



# FluoSolv® 649

## 3M Novec 649 Replacement Fluid

### Technical Information

## *High-Performance Engineered Fluid*

### Introduction

FluoSolv® 649 is a clear, colorless, low-odor, non-flammable heat transfer fluid formulated to match 3M™ Novec™ 649 in every functional and environmental parameter. It is primarily composed of dodecafluoro-2-methylpentan-3-one, offering superior thermal, dielectric, and environmental performance with a boiling point of 49 °C. Ideal for cooling systems requiring both safety and sustainability.

### Key Features & Benefits

- Ultra-low Global Warming Potential (GWP = 1) and zero Ozone Depletion Potential (ODP = 0)
- Exceptional safety margin: 8-hour TWA exposure guideline of 150 ppm with inhalation LC<sub>50</sub> well above 100,000 ppm
- Excellent thermal & dielectric performance in compact heat transfer systems (e.g., electronics, power systems)
- Minimal environmental persistence: atmospheric lifetime of ~5 days upon photolysis

### Applications

FluoSolv® 649 is suited for:

- Dual-phase and single-phase immersion cooling of electronics and power devices
- Heat transfer in aerospace, data centers, generators, and solar technologies
- Transformer and inverter cooling, replacing high-GWP gases like SF<sub>6</sub>

### Material Compatibility

FluoSolv® 649 exhibits excellent compatibility with common engineering materials, requiring no special piping or handling systems:

- Metals: Safe with stainless steel, Aluminum, Copper, Nickel
- Plastics: always test for plastic compatibility
- Designed for direct-contact cooling applications in sensitive electronics without degradation or interaction

## Physical Properties

Property	NuGenTec FluoSolv® 649	HCFC 141b	HCFC-225
Boiling Point °C	49	32	54
Liquid Density (kg/m³)	1600	1.23	1.55
Surface Tension (mN/m)	10.8	19.3	16.2
Solubility of Solvent in Water	Negligible	210	330
Vapor Pressure at 25°C (kPa)	40	569	290
Global Warming Potential (GWP)	1	700	180/160
Ozone Depleting Chemical	0	0.10	0.03
Volatile Organic Compounds (VOC)	1600 g/L	Exempt	-
Flash point	None	None	None

### Free Solvent Sample and Vapor Degreaser for Testing

NuGenTec offers a small loaner vapor degreaser and a loaner 5-gallon pail to assist with your testing. The loaner vapor degreaser plugs into a standard wall outlet and fits on a standard pallet. This allows you to test our FluoSolv® solvent in your own controlled environment without immediately changing the solvent in your current equipment.

FluoSolv® 649 is available for purchase in three package sizes:

- 55-gal phenolic lined metal drums
- 5-gal phenolic lined pails
- 1-gal HDPE plastic bottles

For further information about FluoSolv® 649 for testing or purchasing please contact:

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