

# Human safety of Weltouch®

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- The main ingredient of Weltouch® is Titanium dioxide ( $\text{TiO}_2$ ) which is a safe substance licensed by FDA, KFDA. Titanium dioxide is a safe substance licensed by FDA as a food additive (for use in white chocolate, etc.).
- Japan, European countries, China and other countries around the world evaluate  $\text{TiO}_2$  photocatalytic materials such as Weltouch® as safe for human safety.
- How about Biocafety of active oxygen produced on the catalyst surface?  
Typical active oxygen, which is often said to have a bad effect on the human body, means that it occurs during the biochemical metabolism of the human body and does not mean that it is caused by inhalation or inflow from the outside.  
When  $\text{TiO}_2$  absorbs light, it reacts with oxygen and water in the air on the catalyst surface, resulting in active oxygen such as  $\cdot\text{O}_2^-$ ,  $\cdot\text{OH}$ . Although highly reactive, its life span is only one-thousandth of a second, making it extremely low in life and spread, with only a few millimeters from the surface of the catalyst. Therefore, it is reported that the active oxygen produced by the reaction of  $\text{TiO}_2$  is extremely short-lived, so it is unlikely that it will affect bio-safety under actual conditions of use.
- Opinion on the controversy of exterminating both harmful and beneficial bacteria  
Because the action of Weltouch® has a very short life span, such as a hydroxylic radiator ( $\cdot\text{OH}$ ) produced on a surface coated with Weltouch®, the travel distance is extremely short, germs, viruses contained in the air die from hitting the photocatalyst coating surface, but they do not affect long-term beneficial bacteria in the human body (especially the stomach, gastrointestinal, etc.).

# Is photocatalyst(titan oxide) safe??

<b>Q1</b> The toxicity of photo-catalyst?	<b>A1</b> Titan oxide is also used as a food additive and is not toxic.
<b>Q2</b> Is the active oxygen produced when the light is irradiated are safe?	<b>A2</b> Activated oxygen is an unstable substance that has no effect on the human body due to it has very short life span..
<b>Q3</b> Is the intermediate product caused by oxidative degradation is safe??	<b>A3</b> For example,intermediate like formic acid and acetic acid are produced from aldehyde, which is the cause of a bad odor or VOC, but there is little toxicity and very little effect on the human body..
<b>Q4</b> The effect of ultrafine particles on the human body?	<b>A4</b> A number of studies have shown that titan oxide is safe in ultrafine particles (cell toxicity test results).



**Titan oxide photocatalyst has little effect on the human body**