Aculon OP-216

Nano-Scale Adhesion-Promoting Surface Treatment

Product Information

ACULON'S **OP-216** nano-scale coating product is a surface treatment capable of promoting adhesion on most metal surfaces. It can be applied *via* most traditional coating processes, including dipping, spraying, wiping, *etc*. It is designed to improve adhesion for coatings that cross-link with carboxylic acid functional groups (*e.g.* epoxies, melamine-formaldehyde, *etc.*).

Composition

Solids	Solvent	Color
<5% Proprietary Ingredients	Isopropanol	Clear/ Colorless

Physical Properties of Formulation (all values @ 25°C)	
Viscosity*	2
Boiling Point of Solvent	82°C
Flash Point	12°C
Environmental	Non toxic, non-ozone depleting, flammable
Shelf Life	2 Years (Unopened container)

*Determined by Zahn Cup #1 testing

Physical Properties of Post Treatment Coating	
Visible Light Transmission	100%
Coating Thickness	2-4nm
Solvent and Chemical Resistance	High

Features

- Improved adhesion strength of paints/coatings on metal surfaces
- Excellent chemical bonding to many metal surfaces
- Does not out-gas
- No stress build-up on the substrates
- Does not change the appearance of the surface
- Treated surfaces are very stable (if stored in typical office/lab conditions)
- Easy to apply through standard wet coating methods such as dipping or spraying

Application Ideas

- Use to improve lead-frame adhesion in many electronics applications
- Improved bonding of an epoxy over-mold compound
- Prevent delamination of finished products
- Increase epoxy to metal adhesion
- Supported catalysis/metals remediation

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Application Protocol

Surface Preparation/ Cleaning:

Ensure that the surface is free of any grease, fingerprints or dirt (*i.e.*, water break free). This can be accomplished by first degreasing the surface with solvents or by rinsing with soap and water.
The next step is to remove monolayer-scale contaminants. This is typically performed by using a cleaner specifically designed for the metal you are working with. Contact Aculon if you are unsure what cleaner to use and we will recommend one best suited for your application. The substrate should be water break-free before continuing to coating steps.

Treatment Application:

Spray: Spray the solution onto the substrate using double passes. Post-application curing is recommended for best performance. ***Spray Equipment Suggestions***: HVLP (Binks Mach 1), HVLP (Devilbiss JGHV), Air Atomizatation (Devilbiss MBC gun), and Airless (Graco Model 225-292 President Pump Series A)

Dip: – Immerse the substrate in the solution for five minutes. If a shorter dip time is necessary, then a post-cure is recommended for optimal performance (sonication while dipping can boost performance in some cases).

Dip Coating with Sonication: Ensure the substrate is clean. Completely submerge the substrate in the solution and sonicate for five minutes. Remove substrate from the solution and allow to air dry, preferably in a clean area.

Drying/ Curing: If curing is necessary (short dip times or spray-application), the treated substrates are best cured at 120^{o}C peak metal temperature for approximately 30 seconds. For silicon and titanium oxides, lengthening the cure time to 5 minutes is recommended.
*Note: If **OP-216** is being used to adhere a high viscosity or low-reactive resin system, especially if such coating is not cured after application, then it is suggested to do a post cure rinsing step (or post-treatment rinse if curing was not performed) for best performance. In certain cases it is also possible to directly blend the active materials into a coating; contact an Aculon representative if this approach is of interest to you.

Equipment Cleaning: Clean all equipment with alcohol (e.g., Isopropanol).

Safety, Handling, Storage, Shelf Life:

Store in a cool (~25ºC) 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 from the date it is opened.

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.

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