



Aculon Multi-Surface Hydrophobic Treatment

Product Information

Aculon Multi-Surface Hydrophobic Treatment is a nano-scale surface treatment imparting hydrophobicity and reduced friction to a wide variety of surfaces in a simple, one-step process. It is designed for general purpose and multi-surface treatment for applications that do not require long term abrasion durability.

Solids	Solvent	Color
<10% Proprietary Ingredient	Hydrocarbon	Clear/ Colorless

Physical Properties of Formulation (all values @ 25°C)	
Viscosity*	<1 cP
Boiling Point of Solvent	93-104°C
Flash Point	-10 °C
Environmental	Non toxic, non-ozone depleting, flammable
Shelf Life	2 Years (Unopened container)
Specific Gravity	0.75 g/ml

*Determined by Zahn Cup #1 testing

Physical Properties of Post Treatment Coating	
Coating Thickness	20-100 nm by dip coating
Visible Light Transmission	100%, no change to substrate
Water Contact Angle (treated 304 stainless steel)	110°
Oil Contact Angle (treated 304 stainless steel)	19°
Water Contact Angle (treated glass slide)	107°
Oil Contact Angle (treated glass slides)	24°
Water Contact Angle (treated aluminum)	110°
Oil Contact Angle (treated aluminum)	19°
Sliding Angle of Water Droplet (10 µL distilled water)	>90°
% Haze of Reflected Light	0%, no change to substrate
Dry Abrasion Testing (100 cycles, T-shirt cotton cloth, treated stainless steel)	WCA = 109° OCA = 19°
Wet (Windex) Abrasion Testing (100 cycles, treated stainless steel)	WCA = 73° OCA = 23°
Solvent (isopropanol) Abrasion Testing (100 cycles, treated stainless steel)	WCA = 83° OCA = 23°
Dry Abrasion Testing (100 cycles, T-shirt cotton cloth, treated glass)	WCA = 108° OCA = 24°
Wet (Windex) Abrasion Testing (100 cycles, treated glass)	WCA = 97° OCA = 31°
Solvent (isopropanol) Abrasion Testing (100 cycles, treated glass)	WCA = 95° OCA = 31°
Dry Abrasion Testing (100 cycles, T-shirt cotton cloth, treated aluminum)	WCA = 110° OCA = 18°
Wet (Windex) Abrasion Testing (100 cycles, treated aluminum)	WCA = 108° OCA = 37°
Solvent (isopropanol) Abrasion Testing (100 cycles, treated aluminum)	WCA = 109° OCA = 36°

% Clarity of Transmitted Light	100%, no change to substrate
Dielectric Constant	No change to substrate
Dielectric Strength	No change to substrate
Surface Resistivity	No change to substrate
Volume Resistivity	No change to substrate
Hardness	No change to substrate
Moisture Vapor Transmission Rate (MVTR)	No change to substrate
Oxygen Permeability	No change to substrate
Tensile Strength	No change to substrate
T-bend Testing	0T (no change at 180° bend)

*Stainless steel substrates were 304 alloy 1/32" foil, mill finish supplied by McMaster-Carr

**Glass slides were "Opticlear" supplied by Fisher Scientific

***Aluminum substrates were 1/32" 6061 alloy supplied by Q-Panel

****Abrasion testing is performed using cotton cloth 437W from TestFabrics, Inc. 100 abrasion cycles at 120 g/cm²

Features

- Repels water, blood, etc.
- Can be applied to many different metals, polymers, textiles, paper, etc.
- Lowers the coefficient of friction of surfaces (results in a 'slick' feeling)
- Extremely simple to apply
- Does not change the function or appearance of the surface (if applied at <20 nm thickness)
- Dried film is nontoxic/nonflammable
- Adhesion to a broad range of substrates
- Safe to use (take normal precautions with flammable solvents)

Application Ideas

- Improve water repellency and lower friction on optical surfaces such as electronic displays, eyewear, etc.
- Impart repellency to paper, wood, fabrics, concrete, etc.
- Improved function of microfluidic devices (helps control droplet size more precisely)

Application Techniques

Surface Preparation/ Cleaning:

Typically surfaces do not need special pre-cleaning prior to application of Aculon Multi-Surface Hydrophobic Treatment, other than removal of visual dust, dirt and grime that could damage the surface if wiped across during application. Contact Aculon if you are unsure what cleaner to use and we will recommend one best suited for your application.

Treatment Application:

Wipe: Wet a cotton cloth with solution then rub the surface of the substrate for about 10 seconds, air dry, then wipe clean with a microfiber cloth.

Spray: Spray the solution on the substrate, air dry, then wipe clean with a microfiber cloth. If the coating is too thick, reduce the amount applied by changing the settings on the spray gun or request a sample of diluent from Aculon. Spray Equipment Suggestions; HVLP (Binks Mach 1), HVLP (Devilbiss JGHV), Air Atomization (Devilbiss MBC gun) and Airless (Graco Model 225-292 President Pump Series A).

Dip: Immerse the substrate in the solution for one minute, air dry, then wipe clean with a microfiber cloth.

Other Options: Ink-jet Printing or Roll Coating. Please contact Aculon for more information.

Drying/ Curing: Air dry at room temperature until surface dry to the touch. In some cases additional thermal curing (e.g. 100°C for 5 minutes) may boost performance.

Testing For Hydrophobicity:

Allow droplets of water to fall onto the surface, they should bead up to a contact angle >90°. If the surface is not hydrophobic clean the surface again and reapply.



Safety, Handling, Storage, Shelf Life:

Store in a cool (~25°C) and dry area, and keep away from direct sun light. See this product's MSDS for proper handling and fire hazard data. When stored properly, product has a 2 year shelf life.

For Additional Information:

To request additional product information or sales assistance, contact Aculon's Technical Team, at 858-350-9474. For information on other Aculon products, please visit our website at www.aculon.com.

Product Use: All statements, technical information and recommendations contained in this document are based on tests or experience that Aculon believes to be dependable. However, many factors beyond Aculon's control can affect the use and effectiveness of an Aculon product in a particular use or application, including conditions under which the product is used and the time and conditions in which the product is expected to perform. Since these factors are exclusively within the user's knowledge and control, it is essential that the user evaluate the Aculon product to determine whether it is fit for a specific purpose and suitable for the user's method of application.

Warranty and Liability: Aculon makes no warranty or representation, expressed or implied, by operation of law or otherwise, as to the merchantability or fitness for a particular purpose of the goods arising out of a course of dealing, custom or usage of trade. Aculon shall not be liable for any defect in the goods sold hereunder and customer releases Aculon from any and all liability for negligence. Aculon will not be liable for consequential, incidental or any damages other than repair or replacement of defective good or refund of the purchase price paid for such defective goods.

**Aculon • 11839 Sorrento Valley Road • San Diego • California • 92121
• Tel: 858-350-9474 • Email: info@aculon.com**

