# 2-Nitro-1-propanol



**EMERGENCY OVERVIEW** 

RISK

Harmful if swallowed.

## POTENTIAL HEALTH EFFECTS

## ACUTE HEALTH EFFECTS

#### SWALLOWED

Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual.

The substance and/or its metabolites may bind to hemoglobin inhibiting normal uptake of oxygen.

This condition, known as "methemoglobinemia", is a form of oxygen starvation (anoxia).

#### EYE

• Although the liquid is not thought to be an irritant, direct contact with the eye may produce transient discomfort characterized by tearing or conjunctival redness (as with windburn).

#### SKIN

• The material is not thought to produce adverse health effects or skin irritation following contact (as classified using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.

• The liquid may be miscible with fats or oils and may degrease the skin, producing a skin reaction described as non-allergic contact dermatitis.

The material is unlikely to produce an irritant dermatitis as described in EC Directives .

• Open cuts, abraded or irritated skin should not be exposed to this material.

Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects.

Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

#### INHALED

• The material is not thought to produce adverse health effects or irritation of the respiratory tract (as classified using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.

Inhalation of vapours may cause drowsiness and dizziness.

This may be accompanied by narcosis, reduced alertness, loss of reflexes, lack of coordination and vertigo.

• There is some evidence to suggest that the material can cause respiratory irritation in some persons.

The body's response to such irritation can cause further lung damage.

Inhalation hazard is increased at higher temperatures.

Inhalation of high concentrations of gas/vapor causes lung irritation with coughing and nausea, central nervous depression with headache and dizziness, slowing of reflexes, fatigue and inco-ordination.

## **CHRONIC HEALTH EFFECTS**

	Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS			
NAME		CAS RN	%	
2-nitro-1-propanol		2902-96-7	>98	

## **Section 4 - FIRST AID MEASURES**

#### **SWALLOWED**

· IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY. · Where Medical attention is not immediately available or where the patient is more than 15 minutes from a hospital or unless instructed otherwise:

EYE

• If this product comes in contact with the eyes: • Wash out immediately with fresh running water. • Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.

#### SKIN

■ If skin or hair contact occurs: · Flush skin and hair with running water (and soap if available). · Seek medical attention in event of irritation. **INHALED** 

· If fumes or combustion products are inhaled remove from contaminated area. · Other measures are usually unnecessary.

#### NOTES TO PHYSICIAN

• Symptoms of vasodilation and reflex tachycardia may present following organic nitrate overdose; most organic nitrates are extensively metabolized by hydrolysis to inorganic nitrites. Organic nitrates and nitrites are readily absorbed through the skin, lungs, mucosa and gastro-intestinal tract.

The toxicity of nitrates and nitrites result from their vasodilating properties and their propensity to form methemoglobin.

· Most produce a peak effect within 30 minutes.

· Clinical signs of cyanosis appear before other symptoms because of the dark pigmentation of methemoglobin.

## **Section 5 - FIRE FIGHTING MEASURES**

Vapour Pressure (mmHG):

Negligible

Upper Explosive Limit (%):	Not available.
Specific Gravity (water=1):	1.185
Lower Explosive Limit (%):	Not available

## **EXTINGUISHING MEDIA**

· Alcohol stable foam.

· Dry chemical powder.

#### FIRE FIGHTING

· Alert Emergency Responders and tell them location and nature of hazard.

 $\cdot$  Wear full body protective clothing with breathing apparatus.

## **GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS**

#### · Combustible.

 $\cdot$  Slight fire hazard when exposed to heat or flame.

Combustion products include: carbon dioxide (CO2), nitrogen oxides (NOx), other pyrolysis products typical of burning organic material. May emit poisonous fumes.

May emit corrosive fumes.

#### FIRE INCOMPATIBILITY

Avoid contamination with oxidizing agents i.e. nitrates, oxidizing acids, chlorine bleaches, pool chlorine etc. as ignition may result.

#### PERSONAL PROTECTION

Glasses: Chemical goggles. Gloves: Respirator: Type A Filter of sufficient capacity

# Section 6 - ACCIDENTAL RELEASE MEASURES

#### MINOR SPILLS

- · Remove all ignition sources.
- · Clean up all spills immediately.
- MAJOR SPILLS
- Moderate hazard.
- · Clear area of personnel and move upwind.
- · Alert Emergency Responders and tell them location and nature of hazard.

# Section 7 - HANDLING AND STORAGE

#### PROCEDURE FOR HANDLING

- · Avoid all personal contact, including inhalation.
- · Wear protective clothing when risk of exposure occurs.

#### **RECOMMENDED STORAGE METHODS**

- · Metal can or drum
- · Packing as recommended by manufacturer.

#### STORAGE REQUIREMENTS

#### Store in original containers.

- · Keep containers securely sealed.
- · No smoking, naked lights or ignition sources.
- · Store in a cool, dry, well-ventilated area.
- · Store away from incompatible materials and foodstuff containers.
- · Protect containers against physical damage and check regularly for leaks.
- · Observe manufacturer's storing and handling recommendations.

# Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

## **EXPOSURE CONTROLS**

Source	Material	TWA ppm	TWA mg/m³	STEL ppm	STEL mg/m³	Peak ppm	Peak mg/m³	TWA F/CC	Notes
Canada - Ontario Occupational Exposure Limits	2-nitro- 1-propanol (Particles (Insoluble or Poorly Soluble) Not Otherwise)		10 (I)						

Canada - British Columbia Occupational Exposure Limits	2-nitro- 1-propanol (Particles (Insoluble or Poorly Soluble) Not Otherwise Classified (PNOC))		10 (N)	
Canada - Ontario Occupational Exposure Limits	2-nitro- 1-propanol (Specified (PNOS) / Particules (insolubles ou peu solubles) non précisées par ailleurs)		3 (R)	
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants	2-nitro- 1-propanol (Particulates not otherwise regulated Respirable fraction)		5	
US - California Permissible Exposure Limits for Chemical Contaminants	2-nitro- 1-propanol (Particulates not otherwise regulated Respirable fraction)		5	(n)
US - Oregon Permissible Exposure Limits (Z-1)	2-nitro- 1-propanol (Particulates not otherwise regulated (PNOR) (f) Total Dust)	-	10	Bold print identifies substances for which the Oregon Permissible Exposure Limits (PELs) are different than the federal Limits. PNOR means "particles not otherwise regulated."
US - Michigan Exposure Limits for Air Contaminants	2-nitro- 1-propanol (Particulates not otherwise regulated, Respirable dust)		5	
US - Oregon Permissible Exposure Limits (Z-1)	2-nitro- 1-propanol (Particulates not otherwise regulated (PNOR) (f) Respirable Fraction)	-	5	Bold print identifies substances for which the Oregon Permissible Exposure Limits (PELs) are different than the federal Limits. PNOR means "particles not otherwise regulated."
US - Wyoming Toxic and Hazardous	2-nitro- 1-propanol (Particulates not		5	

Substances Table Z1 Limits for Air Contaminants	otherwise regulated (PNOR)(f)- Respirable fraction)		
Canada - Prince Edward Island Occupational Exposure Limits	2-nitro- 1-propanol (Particles (Insoluble or Poorly Soluble) [NOS] Inhalable particles)	10	See Appendix B current TLV/BEI Book

ENDOELTABLE

#### PERSONAL PROTECTION



#### RESPIRATOR

•Type A Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent) Consult your EHS staff for recommendations

#### EYE

 $\cdot$  Safety glasses with side shields.

· Chemical goggles.

## HANDS/FEET

■ Wear chemical protective gloves, eg. PVC.

Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include: such as:

- · frequency and duration of contact,
- chemical resistance of glove material,
- · glove thickness and

· dexterity

Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739, AS/NZS 2161.1 or national equivalent).

When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended.

• When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended.

· Contaminated gloves should be replaced.

Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.

· Neoprene gloves.

#### OTHER

- · Overalls.
- · P.V.C. apron.
- · Barrier cream.
- · Skin cleansing cream.
- · Eye wash unit.

#### **ENGINEERING CONTROLS**

General exhaust is adequate under normal operating conditions. Local exhaust ventilation may be required in special circumstances.

## Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

## PHYSICAL PROPERTIES

Liquid. Does not mix with water. Sinks in water.			
State	Liquid	Molecular Weight	105.09
Melting Range (°F)	Not available	Viscosity	Not Available
Boiling Range (°F)	162- 165 (1 mm Hg)	Solubility in water (g/L)	Partly miscible
Flash Point (°F)	212	pH (1% solution)	Not available
Decomposition Temp (°F)	Not available	pH (as supplied)	Not applicable
Autoignition Temp (°F)	Not available	Vapour Pressure (mmHG)	Negligible

Upper Explosive Limit (%)	Not available.	Specific Gravity (water=1)	1.185
Lower Explosive Limit (%)	Not available	Relative Vapor Density (air=1)	>1
Volatile Component (%vol)	Negligible	Evaporation Rate	Not applicable

#### APPEARANCE

Colourless to pale-yellow liquid; does not mix well with water.

# Section 10 - CHEMICAL STABILITY

## CONDITIONS CONTRIBUTING TO INSTABILITY

 $\cdot$  Presence of incompatible materials.

Product is considered stable.

#### STORAGE INCOMPATIBILITY

Avoid reaction with oxidizing agents, bases and strong reducing agents.

For incompatible materials - refer to Section 7 - Handling and Storage.

## Section 11 - TOXICOLOGICAL INFORMATION

2-nitro-1-propanol

# TOXICITY AND IRRITATION

2-NITRO-1-PROPANOL:

■ No significant acute toxicological data identified in literature search.

#### CARCINOGEN

VPVB_(VERY~	US - Maine Chemicals of High Concern List	Carcinogen	CA Prop 65; IARC; NTP 11th ROC

# Section 12 - ECOLOGICAL INFORMATION

#### No data

#### Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
2-nitro-1-propanol	LOW	No Data Available	LOW	HIGH

## **GESAMP/EHS COMPOSITE LIST - GESAMP Hazard Profiles**

Name / EHS TRN A1a A1b A1 A2 B1 B2 C1 C2 C3 D1 D2 D3 E1 E2 E3 Cas No / RTECS No \_

Alcoholic 293 85 0 0 R 0 0 0 0 0 0 1 D 1 beverages / CAS:2902-96-7 /

Legend: EHS=EHS Number (EHS=GESAMP Working Group on the Evaluation of the Hazards of Harmful Substances Carried by Ships) NRT=Net Register Tonnage, A1a=Bioaccumulation log Pow, A1b=Bioaccumulation BCF, A1=Bioaccumulation, A2=Biodegradation, B1=Acuteaquatic toxicity LC/ECIC50 (mg/l), B2=Chronic aquatic toxicity NOEC (mg/l), C1=Acute mammalian oral toxicity LD50 (mg/kg), C2=Acutemammalian dermal toxicity LD50 (mg/kg), C3=Acute mammalian inhalation toxicity LC50 (mg/kg), D1=Skin irritation & corrosion, D2=Eye irritation & corrosion, D3=Long-term health effects, E1=Tainting, E2=Physical effects on wildlife & benthic habitats, E3=Interference with coastal amenities, For column A2: R=Readily biodegradable, NR=Not readily biodegradable. For column D3: C=Carcinogen, M=Mutagenic, R=Reprotoxic, S=Sensitising, A=Aspiration hazard, T=Target organ systemic toxicity, L=Lunginjury, N=Neurotoxic, I=Immunotoxic. For column E1: NT=Not tainting (tested), T=Tainting test positive. For column E2: Fp=Persistent floater, F=Floater, S=Sinking substances. The numerical scales start from 0 (no hazard), while higher numbers reflect increasing hazard. (GESAMP/EHS Composite List of Hazard Profiles - Hazard evaluation of substances transported by ships)

## Section 13 - DISPOSAL CONSIDERATIONS

#### **Disposal Instructions**

All waste must be handled in accordance with local, state and federal regulations.

Puncture containers to prevent re-use and bury at an authorized landfill.

Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.

A Hierarchy of Controls seems to be common - the user should investigate:

- · Reduction
- · Reuse
- · Recycling
- · Disposal (if all else fails)

This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. If it has been contaminated, it may be possible to reclaim the product by filtration, distillation or some other means. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate.

DO NOT allow wash water from cleaning equipment to enter drains. Collect all wash water for treatment before disposal.

· Recycle wherever possible or consult manufacturer for recycling options.

· Consult Waste Management Authority for disposal.

## Section 14 - TRANSPORTATION INFORMATION

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: DOT, IATA, IMDG

## **Section 15 - REGULATORY INFORMATION**

## 2-nitro-1-propanol (CAS: 2902-96-7) is found on the following regulatory lists;

"Canada - British Columbia Occupational Exposure Limits", "Canada - Ontario Occupational Exposure Limits", "Canada - Prince Edward Island Occupational Exposure Limits", "Canada National Pollutant Release Inventory (NPRI)", "US - California Permissible Exposure Limits for Chemical Contaminants", "US - Michigan Exposure Limits for Air Contaminants", "US - Oregon Permissible Exposure Limits (Z-1)", "US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants", "US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants", "US - Contaminants", "US - Contaminants", "US - Michigan Exposure Limits For Air Contaminants", "US - Oregon Permissible Exposure Limits for Air Contaminants", "US - Michigan Exposure Limits For Air Contaminants", "US - Oregon Permissible Exposure Limits for Air Contaminants", "US - Michigan Exposure Limits - Limits For Air Contaminants", "US - Michigan Exposure Limits - Limits For Air Contaminants", "US - Michigan Exposure Limits - Limits For Air Contaminants", "US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants", "US - Michigan Exposure Limits - Limits For Air Contaminants", "US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants", "US - Michigan Exposure Limits - Limits for Air Contaminants", "US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants", "US - Michigan Exposure Limits, "Limits for Air Contaminants", "US - Wyoming Toxic Air Contaminants", "US - Michigan Exposure Limits, "Limits, "Li

## **Section 16 - OTHER INFORMATION**

#### LIMITED EVIDENCE

- May produce discomfort of the respiratory system\*.
- Vapours potentially cause drowsiness and dizziness\*.

\* (limited evidence).

Denmark Advisory list for selfclassification of dangerous substances

Substance CAS Suggested codes 2- nitro- 1- propanol 2902- 96- 7 Xn; R22

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Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references. A list of reference resources used to assist the committee may be found at:

www.chemwatch.net/references.

• The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

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Issue Date: Sep-30-2009 Print Date:Jul-12-2011