

TPD500

Scratch-Resistant, Easy-to-Clean Protective Coating for Metal Surfaces



Description

TPD500 is a one-component solution forming a thin, highly transparent clear-coat on metal substrates. Based on nanotechnology, the optimized composition of the organic-inorganic matrix provides easy-to-clean properties with excellent scratch resistance. TPD500 is a ready-to-use formulation compatible with various application processes. TPD500 coating provides excellent cleanability, reducing the formation of stains, scratches, and fingerprints. The extremely thin TPD500 (< 100 nm) coating is highly durable to chemical and environmental exposure, including high humidity, salt corrosion, UV-light, and temperature changes, without degradation of performance.

Applications

- Electronic casings (i.e. notebooks etc.)
- Faucets
- Kitchen appliances

Highlights

- Very good easy-to-clean properties
- and excellent finger sliding properties
- Extremely high abrasion resistance and environmental durability
- High hardness
- Easy applicable single-layer coating
- Optically clear

Technical Background

The TPD coatings eliminate cosmetic distractions such as scratches, fingerprints and degradation due to environmental conditions. The ultra-thin coatings furthermore enhance the touch feel of metal surfaces. Optitune's patented siloxane nanomaterials result in a matrix, where the chemical functionality is controlled on the molecular level yielding a homogeneous and durable coating structure.

How to Apply

Typical application process for TPD is spray or dip coating followed by thermal curing. Surface should be free from dirt and grease before applying the coating. TPD formulations designed for other coating processes such as slot and roller techniques are available upon request. Both IR and convection oven heating are suitable for thermal curing.

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Item	Performance on hairline finish stainless steel and anodized aluminium	Test method / standards
Pencil hardness	> 6H	750 g weight, ASTM D3363, Elcometer tester Mitsubishi pencils
Abrasion (steel wool)	1500 cycle	Taber® Linear Abraser Model 5750 2 cm x 2 cm / 1 kg
Water contact angle (WCA)	115-120°	Static water contact angle with Biolin Scientific Attension Theta
Easy-to-clean	PASS	Make fingerprint on the substrate surface, wipe with wet clean cloth (5N force; dip cloth in room temperature DI water) to check if the fingerprint mark is removed or not
Adhesion	5B	ASTM D3359-D9; Elcometer cross-hatch tester and Elcometer tape test
*Boiling water	No discoloring and film delamination, water contact angle > 100°	100°C / 4 hr (DI water)
*Alkali	No discoloring nor film delamination, water contact angle > 100°	10% KOH in DI water, RT 120 min
Salt fog	Water contact angle > 100°	Visual check, removal corrosive substance from the surface and check the quantity and the location. Time to corrosion (GB 6458-86 ISO 3768-1976)

Table 1. Mechanical performance of TPD500 coated metals. * = tested on stainless steel only

Solution properties, storage and handling

Solution should be stored below room temperature, preferably +4°C, in a well-ventilated place. Keep containers tightly closed and protected from sources of heat and light. Shelf life is 6 months from the date of manufacture. For working safety, consult product Material Safety Data Sheet.

The information given is based on our best knowledge at the date of issue but carries no guarantee or acceptance of responsibility. For further data on products toxicological, ecological and safety aspects, please consult the MSDS. It is the responsibility of the user of the product to ensure to satisfaction that the product is suitable for the intended purpose and methods of use. We do not accept responsibility for any harm caused by the use of this information.

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