



## **Ninhydrin Solution (Reagent Alcohol Formula) MSDS**

**Effective Date: June 14, 2013**

**24 Hour Emergency Contact:**

**ChemTel: (800)255-3924**

**www.pioneerforensics.com**

### **1. PRODUCT AND COMPANY IDENTIFICATION**

**Product:** Ninhydrin Solution (in Reagent Alcohol)  
**Product Number(s):** PF036, PF037  
**CAS#:** Mixture  
**Synonyms:** Mixture  
**Manufacturer:** Pioneer Forensics, LLC  
804 E. Eisenhower Blvd.  
Loveland, CO 80537  
Ph: (970) 292-8487  
**Emergency Number:** (800) 255-3924 (CHEM-TEL)  
**Customer Service:** (970) 292-8487

### **2. HAZARDS IDENTIFICATION**

**Emergency Overview:** DANGER! POISON! FLAMMABLE LIQUID AND VAPOR. MAY BE FATAL OR CAUSE BLINDNESS IF SWALLOWED. CANNOT BE MADE NONPOISONOUS. HARMFUL IF INHALED OR ABSORBED THROUGH SKIN. CAUSES IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT. HIGH VAPOR CONCENTRATIONS MAY CAUSE DROWSINESS. MAY CAUSE HARM TO THE UNBORN CHILD. PROLONGED EXPOSURE MAY CAUSE CHRONIC EFFECTS.

*Safety Ratings:* Health: 3, Severe Reactivity: 1, Slight  
Flammability: 3, Severe Contact: 3, Severe

**OSHA Regulatory Status:** This product is considered a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

**Potential Acute Health Effects:**

**Routes of Exposure:** Inhalation, ingestion, skin contact, eye contact

**Inhalation:** May cause irritation of respiratory tract. Toxic effects exerted upon nervous system, particularly the optic nerve. Once absorbed into the body, it is very slowly eliminated. Symptoms of overexposure may include headache, drowsiness, nausea, vomiting, blurred vision, blindness, coma and death. A person may get better but then worse again up to 30 hours later.

**Ingestion:** Poison - may be fatal if swallowed. Even small amounts (30-250 ml methanol) may be fatal. Symptoms are stomachache, nausea, vomiting, dullness, visual disorder and blindness.

**Skin Contact:** Causes irritation. Prolonged or repeated contact with skin may cause redness, itching, irritation and eczema/chapping. Skin absorption can occur, symptoms may parallel ingestion exposure.

**Eye Contact:** Causes irritation.

**Target Organs:** Skin, central nervous system, liver, reproductive system, eyes

**Chronic Health Effects:** In serious cases absorption of methanol in the body may lead to damage to the eyesight. May cause adverse reproductive effects - such as birth defects, miscarriages, or infertility based on animal data. May cause central nervous system disorder (e.g., narcosis involving a loss of coordination, weakness, fatigue, mental confusion and blurred vision) and/or damage. Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis.

**Potential Environmental Effects:** The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

### 3. COMPOSITION AND INFORMATION ON INGREDIENTS

<u>Components</u>	<u>CAS#</u>	<u>Chemical Formula</u>	<u>Formula Weight</u>	<u>Hazardous</u>	<u>% by Weight</u>
Ninhydrin, Monohydrate	485-47-2	C <sub>9</sub> H <sub>6</sub> O <sub>4</sub>	178.14	Yes	≈ 0.6
Ethanol	64-17-5	C <sub>2</sub> H <sub>6</sub> O	46.07	Yes	≈ 90
Methanol	67-56-1	CH <sub>4</sub> O	32.04	Yes	≈ 5
Isopropanol	67-63-0	C <sub>3</sub> H <sub>8</sub> O	60.10	Yes	≈ 5

### 4. FIRST AID MEASURES

#### First Aid Procedures:

**Inhalation:** Remove to fresh air. If breathing is difficult, administer oxygen. If the victim is not breathing, provide artificial respiration. Get medical attention.

**Ingestion:** Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, keep head low so that vomit does not enter lungs. Never give anything by mouth to an unconscious person. GET MEDICAL ATTENTION IMMEDIATELY.

**Skin Contact:** Wash affected area with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. Get medical attention if symptoms occur.

**Eye Contact:** Check for and remove contact lenses. Immediately flush eyes with gentle but large stream of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention.

**General Advice:** In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

**Notes to Physician:** Treat symptomatically. Symptoms may be delayed.

## 5. FIRE FIGHTING MEASURES

<b>NFPA Ratings:</b>	Health: 2	Flammability: 3	Reactivity: 0
<b>Flammable Properties:</b>	HIGHLY FLAMMABLE! Vapors may cause a flash fire or ignite explosively. Vapors may travel considerable distance to a source of ignition and flash back. Heat may cause sealed containers to explode.		
<b>Flash Point:</b>	13° C (55.4° F) (estimate)		
<b>Auto-ignition Temp:</b>	422° C (792° F) (estimate)		
<b>Flammable Limits in Air (% by volume):</b>	Lower Explosion Limit:	3.3% (estimate)	
	Upper Explosion Limit	19% (estimate)	
<b>Suitable Extinguishing Media:</b>	Water spray, dry powder, alcohol resistant foam, carbon dioxide		
<b>Unsuitable Extinguishing Media:</b>	Do not use a solid (straight) water stream as it may scatter and spread fire.		
<b>Hazardous Combustion Products:</b>	Carbon monoxide, carbon dioxide		
<b>Specific Hazards:</b>	Can be ignited easily by heat, sparks, or flame and burns vigorously. Material may burn with an invisible flame. Sealed containers may explode when heated or involved in fire. Material is sensitive to static discharge. Vapor from the solvent may accumulate in container headspace resulting in flammability hazard.		
<b>Special Protective Equipment For Firefighters:</b>	As in any fire, wear MSHA/NIOSH approved (or equivalent) self-contained positive pressure or pressure-demand breathing apparatus and full protective gear.		
<b>Specific Methods:</b>	Use water spray to cool unopened containers. Move containers from fire area if you can do so without risk. Some of these materials, if spilled, may evaporate leaving a flammable residue. In the event of fire and/or explosion do not breathe fumes.		

## 6. ACCIDENTAL RELEASE MEASURES

<b>Personal Precautions:</b>	Ventilate area of leak or spill. Isolate hazard area and keep unnecessary and unprotected personnel away from the area of the leak or spill. Keep upwind. Keep out of low areas. Wear appropriate personal protective equipment as specified in the Exposure Control and Personal Protection Section 8. Avoid contact with eyes, skin, and clothing. Pay attention to flashback. Take precautionary measures against static discharges.
<b>Environmental Precautions:</b>	Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground. In case of large spill, dike if needed.
<b>Methods for Containment:</b>	Eliminate all sources of ignition. Stop the flow of material, if this is without risk. Prevent entry into waterways, sewer, basements or confined areas. Dike the spilled material, where this is possible. In case of large spill, water spray or vapor suppressing foam may be used to reduce vapors, but may not prevent ignition in closed spaces.
<b>Methods for Cleaning Up:</b>	Use spark-proof tools and explosion-proof equipment. All equipment used when handling the product must be grounded. Absorb spill with an inert material (e.g. vermiculite, dry sand, earth, cloth, fleece), and place in a non-combustible container for reclamation or disposal. Do not use combustible materials, such as sawdust. Clean contaminated surface

thoroughly. Never return spills in original containers for re-use. Clean up in accordance with all applicable regulations.

## 7. HANDLING AND STORAGE

**Handling:** Do not handle or open near flame, sources of heat, or sources of ignition. Protect from direct sunlight. Wear personal protective equipment (see section 8). Use only in well-ventilated areas. Provide sufficient air exchange and/or exhaust in work rooms. Avoid contact with skin, eyes and clothing. Do not breathe vapors or spray mist. Do not ingest. When using, do not smoke. Take precautionary measures against static discharge. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Keep away from incompatible materials. Handle in accordance with good industrial hygiene and safety practice. Wash thoroughly after handling. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquids). Observe all warnings and precautions listed for the product

**Storage:** Store in a cool, dry, ventilated area away from flame, sources of ignition, heat, and incompatible materials. Store in a segregated and approved area if possible. Store in original container. Keep containers tightly closed and upright. Keep away from food, drink and animal feedingstuffs. Keep out of the reach of children. Ground container and transfer equipment to eliminate static electric sparks. Comply with all national, state, and local codes pertaining to the storage, handling, dispensing, and disposal of flammable liquids.

## 8. EXPOSURE CONTROL AND PERSONAL PROTECTION

### Exposure Limits:

**Product:** No exposure limits established for this product.

**Components:** Ninhydrin, Monohydrate: No information found

Ethanol:	ACGIH:	STEL:	1000 ppm
	OSHA:	PEL:	1000 ppm 1900 mg/m <sup>3</sup>

Isopropanol:	ACGIH:	TWA:	200 ppm
		STEL:	400 ppm
		BEL:	40 mg/L
	OSHA:	PEL:	400 ppm 980 mg/m <sup>3</sup>

Methanol:	ACGIH:	TWA:	200 ppm
		STEL:	250 ppm
		BEL:	15 mg/L
	OSHA:	PEL:	200 ppm 260 mg/m <sup>3</sup>

**Engineering Controls:** Ensure adequate ventilation. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Explosion proof exhaust ventilation should be used.

### Personal Protective Equipment:

<b>Eye/Face Protection:</b>	Wear goggles or safety glasses with side shields and a face shield.
<b>Skin Protection:</b>	Wear appropriate chemical resistant clothing (with long sleeves) and appropriate chemical resistant gloves.
<b>Respiratory Protection:</b>	Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.
<b>General Hygiene Considerations:</b>	Avoid contact with skin, eyes and clothing. When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Provide eyewash station and safety shower.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Physical State:</b>	Liquid
<b>Appearance:</b>	Transparent
<b>Color:</b>	Yellow
<b>Odor:</b>	Alcoholic, pleasant, mild
<b>Molecular Formula:</b>	Mixture
<b>Molecular Weight:</b>	Mixture
<b>pH:</b>	No information found
<b>Specific Gravity:</b>	0.79 (estimate)
<b>Freezing/Melting Point:</b>	-114° C (-173.2° F) (estimate)
<b>Boiling Point:</b>	78° C (172.4° F) (estimate)
<b>Flash Point:</b>	13° C (55.4° F) (estimate)
<b>Auto Ignition Temperature:</b>	422° C (792° F) (estimate)
<b>Flammable Limits in Air (% by Volume):</b>	
<b>Upper:</b>	19% (estimate)
<b>Lower:</b>	3.3% (estimate)
<b>Solubility:</b>	Miscible with water
<b>Vapor Pressure:</b>	8.12 kPa at 25°C (estimate)
<b>Vapor Density:</b>	1.6 (estimate)
<b>Percent Volatile:</b>	100%
<b>Odor threshold (ppm):</b>	84 (estimate)
<b>Evaporation Rate:</b>	No information found
<b>Partition Coefficient (n-octanol/water):</b>	No information found

## 10. STABILITY AND REACTIVITY

<b>Stability:</b>	Stable under normal conditions.
<b>Conditions to Avoid:</b>	Heat, flames, sparks, ignition sources, incompatibles.
<b>Incompatible Materials:</b>	Oxidizing agents, alkali metals, inorganic salts, inorganic hydrides
<b>Hazardous Decomposition Products:</b>	Carbon dioxide, carbon monoxide
<b>Possibility of Hazardous Reactions:</b>	Can react vigorously, violently or explosively with the incompatible materials listed above.
<b>Hazardous Polymerization:</b>	Will not occur.

## 11. TOXICOLOGICAL INFORMATION

### Toxicological Data:

<b>Product:</b>	No toxicological data available for this product.		
<b>Components:</b>	Ninhydrin, Monohydrate:	Oral Rat LD50:	600 mg/kg
		Oral Rat LDL:	250 mg/kg
	Ethanol:	Oral Rat LD50:	6.2 g/kg
		Inhalation Rat LC50:	124.7 mg/L 4H
	Isopropanol:	Oral Rat LD50:	5045 mg/kg
		Skin Rabbit LD50:	12800 mg/kg
		Inhalation Rat LC50:	72.6 mg/L 4H
	Methanol:	Oral Rat LD50:	5628 mg/kg
		Inhalation Rat LC50:	87.5 mg/L 6 H
		Skin Rabbit LD50:	15800 mg/kg

**Acute Effects:** May be fatal or cause blindness if swallowed. Cannot be made nonpoisonous. Harmful if inhaled or absorbed through skin.

**Local Effects:** Causes eye irritation. Prolonged or repeated skin contact may cause drying, cracking, or irritation. High vapor concentrations may cause drowsiness and irritation of the eyes or respiratory tract.

**Sensitization:** Not a skin sensitizer.

**Chronic Effects:** May cause central nervous system effects. In serious cases methanol absorption into the body may lead to damage to eyesight. Prolonged or repeated skin contact may cause dermatitis and defatting, dryness, and cracking of the skin.

**Carcinogenic Effects:** This product is not believed to cause cancer.

**ACGIH:** Isopropyl Alcohol: A4 - Not classifiable as a human carcinogen

**IARC:** Isopropyl Alcohol: 3 – Not classifiable for human

**Skin Corrosion/Irritation:** Irritation, defatting, drying, and cracking of skin.

**Epidemiology:** No epidemiological data is available for this product.

**Mutagenicity:** No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

**Neurological Effects:** High vapor/aerosol concentrations (attainable only at elevated temperatures) may cause central nervous system effects such as dizziness, drowsiness or headaches. May cause central and or peripheral nervous system damage.

**Reproductive Effects:** May cause adverse reproductive effects. Suspected of damaging fertility or the unborn child.

**Teratogenic Effects:** May cause birth defects based on animal test data.

**Target Organs and Symptoms:** Skin, central nervous system, reproductive system, liver, kidneys, eyes, optic nerve.  
Irritation, drowsiness, dizziness, blindness, cough, shortness of breath, unconsciousness.

## 12. ECOLOGICAL INFORMATION

### Ecotoxicological Data:

**Product:** No ecotoxicological data available for this product.

**Components:** Ninhydrin, Monohydrate: No information found

Ethanol:

EC50 Water flea (Daphnia magna):	7.7 mg/L 48 H
LC50 Fathead minnow (Pimephales promelas):	> 100 mg/L 96 H

Isopropanol:

LC50 Water flea (Daphnia magna):	10000 mg/L 24 H
LC50 Western mosquitofish (Gambusia affinis):	>1400 mg/L 96 H

Methanol:

EC50 Water flea (Daphnia magna):	> 10000 mg/L 48 H
LC50 Fathead minnow (Pimephales promelas):	> 100 mg/L 96 H

**Ecotoxicity:** This product may be harmful to aquatic organisms.

**Environmental Effects:** This product is not expected to be harmful to the environment.

**Persistence and Degradability:** Expected to be readily biodegradable.

**Partition Coefficient (n-octanol/water):** No information found

## 13. DISPOSAL INFORMATION

**Disposal Instructions:** All wastes must be handled in accordance with local, state and federal regulations.

**Contaminated Packaging:** Since emptied containers retain product residue, follow label warnings even after container is emptied. Residual vapors may explode on ignition; do not cut, drill, grind, or weld on or near this container. Offer rinsed packaging material to local recycling facilities.

**Waste Codes:** Methanol: U154 (US RCRA Hazardous Waste U List)

## 14. TRANSPORT INFORMATION

### DOT:

**UN Number:** UN1987

**Proper Shipping Name:** Alcohols, n.o.s. (Denatured Ethanol)

**Hazard Class:** 3

**Packaging Group:** II

**ERG Number:** 127

## 15. REGULATORY INFORMATION

### U.S. Federal Regulations:

**OSHA:** This product is considered a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

**TSCA Inventory:** Ethanol; Isopropyl Alcohol; Methanol; Ninhydrin, Monohydrate

### U.S. EPCRA (SARA Title III):

<b>Sections 311/312:</b>	<u>Hazard Categories</u>	<u>List (Yes/No)</u>
	Section 311 – Hazardous Chemical	Yes
	Immediate Hazard	Yes
	Delayed Hazard	Yes
	Fire Hazard	Yes
	Pressure Hazard	No
	Reactivity Hazard	No

**Section 313:** Toxic Chemical or Category: Isopropyl Alcohol; Methanol  
 De Minimis Concentration: 1.0% (Isopropyl Alcohol; Methanol)

**CERCLA:** Ethanol: 100 lbs  
 Isopropyl Alcohol: 100 lbs  
 Methanol: 5000 lbs

<b>International Inventories:</b>	<u>Country(s) or Region</u>	<u>Inventory Name</u>	<u>On Inventory (Yes/No)*</u>
	Australia	Australian Inventory of Chemical Substances (AICS)	N/A
	Canada	Domestic Substances List (DSL)	N/A
	Canada	Non-Domestic Substances List (NDSL)	N/A
	China	Inventory of Existing Chemical Substances in China (IECSC)	N/A
	Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	N/A
	Europe	European List of Notified Chemical Substances (ELINCS)	N/A
	Japan	Inventory of Existing and New Chemical Substances (ENCS)	N/A
	Korea	Existing Chemicals List (ECL)	N/A
	New Zealand	New Zealand Inventory	N/A
	Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	N/A

\*A "Yes" indicates that the listed component(s) of this product comply with the inventory requirements administered by the governing country(s)



## 16. OTHER INFORMATION

**Product Use:** Laboratory and/or field reagent

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**Issue Date:** 06/14/2013

**Reason for Revision:** Not applicable