- ***SOLARCOAT*** *for decomposing organic contaminants, VOCs, Formaldehyde, etc.*
- ***SOLARCOAT*** *for decontamination and self-cleaning.*
- ***SOLARCOAT*** *for anti-bacterial.*

SOLARCOAT
Green Area
선한M&T

SUNHAN M&T CO., LTD

Headquarter · Factory
622-12 Namchon-dong, Namdong-gu, Incheon,Korea
TEL : +82-32-822-8272~3
FAX : +82-32-822-8274
Homepage : http//www.solarcoat.co.kr
http//www.esunhan.com

SUNHAN M&T CO., LTD
http//www.solarcoat.co.kr
http//www.esunhan.com

SOLARCOAT, *an environment-friendly room temperature coating agent with photocatalyst*

SUNHAN M&T

Upon the era of globalization, we started our business with great enthusiasm. We make every effort to be a world-renowned model enterprise which can contribute to the welfare and needs of our customers.

Living in the era of information and technology, we hope to be an enterprise which can make people feel happy and comfortable and, at the same time, increase our profits through our advanced technologies.

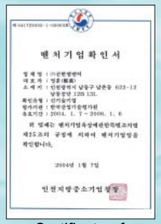
To make it happen, it is important to put our business and technology into globalization, systemization, informatization.

In addition, we give priority to developing environment-friendly products, energy-saving products and consumer-oriented products for betterment of our global environment. For this purpose, we utilize all the networks possible.

We promise to be a model enterprise that can be relied upon by our customers and return some part of our profits to society

2003. 4	Applied for the patent of neutral Photocatalyst
2003. 4	Developed photocatalyst for hardening in normal temperatures which are lower than 1° water contact angle.
2004. 3	Developed visible-lay photocatalyst for the first time in Korea

■ Various officially recognized certificates


Certificate of Venture Enterprise

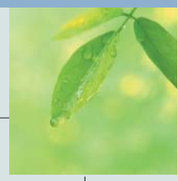
ISO 14001

ISO 9001

Certificate of Trademark Registration

PCT


FDA



Introduction of business

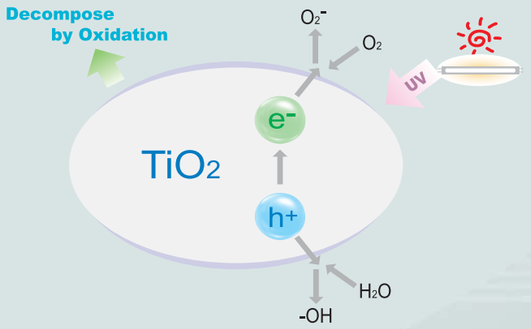
Catalyst is.....

- *Catalyst is a substance that initiates or accelerates a chemical reaction without being affected in itself.*

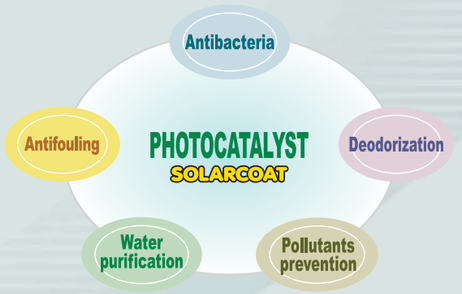
Photocatalyst is

- *Photocatalyst is a semiconductor where strong oxidation occurs on the surface when exposed to UV or sunlight.*
  It decomposes organic compounds by using energy of UV radiation. However, it also decomposes and degrades whole organic compounds due to its significantly antibacterial and deodorization effects.

The Mechanism of photocatalyst is...



Effect of Photocatalyst



Super Hydrophilicity

- *The hydrophilic ability of photocatalyst TiO_2 is induced by light radiation on the surface converted into hydroxyl group.*
  Coated on the glass, no water drops are formed on the photocatalyst TiO_2 film on it.
  It can be applied to the bathroom glass and the front window, the back mirror of a car. When applied to them, it can get dirtied by pollution. It can be also applied to the transparent insulation boards, road side walls and road signs, etc.

- *When photocatalyst are installed on the exterior wall of a building, it can be kept clean all the time by spraying water or rainwater. As its lifespan is semi-permanent, the cost of building maintenance can be dramatically reduced.*

SUNHAN M&T

SOLARCOAT®

SOLARCOAT is a liquefied coating agent of photocatalyst TiO_2. It can be used in the inside and outside of a building at room temperature.
SOLARCOAT has some enhanced characteristics as photocatalyst, that is decomposing organic contaminant , self-cleaning, anti-contamination, antibacterial and deodorization.

Feature of SOLARCOAT

1.Surpassed the limits of existing photocatalyst.
- Ultraviolet rays and visible rays can be used as a source of energy at the same time by surpassing the limits of existing photocatalyst which have used only ultraviolet rays as a source of energy.

2.Passed FDA (Food and Drug Administration) tests - Confirmed safety
- By acquiring FDA approval, it is confirmed that it is safe to human bodies enough to be used as an additive to food.

3.Applied for world patent with the technology of neutral photocatalyst.
- As the only neutral photocatalyst at present, it surpasses the existing acid photocatalyst in its function and safety.

4.Its size is smaller than 10 nanometer.
- As the neutral photocatalyst is smaller than 10 nanometer and its area on contact with air gets expanded relatively, it is excellent in decomposition and elimination of hazardous articles.

5.Colorlessness and transparency
- As it is colorless and transparent, there are no stain or marks left on the surfaces of furniture, ceiling and walls where it is applied.

6.It contains nano silver basically.
- With nano silver, its antibiotic function has been greatly enhanced.

7.It is excellent in eliminating bacteria floating in the air.
- Through the tests done by the Nambang Hospital in China, it is confirmed that it is excellent in eliminating various bacteria in the air.

8.It eliminates SARS germs
- Through the test done by Chinese University of Hong Kong, it proved its great effects in eliminating SARS germ.

9.It is exported to overseas countries including Hong Kong and China.
- It is supplied to world-large enterprises including Shinhwa Group in China.

Application area of SOLARCOAT

- *It can be widely used for buildings, smoking room, underground shopping centers, department stores, pavilions for the elderly, schools, apartments, tunnels, railroad cars, road signs, hospitals, pharmaceutical factories, electronics factories, food factories, areas for sanitation and anti-bacteria and so on.*

How to use

- *You can spray SOLARCOAT onto the glass, tiles, concrete and wood of the inside and outside walls of a building after cleaning them first.*

Package

- *4ℓ , 20ℓ*

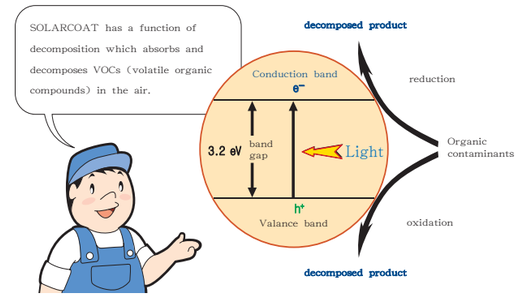
SOLARCOAT for decomposing organic contaminants, VOCs(volatile organic compounds), Formaldehyde, etc.

■ Photocatalytic decomposition reaction

SOLARCOAT

■Characteristics of SOLARCOAT for decomposing organic contaminants
- It has an excellent ability of decomposing organic contaminants such as environmental hormone.
- It can be used in various fields such as water treatment and air purification.
- It can absorb and docompose VOCs, Formaldehyde in the air.
- As a coating agent for room temperature, it doesn't require heat treatment.

■Application area
- Station buildings, airports, underground shopping centers, department stores, pavilions for the elderly, apartments, tunnels, factories, office buildings, public toilets, indoor swimming pools and so on.



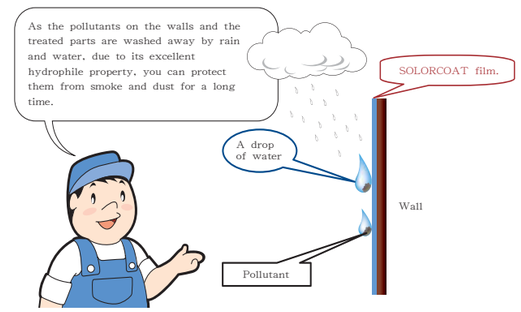
SOLARCOAT for decontamination and self-cleaning

■ Process of self-cleaning

SOLARCOAT

■Characteristics of SOLARCOAT for decontamination and self-cleaning
- It has a self-cleaning ability on the glass and tiles on the exterior wall of a building due to its high hydrophile properity.
- When it is coated onto the glass, drops of water do not stick to the glass and run down so that you can see through the glass.
- Pollutants such as dust do not stick to the coating film. So it is easy to remove them even after the film gets dirty.

■Application area
- High-rise buildings, tunnels, road signs in the expressway, outsides of railroad cars, outsides of vehicles, botanical gardens, billboards, an outside of a building and so on.



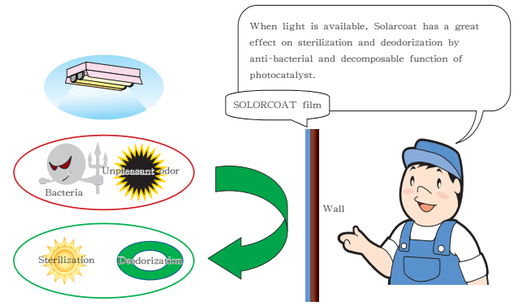
SOLARCOAT for anti-bacterial

■ Purification of life space *(Anti-bacteria, Anti-fungal, deodorizing).*

SOLARCOAT

■Characteristics of anti-bacterial SOLARCOAT
- It is excellent for its anti-bacterial function.
- It is excellent for its deodorizing effect.
- It is very economical as it has a great effect for a long time with just one application.
- It is very safe as it has no odor, smell and poison.

■Application area
- Hospital, pharmaceutical factory, food factory, electronic factory, paper factory, kindergarten, pavilion for the elderly, school, inside of apartment house and so on.



SUNHAN M&T

S · O · L · A · R · C · O · A · T

Self-cleaning and anti-bacterial effects of SOLARCOAT

Decomposition function

▶At the start of experiment

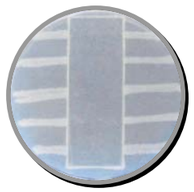
· A box is filled with cigarette smoke.

▶20 minutes after experiment

· The smoke in it is decomposed, so you can see the can in the box.

Antibiotic function

KATRI



Solarcoat coated

KATRI

Solarcoat not coated

Self - cleaning

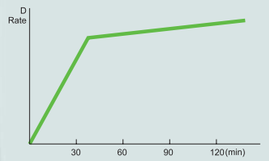
Aluminum

Glass

Tiles

DATA OF SOLARCOAT

Test certificate of decomposition function



Assessment of Deodoritation Achiaity

- **Test authority :** KATRI(Korea Apparel Testing and Research Institute)
- **Object for test :** Resolvability of SOLARCOAT
- **Test result :** Resolved more than 98 percent of Ammonia (NH3)

Test result of antibiotic function

- **Test authority :** KATRI(Korea Apparel Testing and Research Institute)
- **Object for test :** Antibiotic function of SOLARCOAT
- **Test result :** Confirmed more than 99 percent of antibiotic function

Self - cleanings

Below 1°

Below 3°

Below 20~30° (glass)

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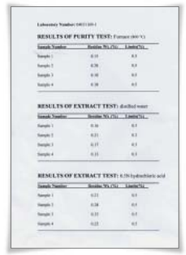
DATA OF SOLARCOAT

Passed FDA tests - Safety has been confirmed





Solarcoat complies with the norms of FDA & EPA of the U.S. and is safe to human bodies, so it can be used as an additive to food. The raw materials of TiO_2 itself was approved by FDA a long time ago, but Solarcoat is the first photocatalyst which has passed the safety tests of FDA. It is possible because the Solarcoat is neutral.

Test Certificate of Acute Oral Cavity


We deputed the Gwangdongseong Hygiene Test Center to do the oral cavity virulence test of photocatalyst SOLARCOAT products on August 23, 2003.
It has been certified that it has no oral cavity virulence of photocatalyst SOLARCOAT, complying with the national norm GB7919-87.

Acute skin test certificate


We deputed the Gwangdongseong Hygiene Test Center to do the acute skin irritation test of photocatalyst SOLARCOAT products on August 23, 2003. It has been certified that there is no skin irritation of photocatalyst SOLARCOAT (zero).

Test result of officially recognized Chinese authorities

1. Hong Kong Jungmoon University Hospital

2. Chinese Nambang Hospital

1. As a result of anti-SARS test with the use of SOLARCOAT, Professor S of Hong Kong Jungmoon University proved that it is very effective in eliminating most of SARS germs.

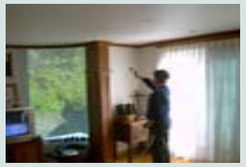
2. As a result of germ-eliminating test in the air with the use of SOLARCOAT at the Chinese Gwangjou Nambang Hospital, it has been confirmed that more than 72 percent of various germs were eliminated.

CASES (KOREA)








- Factory of pharmaceutical company
- Apartment
- Office
- Housing
- Automobile

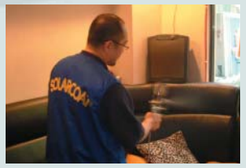
- Kindergarten
- Newly built school
- Application products, such as photocatalystic artificial flower

CASES (OVERSEAS)








- Hotel
- Office
- Apartment
- Housing
- Karaoke
- Gymnasium

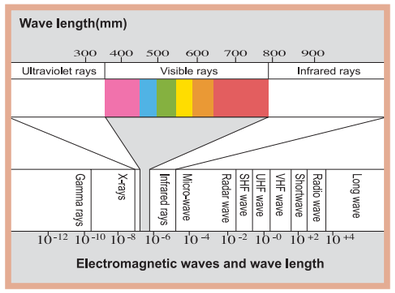
- University hospital
- University
- Motor shop
- Interior and exterior of building
- Other public facilities

SOLARCOAT-V (NEUTRAL, VISIBLE REACTIVE-TYPE PHOTOCATALYST)

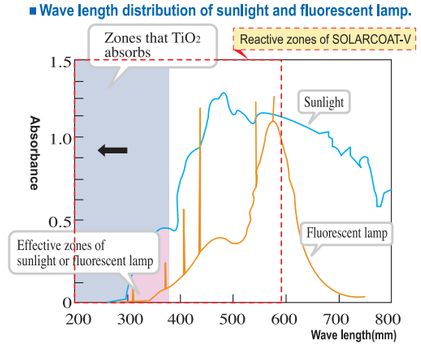
What is SOLARCOAT-V?

- *SOLARCOAT-V is a new-concept photoatalyst that resolves various hazardous articles in the indoor air by using not only ultraviolet rays which are less than 380nm, but also visible rays which are 380~600nm, as a source of energy. As it is more excellent in effectiveness than existing photocatalyst that use ultraviolet rays, which are less than 380nm, as a source of energy, it is said to be a next-generation photocatalyst that is effective even in the faint light.*

What are visible rays?



■ Wave length distribution of sunlight and fluorescent lamp.



Comparison of color analysis tests

- ***Resolution test of SOLARCOAT-V and other products***
  - ▶Test Method : Apply red ink over the surface coated with photocatalyst and expose it to sunlight for 10 hours
  - ▶Test Result : SOLARCOAT-V displayed outstanding effect of ink resolution in comparison to other products

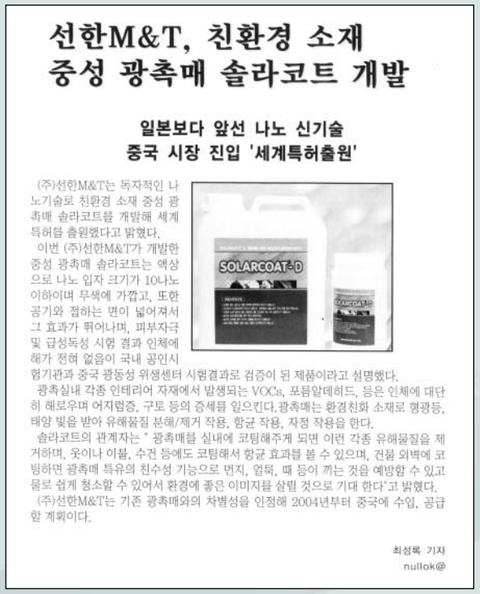
PRESS RELEASE (KOREA)

중성 광촉매 '솔라코르' 개발 (주)선한M&T

광촉매의 업그레이드를 주도한다

Interview

◀ April Issue of Venture Korea



선한M&T, 친환경 소재 중성 광촉매 솔라코트 개발

일본보다 앞선 나노 신기술 중국 시장 진입 '세계특허출원'

(주)선한M&T는 독자적인 나노기술로 친환경 소재 중성 광촉매 솔라코트를 개발해 세계특허를 출원했다고 밝혔다.

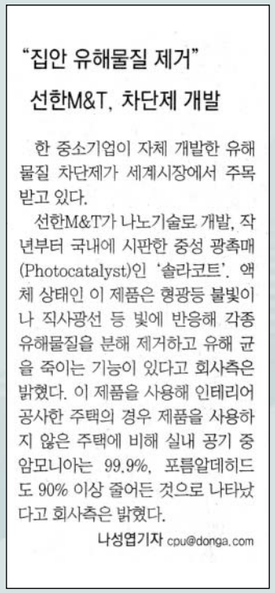
이번 (주)선한M&T가 개발한 중성 광촉매 솔라코트는 액상으로 나노 입자 크기가 10나노 이하이며 무색에 가깝고, 또한 공기와 접하는 면이 넓어져서 그 효과가 뛰어나며, 피부자극 및 급성독성 시험 결과 인체에 해가 전혀 없음이 국내 공인시험기관과 중국 광동성 위생센터 시험결과로 검증이 된 제품이라고 설명했다.

광촉실내 각종 인테리어 자재에서 발생되는 VOCs, 포름알데히드, 등은 인체에 대단히 해로우며 어지럼증, 구토 등의 증세를 일으킨다.광촉매는 환경친화 소재로 형광등, 태양 빛을 받아 유해물질 분해/제거 작용, 항균 작용, 자정 작용을 한다.

솔라코트의 관계자는 " 광촉매를 실내에 코팅해주게 되면 이런 각종 유해물질을 제거하며, 옷이나 이불, 수건 등에도 코팅해서 항균 효과를 볼 수 있으며, 건물 외벽에 코팅하면 광촉매 특유의 친수성 기능으로 먼지, 얼룩, 때 등이 끼는 것을 예방할 수 있고 물로 쉽게 청소할 수 있어서 환경에 좋은 이미지를 살릴 것으로 기대 한다"고 밝혔다.

(주)선한M&T는 기존 광촉매와의 차별성을 인정해 2004년부터 중국에 수입, 공급할 계획이다.

최성록 기자 nullok@



"집안 유해물질 제거"

선한M&T, 차단제 개발

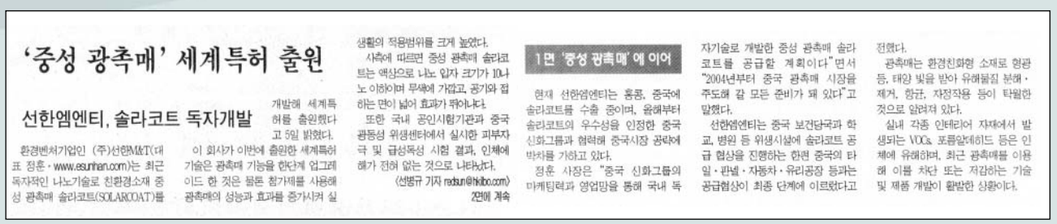
한 중소기업이 자체 개발한 유해물질 차단제가 세계시장에서 주목받고 있다.

선한M&T가 나노기술로 개발, 작년부터 국내에 시판한 중성 광촉매(Photocatalyst)인 '솔라코트'. 액체 상태인 이 제품은 형광등 불빛이나 직사광선 등 빛에 반응해 각종 유해물질을 분해 제거하고 유해 균을 죽이는 기능이 있다고 회사측은 밝혔다. 이 제품을 사용해 인테리어 공사한 주택의 경우 제품을 사용하지 않은 주택에 비해 실내 공기 중 암모니아는 99.9%, 포름알데히드도 90% 이상 줄어든 것으로 나타났다고 회사측은 밝혔다.

나성엽기자 cpu@donga.com

◀ Dong-A Ilbo January 15

▲ Korea Interior News



'중성 광촉매' 세계특허 출원

선한엠엔티, 솔라코트 독자개발

환경벤처기업인 (주)선한M&T(대표 정훈 · www.esunhan.com)는 최근 독자적인 나노기술로 친환경소재 중성 광촉매 솔라코트(SOLARCOAT)를 개발해 세계특허를 출원했다고 5일 밝혔다.

이 회사가 이번에 출원한 세계특허 기술은 광촉매 기능을 한단계 업그레이드 한 것은 물론 첨가제를 사용해 광촉매의 성능과 효과를 증가시켜 실생활의 적용범위를 크게 높였다.

시축에 따르면 중성 광촉매 솔라코트는 액상으로 나노 입자 크기가 10나노 이하이며 무색에 가깝고, 공기와 접하는 면이 넓어 효과가 뛰어나다.

또한 국내 공인시험기관과 중국 광동성 위생센터에서 실시한 피부자극 및 급성독성 시험 결과, 인체에 해가 전혀 없는 것으로 나타났다.

(선봉규 기자 redsun@hkbo.com)

1면 '중성 광촉매'에 이어

현재 선한엠엔티는 홍콩, 중국에 솔라코트를 수출 중이며, 올해부터 솔라코트의 우수성을 인정한 중국 신화그룹과 협력해 중국시장 공략에 박차를 가하고 있다.

정훈 사장은 "중국 신화그룹의 마케팅력과 영업망을 통해 국내 독자기술로 개발한 중성 광촉매 솔라코트를 공급할 계획이다"면서 "2004년부터 중국 광촉매 시장을 주도해 갈 모든 준비가 돼 있다"고 말했다.

선한엠엔티는 중국 보건당국과 학교, 병원 등 위생시설에 솔라코트 공급 협상을 진행하는 한편 중국의 타일 · 판넬 · 자동차 · 유리공장 등과는 공급협상이 최종 단계에 이르렀다고 전했다.

광촉매는 환경친화형 소재로 형광등, 태양 빛을 받아 유해물질 분해 · 제거, 항균, 자정작용 등이 탁월한 것으로 알려져 있다.

실내 각종 인테리어 자재에서 발생되는 VOCs, 포름알데히드 등은 인체에 유해하며, 최근 광촉매를 이용해 이를 차단 또는 저감하는 기술 및 제품 개발이 활발한 상황이다.

▲ Hwang Kyeong Ilbo January 6, 2004