



FluoSolv[®] WS

Technical Information

Heavy Duty Cold Cleaning Solvent and Carrier Fluid

Introduction

FluoSolv[®] WS is a proprietary blend of non-flammable hydrofluoroethers (HFEs) and trans-1,2-dichloroethylene (t-DCE) designed for degreasing of metal parts and as a carrier fluid fast curing agent for epoxies, resins, pastes, fluxes, wax, and oils.

FluoSolv[®] WS is ideally suited for heavy-duty metal cleaning application in liquid-immersion ultrasonic machines to remove high-viscosity oils, greases and paraffin wax.

FluoSolv[®] WS is a drop-in replacement for TCE, n-propyl bromide (nPB) and similar aggressive heavy duty chlorinated solvents.

FluoSolv[®] WS solvent blending technology leverages the chemical solvency of the fluid as well as its physical properties such as high density, low surface tension and low viscosity for optimal cleaning performance. It also provides excellent chemical solvency for polymeric gels, lubricants etc. and can be used as a convenient carrier fluid.

FluoSolv[®] WSa is very effective as an aerosol cleaner where tough to remove soils require aerosolized delivery of solvent.

User Benefits

NuGenTec FluoSolv[®] WS is ideally balanced to deliver performance, worker safety and desirable environmental properties.

- Non-ozone depleting chemical (ODC)
- Drop-in replacement for PERC, TCE & n-PB, HCFC-225, 71DE
- Low global warming potential (GWP)
- Low toxicity; high allowable exposure limit (AEL);
- Non-Flammable; Non-Hazardous
- Chemically stable; will not go acid

Material Compatibility

FluoSolv[®] WS is compatible with all metals, ceramic and other non-conducting materials. Most elastomeric materials are compatible except fluoroelastomers such as Viton & Kalrez which tend to swell. It is recommended that all materials be tested prior to use. See Table 1.

Table 1: Material Compatibility

	Compatible	Additional Testing Required
Metals	Aluminum, Copper, S/S Titanium, Brass, Tungsten	-
Elastomers	Neoprene, Butyl Rubber, EPDM, Kynar (PVDF)	Viton A & B, Kalrez
Plastics	HDPE, PTFE, Nylon, PVC Epoxy, Phenolic	Acrylic, ABS, Polycarbonate

Table 2: Physical Properties

Property	NuGenTec FluoSolv® WS	TCE	nPB
Boiling Point °C [°F]	41 [106]	87[189]	71[160]
Density at 25°C (77°F) kg/liter [lb/gal]	1.27 [10.6]	1.46 [12.15]	1.35 [11.26]
Surface Tension at 25°C (77°F) dyne/cm	21	32.3	25.9
Viscosity at 25°C (77°F), cPs	0.45	0.54	0.49
Vapor Pressure at 25°C (77°F) kPa	44	9.9	20.3
Heat of Vaporization @bp cal/g	59.3	56	58.8
Global Warming Potential	<30	n/a	n/a
Ozone Depleting Chemical	No	No	No
Volatile Organic Compounds (VOC) g/l	1,143	1,470	1,350
Allowable Exposure Limit (AEL) ppm	255	10	<10
Worker Exposure Ceiling (ppm)	No	30	10
KB Value	98	120	125

Worker Safety

Data from acute toxicity studies of various ingredients has demonstrated that FluoSolv® WS blend has low toxicity. It has a calculated AEL (Acceptable Exposure Limit) of 255 ppm based on its individual components. None of the ingredients in FluoSolv® WS have any chronic or acute toxicity associated with them which makes it a worker friendly solvent.

Please refer to the MSDS for information on detailed exposure limits and toxicity-related data.

NuGenTec FluoSolv® WS exhibits no closed cup or open cup flash point and is not classified as a flammable liquid per established definitions by NFPA or DOT, however being volatile, vapors may become flammable in air. Flash point data and vapor flammability limits in air are shown in Table 3 below .

Table 3: Flammability

	Test Method	FluoSolv® WS
Flash Point (CC)	ASTM D93	None
Flash Point (OC)	ASTM D1310	None
Flammability in Air	ASTM E681	
Lower Explosivity		8.8 vol%
Upper Explosivity		11.6 vol%

Storage

FluoSolv® WS is thermally & chemically a very stable solvent. It is non-reactive, has low water solubility and will not oxidize or degrade when exposed to air. It is not affected by any sunlight or other sources of UV radiation. Common industrial practice should be implemented for storage; keep away from human food source and extreme temperature conditions. Freezing temperatures will cause the drums to compress and hot conditions will balloon the drum. The product in any case is perfectly usable.

Packaging & Availability

FluoSolv® WS is available in three package sizes

- 55-gal lined metal drums (net wt. 55)
- 5-gal lined pails (net wt. 55 lb.)
- 1-gal HDPE jugs (net wt. 11 lb.)

Note: Drum & Pail have phenolic liner

All package sizes are inventoried at Emeryville, CA. Lead times are 1-3 business days after receipt of order.