CytoSyl 2500 TECHNICAL DATA SHEET

OVERVIEW

CytoSyl 2500 is a silane terminated perfluoropolyether (PFPE) designed as a low surface energy treatment for glass, siliceous surfaces, metals, and other substrates that have hydroxyl (–OH) groups on the surface. CytoSyl is a hydrophobic and oleophobic coating. CytoSyl provides long-lasting, anti-fouling, anti-fingerprint, and anti-smudge properties. Properties of CytoSyl include oil repellency, water repellency, easy clean, and low coefficient of friction. The nano coating (<10 nanometer) also shows low refractive index, solvent resistance, abrasion resistance, and antireflection properties. CytoSyl is a good replacement for Fluorolink S10.

Formulation:

CytoSyl 880 should be applied from a solvent solution containing water. The parameters for optimal performance are concentration of 880, the aging of the treating solution, the catalysis (by an acid or alkali) and the curing conditions (time and temperature) after the application.

Example of formulation (all measures by weight):

- 0.1%-1.0% CytoSyl
- 99.4-94.0% isopropyl alcohol (IPA)
- 0.4%-4.0% water (4:1 ratio of water: CytoSyl)
- 0.1-1.0% acetic acid or HCl 10% (1:1 ratio acetic acid: CytoSyl)

Shelf life of formulation: 2-3 days.

Directions:

To CytoSyl concentrate add Isopropanol, then water, and finally acid catalyst. The solution could turn slightly cloudy, but this will not affect performance. Wait 30 minutes before application. The product can be applied by dipping, spraying, or by roll. After application, the product should be cured at 100 to 150°C for 30 minutes. Room temperature curing is possible, but a longer cure time will be required for optimal performance. For best substrate specific performance, cure at the highest substrate safe temperature.

PROPERTIES

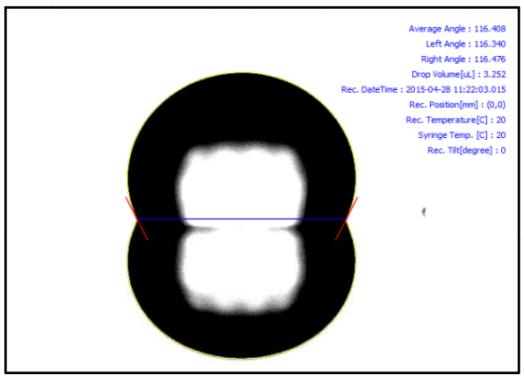
Functional group:	Silane
Average molecular weight:	2250-2500
Appearance:	Clear to Cloudy Liquid
Color:	Colorless to Pale Yellow
Concentration:	0.2 to 100%
Odor:	Light ether
Specific Gravity (20°C):	1.5 g/ml

Kinematic Viscosity (20°C):	173 cSt (100% concentration)
Shelf life (25°C):	1 year (100% concentration)
Solubility (25°C) Water: Isopropyl alcohol: HFE347:	 Insoluble 1% - 10% (by weight) 90 - 100% (by weight)
Stability in Isopropyl alcohol	2-3 days (0.2%)
Stability in Fluorosolvent	1 year (0.2%)

COATING PROPERTIES

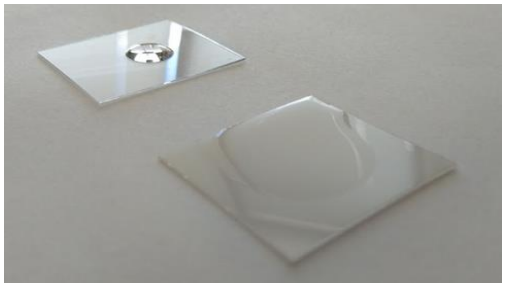
Water contact angle	>100°
Mineral oil contact angle	>50°
Water roll-off	<30°
Oil roll-off	<20°
UV light resistance	Poor
Refractive Index (20°C):	1.35

Case study of CytoSyl coated glass and water contact angle



Contact Angle(Average)[degree]	116.40768
Left Angle[degree]	116.33956
Right Angle[degree]	116.47581
Height from Top to Base[mm]	1.35872
Base Line Length[mm]	1.84448
Base Area[mm^2]	2.67201
Drop Volume[uL]	3.25209
Wetting Energy[mN/m]	-32.37818
Spreading Coefficient[mN/m]	-105.17818
Work of Adhesion[mN/m]	40.42182
Rec. Date	2015-04-28
Rec. Time	22:03.0

Case study of CytoSyl coated polycarbonate and mineral oil



Two pieces of polycarbonate were plasma treated to clean and hydroxylate the surfaces. The cleaned polycarbonate was dip-coated with CytoSyl and air cured at room temperature for 60 minutes. The picture shows 100 microliters of mineral oil on each of the pieces. The CytoSyl coated piece is “repelling” oil and the uncoated piece is “attracting” oil.