

Electronic device component protection with 3M™ Novec™ Electronic Grade Coatings

Electronic devices are more compact and sophisticated than ever, which can make it challenging to protect components from environmental contaminants, such as moisture, sulfur, pollution and grime. Without proper protection, sensitive electronic components can quickly corrode, often leading to electrical shorts, poor performance and device failure. The solution: 3M™ Novec™ Electronic Grade Coatings – a family of clear, low viscosity, low surface tension solutions of fluorinated polymers carried in segregated hydrofluoroether solvents. Easy to apply and electrically stable, they form repellent films designed to protect sensitive electronics from moisture, chemicals and corrosion.

Properties	Product Family								
	1700 Series			1900 Series			2700 Series		2702
Polymer	Fluorinated Acrylate			Fluorinated Acrylate			Fluorinated Acrylate		Fluorinated Acrylate Hybrid
Solvent	3M™ Novec™ 7100 Engineered Fluid			3M™ Novec™ 7100 & 7200 Engineered Fluids Blend			3M™ Novec™ 7200 Engineered Fluid		3M™ Novec™ 7200 Engineered Fluid
Product Numbers	1702	1700	1710	1902	1904	1908	2704	2708	2702
Solids Concentration (w/w)	0.2%	2%	10%	2%	4%	8%	4%	8%	2%
Recommended Application Method ¹	Dip			Spray / Dip		Dip	Spray / Dip		Spray / Dip
Dip Typical Thickness Range (µm) ²	0.1	0.1 - 0.2	NR ³	0.1 - 0.2	0.3 - 0.6	0.8 - 1.3	0.3 - 0.6	0.8 - 1.3	0.1 - 0.2
Single-Pass Spray Typical Thickness (µm) ²	NR	NR	NR	2 - 5	3 - 6	NR	3 - 6	NR	2 - 5
Viscosity (cP)	0.6	0.9	4.3	0.8	1.1	2.2	1.8	4.9	0.7
UV Detectable ⁴	No			No			Yes		No
Dry Time (minutes)	<2			<2			<2		<2
Thermal Cure Time & Temperature ⁵	No need to cure			No need to cure			No need to cure		15 to 60 Minutes @ 70-150 Degree C
Dielectric Constant (@1kHz, 30%RH)	3.2			3.2			3.2		5.5
Dissipation Factor (@1kHz, 30% RH)	0.002			0.002			0.002		0.02
Dielectric Strength (V/mil @ 35% RH)	2000			2000			2500		2900
Safety & Sustainability ⁶	Low in toxicity Non-ozone depleting Low GWP Non-flammable VOC exempt RoHS compliant			Low in toxicity Non-ozone depleting Low GWP Non-flammable VOC exempt RoHS compliant			Low in toxicity Non-ozone depleting Low GWP Non-flammable Low VOC exempt ⁷ RoHS compliant		Low in toxicity Non-ozone depleting Low GWP Non-flammable VOC exempt RoHS compliant

¹ All Novec coatings can be applied using spray, dip or syringe methods. The methods listed are often preferred. Follow all applicable precautions and directions. Always practice smart and safe industrial hygiene practices. Do not spray apply without proper ventilation and/or personal protective equipment (PPE).

² Coating thickness varies based on application methods. Contact your 3M technical representative for more information on other application and thickness options. When atomized spray coating, using an automated spray machine equipped with appropriate engineering controls is recommended.

³ Novec 1710 coating should be used as a concentrate for maintaining Novec 1700 coating solids concentration in application baths or incorporated with resins or other liquids for a unique solution, rather than by itself.

⁴ Fluorescence of the polymer will depend on several factors including coating thickness; substrate type and color; UV source frequency, intensity and distance from the coating surface. The dye fluoresces brightest under higher frequency UV (254 nm). Please follow the UV lamp manufacturer's recommendations on safe handling of UV radiation.

⁵ Preferred conditions. For other processing conditions, contact your 3M technical representative.

⁶ Global Warming Potential (GWP); The U.S. Environmental Protection Agency (EPA) defines a volatile organic compound (VOC) as "any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate, which participates in atmospheric photochemical reactions." Products marked "VOC exempt" are defined as VOC exempt per the U.S. EPA.

⁷ Contain <5% by weight PGMEA, a VOC. See SDS for specific product information.

⁸ Based upon the toxicity of close structural analog. Novec 1700, 1900 & 2700 series coatings are all based on the same polymer with insignificant differences.

IMPORTANT NOTICE: The technical information, recommendations and other statements contained in this document are based upon tests or experience that 3M believes are reliable, but the accuracy or completeness of such information is not guaranteed. Contact your local 3M representative or visit 3M.com/Novec for more information.
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