Pioneer Forensics LLC
VERITATEM PER EVIDENTIA
"Truth Through Evidence"

SDS

Safety Data Sheet

1. IDENTIFICATION

Product Identifier: **Ninhydrin Solution, HFE7100 Formula**

Product Code(s): PF30082

Synonyms: Mixture.

Recommended Use: For manufacturing, industrial, and laboratory use only. Use as a laboratory reagent.

Uses Advised Against: Not for food, drug, or household use.

Supplier: Pioneer Forensics, LLC
4621 Technology Drive
Golden, CO 80403
Phone: (303) 762-0800

Emergency Phone Number: For health emergency, call poison control: (800) 222-1222.

2. HAZARDS IDENTIFICATION

Hazard Classifications: This product is classified as not hazardous under OSHA's Hazard Communication Standard, 29 CFR 1910.1200 (HCS) and the United Nations' Globally Harmonized System of Classification and Labeling of Chemicals (GHS). However, all chemicals handled and used in the workplace should be treated with caution.

Signal Word: Not applicable.

Hazard Statements: Not applicable.

Pictograms: Not applicable.

Precautionary Statements:

Prevention: Not applicable.

Response: Not applicable.

Storage: Not applicable.

Disposal: Not applicable.

Hazards Not Otherwise Classified: Not applicable.

Toxicity Statement: Not applicable.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

Component	Common Name / Synonyms	CAS#	Chemical Formula	% by Weight
Ninhydrin	1,2,3-Indantrione	485-47-2	$C_9H_6O_4$	< 0.50
Methyl Nonafluorobutyl Ether	-	163702-07-6	$C_5H_3F_9O$	18 – 76
Methyl Nonafluoroisobutyl Ether	-	163702-08-7	$C_5H_3F_9O$	18 – 76
Acetic Acid	Ethanoic Acid	64-19-7	$C_2H_4O_2$	< 0.50
Ethyl Acetate	Acetic Acid, Ethyl Ester	141-78-6	$C_4H_8O_2$	< 0.20
Ethanol	Ethyl Alcohol	64-17-5	C_2H_6O	< 4.0
Methanol	Methyl Alcohol	67-56-1	CH_4O	< 0.25
Isopropanol	Isopropyl Alcohol	67-63-0	C_3H_8O	< 0.25

Trade Secret Statement: Not applicable.

4. FIRST AID MEASURES

First Aid Procedures:

Inhalation: Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Call a physician if symptoms occur.

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. Call a physician or poison control center if symptoms occur.

Skin Contact: Wash skin with soap and plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. Call a physician if symptoms occur.

Eye Contact: Check for and remove contact lenses, if present and easy to do. Immediately flush eyes with gentle but large stream of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Call a physician if symptoms occur.

General Advice: Poison information centers in each state can provide additional assistance for scheduled poisons. Ensure that those providing first aid and medical personnel are aware of the material(s) involved and take precautions to protect themselves.

Symptoms and Effects: May cause abdominal pain, nausea, and vomiting if swallowed. May cause drowsiness or dizziness if inhaled. May cause irritation if exposed to the eyes or skin. Prolonged or repeated exposure may cause dermatitis.

Immediate Medical Care/ Special Treatment: Get medical attention if feeling unwell or concerned. Treat symptomatically. Symptoms may be delayed.

5. FIREFIGHTING MEASURES

Suitable Extinguishing Media: Water spray, dry powder, alcohol resistant foam, carbon dioxide.

Unsuitable Extinguishing Media: Do not use a solid (straight) water stream, as it may scatter and spread fire.

Hazardous Combustion Products:	Carbon oxides, hydrogen fluoride, perfluoroisobutylene.
Specific Hazards:	Excessive thermal conditions may cause decomposition yield corrosive and/or toxic fumes.
Special Protective Equipment/ Precautions for Firefighters:	As in any fire, wear MSHA/NIOSH-approved (or equivalent), self-contained, positive-pressure or pressure-demand breathing apparatus and full protective gear. Use water spray to cool unopened containers. Move containers from fire area, if you can do so without risk.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions and Protective Equipment:	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 (see Section 8). Avoid contact with eyes, skin, and clothing.
Emergency Procedures:	In case of chemical emergency, or if unsure how to address an accidental release, consult a professional (see Section 1).
Methods for Containment:	Stop the flow of material, if this is without risk. Prevent entry into waterways, sewer, basements, or confined areas. Dike the spilled material where possible. Product should not be released to the environment. Contain and recover liquid when possible.
Methods for Cleanup:	Absorb spill with an inert material (e.g. vermiculite, dry sand, earth, cloth, or fleece) and place in a non-combustible container for reclamation or disposal. Do not flush to sewer. Clean contaminated surface thoroughly. Never return spills in original containers for reuse. Clean up in accordance with all applicable regulations.

7. HANDLING AND STORAGE

Handling:	Do not handle, store, or open near sources of extreme heat (> 150 °C). Wear personal protective equipment (see Section 8). Use only in well-ventilated areas. Provide sufficient air exchange and/or exhaust in work areas. Limit exposure to light. Avoid contact with skin, eyes, and clothing. Do not breathe vapors or spray mist. Do not ingest. When using, do not eat, drink, or smoke. Keep away from incompatible materials (see Section 10). Handle in accordance with good industrial hygiene and safety practice. Wash thoroughly after handling. Containers of this material may be hazardous when empty, as they retain product residues. Observe all warnings and precautions listed for this product.
Storage:	Store in a cool, dry, ventilated area. Store in a segregated and approved area away from heat and incompatible materials (see Section 10). Store in original container. Keep out of light. Keep containers tightly closed and upright. Keep away from food, drink, and animal foodstuffs. Keep out of the reach of children. Ground container and transfer equipment. Comply with all national, state, and local codes pertaining to the storage, handling, dispensing, and disposal of this product.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits:	Ninhydrin:	No information found.		
	Methyl Nonafluorobutyl Ether:	AHIA:	TWA:	750 ppm
	Methyl Nonafluoroisobutyl Ether:	AHIA:	TWA:	750 ppm

Acetic Acid:	ACGIH:	TWA:	10 ppm
		STEL:	15 ppm
	OSHA:	PEL:	10 ppm
	NIOSH:	IDLH:	50 ppm
		TWA:	10 ppm
		STEL:	15 ppm
Ethyl Acetate:	ACGIH:	TLV:	400 ppm
	OSHA:	TWA:	400 ppm
Ethanol:	ACGIH:	STEL:	1000 ppm
	OSHA:	PEL:	1000 ppm
Methanol:	ACGIH:	TWA:	200 ppm
		STEL:	250 ppm
	OSHA:	PEL:	200 ppm
Isopropanol:	ACGIH:	TWA:	200 ppm
		STEL:	400 ppm
	OSHA:	PEL:	400 ppm

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.

Personal Protective Measures:

Eye/Face Protection: Wear safety glasses with side shields or goggles. Maintain approved eye wash station and accessible rinse facilities in work area.

Skin Protection: Wear appropriate chemical resistant clothing (with long sleeves) and appropriate chemical resistant gloves.

Respiratory Protection: An air-purifying, NIOSH-approved respirator with an organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Use a positive-pressure, air-supplied respirator if there is any potential for an uncontrolled release, if exposure levels are unknown, or if any other circumstances exist where air-purifying respirators may not provide adequate protection.

Specific Requirements for Personal Protective Equipment: Ensure that glove material is compatible with this product. This information is available from glove manufacturers.

9. PHYSICAL AND CHEMICAL PROPERTIES

Unless otherwise indicated, all properties are given at standard temperature and pressure.

Appearance: Yellowish, transparent liquid.

Odor: Characteristic, ethereal.

Odor Threshold: No information found.

Formula Weight: Mixture.

pH: No information found.

Melting/Freezing Point: - 135 °C (estimated)

Boiling Point/Range: 61 °C (estimated)

Decomposition Temperature:	No information found.
Flash Point:	Not applicable.
Auto-ignition Temperature:	Not applicable.
Flammability:	Not flammable.
Flammability/Explosive Limits:	Not applicable.
Solubility:	Miscible with water, alcohol, acetone.
Vapor Pressure:	202 mmHg (estimated) s
Vapor Density:	≈ 8.6 (Air = 1)
Specific Gravity:	1.50 (Water = 1)
Evaporation Rate:	≈ 49 (Butyl Acetate = 1)
Viscosity:	No information found.
Partition Coefficient (n-octanol/water):	3.54 (estimated)

10. STABILITY AND REACTIVITY

Reactivity Data:	No information found.
Chemical Stability:	Stable under normal conditions.
Conditions to Avoid:	Heat, excessive light, incompatible materials.
Incompatible Materials:	Oxidizers, strong acids, strong bases.
Hazardous Decomposition Products:	Carbon oxides, hydrogen fluoride, perfluoroisobutylene.
Possibility of Hazardous Reactions:	May react vigorously or violently if exposed to extreme thermal conditions or in contact with the incompatible materials listed above.
Hazardous Polymerization:	Will not occur.

11. TOXICOLOGICAL INFORMATION

Routes of Exposure:	Inhalation, ingestion, skin contact, eye contact.		
Acute Effects:	May be harmful if swallowed or inhaled. May cause irritation if exposed to the skin or eyes. May affect the central nervous system. May cause blindness or visual disturbances if absorbed into the blood stream. May affect the mucous membranes, blood, brain, urinary system, liver, spleen, eyes, cardiovascular system, pancreas, and kidneys.		
Chronic Effects:	Prolonged or repeated exposure may affect the liver, kidneys, eyes, and central nervous system; may cause conjunctivitis, dermatitis, respiratory irritation, sensitization, mutagenic effects, and adverse reproductive effects		
Toxicological Data:	Ninhydrin:	LD_{50} Oral, Rat:	600 mg/kg
	Methyl Nonafluorobutyl Ether:	LD_{50} Oral, Rat:	> 5000 mg/kg
		LC_{50} Inhalation, Rat:	> 100,000 ppm 4 h

Methyl Nonafluoroisobutyl Ether:	LD_{50} Oral, Rat:	> 5000 mg/kg
	LC_{50} Inhalation, Rat:	> 100,000 ppm 4 h
Ethyl Acetate:	LD_{50} Oral, Rat:	11,300 mg/kg
	LC_{50} Inhalation, Rabbit:	22,627 ppm, 4 h
	LD_{50} Dermal, Rat:	> 20,000 mg/kg
Acetic Acid:	LD_{50} Oral, Rat:	3310 mg/kg
	LC_{50} Inhalation, Rat:	11.4 mg/L 4 h
	LD_{50} Dermal, Rabbit:	1060 mg/kg
	Corrosive to skin and eyes based on animal data.	
	May cause reproductive effects based on animal data.	
Ethanol:	LD_{50} Oral, Rat:	7060 mg/kg
	LC50 Inhalation, Rat:	124.7 mg/L 4 h
Methanol:	LD_{50} Oral, Rat:	5628 mg/kg
	LC_{50} Inhalation, Rat:	87.5 mg/L 6 h
	LD_{50} Dermal, Rabbit:	15,800 mg/kg
Isopropanol:	LD_{50} Oral, Rat:	5045 mg/kg
	LC_{50} Inhalation, Rat:	72.6 mg/L 4 h
	LD_{50} Dermal, Rabbit:	12,800 mg/kg

Symptoms of Exposure: Irritation, blurred vision, nausea, vomiting, dizziness, headache, numbness, loss of coordination, coughing, abdominal pain.

Carcinogenic Effects: No component of this product is considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

ACGIH: Isopropanol: A4 – Not classifiable as a human carcinogen

IARC: Isopropanol: 3 – Not classifiable to humans

12. ECOLOGICAL INFORMATION

Ecotoxicological Data:

Ninhydrin:
No information found.

Methyl Nonafluorobutyl Ether:

EC_{50}, Water Flea (Daphnia magna):	> 10 mg/L 48 h
LC_{50}, Fathead Minnow (Pimephales promelas):	> 7.9 mg/L 96 h

Methyl Nonafluoroisobutyl Ether:

EC_{50}, Water Flea (Daphnia magna):	> 10 mg/L 48 h
LC_{50}, Fathead Minnow (Pimephales promelas):	> 7.9 mg/L 96 h

Ethyl Acetate:

LC_{50} Fathead Minnow (Pimephales promelas):	230 mg/L 96 h

Acetic Acid:

EC_{50}, Water Flea (Daphnia magna):	47 mg/L 24 h
LC_{50}, Fathead Minnow (Pimephales promelas):	88 mg/L 96 h
LC_{50}, Rainbow Trout (Oncorhynchus mykiss):	> 1000 mg/L 96 h

Ethanol:

EC_{50}, Water Flea (Daphnia magna):	7.7 mg/L 48 h
LC_{50}, Fathead Minnow (Pimephales promelas):	> 100 mg/L 96 h

Methanol:

EC_{50}, Water Flea (Daphnia magna):	> 10,000 mg/L 48 h
LC_{50}, Fathead Minnow (Pimephales promelas):	> 100 mg/L 96 h

Isopropanol:

LC_{50}, Western Mosquitofish (Gambusia affinis):	>1400 mg/L 96 h

Persistence and Degradability: Not expected to biodegrade. Not expected to bioaccumulate. Expected to vaporize rapidly from aerobic environments.

Environmental Effects: Not expected to be hazardous to the environment. However, the possibility of an environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Partition Coefficient (n-octanol/water): 3.54 (estimated)

13. DISPOSAL INFORMATION

Disposal Instructions: Dispose of this material and its container to an approved waste collection point. Minimize exposure to product waste (see Section 8). Do not dispose unused waste down drains or into sewers. All wastes must be handled in accordance with local, state, and federal regulations.

Contaminated Packaging: Because containers retain product residue, follow label warnings even after container is emptied. Offer rinsed packaging material to local recycling facilities.

Waste Codes: No information found.

14. TRANSPORT INFORMATION

DOT: Not regulated.

Environmental Hazard Regulations: No information found.

Other Transport Precautions: No information found.

15. REGULATORY INFORMATION

U.S. Federal Regulations:

OSHA: This product is not considered a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Inventory: All components of this product are on the U.S. TSCA Inventory.

U.S. EPCRA (SARA Title III):

Section 302: No information found.

Sections 311/312:

Hazard Category	List (Yes/No)
Section 311 – Hazardous Chemical	Yes
Immediate Hazard	No
Delayed Hazard	No
Fire Hazard	No
Pressure Hazard	No
Reactivity Hazard	No

Section 313: Isopropanol, Methanol

CERCLA Reportable Quantities: Ethyl Acetate: 5000 lb
Acetic Acid: 5000 lb
Methanol: 5000 lb

International Inventories:

Country or Region	Inventory Name	On Inventory (Yes/No)*
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
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

Disclaimer: Pioneer Forensics, LLC provides the information in this Safety Data Sheet in the belief that it is reliable but assumes no responsibility for its completeness or accuracy. The physical properties reported in this SDS are obtained from literature and do not constitute product specifications. Pioneer Forensics, LLC makes and gives no representations or warranties with respect to the information contained herein or the product to which it refers, whether express, implied, or statutory, including without limitation, warranties of accuracy, completeness, merchantability, non-infringement, performance, safety, suitability, stability, and fitness for a particular purpose. No warranty against infringement of any patent, copyright or trademark is made or implied. This SDS is intended only as a guide to the appropriate handling of the material by a properly trained person. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. Accordingly, Pioneer Forensics, LLC assumes no liability whatsoever for the use of or reliance upon this information including results obtained, incidental or consequential damages, or lost profits.

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