1-NITROPROPANE

NPN

CAUTIONARY RESPONSE INFORMATION

Common Synonyms	Liquid	Colorless	Mild, fruity odor
Propane, 1-nitro-	May float or sink in water, depending on temperature. Slowly mixes with water.		

KEEP PEOPLE AWAY. AVOID CONTACT WITH LIQUID AND VAPOR.
Wear full protective clothing with self-contained breathing apparatus.
(AVOID CARBON-TYPE RESPIRATOR WITH HOPCALITE CATALYST.)
Shut off ignition sources. Call fire department.
Evacuate area.
Stay upwind and use water spray to ``knock down'' vapor.
Notify local health and pollution control agencies.
Protect water intakes.

Fire

COMBUSTIBLE.
POISONOUS GASES ARE PRODUCED IN FIRE.
Containers may explode in fire.
Vapor may explode if ignited in an enclosed area.
Flashback along vapor trail may occur.
Extinguish with water spray, fog or alcohol foam; also may use CO_2 for small fire.
Dry chemicals may react in the presence of water to produce salts which may explode when dry.
Cool exposed containers with water spray.
Combat fires from a safe distance or protected location.

Exposure

CALL FOR MEDICAL AID.

VAPOR
Irritating to eyes and respiratory system.
If inhaled, will cause headache, nausea, vomiting, and diarrhea.
Move victim to fresh air.
If in eyes, hold eyelids open and flush with plenty of running water.
If breathing has stopped, give artificial respiration.
If breathing is difficult, give oxygen.

LIQUID
Irritating to skin and eyes.
If swallowed, will cause headache, dizziness, nausea, vomiting, diarrhea, restlessness and muscular uncoordination.
If swallowed and victim is CONSCIOUS, give large volumes of water and induce vomiting.
If swallowed and the victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim warm.
If in EYES, hold eyelids open and flush with plenty of running water for at least 15 minutes.
If on SKIN, wash with soap or mild detergent under running water for at least 15 minutes.
Remove and isolate contaminated clothing and shoes.

Water Pollution

Effect of low concentrations on aquatic life is unknown.
May be dangerous if it enters water intakes.
Fouling to shoreline.
Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. CORRECTIVE RESPONSE ACTIONS

Dilute and disperse
Stop discharge
Contain
Collection Systems: Skim; Pump
Chemical and Physical Treatment:
Absorb
Do not burn
Clean shore line
Salvage waterfowl

2. CHEMICAL DESIGNATIONS

2.1 CG Compatibility Group: 42; Nitrocompounds
2.2 Formula: $C_3H_7NO_2$
2.3 IMO/UN Designation: 3.3/2608
2.4 DOT ID No.: 2608
2.5 CAS Registry No.: 108-03-2
2.6 NAERG Guide No.: 129
2.7 Standard Industrial Trade Classification: 51140

3. HEALTH HAZARDS

3.1 Personal Protective Equipment: Wear self-contained breathing apparatus and full protective clothing including helmet, coat and pants worn by fire fighters, rubber boots, gloves, bands around legs, arms and waist along with face mask and coverings for parts of neck and head not protected by other apparel. Carbon type respirators containing HOPCALITE, an oxide catalyst that converts carbon monoxide to carbon dioxide, should not be used with high vapor concentrations of 1-nitropropane because the resulting reaction may cause a fire.
3.2 Symptoms Following Exposure: Inhalation causes headache, dizziness, nausea, vomiting, diarrhea, restlessness, muscular uncoordination and irritation of the respiratory tract. Contact causes irritation of the eyes and skin. Ingestion may cause headache, dizziness, nausea, vomiting, restlessness and muscular uncoordination.
3.3 Treatment of Exposure: INHALATION: Move victim to fresh air; call emergency medical care. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. EYES: Immediately begin to flush eyes with running water; lift upper and lower eyelids occassionally. Continue to wash for at least 15 minutes. SKIN: Wash immediately with running water and soap or mild detergent. Continue for at least 15 minutes. Remove and isolate contaminated clothing and shoes. INGESTION: If the victim is CONSCIOUS, give large volumes of water and induce vomiting. If the victim is UNCONSCIOUS, keep the victim warm. Get immediate medical attention.
3.4 TLV-TWA: 25 ppm
3.5 TLV-STEL: Not listed.
3.6 TLV-Ceiling: Not listed.
3.7 Toxicity by Ingestion: Grade 3; LD_{50} = 455mg/kg (rat)
3.8 Toxicity by Inhalation: Currently not available.
3.9 Chronic Toxicity: Causes liver, kidney and heart damage.
3.10 Vapor (Gas) Irritant Characteristics: Vapor causes moderate irritation such that personnel will find high concentrations unpleasant.
3.11 Liquid or Solid Characteristics: If spilled on clothing and allowed to remain, may cause smarting and reddening of skin.
3.12 Odor Threshold: 300 ppm
3.13 IDLH Value: 1,000 ppm
3.14 OSHA PEL-TWA: 25 ppm.
3.15 OSHA PEL-STEL: Not listed.
3.16 OSHA PEL-Ceiling: Not listed.
3.17 EPA AEGL: Not listed

4. FIRE HAZARDS

4.1 Flash Point: 120°F O.C. 96°F C.C
4.2 Flammable Limits in Air: 2.2% (LFL)
4.3 Fire Extinguishing Agents: Small fires: carbon dioxide, CO_2, water spray or alcohol foam. Large Fires: Water spray, fog, or alcohol foam. Unmanned nozzles should be used for a massive fire in a cargo area. Fires should be fought from an explosion-resistant location.
4.4 Fire Extinguishing Agents Not to Be Used: Do not use dry chemicals because some of them may react with water to make the fire worse. In the presence of water, inorganic bases react with nitropropane to produce salts which are explosive when dry.
4.5 Special Hazards of Combustion Products: Combustion products include toxic oxides of nitrogen along with carbon monoxide.
4.6 Behavior in Fire: Produces toxic gases and vapors. Containers may explode in heat of fire. Vapor explosive hazard indoors, outdoors or in sewer. Runoff to sewer may create fire or explosion hazard. Flashback may occur along vapor trail.
4.7 Auto Ignition Temperature: 789°F.
4.8 Electrical Hazards: Class: 1; Group: C
4.9 Burning Rate: Currently not available
4.10 Adiabatic Flame Temperature: Currently not available
4.11 Stoichometric Air to Fuel Ratio: 22.6 (calc.)
4.12 Flame Temperature: Currently not available
4.13 Combustion Molar Ratio (Reactant to Product): 7.5 (calc.)
4.14 Minimum Oxygen Concentration for Combustion (MOCC): Not listed

5. CHEMICAL REACTIVITY

5.1 Reactivity with Water: No reaction
5.2 Reactivity with Common Materials: Contact with amines, strong acids, metal oxides, and alkalies may cause 1-nitropropane to become unstable. May react with strong oxidizers to produce fires or explosions. Highly flammable when mixed with hydrocarbons or other combustibles. Attacks some forms of plastics, rubber, and coatings.
5.3 Stability During Transport: Stable
5.4 Neutralizing Agents for Acids and Caustics: Small spills may be covered with soda ash then mixed with water and subsequently neutralized with 6 molar hydrochloric acid.
5.5 Polymerization: Not pertinent
5.6 Inhibitor of Polymerization: Not pertinent

6. WATER POLLUTION

6.1 Aquatic Toxicity: Currently not available
6.2 Waterfowl Toxicity: Currently not available
6.3 Biological Oxygen Demand (BOD): Currently not available
6.4 Food Chain Concentration Potential: Currently not available
6.5 GESAMP Hazard Profile:
Bioaccumulation: 0
Damage to living resources: (1)
Human Oral hazard: 2
Human Contact hazard: II
Reduction of amenities: XX

7. SHIPPING INFORMATION

7.1 Grades of Purity: 98%
7.2 Storage Temperature: Ambient
7.3 Inert Atmosphere: No requirement
7.4 Venting: Pressure vacuum valve
7.5 IMO Pollution Category: D
7.6 Ship Type: 3
7.7 Barge Hull Type: 3

8. HAZARD CLASSIFICATIONS

8.1 49 CFR Category: Keep Away From Food
8.2 49 CFR Class: 6.1
8.3 49 CFR Package Group: III
8.4 Marine Pollutant: No
8.5 NFPA Hazard Classification:

Category	Classification
Health Hazard (Blue).....	2
Flammability (Red).....	3
Instability (Yellow).....	1

8.6 EPA Reportable Quantity: Not listed.
8.7 EPA Pollution Category: Not listed.
8.8 RCRA Waste Number: Not listed
8.9 EPA FWPCA List: Not listed

9. PHYSICAL & CHEMICAL PROPERTIES

9.1 Physical State at 15° C and 1 atm: Liquid
9.2 Molecular Weight: 89.1
9.3 Boiling Point at 1 atm: 269°F = 131.6°C = 405°K
9.4 Freezing Point: –162°F = –108°C = 165°K
9.5 Critical Temperature: Currently not available
9.6 Critical Pressure: Currently not available
9.7 Specific Gravity: 0.9934 at 25°C (liquid)
9.8 Liquid Surface Tension: 30.57 dynes/cm = 0.0306 N/m at 25°C
9.9 Liquid Water Interfacial Tension: Currently not available
9.10 Vapor (Gas) Specific Gravity: 3.1
9.11 Ratio of Specific Heats of Vapor (Gas): Currently not available
9.12 Latent Heat of Vaporization: 09.5 Btu/lb = 116.4 cal/g = 4.87 X 10^5 J/kg
9.13 Heat of Combustion: 9,723 Btu/lb = 5,402 cal/g = 22.62 X 10^6 J/kg
9.14 Heat of Decomposition: Not pertinent
9.15 Heat of Solution: Not pertinent
9.16 Heat of Polymerization: Not pertinent
9.17 Heat of Fusion: Currently not available
9.18 Limiting Value: Currently not available
9.19 Reid Vapor Pressure: Currently not available

NOTES

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9.20 SATURATED LIQUID DENSITY		9.21 LIQUID HEAT CAPACITY		9.22 LIQUID THERMAL CONDUCTIVITY		9.23 LIQUID VISCOSITY	
Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F	Temperature (degrees F)	British thermal unit inch per hour-square foot-F	Temperature (degrees F)	Centipoise
68	62.420		CURRENTLY NOT AVAILABLE		CURRENTLY NOT AVAILABLE	77	0.798

9.24 SOLUBILITY IN WATER		9.25 SATURATED VAPOR PRESSURE		9.26 SATURATED VAPOR DENSITY		9.27 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	Pounds per 100 pounds of water	Temperature (degrees F)	Pounds per square inch	Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F
68	1.400		CURRENTLY NOT AVAILABLE	68	0.00229		CURRENTLY NOT AVAILABLE