OPX

Nano-coating for glass, metal and plastic
Technical Data Sheet

OPX is a specialized nano-coating in the family of perfluoroethers supplied by Thin film Partners.

It is a robust and abrasion resistant, high performance PFPE formulated with Silane, that provides a very long-lasting, optically clear, hydrophobic thin film.

OPX can be applied to virtually any surface. This includes metal, glass and plastic. Applied at less than a micron in thickness, the OPX chemically bonds to a pre-treated surface by attaching to any available hydroxyl group.

OPX occupies a unique niche where it performs extremely similarly to PTFE with its low surface energy. However, OPX differs from PTFE in that it also provides a robust protective finish that can withstand prolonged abrasive force.

These properties are especially valuable in industrial parts as well as consumer goods. Its uses include sectors like tablets, mobile phones, and other screen technologies where there is a need to repel water, prevent fingerprint smudges and resist scratches.

Features

- A low surface energy sub-micron film with a high contact angle in water (>110°)
- Optically transparent and colorless film
- Anti-scratching and anti-smudging properties are ideal for coating glass, LCDs, optical filters, touch-panel displays, LCD, optical filters and lenses
- OPX can withstand 10,000 rubs with steel wool (force=1lb per square inch)
- Applied either dipped or sprayed (as thin as 20-30 nanometers)
- OPX does not add any measurable dimensions to coated products

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Properties:

Refractive Index	1.3
Contact angle (to water)	110-115°
Contact angle (mineral oil)	60-70°
Contact angle following 5000 rubs with steel wool (@25kPa)	110-115°
Contact angle following 10,000 rubs with steel wool (@25kPa)	110-115°
Contact angle following IPA immersion	110-115°
Contact angle following exposure to acetone	110-115°
OPX shelf life	1 year

Application methods and surface preparation

Starting with a clean substrate, OPX requires an oxide or a hydroxylated surface in order to bond. Hydroxyl (-OH) density and dispersal at the surface are required for good OPX adhesion and uniformity.

Oxygen or Argon Plasma is the preferred method to clean as well as create the hydroxyl bonding sites for OPX deposition.

In the absence of plasma, a wet cleaning is advised. This involves methanol and HCl, followed by H_2SO_4.

Dipping for a few minutes is the preferred deposition process.

Here, OPX is diluted to 0.2-0.25% utilizing a quick-drying fluorosolvent.

Plasma-assisted deposition is also possible. For this, and other methods such as spraying or atomization, call us for information.

OPX Curing

Air drying and curing is possible with OPX. The solvent system flashes off in a matter of just a few minutes.

However, properties of the final coating can be optimized via heat curing in the presence of high humidity (8-10 minutes at 150°C, with 50% relative humidity).

Curing at lower temperatures is also possible (60-100°C).

Post curing is not typically necessary except when the surface film is cloudy.

In this case, rinse the coated surface with deionized water or fluorosolvent.

Contact us for details.

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Custom technology

OPX is available in various concentrations and can be customized to more precisely fit customer requirements.

Properties of hydrophobicity and/or oleophobicity, as well as abrasion resistance, can be tailored to fit specific applications.

Further Information

For additional information relating to how Thin Film partners LLC can help you with your requirements, please contact us at: info@thinfilmpartners.com

Health and Safety

Guidelines for proper use and safety should be strictly followed. Review 40 CFR 261 for handling/ disposal method. Review the product SDS prior to handling this material.

The potential hazards associated with this product should be understood to ensure that they are used properly.

Please review the SDS before working with this material.

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