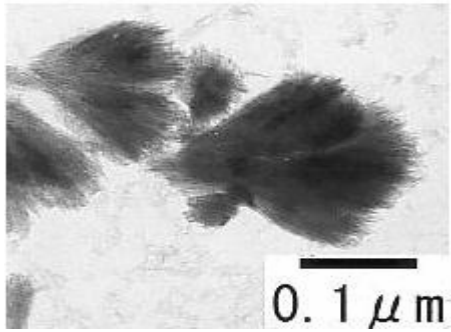


Silky Touch Titanium Dioxide ST-700

Features

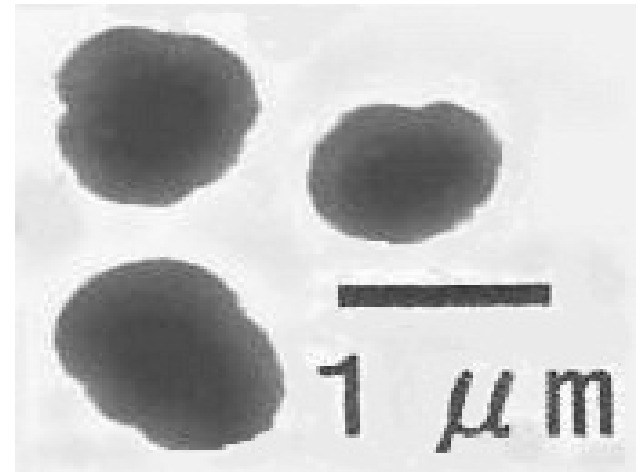
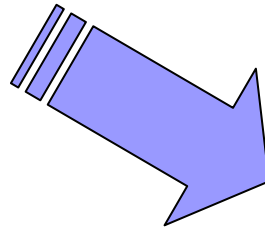
- Spread well onto skin and lead it to smoother
- Moderate tinting strength and hiding power
- Various Particle Size
(0.3, 0.5, 0.8, 1.0 μm)

Silky Touch Titanium Dioxide ST-700

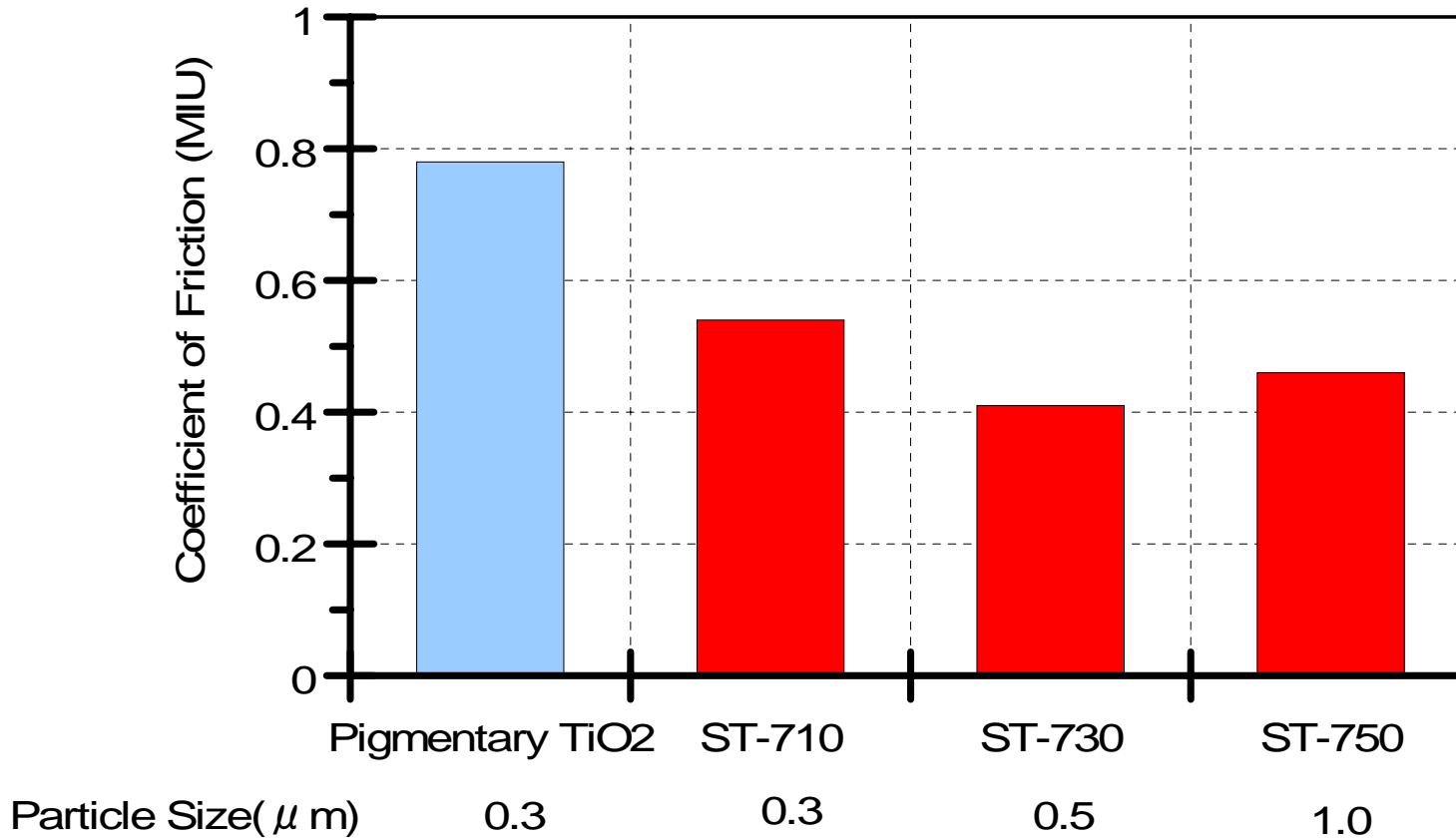


Fan Shape Particles

Aggrigation



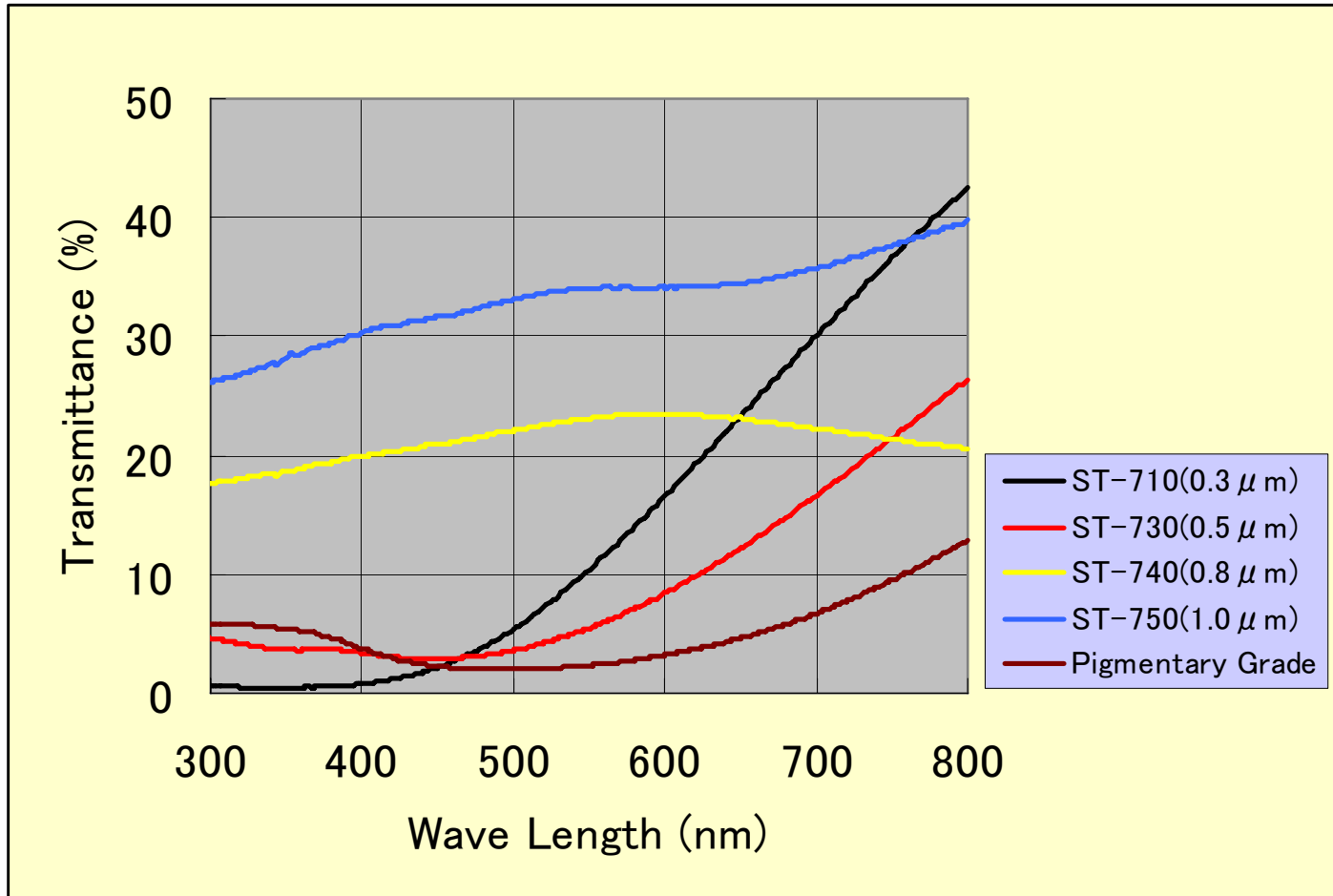
Data from Friction Tester



Properties of ST-700

Properties		ST-710EC	ST-730EC	ST-740EC	ST-750EC
Particle size (μm)		0.3	0.5	0.8	1.0
Surface treatment	Inorganic	Aluminum Hydroxide			
	Organic	Dimethicone/Methicone Copolymer			
Spec. Surface Area(m^2/g)		27	20	14	2

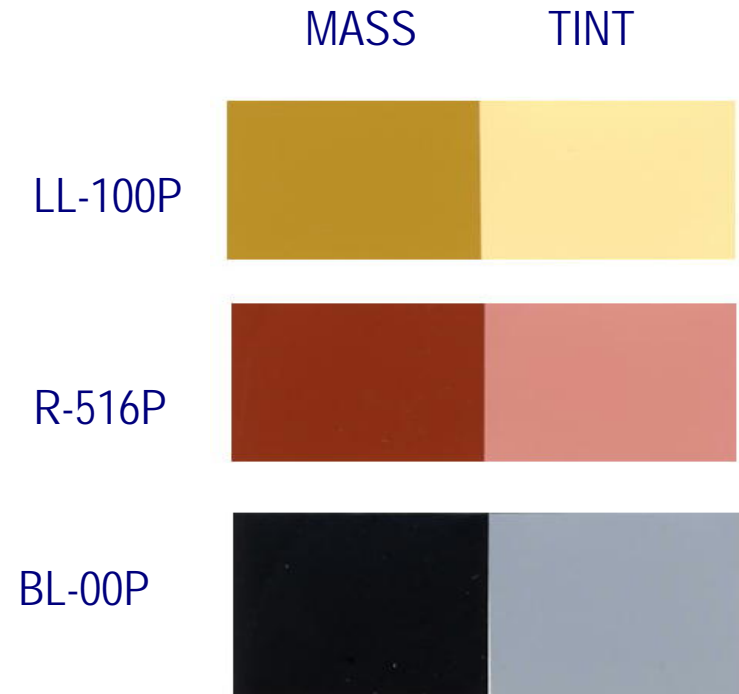
Optic characteristic of ST-700



TAROX Iron Oxide for Cosmetics

- Yellow Iron Oxide
- Red Iron Oxide
- Black Iron Oxide

The highest evaluation
is obtained for
Uniformity and non-toxicity.



TAROX Iron Oxide for Cosmetics

TAROX Iron Oxide is manufactured in modern facilities under a stringent quality control regime to guarantee continuous supply of quality products.

■ Advantages of TAROX are :

- High purity, high uniformity and non-toxicity
- Pure and bright colors of mass and tint tone
- High dispersibility
- High tinting strength and hiding power
- Good weathering resistance
- Strong acid/alkali resistance

Properties of P series

Grades	Color	Chem. formula	Particle Size(μ m)	pH
LL-100P	Yellow	FeOOH	0.07 \times 0.8	8.0 \pm 1.0
R-516P	Red	Fe ₂ O ₃	0.08 \times 0.8	3.5 \pm 1.0
BL-100P	Black	Fe ₃ O ₄	0.2 \sim 0.6	6.5 \pm 1.0