Novec™ Replacement Technology Comparison

nanoproof®

Aculon® NanoProof® electronic coating series offers anti-wetting, anti-stiction, chemical protection, and moisture protection. The NanoProof® 3 series has similar performance and chemical properties as 3M™ Novec™ products (see Figure A), providing a readily available and accessible alternative to the 3M™ Novec™ product series. This product series is available in North America, Europe, and Asia.

3M™ Novec™ Products	Aculon® Replacement
	NanoProof® 3-01
Novec™ 1700	NanoProof® 3-02
Novec™ 1702	NanoProof® 3-002
Novec™ 1710	NanoProof® 3-10
Novec™ 1720	NanoProof® 3-001X
Novec™ 1902	NanoProof® 3-02
Novec™ 1904	NanoProof® 3-04
Novec™ 1908	NanoProof® 3-08
Novec™ 2704	NanoProof® 3-04
Novec™ 2708	NanoProof® 3-08
Novec™ 7100	NanoProof® 3 Extender

Figure A

	3M™ Novec™ Product			Aculon® NanoProof® Product		
	1700	1702	1710	3-02	3-002	3-10
Solids	Fluoroacrylate 2%	Fluoroacrylate 0.2%	Fluoroacrylate 10%	Fluoroacrylate 2%	Fluoroacrylate 0.2%	Fluoroacrylate 10%
Solvent	7100DL			NanoProof® 3 Series Extender		
Appearance	Clear			Light Green		
Density	1.5 g/mL			1.5 g/mL		
Viscosity	0.91 cP	0.63 cP	4.3 cP	<20 cP		
Boiling Point	61°C			56°C		
Flash Point	None			None		
Environmental	Non-ozone depleting, low in toxicity, low in GWP, RoHS compliant and VOC exempt (per U.S. EPA), contains no chlorine or bromine			Non-ozone depleting, low in toxicity, low in GWP, RoHS compliant and VOC exempt (per U.S. EPA), contains no chlorine or bromine		
Shelf Life	4 years (unopened container)			2 years (unopened container)		
Thickness (varies by application style)	0.1-1 µm	<100 nm	0.1-1 µm	0.2-2 µm	0.1-1 µm	0.25-6 µm
Solvent and Chemical Resistance	Resists a variety of solvents and chemicals, dissolves in acetone			Resists a variety of solvents and chemicals. Attacked by fluorosolvents and ketones.		
Tg (glass transition)	44°C			~95°C from peak on DSC (viscous pool by 70°C)		
Thermal Stability of Dry Film	Can withstand 175°C for 24hrs and maintain repellency			Can withstand 175°C for 24hrs and maintain repellency (WCA/OCA: 120°/78°)		
Contact Angles	WCA / OCA: 105°/ 65°			WCA / OCA: 120°/ 80°		
Refractive Index	1.39			n=1.376 @ 632.8nm		
Solder Through Repairability	Yes			Yes		
Non-flammability	Meets UL 94 V-0			Will meet UL 94 V-0 (met via 5.5)		
Coefficient of Thermal Expansion - TMA	70 um/(m·°C)			205 ppm/°C		
Thermal Conductivity	0.1 W/m*K			0.064 W/m*K		
Dielectric Constant @ 30% RH	3.2 (@1kHz)			2.15 @ 1kHz	2.74 @ 1MHz	2.41 @ 1 GHz
Dissipation Factor @ 30% RH	0.002(@1kHz)			0.0516 @ 1 kHz	0.033 @ 1 MHz	<0.084 @ 1 GHz
Dielectric Breakdown Strength @ 35% RH	2000 V/mil			3600 V/mil		
Cure	None			None		
Removable	Yes, with solvent.			Yes, with solvent.		
Application	Anti-stiction, Chemical Protection, Moisture Protection			Anti-wetting, Anti-stiction, Chemical Protection, Corrosion Protection, Moisture Protection		
Application Location	PCB, Electrical Components			PCB, Electrical Components		

Contact an Aculon® representative to learn which NanoProof® 3 product best suits your project needs!

Aculon, Inc.® Confidential Information
10110 Sorrento Valley Road, San Diego, CA 92121 ● T + 1 858 350 9474 ● F + 1 858 350 9422
www.aculon.com