

# TITANCARE® TSC

## TECHNICAL DATA SHEET (DRAFT V 1.0) PRODUCT INFORMATION

### ADVANCED NANO COMPOSITE MATERIAL APPLICATION



#### General Description

- green material, 100% non-toxic and environmentally-friendly
- easy to use, long lasting 24/7 basic functionality
- Excellent heat resistant up to 500°C
- tested by worldwide renowned authorities such as MICROBAC®, SGS and others

#### Features

- excellent self-cleaning & anti-dirt effect
- decomposes formaldehydes and VOCs
- anti-odor
- anti-reflective
- perfect adhesion and durability on any material like, metals like alloy, copper and stainless steel, marble and stone plates, ceramics and tiles, TV and Display panels, 3C products

#### Applications

as a protective and preventive measure in areas of

- health and medical
- food processing industries
- gastronomy and hotels
- merchandising and retail
- offices and public spaces
- OEM applications like glass, solar panel and window production, lighting and medical equipment, refinery and tank facilities, filter and industrial plant builders, wood industry

#### Standard Packing

1kg bottle, 20kg/plastic drum & 200kg/plastic drum

#### Storage

Please store under room temperature 25 °C, humidity >45% with good ventilation and avoid exposure to direct sunshine. Keep container sealed after opening. Shelf-life 1 year from date of manufacture.

## Typical Physical Properties

These properties are typical but should not be considered specifications.

	Item	Unit	Specification
Property	Appearance	Visual	Light yellow solution
	Component	-	TiO <sub>2</sub> SiO <sub>2</sub> H <sub>2</sub> O
	Solid Content	wt%	1.10-1.40
	Particle Size	Nm	<100nm
	pH value	-	7.5~9.5
	Viscosity	25 °C mPa s	<5
	Reflectance	-	1.4~1.8
	Specific Gravity	25 °C	1.03
	Freezing Point	°C	4
Safety	Peroral Acute Toxicity	LD50 (mg/kg. mouse)	>5000mg/kg
	Primary Skin Irritation	Primary irritation index	0

## Reference Data

Item	Test Method	Unit	Result
Appearance	1)	Color difference	none
Decomposition Activity Index	TN-031	nmol/(L ° min)	>5
Anti-Dirt	2)	ΔT %	<10%
Pencil Hardness	ASTM D3363-00	-	7H
Cross Cut	CNS10757	-	5B
Cross-Cut after dipping in boiled water	Dipping in boiled water [100 °C]/30minutes		5B
Durability	CNS 10757	times	3000 times
Contact Angle	TN-031	degree	<10°

Method of making samples: Baking 400 °C 30minutes after spraying 30g/m<sup>2</sup> on the tile.

<sup>1)</sup> Substrate: White glossy tile.

<sup>2)</sup> Methodology: a) Place coated and uncoated glass samples in talc, subject to 1kg weight for 1 minute

b) Check the transparency of the glass samples (average value of 5 points)

Results: Transparency of uncoated sample declined by > 10%.

ΔT is the change rate of transparency.

## Comparison of Baking Temperatures

Item	Room Temp Day 1	Room Temp Day 3	Room Temp Day 10	Baking 100 °C	Baking 200 °C	Baking 300 °C	Baking 400 °C
Hardness	B	B	5H	3H	5H	6H	7H
Anti-dirt	✓	✓	✓	✓	✓	✓	✓
Durability of wiping with water <sup>1)</sup>	500	2000	2000	2000	2000	2000	2000
Durability of wiping with alcohol <sup>2)</sup>	500	2000	2000	2000	2000	2000	2000

Methodology: Baking 30minutes after spraying 30g/m<sup>2</sup> on the tile.

- 1) Test Method: Load 500g weight on the substrate and wipe with non-dust cloth with water.  
No wrinkle, scratch, peeling allowed on the surface.
- 2) Test Method: Load 500g weight on the substrate and wipe by non-dust cloth with alcohol.  
No wrinkle, scratch, peeling allowed on the surface.

## Comparison of Baking Durations

Item	Baking 100 °C 15 min	Baking 100 °C 30 min	Baking 100 °C 60 min	Baking 300 °C 15 min	Baking 300 °C 30 min	Baking 300 °C 60 min
Anti-dirt	✓	✓	✓	✓	✓	✓
Hardness	2H	3H	6H	3H	6H	6H
Durability of wiping with water <sup>1)</sup>	2000	2000	2000	2000	2000	2000
Durability of wiping with alcohol <sup>2)</sup>	2000	2000	2000	2000	2000	2000

Methodology: spraying 30g/m<sup>2</sup> on the tile.

- 1) Test Method: Load 500g weight on the substrate and wipe with non-dust cloth with water.  
No wrinkle, scratch, peeling allowed on the surface.
- 2) Test Method: Load 500g weight on the substrate and wipe by non-dust cloth with alcohol.  
No wrinkle, scratch, peeling allowed on the surface.

## Comparison of quantity used

Item	Spray 10g/m <sup>2</sup>	Spray 20g/m <sup>2</sup>	Spray 30g/m <sup>2</sup>
Anti-dirt	○	○	○

Method of making samples: Baking 400 °C 30minutes after spraying on the tile

## Super-Hydrophilicity

	Light 1 min	Light 3 min	Light 5 min	Light 10 min	Light 15 min	Light 30 min
Contact Angle [degree]	<10	<10	<10	<10	<10	<10

Methodology: 30 minutes baking at 400 °C after spraying 30g/m<sup>2</sup> on the tile.

Subject test specimens to UVA (1mW/cm<sup>2</sup>) after keeping in a dark (non-litted) area for 1 week.

## Super-Hydrophilicity (Duration at inert condition)

	1 day	3 day	5 day	7 day	14 day
Contact Angle [degrees]	<10	<10	<10	<10	24

Methodology: 30 minutes baking at 400 °C after spraying 30g/m<sup>2</sup> on the tile.

Subject test specimens to UVA (1mW/cm<sup>2</sup>) after keeping in a dark (non-litted) area for 1 week.

## Different Substrate

Item	Polished tile	Exterior Wall Tile
Anti-dirt	✓	✓
Hardness	4H	6H
Durability of wiping with water <sup>1)</sup>	1500	2000
Durability of wiping with alcohol <sup>2)</sup>	1500	2000

Method of making samples: Spraying 30g/m<sup>2</sup> on the tile.

<sup>1)</sup> Test Method: Load 500g weight on the substrate and wipe by non-dust cloth with water.

No wrinkle, scratch, peeling allow on the surface.

<sup>2)</sup> Test Method: Load 500g weight on the substrate and wipe by non-dust cloth with alcohol.

No wrinkle, scratch, peeling allowed on the surface.

## Recommended Application Process

### 1. Equipment

a) Spraying: Spray gun, nozzle diameter 0.3~1mm, air pressure 0.3~3kg under room temperature 10~40 °C

### 2. Process

a) Ensure a thorough cleaning of the substrate surface

b) Apply Nano Coat after cleaned surface is dry:

Spraying: ensure minimum of 30 cm distance from the nozzle to the surface

Dipping: Baking temperature ~500 °C oven with hot air circulation

c) Ripening : Room temperature 24 hours

d) Rinse equipment with water after application

The data above is for reference only. Rubberized surfaces may require plasma treatment  
Please use the materials based on actual substrate & environment

## Safety & Notice

1. In order to ensure product reliability, please apply under clean environment
2. Keep containers sealed after opening and store under recommended environment.
3. Minimum Storage temperature = 5°C, ensure good ventilation.
4. Precipitation and slight color change to light yellow is normal.
5. Please refer to Safety Data Sheet (SDS) for more details.

## Product Stewardship

Scutum Nano Solutions GmbH encourages its customers to ensure that our products are not used in ways for which they are not intended or tested. Our personnel assist you to answer your questions and to provide reasonable technical support. Scutum Nano Solutions GmbH safety data sheets should be considered prior to use.

## Disposal

Disposal according to official regulation, not contaminated and completely emptied packaging can be recycled.

## Disclaimer

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