

TI02 – SELF CLEANING PHOTOCATALYTIC MEMBRANE





TiO₂ - COATED PTFE

PTFE fiberglass coated with non-toxic and flame-resistant TiO₂ (titanium dioxide) produces a photocatalytic membrane that functions like the leaves of a tree, providing shade and comfort while actively neutralizing airborne pollutants and odours.

The unique self-cleaning benefits of TiO₂ allow the material to break down dirt and other organic materials through a chemical reaction with the sun's UV rays, oxygen and water vapour, present in the air.

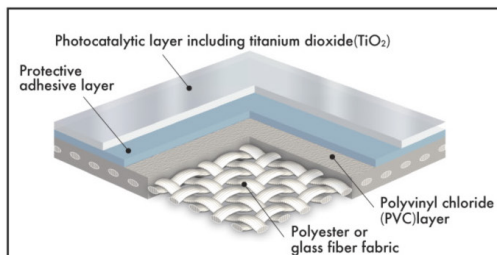
This reaction, known as oxidation-reduction, converts these materials into harmless gases and natural components without using excess chemicals, solvents or water. The resulting sediments are simply washed away by rain. As a result, the membrane material remains bright and clean, reducing the need for frequent service

Whilst many fabrics have self-cleaning attributes, TiO₂ is the only ACTIVE surface treatment ensuring a clean surface all year round with minimal maintenance

The fabric is available in three choices each graded according to their degree of translucency.

TiO₂ coating technology promises an extended beauty, translucency and an "as new" appearance for the life of your fabric structure.

PVC coated fabric with TiO₂



PVC-coated fabric with TiO₂ is a combination of standard base cloth material coated in PVC, with TiO₂ photocatalytic treatment added to the fabric surface. Due to the oxidation decomposition and highly hydrophilic nature caused by the TiO₂, dirt can be easily washed off.

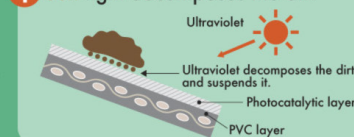
As this photocatalytic coating lasts as long as the membrane life, the fabric structure will always appear clean and new. Also, its high heat reflectivity avoids solar heat gain inside the building or structure.

There are variations of strength and light transmission. Custom-ordered colors are also available. Light reflectance and transmission are changed by the color.

Self-cleaning

The self-cleaning effect of the PVC-coated fabric with TiO₂ begins with decomposition. The surface layer of the photocatalytic membrane decomposes organic matter (dirt etc.) under the sun's UV rays. This process allows for easy removal of the dirt with hydrophilicity.

1 Sun light decomposes the dirt



2 Rain suspends and washes away the dirt



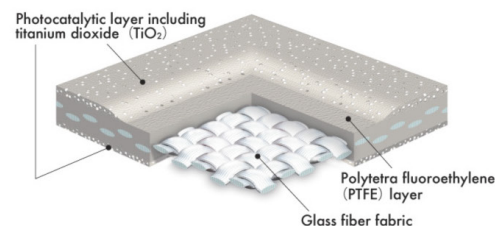
Exposure Test

PVC-coated fabric

Period: 2000 Jun. - 2002 Jun
Location: Osaka
Tested by R&D, Taiyo Kogyo

		Non-TiO ₂	With-TiO ₂
2 years color difference (°1)	45°	21.2	2.7
	90°	21.4	3.9

PTFE coated fabric with TiO₂



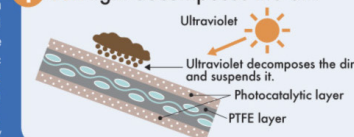
PTFE-coated fabric with TiO₂ is a combination of standard base cloth material coated in PTFE, with TiO₂ photocatalytic treatment added to the fabric surface. It demonstrates PTFE membrane's own strength and light transmission while removing dirt and contaminants by oxidation decomposition, the result of a photocatalytic action. The antifouling property also works on the vertical surface where traditional fabrics often show dirt and contaminants.

The TiO₂ Photocatalytic effect lasts as long as the membrane life. This product with NO_x removal performance is also available.

Self-cleaning

The self-cleaning process of the PTFE-coated fabric with TiO₂ begins with powerful decomposition. The surface layer of the photocatalytic membrane decomposes organic matter (dirt etc.) under the sun's UV rays. This process allows for easy removal of the dirt with occasional precipitations.

1 Sun light decomposes the dirt



2 Rain washes away the dirt



Exposure Test

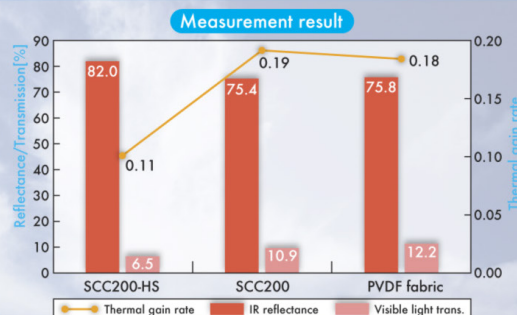
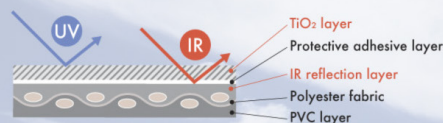
PTFE-coated fabric

Period: 2000 Jun. - 2002 Jun
Location: Osaka
Tested by R&D, Taiyo Kogyo

		Non-TiO ₂	With-TiO ₂
2 years color difference (°1)	45°	6.9	1.1
	90°	11.5	1.4

SCC-HS... heat shield type

SCC-HS fabrics has a higher infrared reflectance, and therefore has a lower thermal gain rate. Our experiments show that the room temperature decreases by up to 5.1°C during summer time with SCC-HS, compared to the traditional membrane material. A high level of UV reflectance can delay the deterioration of fabric coatings and improve weather resistance.



NO_x Reduction (FGT800-TFB actual measurement result in JAPAN)

Decomposes Nitrogen oxide (NO_x) contained in fuel exhaust and other sources, providing significantly purified air.

Results of NO_x reduction on photocatalytic membrane (*2) structures based on JIS R 1701-1(2004) tests: (*3)
NO_x removal volume = 0.55(μmol/50cm²·5h)

NO_x removal volume per hour utilizing PTFE-coated fabric with TiO₂ of 1000m².
0.66g/1000m²·h

(*2) In case of fabric: FGT800-TFB(PTFE/Glass fiber-TiO₂ : 0.8mm Thickness) (*3) JIS R 1701-1 (2004) is equivalent to ISO 22197 (2007)

Gross Vehicle Mass	NO _x Emission Factor(g/km)	NO _x discharge (g/vehicle/h)	NO _x removal volume per 1000m ² in terms of the number of vehicles
Truck/Bus(1.7~3.5t)	0.018	0.409	1.6 vehicles
Car(~1.7t)	0.013	0.295	2.2 vehicles

NOTE Based on low-emission vehicles with levels 75% lower than the 2005 standard under the approval system of Ministry of Land, Infrastructure, Transport and Tourism, Japan

Removal performance is based on the capability to remove NO_x being emitted during an hour drive at an average speed of 10~15km/h(22.7km/h).