

F-0573

Anti-fingerprints & scratch (wet process)

Introduction

F-0573 is a newly developed hydrophobic and oleophobic formulation of modified fluoro chemicals compounds providing exceptional durability, lubricity and abrasion resistance at nano coat. F-0573 has a low surface energy and refractive index, excellent oil, solvent and water repellency, and has anti-reflection properties. On commercial and domestic surfaces, F-0573 may be expected to provide extremely long-lasting anti-fouling from stains, **fingerprints** and other contaminants. Excellent anti-fingerprints & scratch properties.



Substrate Composition

F-0573 adheres to glass, siliceous materials and metals, plastics & films. Materials rank ordered in adhesion from excellent to good include: Silica, Quartz, Glass, Aluminum, Copper, Tin, TiO₂, Steel and Nickel. Adhesion to many unreceptive surfaces, such as plastics, can be improved by pre-application of Tetraethoxy Silane or other suitable primer and co-agents.

Applications

On touch-screen displays and other touch-controlled surfaces, F-0573 protects against marring and abrasion, has a "slippery" low friction feel, reduces contamination, and makes surfaces easy to clean. F-0573's repellency to liquids, resistance to abrasion and fouling, and ease of cleaning are beneficial in the treatment of many personal, automotive, household and industrial working surfaces.

Surface Preparation

Hydroxyl (-OH) density at the substrate surface provides the linkages required for silane adhesion, so there cannot be interference from contaminants. Hardened or heat-treated glasses may

require stronger cleaning and -OH optimizing processes. Clean hardened glass with cerium oxide and water made into a paste and a sponge ball mounted on a small motor to clean the glass, remove any tarnish and rinse the glass with deionized water and place into alcohol for drying. Finally use oxygen or argon plasma to hydrolyze the surface.

Coating Application

F-0573 may be applied using all conventional means. For Dipping, depending on the process. For spraying we recommend air assisted atomization pressure of 5-10 psi (34-69kPa) and fluid pressure of 3-5psi (20-25kPa). For ultrasonic assisted atomization, use 30-45 kHz frequency and liquid air flow rates of 3/5ml per minute and an air shaping pressure of 30-60psi (206-413kPa). F-0573 may be applied by PVD(Plasma Vacuum Deposition) after depositing onto heated boats or porous pellets. Wet process-spray/inkjet and vacuum deposition process need a pre-cleaning & plasma treatment effectively.

Curing

While a functional degree of curing will occur in 24 hours at room temperature with a relative humidity of about 40 to 50%, full properties may not be reached for weeks or months, as with any silane. However, curing can be accelerated in the presence of acid vapors and/or heat. Full curing of F-0573 can be achieved at 50-150 degrees C in a 50% relative humidity atmosphere in 10-15 minutes. For the best abrasion resistance we recommend curing at the highest temperature possible. Best one is vacuum deposition process.

Physical Information

Refractive Index 1.3
Density 1.55 g/cm³
Surface Energy 14 mN·m⁻¹
Dry Coefficient of Static 0.05
Dry Coefficient of Sliding Friction 0.05

Contact Angle Data for Float Glass

Static Contact Angle to Water (20 µl) 110°
Static Contact Angle to Mineral Oil (20 µl) 65°
Sliding Angle to Water (200 µl) 4°
Sliding Angle to Mineral Oil (200 µl) 3°

Contact Angles Data after Abrasion at 120 Hz

Contact Angle after 5,000 Cotton² Double Rubs @ 2.5 g/mm² >110°
Contact Angle after 1000 Steel Wool³ Double Rubs @ 2.5 g/mm² >110°

Contact Angle Data after 24 Hour Exposure to Cleaning Agents and Solvents (n-2)

Contact Angle after Windex⁴ Exposure >110°
Contact Angle after Isopropyl Alcohol Exposure >110°
Contact Angle after Acetone Exposure >110°