# 3M **Novec**<sup>™</sup> **Electronic Coating** EGC-1700

### Introduction

3M<sup>™</sup> Novec<sup>™</sup> Electronic Coating EGC-1700 is a clear, low viscosity solution of a fluorochemical acrylate polymer coating carried in a hydrofluoroether solvent. The solvent is nonflammable, has low toxicity and provides acceptable environmental properties for today's demanding electronic applications. It contains no volatile organic compounds (VOCs). When applied to clean, moisture-free surfaces such as copper, aluminum, ceramic, steel, tin or glass, Novec coating EGC-1700 dries to a thin transparent film with excellent anti-wetting, anti-stiction, anti-migration, and anti-corrosion properties required in many diverse applications. This makes it applicable for many uses in the electronics industry including coating printed circuit boards, MR heads, micro motors, ball bearing tracks, MEMS, ink jet print cartridges and various components in hard disk drives. The low surface energy film repels liquids such as lubricating oils, silicones, and photoresist solutions used in the manufacturing of semiconductors.

Novec coating EGC-1700 will form a clear, nearly invisible, uniform film that is insoluble in solvents such as heptane, toluene, and water. It is strippable with fluorinated solvents. These films can endure up to 175°C for prolonged periods and maintain good repellency.

lot for	Properties	Novec Coating EGC-1700	
urposes	Appearance	Clear, colorless to light-colored liquid solution	
	Solids	2%	
	Specific Gravity @ 25°C	1.5	
	Solvent	3M <sup>™</sup> Novec <sup>™</sup> Engineered Fluid HFE-7100DL	
	Boiling Point of Solvent	61°C	
	Flash Point	None	
	Thermal Stability of Dry Film	Repellent to chlorinated silicone oil after 24 hrs at 175°C	
	Surface Energy of Dry Film	11-12 dynes/cm	
	Volume Resistivity @ 30% RH 25°C	4.6 x 10 <sup>12</sup> 40V DC (ohm-cm)	
	Dielectric Constant @ 30% RH, 25°C @1 kHz	3.1	
	Coating Thickness (dip coated)	~1 micron	
	Dissipation Factor @ 30% RH, 25°C @ 1 kHz	0.0089	
	Dielectric Strength @ 35% RH, 25°C	1.0 kV/25.4 microns	
	Refractive Index of Dry Film	1.38	

# **Typical Properties**

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# **Product Safety & Handling**

Before using this product, please read the current product Material Safety Data Sheet (available through your 3M sales or technical service representative) and the precautionary statement on the product package. Follow all applicable precautions and directions.

### 3M<sup>™</sup> Novec<sup>™</sup> Electronic Coating EGC-1700 Advantages

The low surface energy films cast from 3M<sup>™</sup> Novec<sup>™</sup> Electronic Coating EGC-1700 have excellent repellency to hydrocarbon oils, silicone oils, synthetic fluids and aqueous solutions. With a surface energy of 11-12 dynes/cm, Novec coating EGC-1700 films compare favorably to coatings of polyethylene and polytetrafluoroethylene, which have surface energy values of approximately 31 and 18 dynes/cm respectively. This property enables non-solubilizing solvents such as heptane, toluene, and water as well as liquids having low surface tension values such as lubricating oils, silicones, etc. to bead and drain freely from surfaces coated with Novec coating EGC-1700 while leaving the film in tact. EGC-1700 coating exhibits many of the practical characteristics desired in a coating system, as seen below, making it especially well-suited for many applications.

Properties	Novec Coating EGC-1700		
Ease of Application	Excellent		
Removable	Yes		
Solder-through Repairability	Yes		
Solvent/Chemical Resistance	Excellent		
Ease of Cure/Dry	Dries at room temperature and can be handled in under two minutes		
Shelf Life	4 years, when stored in the original, unopened container		
Transparent	Yes		
Environmental	Low in toxicity, non-ozone depleting, nonflammable, not a VOC		
One Part System	Yes		
Low Labor Content	May not require masking, etc.		
Application Options	Dipping, spraying and brushing all work well		
Dilution	May be diluted with 3M <sup>™</sup> Novec <sup>™</sup> Engineered Fluid HFE-7100DL for tightly controlled specifications of the solvent, or any other 3M HFE product. EGC-1700 coating should not be diluted with perfluorocarbons (PFCs).		

#### Resources

For additional technical information on Novec coating EGC-1700, call 3M Customer Service at one of the numbers below. For other 3M global offices, and information on additional 3M products, visit our web site at **www.3m.com/electronics/chemicals** 

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3M Specialty Materials	3M Specialty Materials	Specialty Materials	33-1, Tamagawadai 2-chome	Latin America
3M Center, Building 223-6S-04	3M Belgium N. V.	P.O. Box 5757	Setagaya-ku, Tokyo	Call (U.S.) 651 736 7123
St. Paul, MN 55144-1000	Haven 1005, Canadastraat 11	London, Ontario	158-8583 Japan	
800 810 8513	B-2070 Zwijndrecht	N6A 4T1	813 3709 8250	
800 810 8514 (Fax)	32 3 250 7521	800 364 3477		

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