



# Novec™

Brand

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

## Introduction

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.

Product Family								
Properties	1700 Series			1900 Series			2700 Series	
Polymer	Fluorinated Acrylate			Fluorinated Acrylate			Fluorinated Acrylate	
Solvent	3M™ Novec™ 7100 Engineered Fluid			3M™ Novec™ 7100 & 7200 Engineered Fluids Blend			3M™ Novec™ 7200 Engineered Fluids Blend	
Product Numbers	1702	1700	1710	1902	1904	1908	2704	2708
Solids Concentration(w/w)	0.2%	2%	10%	2%	4%	8%	4%	8%
Recommended Application Method <sup>1</sup>	Dip			Spray/Dip		Dip	Spray/Dip	Dip
Dip Typical Thickness Range (µm) <sup>2</sup>	0.1	0.1-0.2	NR <sup>3</sup>	0.1 -0.2	0.3 -0.6	0.8 -1.3	0.3 -0.6	0.8 -1.3
Single-Pass Spray Typical Thickness (µm) <sup>2</sup>	NR	NR	NR	2-5	3-6	NR	3-6	NR
Viscosity (cP)	0.6	0.9	4.3	0.8	1.1	2.2	1.8	4.9
UV Detectable <sup>4</sup>	No			No			Yes	
Dry Time (minutes)	<2			<2			<2	
Thermal Cure Time & Temperature <sup>5</sup>	No need to cure			No need to cure			No need to cure	
Dielectric Constant (@1kHz, 30%RH)	3.2			3.2			3.2	
Dissipation Factor (@1kHz, 30% RH)	0.002			0.002			0.001	
Dielectric Strength (V/mil @ 30% RH)	2000			2000			2500	
Safety & Sustainability <sup>6,7</sup>	Low in toxicity, Non-ozone depleting, Low GWP, Non-flammable, VOC exempt and RoHS compliant			Low in toxicity, Non-ozone depleting, Low GWP, Non-flammable, VOC exempt and RoHS compliant			Low in toxicity, Non-ozone depleting, Low GWP, Non-flammable, Low VOC <sup>8</sup> and RoHS compliant	

<sup>1</sup> 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).

<sup>2</sup> 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.

<sup>3</sup> 3M™ Novec™ 1710 Electronic Grade 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.

<sup>4</sup> 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.

<sup>5</sup> Preferred conditions. For other processing conditions, contact your 3M technical representative.

<sup>6</sup> 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.

<sup>7</sup> Based upon the toxicity of close structural analog. Novec 1700, 1900 & 2700 series coatings are all based on the same polymer with insignificant differences.

<sup>8</sup> Contain <5% by weight PGMEA, a VOC. See SDS for specific product information.

**Smart. Safe. Sustainable.**

---

## The 3M™ Novec™ Brand Family

The Novec brand is the hallmark for a variety of proprietary 3M products. Although each has its own unique formula and performance properties, all Novec products are designed in common to address the need for smart, safe and sustainable solutions in industry-specific applications. These include precision and electronics cleaning, heat transfer, fire protection, protective coatings, immersion cooling, advanced insulation media replacement solutions and several specialty chemical applications.

---

3M™ Novec™ Engineered Fluids • 3M™ Novec™ Aerosol Cleaners • 3M™ Novec™ 1230 Fire Protection Fluid • 3M™ Novec™ Electronic Grade Coatings • 3M™ Novec™ Insulating Gases

---

**Safety Data Sheet:** Consult Safety Data Sheet before use.

**Regulatory:** For regulatory information about this product, contact your 3M representative.

**Technical Information:** 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.

**Product Use:** Many factors beyond 3M's control and uniquely within user's control can affect the use and performance of a 3M product in a particular application. Given the variety of factors that can affect the use and performance of a 3M product, user is solely responsible for evaluating the 3M product and determining whether it is fit for a particular purpose and suitable for user's method of application.

**Warranty, Limited Remedy, and Disclaimer:** Unless an additional warranty is specifically stated on the applicable 3M product packaging or product literature, 3M warrants that each 3M product meets the applicable 3M product specification at the time 3M ships the product. 3M MAKES NO OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY IMPLIED WARRANTY OR CONDITION ARISING OUT OF A COURSE OF DEALING, CUSTOM OR USAGE OR TRADE. If the 3M product does not conform to this warranty, then the sole and exclusive remedy is, at 3M's option, replacement of the 3M product or refund of the purchase price.

**Limitation of Liability:** Except where prohibited by law, 3M will not be liable for any loss or damage arising from the 3M product, whether direct, indirect, special, incidental or consequential, regardless of the legal theory asserted, including warranty, contract, negligence or strict liability.



### Electronics Materials Solutions Division

3M Center, Building 224-3N-11  
St. Paul, MN 55144-1000 USA

Web [www.3M.com/novec](http://www.3M.com/novec)  
Phone 1-800-810-8513

Please recycle. Printed in USA.  
©3M 2019. All rights reserved.  
Issued: 9/19 15216HB  
60-5002-0808-1

3M and Novec are trademarks of 3M Company.  
Used under license by 3M subsidiaries and affiliates.