



FluoSolv™ AP

Technical Information

Defluxing & Vapor Degreasing Solvent

Introduction

FluoSolv™ AP is a proprietary blend of non-flammable hydrofluoroethers (HFEs) and trans-1,2-dichloroethylene (t-DCE) and alcohol engineered for defluxing as well as white residue removal.

FluoSolv™ AP is a drop-in replacement for defluxing blends of n-propyl bromide (nPB) and similar vapor degreasing solvents. It can also be used as a substitute for other cleaners such as Asahi AK-225 (blend of HCFC-225 ca/cb) & HCFC-141b both of which are ozone depleting substances and have been banned from production.

FluoSolv™ AP 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 performance. Our research has shown that to clean metal surfaces in the shortest amount of time the solvent must flow extremely close to the surface to “catch & release” contaminants

User Benefits

NuGenTec FluoSolv™ AP is ideally balanced to deliver performance, worker safety and desirable environmental properties.

- Non-ozone depleting chemical (ODC)
- Drop-in replacement; no equipment modifications
- Low global warming potential (GWP)
- Low toxicity; high allowable exposure limit (AEL);
- No ceiling on instantaneous exposure
- Chemically stable; will not go acid

Material Compatibility

FluoSolv™ AP 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	Viton, Kalrez
Plastics	HDPE, PTFE, Nylon, PVC Epoxy, Phenolic	Acrylic, ABS

Table 2: Physical Properties

Property	NuGenTec FluoSolv™ AP	Asahi AK- 225	Chemours Vertrel® SDG	Honeywell Solstice®	TCE	nPB
Boiling Point °C [°F]	43 [109]	54 [129]	43 [109]	19 [66]	87[189]	71[160]
Density at 25°C (77°F) kg/liter [lb/gal]	1.26 [10.6]	1.55 [12.9]	1.28 [10.7]	1.27 [10.6]	1.46 [12.15]	1.35 [11.26]
Surface Tension at 25°C (77°F) dyne/cm	21	16.2	21.2	12.7	32.3	25.9
Viscosity at 25°C (77°F), cPs	0.46	0.59	0.59	0.53	0.54	0.49
Vapor Pressure at 25°C (77°F) kPa	41	38.5	51.7	152	9.9	20.3
Heat of Vaporization @bp cal/g	64.3	35	67.3	45.6	56	58.8
Global Warming Potential	<30	370	148	1	n/a	n/a
Ozone Depleting Chemical	No	Yes	No	No	No	No
Volatile Organic Compounds (VOC) g/l	756	0	1,150	0	1,470	1,350
Allowable Exposure Limit (AEL) ppm	352	100	200	800	10	<10
Worker Exposure Ceiling (ppm)	No	No	400 ^a	No	30	10
KB Value	92	31	95	25	120	125

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a: Has a ceiling of 400 ppm due to its acute toxicity. None of the above solvents have any stipulated ceiling on AEL



Worker Safety

Data from acute toxicity studies of various ingredients has demonstrated that FluoSolv™ AP blend has low toxicity. It has a calculated AEL (Acceptable Exposure Limit) of 335 ppm based on its individual components. None of the ingredients in FluoSolv™ AP 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™ AP 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™ AP
Flash Point (CC)	ASTM D93	None
Flash Point (OC)	ASTM D1310	None
Flammability in Air	ASTM E681	
Lower Explosivity		6.1 vol%
Upper Explosivity		11.1 vol%

Storage

FluoSolv™ AP 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.

Solvent Recycling

FluoSolv™ AP is a stable azeotropic blend easy to reclaim and reuse by simple distillation process. Commercially available modular recycling units can easily be added to realize sizable savings in solvent usage. Solvent recovery yields are typically in the range of 80 to 95%.

Please contact the FluoSolv™ Technical Services group for information.

Product Specifications

FluoSolv™ AP Composition (Typical)

Hydrofluoroethers	< 30 wt%
Trans-dichloroethylene	> 70 wt%
Iso-propyl alcohol	< 5 wt %
Water	< 100 ppm
Non-volatile residue	<100 ppm (drums) <200 ppm (pails)
Appearance	Clear, colorless

Packaging & Availability

FluoSolv™ AP is available in three package sizes

- 55-gal lined metal drums (net wt. 55)
- 5-gal lined pails (net wt. 55 lb.)
- 1 gal amber glass bottles (net wt. 11 lb.)

Note: Drum & Pail have phenolic liner

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

For further information about FluoSolv™ AP and purchasing please contact office listed below closest to you.

Ecolink

Customer Service Center
2177-A Flintstone Dr.
Tucker, GA 30084

Toll Free (US only): 800-563-1305
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