Do you have a bacteria, yeast and mold problem?

Even though our medical facilities are among the safest in the world, surfaces are repeatedly contaminated by a variety of factors. Our SM1152 Nano TiO_2 coating solution was formulated to continuously prevent growth of bacteria, yeast and molds on exposed surfaces.

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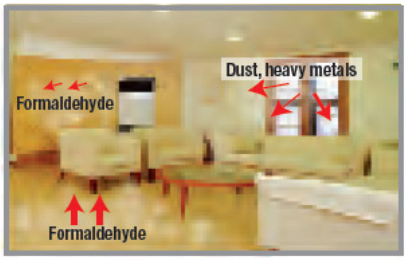
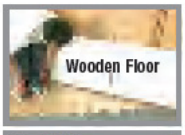
Formaldehyde from hardwood, wall paneling and furniture....

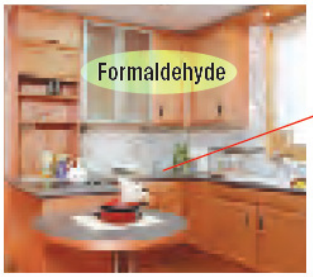
→ Eye, nose and throat irritation; wheezing and coughing; fatigue, skin rash and severe allergic reaction.





Biological pollutants (fungi, bacteria, virus)

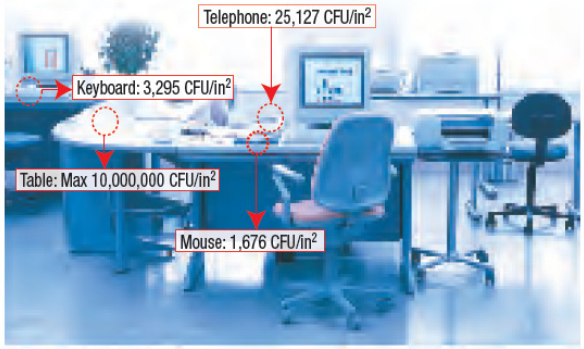
from household pets, kitchen, wet or moist walls, ceilings, carpets
→ Respiratory irritations, allergy irritation



Biological pollutants (Malodor)
from decomposition of food, odor →
Nausea, damage to nervous system

Bacteria in The Office

CNN News Report Feb 2004
Arizona Univ. & Clorox Co.



Frequently Asked Question

1. Is TiO_2 coating harmless to humans? Is it harmless to pets?

Nano TiO_2 liquid is completely harmless to human bodies and is actually used widely as a food additive.

2. After application, does it produce any odor?

No, it does not have any odor.

3. Does this Nano TiO_2 liquid have a shelf life?

There is no shelf life. This solution should be stored in a dark, cool environment.

4. How is this Nano TiO_2 liquid applied?

It can be brushed or sprayed onto surfaces. When applied to fabrics via spray, a brush should be used to work the solution into the fabric.

5. After it is applied, how long does it last?

TiO_2 PCO Solution has a service life of 2-4 years.

6. Does Nano TiO_2 liquid remove odors from the air? How about from fabrics?

When exposed to light, Nano TiO_2 liquid will create -OH (hydroxyl radical) and O- (super oxide ions) which will decompose substances that creates the odor.

7. How does Nano TiO_2 liquid prevent and remove contamination from surfaces?

They become oxidized by the photo-catalytic oxidation and float away as harmless substances.

8. Why does Nano TiO_2 liquid have a sterilizing and anti-microbial effect?

Most microbes die quickly when any part of them comes in contact with a coated surface. In addition, Nano TiO_2 liquid decomposes toxins that are discharged when microbes die (Verotoxins, Enterotoxins), rendering them into harmless vapors.

9. Exactly what type of odors will Nano TiO_2 liquid eliminate?

It will remove virtually all and any type of odor from surfaces as treated surfaces become resistant to microorganisms, mold, bacteria, viruses, smoke, odors, etc.

10. Does it work in cold environments such as freezers?

Yes. Microbes that come in contact with a treated surface will cease to exist.

11. Does Nano TiO_2 liquid get rid of cigarette odors from tar and nicotine that have penetrated surfaces?

Yes. If a second hand smoke contaminated surface (second hand smoke is known to have over 400 known cancer causing chemicals) is treated with TiO_2 solution, the odor will soon disappear.

12. How does the intensity of light affect the ability of this Nano TiO_2 liquid to create friendly oxidizers which purify the air?

As a characteristic of titanium dioxide, it starts to produce friendly oxidizer en mass when exposed to ultraviolet rays of 400nm range or lower. It is more affected by the intensity of the ultraviolet rays rather than the intensity of light itself per se. However, any air pollution, VOC, or odor that comes in contact with a surface treated with Nano TiO_2 liquid will become oxidized.

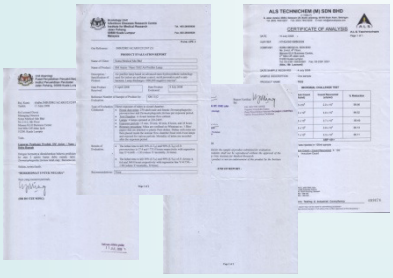
13. What are some of the more popular applications for Nano TiO_2 liquid?

Bathrooms, floor tiles, sinks, showers, car interiors, to remove and prevent tobacco odors, kitchen counters, furniture and carpets (especially if you have pets), curtains, mini-blinds, windows exposed to light, ceiling fans, car rims, white outdoor furniture, house gutters (keep them mold free), concrete or brick that you want to keep mold free, the list goes on and on.

14. Can Nano TiO_2 be applied to carpets?

Yes, and with great results! Carpets treated with Nano **TiO_2** will resist not only odors and grime but also pests such as fleas. Carpets will last much longer as well.

Researched and Tested by



[Physicochemical Data Sheet]	
Product Series	Nano TiO_2 Sol Coating Agent (SM1152)
Appearance	Transparent liquid
Dispersive type	Solution
Odor	None
PH	7-8.5
Boiling Point	100°C/212°F
Volatility	None
Freezing Point	0°C/32°F
Flash Point	Non flammable
Average primary particle size - Acc. to GB/T 19591-2004	< 4nm
Crystal structure - Acc. to GB/T 19591-2004	Anatase
Specific surface area (BET) - Acc. to ISO 9277:1995	160± 30m^2/g
Coagulation index - Acc. to GB/T 19591-2004	2-4
Material academic duration	Permanent
Coating duration - Acc. to outdoor simulation environment	> 2 years
Primary drying time	30 minutes
Final setting time	2 weeks
Saturated stream pressure	2333Pa acc. to H_2O 1 PN 20°C
Opposite stream density	< 1.0 acc. to H_2O
Solubility	Dissolve in water, miscible in oil
True specific gravity	1.0075 – 1.01
Viscosity, dynamic	1.0050 mPa.s
Vaporize velocity	< 1.00 acc. to H_2O

Researched and Tested by ***Institute for Medical Research (IMR), Ministry of Health Malaysia against Dust Mites & ALS Technichem against bacteria, yeast & mold.***

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For more information please contact:

User Manual

Air spray instruction

Soma Nano Coat TiO_2-based Photocatalyst Sol User Manual

Overview

The room temperature air spray method (named as RTAS-method) is the most popular & recommended application method of our TiO2-based photocatalyst sol products. The RTAS-method is spraying the super fine drop which is atomized from the nano photocatalyst sol mixed with the high pressure or high volume air flow onto the surface to be treated. The air compressor sprayer or HVLP sprayer is the recommend tool to apply this method. Usually, this method can form even film of photocatalyst and provide the best balance between the cost and the effect.

The typical objects recommended to apply this method are as follows: Wall, paint surface, marble, granite, building, glass, ceiling, ceramic, tile, carpet, paper and etc…

Handling Equipment

1. AC sprayer system

An AC (Air compressor) spray unit is the traditional paint spray system. It consists of a high pressure air compressor & fine nozzle metal sprayer. The advantage of the AC sprayer unit is the low setting up cost and popular. But the AC sprayer system will cause more material rebound, so increase the waste of the effective material. The noise of the AC sprayer system is also a disadvantage.

Recommend Specification

Properties	*Recommend Value*
Power	***>2 HP (1500W)***
Input voltage	***100-220 V***
Feed cup capacity	***500-2000ml***
Feed mode	***Siphon / Gravity***
Nozzle dimension	***0.3-1.0 mm***
Air flow	***>100L/ Minute***
Pressure	***>50 psi (350 Kpa)***
Working noise	***<60 db***

Key module of AC sprayer system

2. HVLP sprayer system

An HVLP (High Volume Low Pressure) spray unit consists of a turbine motor that produces warm, low-pressure air. The HVLP spray equipment uses the concept of increasing the volume of air under reduced pressure to atomize the finish. Its high transfer efficiency increases the coverage and reduces the cost. The advantage of HVLP is the reduction of overspray which produces less air pollution and maximizes the finish material.

Recommend Specification

Properties	*Recommend Value*
Power	***>2HP (1500 W)***
Input voltage	***100-220 V***
Feed cup capacity	***500ml-2000ml***
Feed mode	***Siphon / Gravity***
Nozzle dimension	***0.3-1.0 mm***
Air flow supply	***>2500L / Minute***
Air flow consuming	***>60 L/ Minute***
Spray range	***>10 cm***
Spray distance	***>15 cm***
Transfer effect icy	***>65%***
Working noise	***<60 db***

Key Module of HVLP system

HVLP Turbine

Sprayer & Feed cup

Plastic pipe

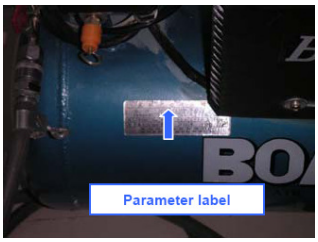
Setup AC Spraying Instrument

1. Before 1st time use setup

Rubber pipe

Step 1 Select the suitable long rubber pipe for the AC machine

The length of the rubber pipe should be 10-20 meters. This length parameter of the pipe will help you easily to spray all over a room without moving the AC machine. If the pipe is too long, it may cause the pressure declining phenomenon. The caliber of the pipe should match with the air flow output interface of the AC machine and the input interface of the sprayer.



Step 2 Check the voltage parameter

Insure the input voltage match with the local electric power voltage. Usually we can get the input voltage parameter from label of the transformer or AC machine.

Step 3 Check the AC output pressure

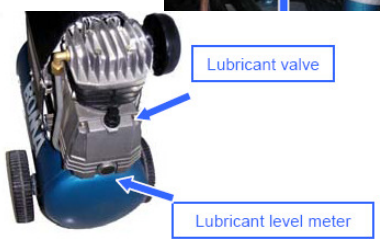
Turn off the output valve and then start the the pressure meter and insure the output reach the minimum pressure requirement. (50

AC machine. See pressure can psi)

2. Before use setup

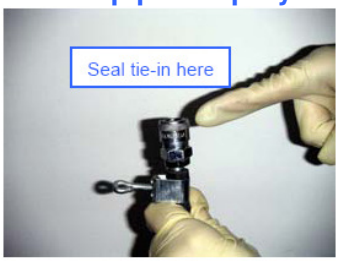
Step 1 Check the lubricant level of the AC machine.

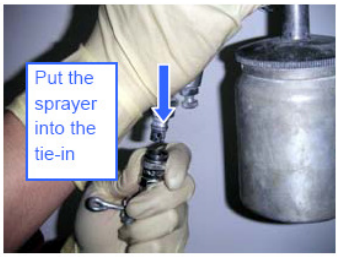
The lubricant insure the well-working of the system. If the is low, please add special lubricant into the air

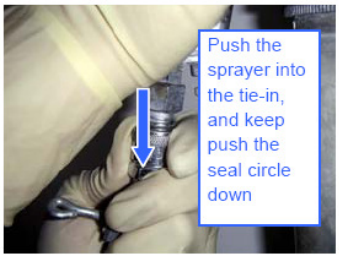


level of lubricant compressor.

Step 2 Link the rube pipe to sprayer

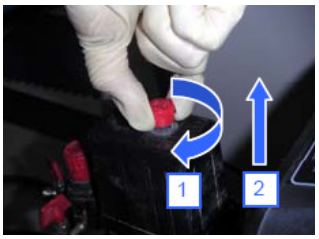






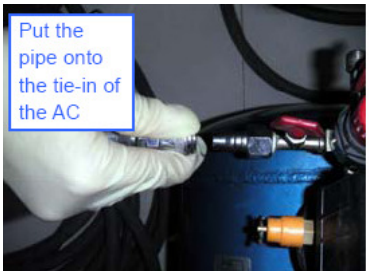
Step 3 Adjust the sprayer

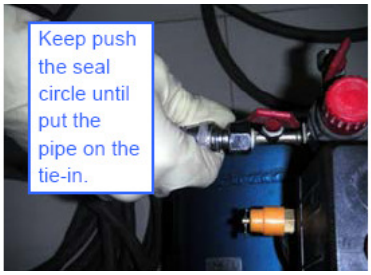
There are 2 key adjustors on the sprayer. One of them controls the material output and another control the atomization grade. You should find the best balance of these 2 adjustors, it is very important for the next handling process and it need some experience.



Step 4 Link the rube pipe to AC machine

You should check the valve and keep it closed before the link operation. Then you can link the pipe onto the AC like you link it onto the spray. Open the valve when you finish the link operation.





Step 5 Start the AC machine

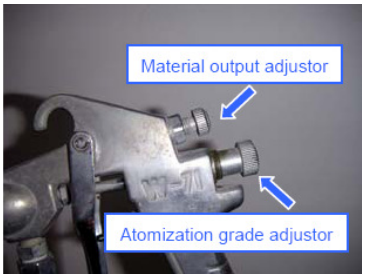
The final step before the spray working is startingthe AC machine. Usually we should turn around the switch and then pull it up.

3. After use maintance

3. After use maintenance

Step 1 Clean the sprayer and the system.

The sprayer and AC system must be cleaned by non-ion water (pure water) after every times use. This step is very important. You should add some pure water into the feed cup and spray it out for cleaning the nozzle. Nozzle is the key of spraying quality, so its cleaning is very important.



Step 2 Fix the sprayer

The nozzle of the sprayer is easy to be collided. Collision will cause the damage of the nozzle, so fix the sprayer can protect the sprayer better.

Note: The instruction in this paragraph is based on our demonstration equipment, the practical setup process should follow operation manual of the device. This paragraph is only a reference of spray setup.

Spray Guidance

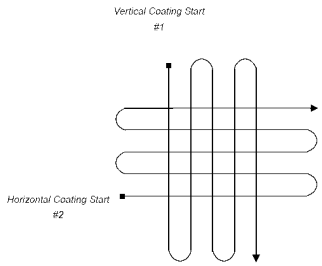
1. Before spray equipment calibration

i. Before the actual spraying, we suggest using water to calibrate the spray volume and coverage area.

ii. To achieve the optimal coverage area and effectiveness, test the spray pattern on a piece of glass or mirror. An even spray of fine mist appearance is strongly desired.

2. Spray pattern

i. Apply the photocatalyst sol in interlaced spray-pattern to ensure an even and sufficient coverage of the coating.



ii. One Horizontal pass plus One Vertical pass is considered as one coat.

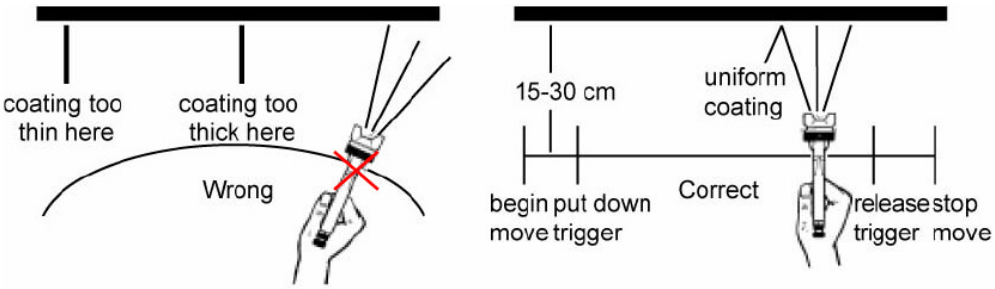
iii. If need coat more times, wait at least 10 minutes between each coat for better solution adhesion.

iv. Horizontal coating start from #1 & Vertical coating start from #2

v. A recommended distance between substrate and spray gun is 30 cm or one foot. It is very hard to produce fine mist of the solution on substrate surface if the distance is shorter than 30cm or one foot.

vi. Spray nozzle size should between 0.3mm (0.012 inches) to 1.0mm (0.039 inches). Nozzle size larger than 1.0 mm (0.39 inches) has difficulty to produce the even coat on surface.

vii. For a correct spray action please refer to the below spray guide figure.



Coat Drying

- There are two phases in the coat forming process, including the primary drying and the final setting. Primary drying is a procession, by which, photocatalyst are preliminarily coagulated by evaporation of the dispersant. After primary drying, the nano-particles of the photocatalyst coating are stabilized and which can be activated by light.
- The drying & final setting time of the photocatalyst coating please refer to the product manual.
- Drying with heat can effectively save the fixing time.
- Once solution is final set it becomes a solid film which never dissolves in water.
- For approximately two months after the finished application the hardness process will continue until it reaches a stability of 2H to 5H (equivalent to a pencil lead).
- In case of forced drying or heating, it should be conducted below 600℃. When the Ti02 film is heated to more than 800℃, the photocatalyst activity is decreased.
- When you have coated area by accident, wipe off the excess solution immediately. It is very difficult to remove the Ti02 after it has dried completely.

Safety Caution

- Refer to **Material Safety Data Sheet** (MSDS) and **Product Manual** (PM).
- Protective gear such as facemask, breathing apparatus, goggle, and protective clothing should be worn during coating procedure.