Sustainable Titania Technology Inc. *STi*

The Photo-oxidation the Photocatalysis Titanium Dioxide to contribute to the global environmental improvement

Outline of ***STi***

- Established : in September, 2000
- Capital paid : Yen 75 million
- No. of officers and employees: 9
- President : Mr. Shiro Ogata
- Facility : Head office in Tokyo and
  Laboratory in Saga, Kyusyu Is.
- Production : Annual capacity to be 20ton
  based on 0.85w% Dispersion

Photo Oxidation : Anti stain, Protective against UV aging

STi Titania High Coat Z

STi Titania High Coat Z Super

Photocatalysis : Gas decomposition,Anti bacillus, Anti mildew

STi Titania High Coat

STi Titania High Coat Super

SUS,Glass : Anti stain,Anti rust:

The National Museum of Art, Osaka

TiO2 Photo-oxidation & Photocatalysis
New but proven technology

- Now, an industrial standard technology
- As a standard application especially to the construction industry in Japan
- For a maintenance cost saving and Building Asset-value raising technology
- Allow the Architects' free (unlimited) designing versatility
- As a standard specification for the new building and civil works

Photo- oxidation & Photocatalysis Function and Application

	Decomposition	Hydrophilicity
Self-cleaning (Photo- oxidation & Photocatalysis)	Building façade, Civil works, Road related, Sign board, etc.	Building façade, Civil works, Road related, Sign board, etc.
Anti-Virus (Photocatalysis)	Medical facility, etc.	---
Air / Water Purificatio (Photocatalysis)	Air conditioner, curtain, water filter, etc.	---
Anti-foggin (Photo- oxidation & Photocatalysis)	---	Mirror, Peeping glass, etc.

Solution by Photo- oxidation & Photocatalyst **Titaium Dioxide**

- Decomposition by Titanium Dioxide
- Hydrophilicity by Titanium Dioxide
- Conductivity by Titania Hi-Coat™Z
- Conductivity by Titania Hi-Coat™

"TiO_2 Photo- oxidation & Photocatalysis"
technology-solve the issue.

STi s Titania Technology

STi Titania High Coat Z

1. All ingredients are inorganic (main material is TiO_2 complex).
   Since no organic binding agent included service life ob the coating is extremely long. PH7 - 8 Water, Water+ ethanol
2. Film thickness under 0.1 micron with super trans-parency and Positive charged characteristics give substrates super hydrophilicity and releasing dirt attached to the surface and also protect substrates from UV aging.

TiO2 complex particles keep round shape in tcoating layer**,** **2nm~10nm** diameter, each particle contacts at point, with flexibility. No crack occurs while substrates are bent or under vibrating conditions.

Adhesive mechanism of titania is that Peroxide reacts with O_2 and OH on the substrates and repeat this dehydration and condensation reactions.

STi Titania High Coat Z **does not include any adhesive promoter and binders.**

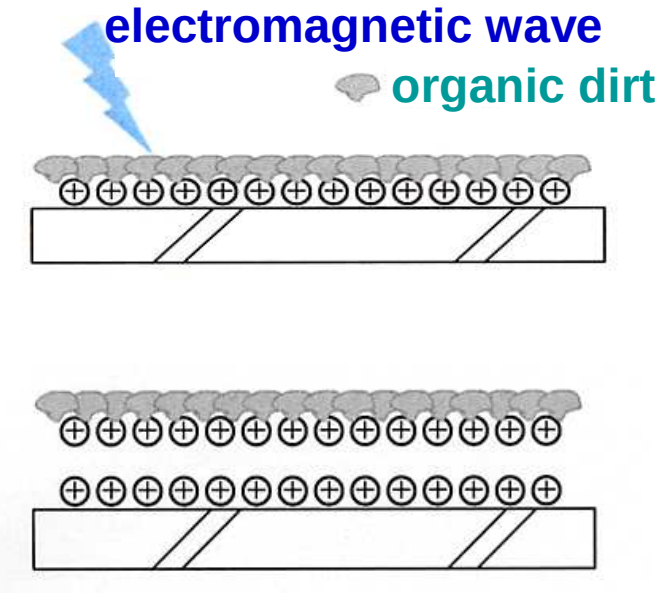
	Product name	Function
Photocatalysis Decomposition ・ Anti-Virus	***STi*** *Titania High Coat* Proper substrate : Everything	Set measures to the sick-house Deodorization Anti-Virus
Photo Oxidation Hydrophilicty Anti stain	***STi*** *Titania High Coat* Z:Z18 Proper substrate : building materials	Anti stain Blocking for organic substrate
	STi *Titania High Coat* Z: Z18-1000 A, B (High performance) Proper substrate : Glass, metal, Other everything.	Anti stain Anti rust Protective against UV aging
	STi *Titania High Coat* Z: Z18-1000 super A, B (High performance) Proper substrate : Glass, metal, Other everything.	Anti stain Anti rust Protective against UV aging Hard Coat Type
Photo Oxidation Hydrophobic Anti stain	***STi*** *Titania High Coat* Z Hydrophobic C: Z・Hydrophobic・CA,CB Proper substrate : Concrete, Mortal, Stone (Brush except) Sand blast material of wall Plasterer material	Anti stain Water absorption protector Acid rain absorption protector
	STi *Titania High Coat* Z Hydrophobic T : Z・Hydrophobic・TA,TB Proper substrate : Stone (Brush), Ceramic tire, Mortal joint	Anti stain Water absorption protector Acid rain absorption protector
	STi *Titania High Coat* Z Hydrophobic : Z・Hydrophobic Proper substrate : Water absorption building materials	Anti stain Water absorption protector Acid rain absorption protector
Photo Oxidation Coloring Hydrophobic Anti stain	***STi*** *Titania High Coat* Z Color Hydrophobic : Z・Coloring・Hydrophobic Proper substrate : Water absorption building materials	Coloring Anti stain Water absorption protector

Photo- oxidation anti staitn technology

1. Organic dirt on the surface of the substrate is attacked by electromagnetic wave and plus charged.

2. Electrical repulsion occurs between the surface of the substrate and organic dirtOrganic dirt is separated from the surface of coated substrate

3. Under the condition of 2. flusing water, rainfalls and wind help organic dirt being removed earlier



Advantages of Photo Oxidation technology

1. Reduce hydrophobic contamination from silicone sealants and keep the surface of silicone sealants clean
2. Excellent anti stain performance by electrostatic repulsing and super hydrophilicity
3. Excellent esthetics on organic substrates by one layer coating
4. Protective performance against acid rain, exhaust gas and UV
5. Super thin film keeps original esthetics of the substrates

Magnets repulse by magnetic force

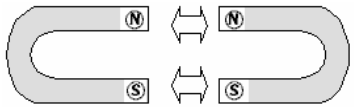
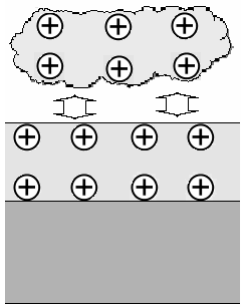


Photo Oxidation utilizes electrostatic repulsing

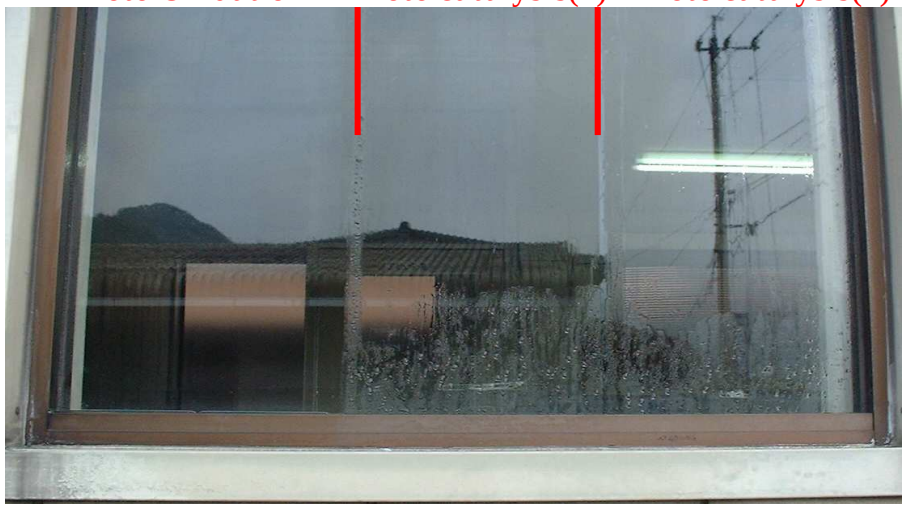


STi anti stain technology:

Comparison of Photo catalysis and Photo Oxidation

Silicone sealant applied for glazing Photo taken after 1 year's exposure

Photo Oxidation Photo catalysis(1) Photo catalysis(2)

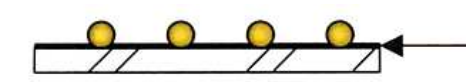


Solution against Urban Stain

- Against stains sticked to by oil and other type of organic bonding

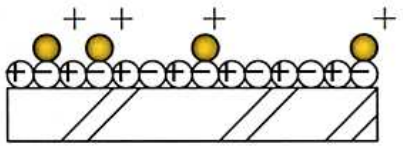
- Against dust and stain sticked by electrostatics

- Against stain invaded and stain in fine gap



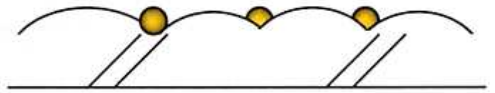
sticked with organic bondings : **Stain**

Removed by decomposition



Sticked by electrostatics

Clean-off by Conductivity



Invaded and stayed in gap

Flushing out by rain water