



**Novec™**

Brand

## 3M™ Novec™ 7100DL Engineered Fluid

### Product Description

3M™ Novec™ 7100DL Engineered Fluid is a high purity version of 3M™ Novec™ 7100 Engineered Fluid designed to meet some of the most demanding needs of the electronics industry. It is used for precision cleaning and as a deposition solvent when high purity materials are needed. Product specifications are tightly controlled for the following contaminants:

- Ions
- Particulates
- Metals
- Non-volatile residue

Novec 7100DL fluid is used in the disk drive industry for the deposition of lubricants and lubricant additives onto hard disk media as well as for cleaning during the processing of head gimbal assemblies. It can also be used in other electronics, aerospace and medical industry applications that require a non-flammable, high purity and consistent product.

### Key Features

- Non-flammable and low toxicity
- Low surface tension and low viscosity for excellent surface wetting
- Excellent solubility for fluorinated lubricants

### Applications

- Deposition of lubricants and lubricant additives onto hard disk media
- Cleaning during the processing of head gimbal assemblies
- Particulate removal in high reliability devices

### Materials Description

3M™ Novec™ 7100DL Engineered Fluid is a clear-colorless liquid composed of a mixture of C<sub>4</sub>F<sub>9</sub>OCH<sub>3</sub> isomers (methyl nonafluoroisobutyl ether and methyl nonafluorobutyl ether), and 99.5% minimum purity. It has non-volatile residue (NVR) of 1.00 ppm maximum.

# 3M™ Novec™ 7100DL Engineered Fluid

## Typical Physical Properties

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes. Final product specifications and testing methods will be outlined in the product's Certificate of Analysis (COA) that is shipped with the product or available by request from your 3M Technical Service Representative.

Properties	3M™ Novec™ 7100DL Engineered Fluid
Molecular Weight (g/mol)	250
Boiling Point (°C)	61
Freeze Point (°C)	-135
Liquid Density (kg/m <sup>3</sup> )	1510
Surface Tension (mN/m)	13.6
Solubility of Fluid in Water (ppmw)	12
Solubility of Water in Fluid (ppmw)	95
Vapor Pressure (kPa)	27
Absolute Viscosity (cP)	<1.0
Heat of Vaporization (kJ/kg at bp)	112
Specific Heat (J/kg·K)	1183

## Materials Compatibility

Testing of 3M™ Novec™ 7100DL Engineered Fluid demonstrates compatibility with a wide range of metals, plastics and elastomers—most materials used in electronics manufacturing. The following materials were deemed compatible after one hour of exposure to the fluid at its boiling point.

Metals	Plastics	Elastomers <sup>1</sup>
Aluminum	Acrylic (PMMA)	Butyl Rubber <sup>2</sup>
Copper <sup>3</sup>	Polyethylene	Natural Rubber
Carbon Steel	Polypropylene	EPDM
302 Stainless Steel	Polycarbonate	EPR
Brass	Polyester	
Molybdenum	Epoxy	
Tantalum	PET	
Tungsten	Phenolic	
Cu/Be Alloy C172	ABS	
Mg Alloy AZ32B		

(1) As with most fluorinated liquids, Novec 7100DL fluid will absorb into fluorinated plastics (e.g. PTFE) and elastomers (e.g. FFKM, FKM types) over longer exposures. Absorption and swelling of silicone rubber are also observed.

(2) Butyl Rubber best for extended exposure > one month.

(3) Some surface oxidation of copper during testing.

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## Safety & Handling

Before using this product, please review the current product Safety Data Sheet ([www.3M.com/SDS](http://www.3M.com/SDS)) and the precautionary statement(s) on the product label. Follow all applicable precautions and directions. This product does not display a closed cup flash point and therefore is not classified as a flammable liquid.

## Environmental Properties

3M™ Novec™ 7100DL Engineered Fluid has zero ozone depletion potential. Additionally, the hydrofluoroether components of this product have negligible photochemical reactivity and therefore does not appreciably contribute to ground-level smog formation. As such, that component is not defined or regulated by the U.S. EPA as a volatile organic compound (VOC). See 40 CFR 51.100(s) for more information.

Properties	3M™ Novec™ 7100DL Engineered Fluid
Ozone Depletion Potential (ODP) <sup>1</sup>	0
Global Warming Potential (GWP) <sup>2</sup>	297
Atmospheric Lifetime (years) <sup>3</sup>	3.8

(1) CFC-11 = 1.0

(2,3) GWP-100-year ITH, IPCC 4th Assessment Report (2007), CO<sub>2</sub> = 1.0

## Recycle and Disposal Options

### Used Fluid Disposal Program

As part of 3M's commitment to product stewardship and customer service, we offer the 3M Used Fluid Disposal Program for free pickup of used 3M fluids in the U.S. This program is provided through Clean Harbors Environmental Services. Working with Clean Harbors will ensure that your used 3M fluids will be managed properly and responsibly. A minimum of 30 gallons of used 3M fluid is required for participation in this free program. Amounts of less than 30 gallons will be at your own expense and will be determined based upon quantity and approved profile of waste.

For additional information on the 3M Used Fluid Disposal Program, send an email to [3Musedfluid@cleanharbors.com](mailto:3Musedfluid@cleanharbors.com).

## Storage and Shelf Life

The shelf life of 3M™ Novec™ 7100DL Engineered Fluid is 12 months from the date of manufacture when stored in the original packaging materials and stored under general warehouse storage conditions (< 49°C / 120°F).

## Certificate of Analysis (COA)

The 3M Certificate of Analysis (COA) for this product is prepared when each lot of the product is manufactured and deemed commercially available from 3M. The COA contains the specifications, test methods and test results for the product's performance attributes that the product will be supplied against. Contact your local 3M representative for the product's COA.

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

**Regulatory:** For regulatory information about this product, contact your 3M representative.  
[https://www.3M.com/3M/en\\_US/company-us/SDS-search/](https://www.3M.com/3M/en_US/company-us/SDS-search/)

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