

**Material Safety Data Sheet**  
According to ISO 11014-1:1994(E)

1. IDENTIFICATION OF SUBSTANCE	
<b>Name:</b>	<b>NITROGLYCERIN INJECTION 50 mg/mL</b>
<b>Manufacturer:</b>	Department of Pharmacy Duke University Medical Center Box 3089 Durham, NC 27710 919-684-5125
<b>Information Department:</b>	Occupational and Environmental Safety Office Duke University Medical Center Box 3914 Durham, NC 27710 919-684-5996
<b>Emergency Information:</b>	Regional Poison Control Center 800-848-6946
2. COMPOSITION/INFORMATION ON INGREDIENTS	
<b>Chemical Characterization/Description:</b> Nitroglycerin, propylene glycol, and ethyl alcohol solution	
<b>Synonym(s):</b> Nitroglycerin: nitroglycerol, nitrol, trinitroglycerol; Propylene glycol: 1,2-propanediol; Ethyl alcohol: ethanol, absolute alcohol	
<b>Dangerous Components (CAS#, Hazardous Chemical, Percent):</b>	
55-63-0	Nitroglycerin 5%
57-55-6	Propylene glycol <50%
64-17-5	Ethyl alcohol <50%
3. HAZARDS IDENTIFICATION	
<b>Hazard Description:</b>	
Nitroglycerin in the pure form is a high explosive sensitive to mechanical shock, heat, or UV radiation and will explode at 500°F. A combustible liquid, It is readily absorbed by intact skin and is a potent vasodilator. Propylene glycol is irritating to the eyes and skin and is rated as slightly toxic. Ethyl alcohol is moderately toxic to humans by ingestion and mildly toxic by inhalation and skin contact. Ethyl alcohol is flammable. (Hazard description based on concentrated constituents; this product contains a mixture of constituents.)	
<b>NFPA Ratings (scale 0-4):</b>	
Health	3
Fire:	4
Reactivity:	3

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**4. FIRST AID MEASURES**

**Inhalation:**

Remove victim to fresh air. Give oxygen or artificial respiration if necessary.

**Skin Contact:**

IMMEDIATELY flood affected skin with water while removing and isolating all contaminated clothing. Gently wash all affected skin areas thoroughly with soap and water. Seek medical attention if warranted.

**Eye Contact:**

First check the victim for contact lenses and remove if present. Flush victim's eyes with water or normal saline solution for 20 to 30 minutes while simultaneously calling a hospital or poison control center. Do not put any ointments, oils, or medication in the victim's eyes without specific instructions from a physician. IMMEDIATELY transport the victim after flushing eyes to a hospital even if no symptoms (such as redness or irritation) develop.

**Ingestion:**

DO NOT INDUCE VOMITING.

If the victim is conscious and not convulsing, give 1 or 2 glasses of water to dilute the chemical and IMMEDIATELY call a hospital or poison control center. IMMEDIATELY transport the victim to a hospital.

If the victim is convulsing or unconscious, do not give anything by mouth, ensure that the victim's airway is open, and lay the victim on his/her side with the head lower than the body. Transport the victim IMMEDIATELY to a hospital.

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**5. FIRE-FIGHTING MEASURES**

**Suitable Extinguishing Agents:**

Avoid using water since this can result in separation of the nitroglycerin. Fires involving this material can be controlled with a dry chemical, alcohol foam, Halon or carbon dioxide extinguisher.

**Protective Equipment:**

Self-contained breathing apparatus and protective equipment for fire fighting.

**6. ACCIDENTAL RELEASE MEASURES**

**Personnel Precautions:**

Wear gloves (4H) and eye protection (chemical splash goggles).

**Environmental Precautions:**

None necessary under normal conditions of use.

**Measures for Cleaning/Collection:**

Use absorbent paper to pick up all liquid spill material. Seal the absorbent paper, as well as contaminated clothing, in a vapor-tight plastic bag for eventual disposal. Wash all contaminated surfaces with a soap and water solution. If the nitroglycerin has separated from solution (e.g., evaporation of solvent), contact the Occupational and Environmental Safety Office for specific guidance.

**7. HANDLING AND STORAGE**

**Handling:**

Wear PPE when handling this material. Wash hands after handling.

**Storage:**

Store in a cool, dry, well-ventilated location.

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**8. EXPOSURE CONTROLS AND PERSONAL PROTECTION**

**Engineering Controls:**

None necessary under conditions of normal use.

**Control Parameters:**

<u>Chemical</u>	<u>Limit</u>	<u>Reference</u>
Nitroglycerin	0.05 ppm (skin)	ACGIH TLV-TWA
Propylene glycol	N/A	N/A
Ethyl alcohol	1000 ppm	ACGIH TLV-TWA

**Personal Protective Equipment:**

**Respiratory Protection**

None necessary under conditions of normal use.

**Skin Protection**

Wear gloves (4H) when using this chemical. If this chemical comes into contact with your gloves, or if a tear/puncture develops, remove gloves at once and wash hands.

**Eye Protection**

Splash-proof safety goggles should be worn while handling this chemical.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

**Physical State:** Liquid

**Color and Odor:** Colorless; alcohol odor

**pH:** N/A

**Boiling Point (° C):** 197 (propylene glycol); 78 (EtOH)

**Flashpoint (° C):** 99 (propylene glycol); 13 (ethyl alcohol = EtOH)

**Autoignition Temperature (° F):** 700 (propylene glycol); 422 (EtOH)

**Explosion Properties:**

%LEL=2.6/3.3: %UEL=12.6/19 (propylene glycol/EtOH)

**Vapor Density (air = 1):** 2.62 (propylene glycol); 1.59 (EtOH)

**Vapor Pressure (mm Hg/20°C):** 1 (nitroglycerin); 40mm (EtOH)

**Solubility:** Soluble in water (propylene glycol, EtOH); nitroglycerin slightly soluble in water.

**Specific Gravity (water = 1):** 0.8 (EtOH)

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**10. STABILITY AND REACTIVITY**

**General:** Nitroglycerin is a powerful explosive in its pure form and very sensitive to mechanical shock, heat, or UV radiation. It is a severe explosion hazard when shocked or exposed to O<sub>3</sub>. This product is hygroscopic.

**Materials to Avoid:** Water, acids, alkalies, oxidizing materials. Nitroglycerin in the undiluted state is sensitive to detonation by friction or shock. Separation of the nitroglycerin from the propylene glycol by extraction, evaporation, or any other means is extremely hazardous. As long as it remains dissolved in the propylene glycol, it can be safely handled with the normal precautions for a combustible liquid. Propylene glycol and ethyl alcohol react with a wide range of oxidants.

**Hazardous Decomposition Products:** When heated to decomposition, product may emit acrid smoke and irritating fumes.

**11. TOXICOLOGICAL INFORMATION**

**Acute Toxicity:** Nitroglycerin is a human poison by ingestion, intraperitoneal, subcutaneous, and intravenous routes. It is also a skin irritant and by ingestion, can cause respiratory difficulties and death due to respiratory paralysis. The oral LD<sub>50</sub> is 105 mg/kg (rat). Nitroglycerin is readily absorbed through the skin and can induce vasodilation and methemoglobin formation. Propylene glycol is an eye and skin irritant. It is slightly toxic by ingestion, skin contact, intraperitoneal, intravenous, subcutaneous, and intramuscular routes. The oral LD<sub>50</sub> is 20 g/kg (rat). Ethyl alcohol is moderately toxic to humans by ingestion, and mildly toxic by inhalation and skin contact. The oral LD<sub>Lo</sub> for humans is 1400 mg/kg.

**Signs/Symptoms of Overexposure:** Nitroglycerin is a vasodilator and can result in hypotension. Vasodilation effects include pallor, cold sweats, flushing, dizziness, and weakness. Exposure may cause persistent, throbbing headaches. Methemoglobinemia symptoms include cyanosis, euphoria, headache, flush, light-headedness, ataxia, weakness, rapid heartbeat, labored breathing, nausea, vomiting, and confusion. Propylene glycol human systemic effects by ingestion include general anesthesia, convulsions, and changes in the surface EEG. Ethyl alcohol exposure may cause anesthesia, nausea, headaches, and dizziness.

**Chronic Toxicity:** This product is not considered a carcinogen by NTP, IARC or OSHA. Nitroglycerin is an experimental tumorigen and teratogen and has experimental reproductive effects. Propylene glycol has experimental teratogenic and reproductive effects. Ethyl alcohol is an experimental tumorigen and teratogen and may cause human reproductive effects.

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<b>12. ECOLOGICAL EFFECTS</b>
None anticipated under normal conditions of use.
<b>13. DISPOSAL CONSIDERATIONS</b>
Dispose of all waste and contaminated materials associated with this chemical as specified by existing local, state and federal regulations concerning hazardous waste disposal. Contact the Occupational and Environmental Safety Office for specific guidance.
<b>14. TRANSPORT INFORMATION</b>
<b>Proper shipping name (DOT):</b> Ethyl alcohol
<b>UN/ID number:</b> UN1170 <b>Hazard class:</b> 3
<b>Packing group:</b> II <b>Labels required:</b> Flammable Liquid
<b>15. REGULATORY INFORMATION</b>
Nitroglycerin, propylene glycol, and ethyl alcohol are reported in EPA TSCA Inventory; propylene glycol and ethyl alcohol are reported in the EPA Genetic Toxicology Program.
<b>16. OTHER INFORMATION</b>
This information is based on our present knowledge; however this shall not constitute a guarantee for any specific product features. No toxicity data are available on this specific formulation; this health hazard assessment is based on information that is available for its components.