

3M™ Novec™ EGC-4880 Electronic Coating

Introduction

3M™ Novec™ EGC-4880 Electronic Coating is a transparent surface treatment comprised of a fluoropolymer dissolved in an alkoxy silane/ethanol solvent. When applied to clean surfaces such as glass, ceramics, aluminum or steel, Novec EGC-4880 coating dries to form a thin, abrasion resistant, low surface energy film with excellent anti-wetting, anti-stiction, anti-migration and anti-corrosion properties. The coating does not significantly change the appearance of the substrate and is highly repellent to water, oils, silicones and many other materials. Novec EGC-4880 coating also produces a pleasing tactile feel on touch surfaces. The improved surface feel reduces stick-slip friction on glass and metal surfaces to enhance the end user's experience. These properties make Novec EGC-4880 Electronic Coating ideal for application to a variety of substrates, particularly oxide surfaces, commonly used in electronics and related industries.

Novec EGC-4880 coating is typically applied at room temperature from a diluted solution containing about 1.0% by weight of product, resulting in a coating thickness of 20 to 100 nm. The coating can be applied by spray, roll or dip coating. The resulting fluoropolymer coating is stable and cannot be easily removed.

Typical Properties

Not for specification purposes.

All values determined at 25°C (77°F) unless otherwise specified.

Coating Solution	
Appearance	Clear, colorless to light-colored liquid solution
Solvent	Alkoxy silane (60% w/w) and ethanol (30% w/w)
Polymer content	10% (w/w) fluoropolymer
Specific Gravity	0.92
Flash Point	12°C (54°F)
Fluoropolymer Coating	
Contact Angles (typical values as applied to glass)	87° (water), 50° (hexadecane)
Surface Energy	16 dynes/cm
Coating Thickness (diluted to 1% in Novec fluid)	20-100 nm depending on application method
Solvent and Chemical Resistant	Yes
Transparent	Yes
Application and Processing	
Application Options	Dipping is preferred but spraying and roll coating also work well
Dilution	Novec EGC-4880 coating should be diluted to lower concentrations with 3M™ Novec™ Engineered Fluids
Drying/Curing	Dries in seconds. For best results the coating should be thermally cured following application

Storage and Shelf Life

It is recommended that Novec EGC-4880 coating be stored in a closed bottle, away from direct sunlight, in a cool, dry place (temperatures between 10-25°C/50°-77°F). Avoid contact with moisture. Shelf life of the unopened product is one year from date of 3M manufacture.

Product Safety and Handling

To avoid thermal decomposition, neither the coating solution nor the cured fluoropolymer should be subjected to temperatures above 250°C. Before using this product, please read the current product Material Safety Data Sheet (available through your 3M sales or technical service representative or at www.3M.com/Novec) and the precautionary statement on the product package. Follow all applicable precautions and directions.

Application Recommendations

As with any coating, surface preparation is a key consideration. Before treatment, the part to be coated should be cleaned, using agents compatible with the substrate material, in order to remove dust, fingerprints and other contamination that could interfere with coating adhesion or appearance.

The coating solution should be prepared in a clean and dry glass, stainless steel or plastic vessel. 3M™ Novec™ Engineered Fluids are the recommended carrier solvents for the Novec EGC-4880 material. The low surface tension of these fluids allows excellent wetting and even coverage over a variety of inorganic and polymeric substrates. Dilution of the Novec EGC-4880 material to 1-5% by weight in coating solution is generally sufficient for most applications. These solutions are only stable for a limited period of time (4-6 hours); therefore, it is recommended that only the amount of solution that can be used during that time be prepared at one time.

Application of the material may be via spray, roller coating or dip coating. The temperature of the substrate should preferably be 15-30°C (60- 85°F) and above the ambient dew point. The application type will depend on the part being coated, its geometry, and further processing or assembly of the coated part. Spray and roller coating will apply materials from one direction, while dip coating will apply the coating to any areas the coating solution can reach. Most adhesives will have difficulty wetting a surface to which Novec EGC-4880 coating has been applied. Allow the solvent to completely dry from the part, usually seconds to minutes, before handling. Once the parts are dry the coating should be thermally cured at 100°C for 60 minutes.

Resources

For additional technical information on Novec EGC-4880 coating, contact 3M Customer Service at one of the numbers below or visit www.3M.com/Novec. For other 3M global offices, and information on additional 3M products for electronics industries, visit our web site at www.3M.com/Electronics.

The 3M™ Novec™ Brand Family

The Novec brand is the hallmark for a variety of patented 3M products. Although each has its own unique formula and performance properties, all Novec products are designed in common to address the need for safe, effective, sustainable solutions in industry-specific applications. These include precision and electronics cleaning, heat transfer, fire protection, lubricant deposition and several specialty chemical applications.

3M™ Novec™ Engineered Fluids • 3M™ Novec™ Aerosol Cleaners • 3M™ Novec™ 1230 Fire Protection Fluid • 3M™ Novec™ Electronic Coatings • 3M™ Novec™ Electronic Surfactants

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