



FluoSolv® 7000

3M Novec 7000 Replacement Fluid

Technical Information

Azeotropic Vapor-Degreasing Solvent

Introduction

FluoSolv® 7000 is a clear, colorless, thermally stable dielectric fluid engineered for extreme low-temperature operation (down to -120°C). It is a direct replacement for 3M Novec 7000, matching its performance in semiconductor, pharmaceutical, chemical, and electronics applications.

FluoSolv® 7000 is non-ozone-depleting, has very low Global Warming Potential (≈ 530 over 100-year ITH), and is non-flammable, non-corrosive, low in toxicity, and compatible with many materials

Key Features & Benefits

Low viscosity at cryogenic conditions (0.32 cSt @ 25°C ; ≈ 17 cSt @ -120°C)

Excellent dielectric strength (≥ 25 kV over a 0.1" gap); dielectric constant ~ 7.4 ; volume resistivity $\sim 10^8 \Omega\text{-cm}$

Low GWP (~ 530) and zero Ozone Depletion Potential (ODP)

Outstanding thermal stability, inert, non-corrosive

Wide materials compatibility: metals, glasses, PMMA, PEEK, polycarbonate, EPDM, nitrile, ABS, PTFE (though some fluoropolymers/elastomers absorb the fluid over time)—suitable for most standard systems; compatibility testing recommended for soft elastomers

Safe handling profile: follows NU-Safety Data Sheet; no flash point, VOC-exempt under U.S. EPA VOC regulation

Applications

FluoSolv® 7000 is ideal for:

- **Semiconductor equipment**: heat transfer in ion implanters, dry etchers, CVD/PVD tools, automated test equipment (ATE)
- **Pharmaceutical / chemical processing**: reactor cooling, freeze drying, VOC capture
- **Cryogenic cooling**: cryopumps, supercomputers, sensitive electronics, high-voltage transformers
- **Reliability testing**: thermal shock cycles, leak detection, temperature calibration
- **Autocascade refrigeration**: as a replacement for HCFC-123
- **Medical/lab use**: histology baths and related uses

Material Compatibility

FluoSolv® 7000 is compatible with a broad range of materials:

- **Metals**: aluminum, copper (may oxidize), stainless steel, carbon steel, brass
- **Hard polymers**: acrylic (PMMA), PEEK, polycarbonate, polyesters, polyethylene, ABS, PTFE
- **Elastomers**: EPDM, nitrile (EPR), polyurethane, fluorosilicone—with variability in absorption and extractables; testing recommended for applications using soft elastomers or fluorinated polymers

Physical Properties

Property	NuGenTec FluoSolv® 7000	HCFC 141b	HCFC-225
Boiling Point °C	34	32	54
Liquid Density (kg/m3)	1400	1.23	1.55
Surface Tension (dynes/cm)	12.4	19.3	16.2
Solubility of Solvent in Water (ppmw)	<5	210	330
Vapor Pressure at 25°C (kPa)	65	569	290
Global Warming Potential (GWP)	530	700	180/160
Ozone Depleting Chemical	0	0.10	0.03
Volatile Organic Compounds (VOC)	Exempt	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® 7000 is available for purchase in three package sizes:

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

System Design & Operating Notes

Heat-flux guidelines: avoid exceeding thermal critical flux (~18 W/cm² on small heater geometries) to prevent decomposition—consult NuGenTec technical engineering for custom system guidance

Best practices: Use magnetically-coupled or canned pumps; avoid shaft seals. Recommended fittings: compression, flare, compatible NPT thread sealants; evaluate quick-disconnects and barbs under exposure

Filtration & reuse: Activated carbon for hydrocarbons; activated alumina for decomposition byproducts; silica gel for moisture; PP/PE/PVDF filters for particulates

Leak detection: Use halogen leak detectors to monitor and minimize emissions

For further information about FluoSolv® 7000 for testing or purchasing please contact:

Nugentec

1155 Park Ave

Emeryville, CA 94608

Tel: 800-409-3142 fluosolv@nugentec.com

