

## Material Safety Data Sheet

### 1. Product and Company Identification

Enviro Tech International, Inc.  
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**PRODUCT DESCRIPTION:** Patented Stabilized n-Propyl Bromide Mixture  
US Patents 5616549, 5824162, 5938859, 6176942 & 6402857B2. European Patent 781842:  
France, Great Britain, Italy, Netherlands, Sweden 781842. Germany 69604477.3  
Canadian Patent 2284792. Israeli Patent 132000. Australian Patent 720172. Mexican Patent 212927.

**PRODUCT GENERAL USE:** Precision Aerosol Cleaning Solvent for Non-Destructive Inspection

**GENERAL DESCRIPTION:** Non-flammable Azeotropic Solvent Mixture

### 2. Composition and Ingredient Information

n-Propyl Bromide (stabilized) Molecular Formula: C <sub>3</sub> H <sub>7</sub> Br CAS Number: 106-94-5 Synonyms: 1-Bromopropane, Propyl Bromide, nPB, 1-BP N-Bromopropane	>94% by Weight	Not Established: OSHA/ACGIH	OSHA PEL not established. Enviro Tech International, Inc. recommends a workplace exposure guideline of 100 ppm 8 hour time weighted average (TWA) based on the scientific assessment of the <i>EnSolv</i> mixtures, nPB and other existing toxicological data. Based on this data <i>EnSolv</i> mixtures are not expected to be carcinogenic.
Patented Stabilizer Package:	<6% by Weight		
CO <sub>2</sub>		Propellant	

### 3. Hazards Identification

**Emergency Overview:** *EnSolv-NDI* has no flash point, but vapors will form a flammable mixture at a concentration of 4.6% to 8.5% by volume with air. Vapors may be irritating to eyes, skin and respiratory tract. Not expected to be acutely toxic.

#### Potential Health Effects:

**INHALATION:** High concentrations are irritating to the respiratory tract and may cause headache, dizziness, nausea, vomiting or narcosis. Chronic overexposure at high levels may cause adverse effects in the liver, respiratory system, kidney, reproductive system, and central nervous system. Persons having pre-existing diseases of the lungs, eyes or skin may have an increased susceptibility to the hazards of excessive exposure.

**EYE:** May cause irritation.

**SKIN:** May produce irritation with discomfort or rash.

**INGESTION:** May cause irritation of mouth and gastro-intestinal tract.

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### 4. First Aid Measures

INHALATION: Remove person to fresh air. Give oxygen if breathing is difficult. Apply CPR respiration if individual is not breathing.

EYE: Flush eyes with water for at least 15 minutes. Seek emergency medical attention.

SKIN: Wash contaminated areas with soap and water.

INGESTION: Drink large amounts of water. DO NOT induce vomiting. Seek emergency medical attention.

### 5. Fire Fighting Measures

FLASH POINT (Method): None (ASTM D-56 TCC)  
None (ASTM D-92 COC)  
None (ASTM D-93 TCC)

FLAMMABLE LIMITS: 4.6 to 8.5 % by volume in air

AUTO-IGNITION TEMPERATURE: 914° F (490° C)

EXTINGUISHING MEDIA: Mixture is non flammable. Extinguishing media should be chosen based on surrounding conditions.

FIRE FIGHTING PROCEDURE: Use NIOSH approved self-contained breathing apparatus. Use water spray or fog to cool exposed equipment and containers.

UNUSUAL FIRE AND EXPLOSION HAZARDS: **Aerosol containers: DO NOT** puncture or incinerate container. Vapor will form a flammable mixture in a narrow concentration range of 4.6 % to 8.5 % by volume in air. Do not weld or cut any drum with a torch that contained *EnSolv* because residual vapors in the drum could be in the flammable range and an explosion could occur. Thermal decomposition may produce carbon monoxide, carbon dioxide, hydrogen halide and bromides.

### 6. Accidental Release Measures

Contain spillage or leakage with dikes or absorbent material to prevent migration into sewer or waterway. For large spills, evacuate and ventilate the area. Wear self-contained breathing apparatus and recommended personal protective equipment. Absorb with earth, sand, or other non-combustible absorbent material and place in closed container for disposal.

### 7. Handling and Storage

HANDLING: Wear safety glasses. Use of gloves is recommended. Viton or Silvershield gloves offer the best extended protection. Nitrile, neoprene or butyl gloves offer less protection and should be used for splash protection only. DO NOT use natural rubber gloves when handling this product.

STORAGE: Store in well ventilated, cool, dry area. Keep container closed when not in use. Minimize introduction of water or moisture into the product.

### 8. Exposure Controls and Personal Protection

EXPOSURE LIMITS: OSHA PEL not established. Enviro Tech International, Inc. recommends a workplace exposure guideline of 100 ppm 8 hr TWA based on the scientific assessment of the *EnSolv* mixtures, nPB and other existing toxicological data.

RESPIRATORY PROTECTION: Use full face piece, NIOSH approved organic vapor respirator if ventilation is not sufficient and if mists are generated.

CLOTHING/GLOVES: Wear safety glasses. Use of gloves is recommended. Viton or Silvershield gloves offer the best extended protection. Nitrile, neoprene, or butyl gloves offer less protection and should be used for splash protection only. DO NOT use natural rubber gloves when handling this product.

EYE PROTECTION: Always wear safety goggles or full face shield.

WORK/HYGIENIC PRACTICES: Do not eat, drink, or smoke while working with this product. Launder soiled clothes. Provide emergency eye bath and safety shower.

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## 9. Physical Properties

APPEARANCE:	Clear, colorless to yellow liquid
SPECIFIC GRAVITY (25/25° C, H <sub>2</sub> O = 1):	1.32
BOILING POINT:	158°F (70°C)
VAPOR PRESSURE, mm Hg:	134 @ 25°C 102 @ 20°C
PH LEVEL (water extract)	6.7
VOC Content:	1,320 g/l - 11 lbs/gal

## 10. Stability and Reactivity

STABILITY:	Stable under normal conditions.
CONDITIONS TO AVOID:	Avoid open flame, electric arc and other high energy ignition sources. Prolonged contact with free water may result in diminished stabilizer and corrosion.
INCOMPATIBILITY:	Incompatible with strong alkalis, oxidizers, bases, reactive metals and natural rubber.
HAZARDOUS DECOMPOSITION:	Thermal decomposition produces carbon monoxide, carbon dioxide, and hydrogen bromide.
HAZARDOUS POLYMERIZATION:	Will not occur.

## 11. Toxicological Information

LD <sub>50</sub> oral, rat:	4,260 mg/kg
LC <sub>50</sub> inhalation, rat:	50,291 ppm / 30 min.; 14,374 ppm / 4 hr
Ocular:	Irritant
Dermal:	Irritant
Ingestion:	Irritant to mucous membranes.
Inhalation:	High concentrations are irritating to the respiratory tract and may cause headache, dizziness, nausea, vomiting or narcosis. Chronic overexposure at high levels may cause adverse effects in the liver, respiratory system, kidney, reproductive system, and central nervous system. Persons having pre-existing diseases of the lungs, eyes or skin may have an increased susceptibility to excessive exposure.

nPB gave no adverse results in the Ames bacterial mutation study using five strains of *Salmonella typhimurium*. In human liver cell bioassays, *EnSolv* mixtures showed no effects for altered enzyme function, showed no effects for DNA damage and showed no effects for impairment of DNA repair at all cell concentrations tested. In the same bioassays, *EnSolv* mixtures showed no effects for acute cytotoxicity at cell concentrations below 500 ppm.

Based on the results of three different developmental studies in rats, nPB is not expected to be a developmental toxicant at recommended exposure levels. nPB was found to have caused reduced weight of the epididymis and prostrate of male rats at an exposure equivalent to three and one half times the recommended workplace exposure level. In the same study, microscopic liver changes seen at the equivalent of seven times the recommended workplace exposure level were determined to be reversible and not biologically adverse.

A NIOSH epidemiological study of workers exposed to nPB levels of up to 197 ppm for one year found no adverse effects with the exception of a possible association with headaches in the highest exposure group. The same study found no reproductive toxicity.

### CARCINOGENICITY:

Not expected to be a carcinogen. NTP: NO IARC: NO OSHA: NO

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**12. Ecological Information**

The Ozone Depletion Potential of n-propyl bromide has been determined to be in the range of 0.006 to 0.016.

**13. Disposal Considerations**

Follow Federal, State and Local governmental regulations. DO NOT flush into sanitary sewer or waterway.

**14. Transportation Information**

PROPER SHIPPING NAMES:	Cleaning Solvent Mixture
UN NUMBER:	UN 2344 Special Provision A3
IATA:	UN 2344 Special Provision A3
NAFTA:	2903.15.30
Ground Transportation:	Consumer Commodity, ORM-D.
IATA Air Transportation Classification:	Aerosols, Non-flammable, 2.2, UN1950, Limited Quantity

**15. Regulatory Information**

TCSA:	All of the components of this product are in the EPA TSCA inventory and are in compliance with 15 USC 2601-2629.
NESHAP:	N/A
RCRA:	N/A
HAP:	N/A
SARA:	SARA 313 Components subject to reporting: 1,2, butylene oxide CAS 106-88-7 < 0.75% by weight.
CERCLA:	40 CFR 302.4 Component: 1,2-butylene oxide CAS 106-88-7 < 0.75% by weight. Requires a discharge of 20,000 pounds (@ 1,800 gallons) of EnSolv mixture to reach RQ of 100 lbs.
CALIFORNIA PROPOSITION 65:	Yes - reproductive
SNAP:	Proposed Approved by USEPA June 3, 2003
VOC:	100%. 11 lbs per gallon. Exemption from the definition of a VOC applied for.
EEC (EINECS):	Ingredients Listed
CANADA (DSL):	Ingredients Listed
JAPAN (MITI):	Ingredients Listed
AUSTRALIA (AICS):	Ingredients Listed
SOUTH KOREA (ECL):	Ingredients Listed

**16. Other Information**

This information is accurate to the best knowledge of Enviro Tech International, Inc. and is offered as a guide to the safe use of this product. The information contained in this Material Safety Data Sheet is furnished without warranty of any kind, express or implied, and relates only to the specific material designated herein. Enviro Tech International, Inc. assumes no responsibility for use or reliance on this data and assumes no liability for damages related to the use or misuse of this product. The user is responsible for determining the conditions of safe use of this product and for complying with all Federal, State and Local governmental laws and regulations.