

# Mist coating of photocatalyst

## Its application is easy 3 steps!



Even small areas can be covered with photocatalyst by spraying 2.5µm particles with a dedicated atomizer. Minacoat® does not contain binders thanks to our special technology, so it does not require curing of glass and can be applied quickly.



▲Dedicated atomizer  
Certificate of utility model registration: No. 3163156  
The title of the creation: Photocatalyst atomizer



▲How photocatalyst is applied

Before coating, we will arrange a meeting to discuss and estimate the work to be done. >>> E-mail: [info@opeth.co.jp](mailto:info@opeth.co.jp)

### Application examples

#### To prevent infection: Room/vehicle interior coating



Kindergarten



Ambulance



Care taxi

#### For antibacterial use: Bathroom coating



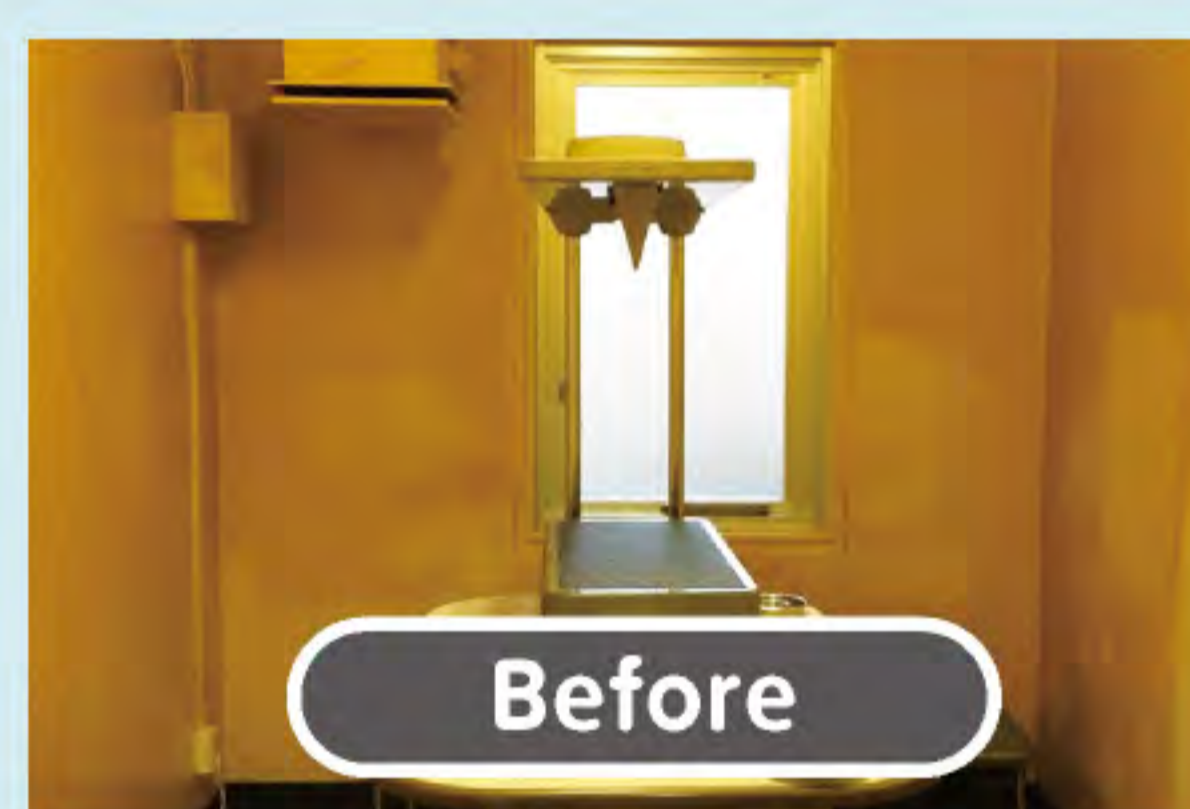
Before application: 22,917RLU  
43 months after application: 264RLU



Before application: 21,449RLU  
43 months after application: 803RLU

Testing three years and seven months later, the antimicrobial effect remained!

#### For odor/stain prevention: Smoking room coating



Before



After

Clean with Kabi Knock Power 2 and coat with minacoat®

#### Three-year guarantee

Guarantee conditions: When significant deterioration of stain- and deodorant functions under normal conditions of use and maintenance occurs after completion and delivery, and the cause is a defect in materials or construction. Details of guarantee: Repairs shall be performed in the case of significant deterioration of the stain-proof and deodorant functions within the guarantee period in the contents of the quotation and construction specifications. \*Please contact us for more information on guarantee coverage.



#### SDGs in minacoat®

Minacoat® has strong sterilization in sunlight and indoor light, and exhibits antibacterial performance in the dark. This sustainable and eco-friendly product is made of environment cleaning and energy recycled material.



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Distributing agent



# The key weapon in the fight against infection is photocatalysis.

Make your room safe by high-function photocatalyst coating!



The advanced photocatalyst minacoat® is clearly different from conventional photocatalysts

See inside for details!

**Point 1**  
Pioneer of the industry

Opeth offers one of the **top quality** visible-light-driven photocatalysts **in the industry**

**Point 2**  
Valid evidence

**Tested** for effectiveness against many bacteria and viruses, including **COVID-19**

**Point 3**  
Disinfects in the dark, sterilizes in the light

Inhibits the growth of bacteria and viruses **indoors and in the dark**

# Fight against infection with a proven product, the advanced photocatalyst **minacoat®**

## 1 Antiviral/antibacterial effects

### The result of COVID-19 inactivation test on minacoat®

#### Test summary

The new coronavirus (SARS-CoV-2) shared from the National Institute of Infectious Diseases was incubated on a glass piece (25cm<sup>2</sup>) coated with minacoat and left under light irradiation (500 Lx) and in the dark for 4 hours before measurement. The table on the right lists the test result.

	Virus infectivity titer (PFU/sample)					
	4 hours after light irradiation			4 hours after kept in the dark		
	Virus infectivity titer	Average	Common logarithm	Virus infectivity titer	Average	Common logarithm
Untreated product	n1	3.3×10 <sup>6</sup>	3.4×10 <sup>6</sup>	5.53	n1	6.9×10 <sup>6</sup>
	n2	3.5×10 <sup>6</sup>			n2	5.2×10 <sup>6</sup>
	n3	3.5×10 <sup>6</sup>			n3	6.0×10 <sup>6</sup>
Advanced visible-light-driven apatite coated photocatalyst minacoat® (minacoat DC)	n1	2.3×10 <sup>6</sup>	2.5×10 <sup>6</sup>	5.40	n1	3.6×10 <sup>6</sup>
	n2	2.6×10 <sup>6</sup>			n2	4.3×10 <sup>6</sup>
	n3	2.7×10 <sup>6</sup>			n3	4.0×10 <sup>6</sup>

Test using SARS-CoV-2 (Shared from the National Institute of Infectious Diseases; JPN/TY/WK-521)  
Test laboratory: Japan Textile Products Quality and Technology Center

#### In summary...

- 1 Sterilizes 100,000 viruses in 4 hours under 500Lx (equivalent to light level of general office spaces) of light!**
- 2 Inhibits the growth of 210,000 viruses even in the dark!**

Point!

The test was conducted using the new coronavirus shared by the National Institute of Infectious Diseases, rather than an alternative virus. Very few institutions have actually conducted tests with the new coronavirus, but Opeth was one of the pioneers in the industry to conduct the test.

## Why can minacoat® sterilize viruses?

The structure of a virus consists of RNA carrying genetic information wrapped in a protein membrane. We believe that viruses are highly inactivated by OH radicals (reactive oxygen species) generated by photocatalysts.

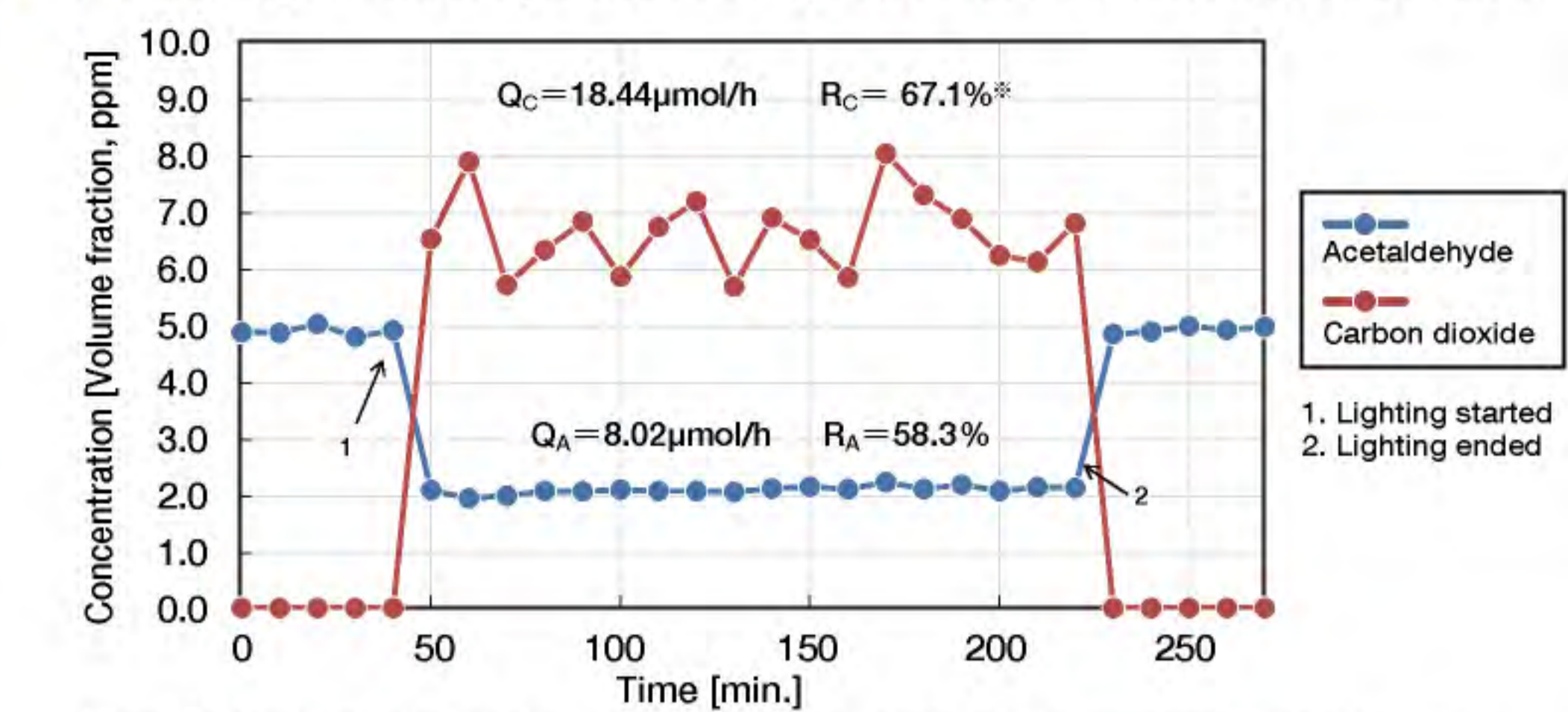


## 2 Removal of harmful substances

In addition to viruses and bacteria, NO<sub>x</sub>, SO<sub>x</sub>, and VOC can also be decomposed.

### Acetaldehyde

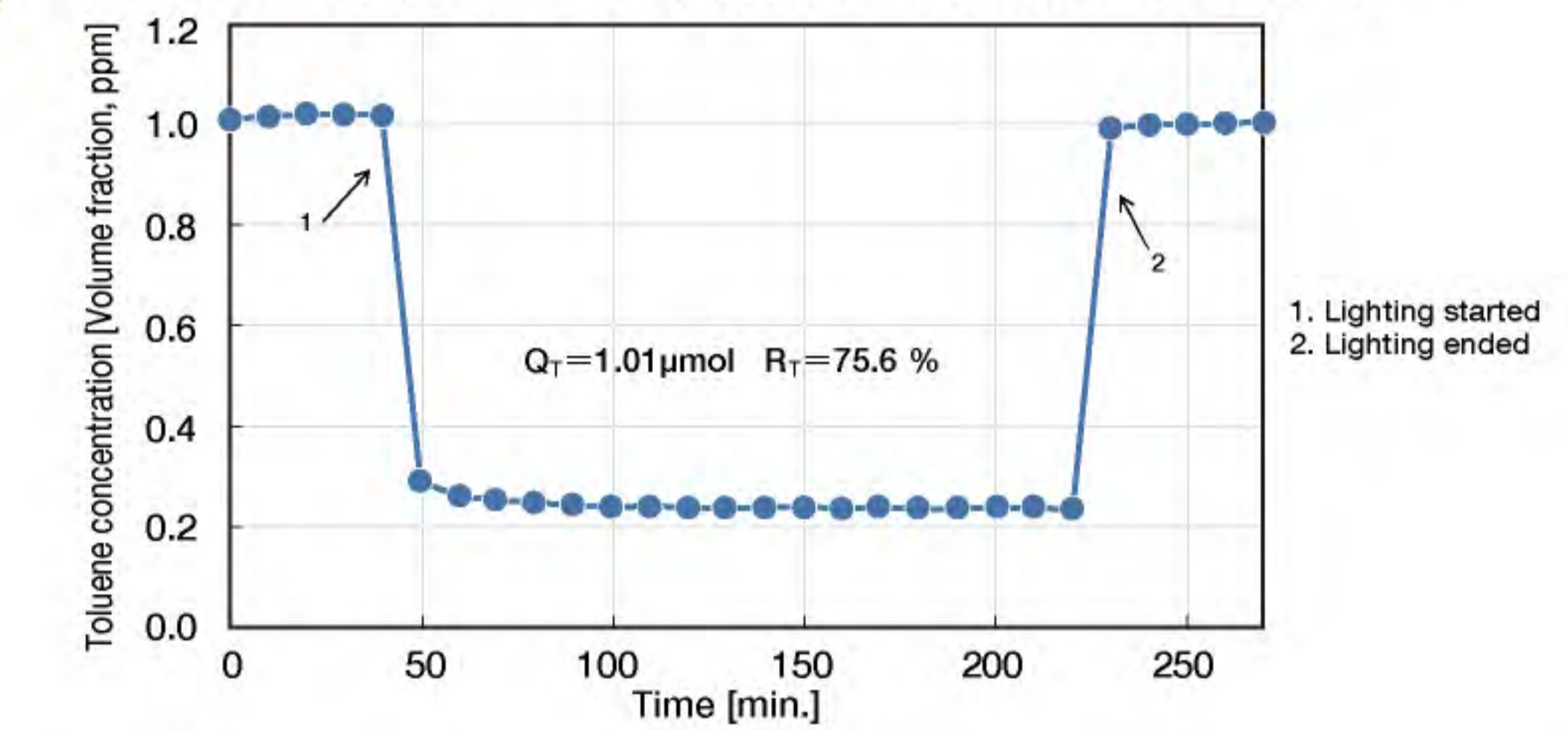
Minacoat®DC, an advanced visible-light-driven apatite coated photocatalyst Acetaldehyde removal performance by 2.08% titan soaked with cotton cloth



\* While the zero calibration gas flows, a difference of carbon dioxide concentrations upon lighting up and down was greater than 1 volume fraction ppm; a conversion rate of carbon dioxide is for reference.

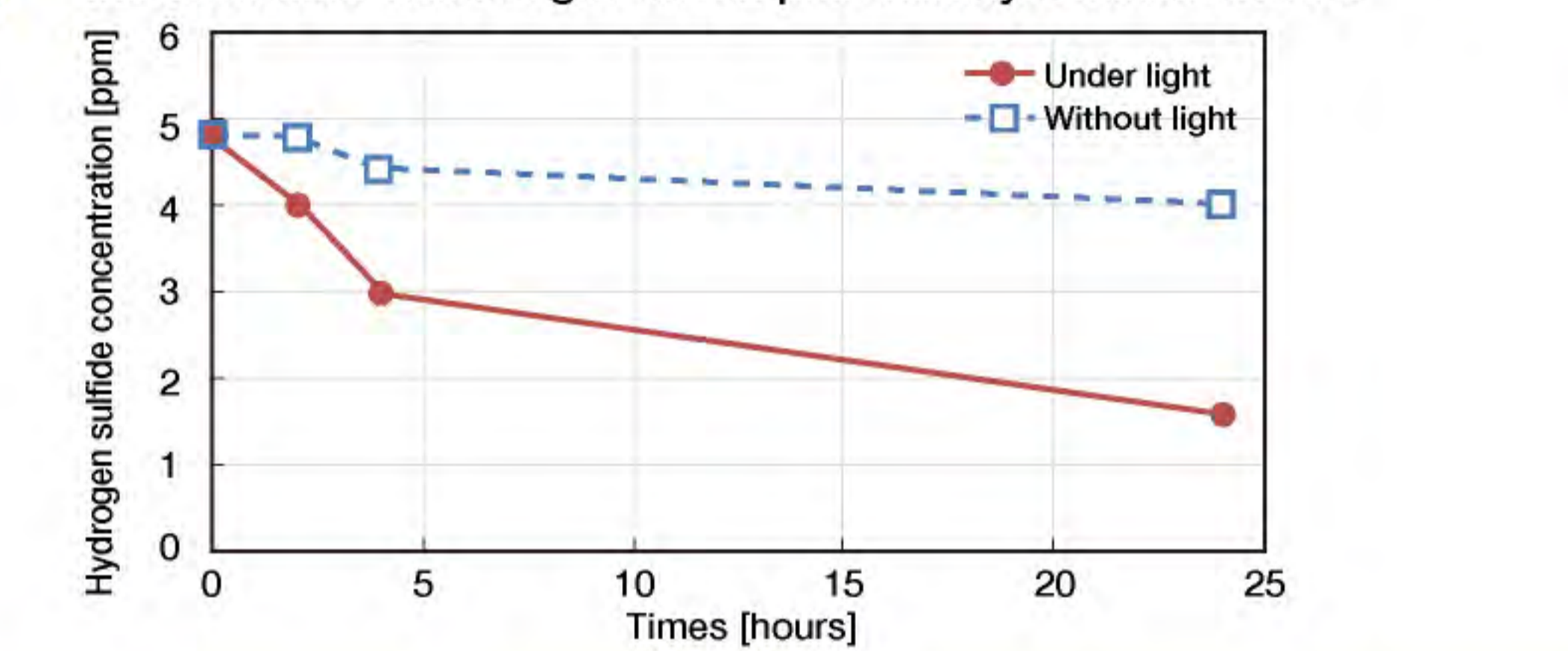
### Toluene

Minacoat®DC, an advanced visible-light-driven apatite coated photocatalyst Toluene removal performance by 4.08% titan soaked with cotton cloth



### Hydrogen sulfide

The performance for removing hydrogen sulfide (gas pack method) with the advanced visible-light-driven photocatalyst minacoat®DC



Test laboratory: Kanagawa Institute of Industrial Science and Technology

### Inactivation of the following viruses and bacteria has also been demonstrated.

- Influenza A virus
- Feline calicivirus
- Blue mold
- Aspergillus niger
- Escherichia coli
- Staphylococcus aureus
- Spore forming bacteria

Test laboratory: Kitasato Research Center for Environmental Science

## + Minacoat® also features...

### 3 Deodorization



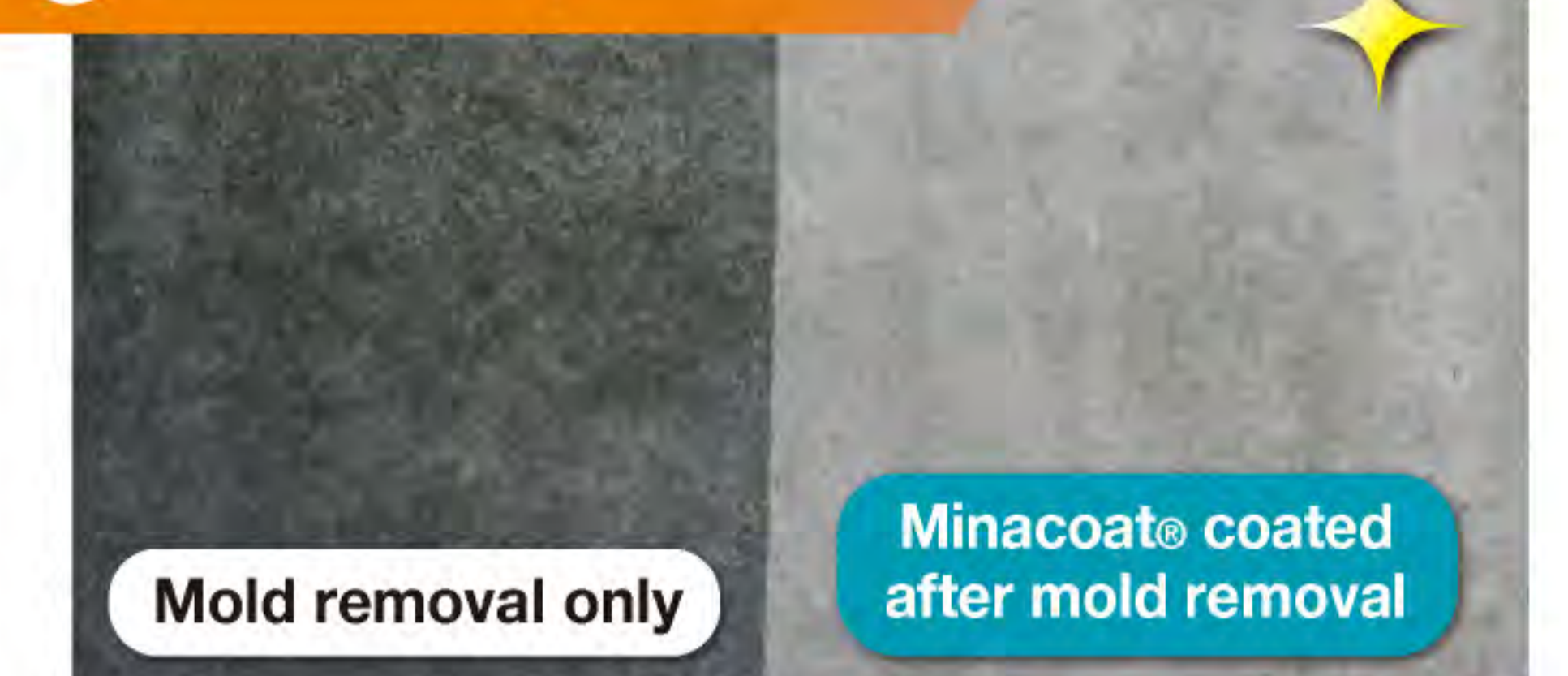
Applying minacoat® to smelly shoe boxes sterilize the causative bacteria and eliminate the odors.

### 4 Stainproof



The picture on the right shows the minacoat® coated plastic belt of a new escalator after one month of application. You can tell that the belt is stain resistant and remains white.

### 5 Moldproof



The picture on the right shows the plaster board surface four and a half years after the mold removal. Coating with minacoat® after mold removal will keep it clean.

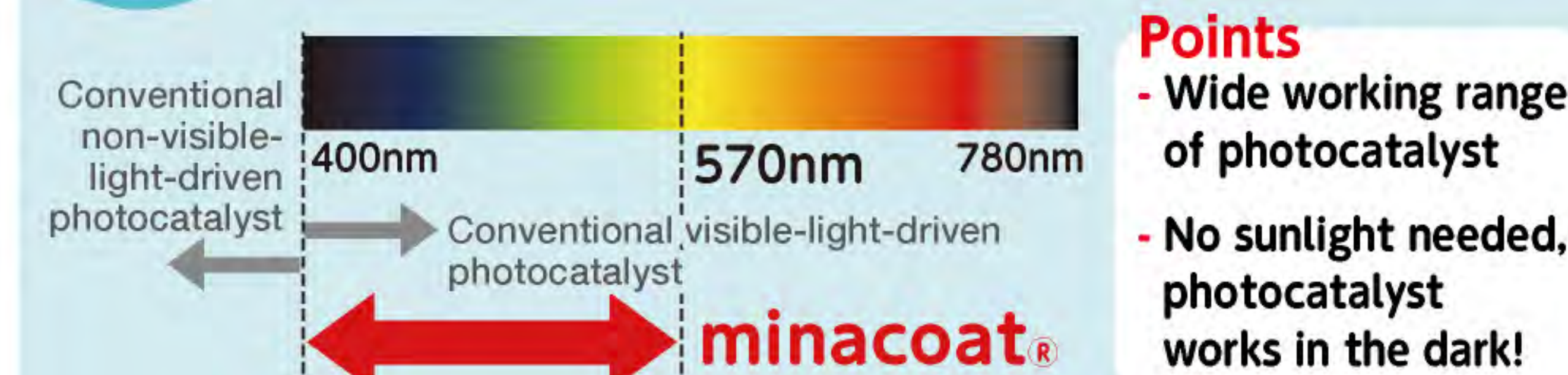
## In addition to the data-backed antiviral and antibacterial effects, **minacoat®** has many advantages!

**Advantage 1** Unlike alcohol or chlorine-based agents, the effect lasts longer.

Photocatalysts including minacoat® keep decomposing bacteria and viruses when exposed to light, so unlike alcohol, which only works once, there is no need for repeated disinfection.



**Advantage 2** Industry's highest reaction area in visible light, and is able to disinfect even in the dark.



**Advantage 3** Contains apatite that keeps viruses away.

Minacoat® sterilizes bacteria and viruses by reacting with light without adsorbing them. Competitors' products absorb bacteria and viruses, so bacteria and viruses are attracted to the surface of the mask.



**Advantage 4** Easy application: Binder-less and requires no masking.

Minacoat® is applied in a thin film of less than 1 μm, maximizing its photocatalytic performance. This product can be coated on leather and cloth, which is impossible with competitors' products, and also prevents deterioration caused by ultraviolet rays.

