# **CytoThane TS** TECHNICAL DATA SHEET

## **OVERVIEW**

CytoThane® TS is a 2-step, ~100 micron thick, air-dry, superhydrophobic coating that is easily applied by spraying or rolling. When coated with CytoThane, water forms beads and rolls-off the surface. This prevents water-film formation and reduces ice build-up.



#### APPEARANCE AND PERFORMANCE

The coated surface is frosty in appearance due to nanoparticles on the surface. Super-hydrophobic performance is retained under most conditions and for extended periods of time. This paint is used for anti-wetting, anti-icing, and anti-snow applications.

## **DURABILITY**

CytoThane repels rain, ice, and snow for years. The CytoThane coated surface may be washed with a hose spray, but handling or rubbing it, will reduce performance.

## **COVERAGE**

Apply by spraying or rolling. However, spray application provides the best appearance and most consistent results. Coverage will vary by thickness of coating applied. Coverage of 500 ml (X2) of CytoThane is approximately 10 square meters.



# **DIRECTIONS**

The temperature of the surface to be sprayed should be between 45°F and 95°F. Keep containers at room temperature prior to use. All surfaces need to be dry and free from wax, grease, and polishes for good adhesion.

First shake the can of BASE-COAT vigorously for 30 seconds. The nanoparticles in the BASE-COAT must be dispersed properly before and during spraying. Hold the spray-gun vertically 8-10 inches from the surface. Depress the trigger button fully. Move the spray-gun evenly across the surface covering 6-10 inches per second. Apply half overlapping strokes 3-4 inches apart. Shake the spray-reservoir for a few seconds every 60 seconds. Allow the BASE-COAT to dry for 10 minutes or more before applying the TOP-COAT.

In the USA, the TOP-COAT is provided ready for spraying. For projects outside the continental United States, add acetone to the "drypowder" TOP-COAT. Add 666 grams of acetone to 1000 ml bottles or 2636 grams of acetone to gallon cans and shake the container vigorously for 30 seconds. Hold the spray-gun vertically 8-10 inches from surface. Depress the button fully. Move the spray-gun evenly



across the surface covering 6-10 inches per second. Apply half overlapping strokes 3-4 inches apart. Shake the spray-reservoir for a few seconds every 60 seconds. Allow the coating to dry for over 24 hours before exposing to rain. For best long-term performance avoid touching the coated surface.

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## **UV LIGHT RESISTANCE**

CytoThane shows good resistance to solar radiation exposure (up to 1,000 Megajoules per square meter) that could be expected during 5 years in outdoor installations (please see data in Table 2 and 3). Surface analysis after prolonged exposure showed good resistance to damage, erosion, and water penetration.

# **TEMPERATURE CYCLING**

CytoThane performs well in rapid temperature cycling tests (-45°F to 85°F 100X) and can be expected to perform well in both cold and hot environments.

## SALT FOG & CHLORINE EXPOSURE

CytoThane is functionally uncompromised by the extremely corrosive chlorine atmosphere and can be expected to perform well in many other corrosive environments. CytoThane showed complete or substantial resistance to high salt and high humidity environments that are expected for marine or coastal installations. No visible corrosion of metal substrate after 1,000 hours of salt fog was observed.

#### **PERFORMANCE**

CytoThane exhibited no significant loss of contact angle after over 50 gallon per square inch of simulated heavy rain (please see table 3). In other tests, CytoThane had 145° contact angles after exposure to extreme rain at 60 inches per hour for one hour.

## **SUBSTRATES**

Recommended for plastic, painted-surfaces, metal, glass, fabric, rubber, foam, and gelcoat.

## **LIMITATIONS**

Excessive abrasion will reduce performance. Organic solvents and oil exposure will reduce performance.

## **PURCHASING & SHIPPING**

CytoThane samples are offered at www.CYTONIX.com, by emailing cytonix@cytonix.com or by calling 301.470.6267. The BASE-COAT for CytoThane TS is water-based and can be easily shipped worldwide. The TOP-COAT is shipped "dry" (solvent-free) and is also easy to ship.

TECHNICAL DATA	
Colors	Frosty-white, Frosty-gray, Frosty-black, Frosty-red, Frosty-blue
Product codes	CytoThane TS
Solids percent	~10%
Flammable solvents	Base-Coat: No Top-Coat: Shipped Dry (requires acetone)
Storage temperature	20-30°C
Shelf life	1 year
Weatherability	Up to 5 years
Dielectric constant	3 at 100 MHz

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Electrical resistivity	~2 tera ohms		
RF transparent	Yes		
Taber abrasion	Superhydrophobic after 10 cycles with CS10 wheel		

Solar Radiation  Megajoules per square  meter [MJ/m²]	Water con on CytoT	Water contact angle substrate*		
0				
	_			
	130.8	144.7	75.5	
300	1	I	1	
	_0_	_0_		
	140.3	137.6	51.3	
600	1	1	1	
	141.3	144.1	측정불가	

RAIN TESTING										
Water (100 μl) roll-off angle after simulated rain exposure (degrees)										
Water Gallons / sq. inch	0	3	6	12	18	24	30	36	45	60
CytoThane TS	1°	1°	1°	1.5°	1.5°	1.8°	1.8°	2°	2°	2.2°
CytoThane ME	1°	1.5°	2.5°	3°	3°	3°	3.5°	4°	4°	5°
WX2100	1.5°	2°	2°	4°	6°	8°	8°	8°	8°	10°

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