

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT IDENTIFICATION

Product Name: FluoSolv® LF Product #: N/A CAS Number: Blend

COMPANY IDENTIFICATION

NuGeneration Technologies, LLC

www.nugentec.com

1155 Park Avenue, Emeryville, CA 94608 USA

(888) 996-8436 (For product information) or (510) 962-9551 (NuGenTec Safe-T-Chem: For emergencies)

2. COMPOSITION/INFORMATION ON INGREDIENTS:

<u>Component</u>	<u>CAS No.</u>	<u>Conc.</u>
trans-Dichloroethylene	156-60-5	10-45 %
Proprietary blend of hydro-fluorocarbons and other fluorocarbons	blend	55-90%

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW - WARNING!
VAPOURS ARE HEAVIER THAN AIR AND CAN CAUSE SUFFOCATION BY REDUCING OXYGEN AVAILABLE FOR BREATHING IN VERY CONFINED BASEMENT AREAS

POTENTIAL HEALTH EFFECTS

EYE: Vapors cause eye irritation. Splashes cause severe irritation. May cause: Pain, tearing, swelling, redness, or temporary visual impairment.

SKIN: Causes skin irritation. May cause pain, burning sensation, itching, redness, swelling, or rash.

INHALATION: Vapors are heavier than air and can cause suffocation by reducing oxygen available for breathing. Effects of breathing high concentrations of vapor may include: tiredness or drowsiness, convulsions. May cause narcosis, irregular heartbeat with a strange sensation in the chest, heart thumping, and apprehension, the feeling of fainting, dizziness or weakness.

INGESTION: Can cause drowsiness, unconsciousness, and vomiting. Gastrointestinal pain, cramps, nausea, vomiting, and diarrhea may also result.

CHRONIC EFFECTS: Prolonged/repeated contact may produce mild skin irritation.

CARCINOGENICITY INFORMATION: No known cancer hazards.

None of the components present in this material at concentrations equal to or greater than 0.1% is listed by IARC, NTP, or OSHA, as a carcinogen.

4. FIRST AID MEASURES

EYE CONTACT FIRST AID: Flush eyes with plenty of water for at least 15 minutes. Get medical attention.

SKIN CONTACT FIRST AID: Wash skin with water and remove contaminated clothing.

INHALATION FIRST AID: Remove from exposure, lie down. Move to fresh air. Keep patient warm and at rest. Artificial respiration and/or oxygen may be necessary. Consult a physician.

INGESTION FIRST AID: Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Drink 1 or 2 glasses of water. If vomiting occurs, have victim lean forward to reduce the risk of aspiration. Consult a physician.

STATEMENT OF PRACTICAL TREATMENT: Never give anything by mouth to an unconscious person.

Victim to lie down in the recovery position, cover and keep him warm. Give oxygen or artificial respiration if needed. When symptoms persist or in all cases of doubt seek medical advice.

NOTES TO PHYSICIAN: Do not give adrenaline or similar drugs.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES: NON-FLAMMABLE

FLASH POINT: NONE

Method : Pensky-Martens Closed Cup (ASTM D 93)

Method: Tag Open Cup (ASTM D 1310)

FLAMMABLE LIMITS IN AIR: (% by Volume)

LEL: none UEL: none

AUTOIGNITION TEMPERATURE:

Has not been determined for "FluoSolv LF" which is non-flammable.

Hydrofluorocarbons and other fluorocarbons are known for fire suppression, and this blend of fluorinated compounds suppresses the flammability of trans-1,2-dichloroethylene.

FIRE & EXPLOSION HAZARDS: Fire or intense heat may cause violent rupture of packages. Hazardous combustion products: Hydrogen fluoride Fluorinated hydrocarbons Carbonyl fluoride Carbon oxides Hydrogen chloride. The product is not flammable. Vapors may form flammable mixture with air.

FIREFIGHTING INSTRUCTIONS: In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment. Wear neoprene gloves during cleaning up work after a fire. Exposure to decomposition products may be a hazard to health. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Evacuate personnel to safe areas. Cool containers / tanks with water spray. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

EXTINGUISHING MEDIA: Use media suitable for surrounding materials.

6. ACCIDENTAL RELEASE MEASURES

SAFEGUARDS (PERSONNEL): Evacuate personnel to safe areas. Ventilate area, especially low or enclosed places where heavy vapors might collect. In case of insufficient ventilation, wear suitable respiratory equipment. Refer to protective measures listed in sections 7 and 8.

SPILL CLEANUP: Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

ACCIDENTAL RELEASE MEASURE: Prevent further leakage or spillage. Prevent spreading over a wide area (e.g. by containment or oil barriers). Should not be released into the environment.

7. HANDLING AND STORAGE

RECOMMENDED STORAGE TEMPERATURE: <52°C (<126°F)

HANDLING (PERSONNEL): Avoid contact with skin, eyes and clothing. Avoid breathing vapors or mist.

Provide sufficient air exchange and/or exhaust in work rooms. For personal protection see section 8.

Handle in accordance with good industrial hygiene and safety practice. When using do not eat, drink or smoke. Do not breathe vapors or spray mist. Avoid contact with skin, eyes and clothing. Wash hands before breaks and at the end of workday.

HANDLING (PHYSICAL ASPECTS): Material should not be dispensed from its container by pouring, except

for small sample containers where fume hoods or where other ventilation is used to manage the exposure limits. The use of a drum pump is recommended for dispensing from shipping containers.

STORAGE PRECAUTIONS: Protect from contamination. Keep container tightly closed in a dry and well ventilated place. Store in original container. Avoid freezing temperatures. If stored below -10°C (14°F), mix prior to use.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: Under normal use conditions, with adequate ventilation, no special handling equipment is required.

EYE/FACE PROTECTION REQUIREMENTS: Safety glasses with side-shields. Additionally wear a face shield where the possibility exists for face contact due to splashing, spraying or airborne contact with this material.

RESPIRATORY PROTECTION REQUIREMENTS: For rescue and maintenance work in storage tanks use self-contained breathing apparatus. Vapors are heavier than air and can cause suffocation by reducing oxygen available for breathing.

SKIN PROTECTION REQUIREMENTS: Wear protective gloves to minimize skin contamination.

EXPOSURE GUIDELINES: No occupational exposure limits have been established by OSHA for this product.

Exposure Limit Values

trans-Dichloroethylene			
TLV	(ACGIH)	200 ppm	TWA
Hydrofluorocarbon blend			
AEL*		400 ppm	8 & 12 hr. TWA

**Calculated value of the blend based on available data for individual components as established by various governmental agencies and manufacturers recommendations.*

9. PHYSICAL AND CHEMICAL PROPERTIES

FORM: Clear Liquid
ODOR: Slight, Etheral
DENSITY: 1.38 g/cm³ at 25°C (77°F)
pH= 6.9 - 7.8
SOLUBILITY IN WATER = <1%

COLOR: Colorless
BOILING POINT: 39°C (111°F)
VAPOR DENSITY =5.4 (Air=1), heavier than air
VISCOSITY= 0.49 cps @ 25°C

10. STABILITY AND REACTIVITY

STABILITY: Stable under ordinary conditions of use and storage.

POLYMERIZATION: Hazardous polymerization will not occur.

INCOMPATIBILITY: Alkali metals, alkaline earth metals, powdered metals, powdered metal salts, and strong bases.

DECOMPOSITION: Hazardous decomposition products formed under fire conditions: fluorinated hydrocarbons, hydrogen fluoride, carbon dioxide (CO₂), and carbon monoxide.

11. TOXICOLOGICAL INFORMATION

trans-Dichloroethylene	
Dermal LD50:	> 5,000 mg/kg , rabbit
Oral LD50:	1,275 mg/kg , rat
Inhalation 4 h LC50:	96.4 mg/l , rat. Target Organs: Central nervous system narcosis; cardiac sensitization
Skin irritation:	Moderate skin irritation, rabbit

Eye irritation: Severe eye irritation, rabbit
 Repeated dose toxicity: Inhalation, rat. No toxicologically significant effects were found. Organ weight changes, Liver, Kidney, altered blood chemistry
 Mutagenicity: Did not cause genetic damage in animals. Tests on bacterial or mammalian cell cultures did not show mutagenic effects.
 Teratogenicity: Animal testing showed effects on embryo-fetal development at levels equal to or above those causing maternal toxicity. Reduced embryo-fetal viability.

Hydrofluorocarbon blend:

Dermal LD50: > 5,000 mg/kg, rabbit
 Oral LD50: > 5,000 mg/kg, rat
 Inhalation 4 h LC50: 114 mg/l, rat
 Skin irritation: No skin irritation, rabbit
 Eye irritation: No eye irritation, rabbit
 Skin sensitization: Did not cause sensitization on laboratory animals, guinea pig. Repeated dose toxicity: Inhalation, rat. No toxicologically significant effects were found.
 Mutagenicity: Did not cause genetic damage in animals. Did not cause genetic damage in cultured mammalian cells. Did not cause genetic damage in cultured bacterial cells. Reproductive toxicity: Animal testing showed no reproductive toxicity.
 Teratogenicity: Animal testing showed no developmental toxicity.

Reproductive toxicity: Evidence suggests the substance is not a reproductive toxin in animals.
 Teratogenicity: Evidence suggests the substance is not a developmental toxin in animals.

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL FATE:

Hydrofluorocarbons and other fluorinated compounds:

Biodegradability: Not readily biodegradable.
 Bioaccumulation: Bioaccumulation is unlikely.

AQUATIC TOXICITY:

trans-Dichloroethylene
 96 h LC50 Lepomis macrochirus (Bluegill sunfish) 135 mg/l
 96 h EC50 Pseudokirchneriella subcapitata (green algae) 560 mg/l
 Information given is based on data obtained from similar substances.
 48 h LC50 Daphnia magna (Water flea) 220 mg/l

Hydrofluorocarbons and other fluorinated compounds

96 h LC50 Oncorhynchus mykiss (rainbow trout) 13.9 mg/l
 96 h LC50 Pimephales promelas (fathead minnow) 27.2 mg/l
 96 h LC50 Danio rerio (zebra fish) 13 mg/l
 72 h EC50 Pseudokirchneriella subcapitata (green algae) > 120 mg/l
 48 h LC50 Daphnia magna (Water flea) 11.7 mg/l
 21 d NOEC Daphnia magna (Water flea) 1.72 mg/l

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL: Can be used after re-conditioning. The product should not be allowed to enter drains, water courses or the soil. If recycling is not practicable, contact your vendor for recovery of waste solvent value. Dispose off, container and unused contents in accordance with federal, state and local requirements.

CONTAMINATED MATERIALS: Wash contaminated clothing before reuse.

CONTAINER DISPOSAL: Clean out containers prior to disposal.

14. TRANSPORTATION INFORMATION

Not classified as dangerous in the meaning of transport regulations.
DOT only - when shipped in packages with > 1470 lbs., use: UN3082, Environmentally Hazardous Substance, Liquid, N.O.S. (Dichloroethylene), 9, PGIII RQ (Dichloroethylene)

15. REGULATORY INFORMATION

U.S. Federal Regulations: All Components Are Listed on the TSCA Public Inventory

TITLE III HAZARD CLASSIFICATIONS SECTIONS 311, 312

Acute :	Yes
Chronic :	No
Fire :	No
Reactivity :	No
Pressure :	No

TSCA Status: Some components of the hydro-fluorocarbon blend are controlled by TSCA Section 5, Significant New Use Rule (SNUR; 40 CFR 721.5645) The approved uses are: precision and general cleaning, carrier fluid, displacement drying, printed circuit board cleaning, particulate removal and film cleaning, process medium, heat transfer fluid (dielectric and non-dielectric), and test fluid. Processors and users of this substance must also comply with the applicable general SNUR requirements set forth in 40 CFR 721 subpart A, including export notification requirements if applicable (40 CFR 721.20), and the applicable record keeping requirements set forth at 40 CFR 721.125.

SARA 313 Regulated Chemical(s): trans-Dichloroethylene.

CERCLA Reportable Quantity: 1,471 lbs.

Based on the percentage composition of this chemical in the product: trans-Dichloroethylene

California Prop. 65: none known

PA Right to Know Regulated Chemical(s): Substances on the Pennsylvania Hazardous Substances List present at a concentration of 1% or more (0.01% for Special Hazardous Substances): trans-Dichloroethylene.

NJ Right to Know Regulated Chemical(s): Substances on the New Jersey Workplace Hazardous Substance List present at a concentration of 1% or more (0.1% for substances identified as carcinogens, mutagens or teratogens): trans-Dichloroethylene.

16. OTHER INFORMATION

PREPARED BY: Donato Polignone
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SUPERCEDES DATE: March 14, 2012

The data in this Material Safety Data Sheet relates only to the specific material designated herein. It does not relate to use in combination with any other material or in any process.

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