DFO Reagent SDS

Effective Date: November 19, 2015
24 Hour Emergency Contact:
ChemTel: (800)255-3924
www.pioneerforensics.com

1. PRODUCT AND COMPANY IDENTIFICATION

Product:	**DFO Reagent**
Product Number(s):	DFO Reagent
CAS#:	Mixture
Synonyms:	Mixture
Manufacturer:	Pioneer Forensics, LLC 804 E. Eisenhauer Blvd. Loveland, CO 80537 - Ph: (970) 292-8487
Distributor:	Arrowhead Forensics 11030 Strang Line Rd. Lenexa, KS 66215 - Ph: (913) 894-8388
Emergency Number:	(800) 255-3924 (CHEM-TEL)
Customer Service:	(970) 292-8487

2. HAZARDS IDENTIFICATION

Emergency Overview: DANGER! FLAMMABLE LIQUID AND VAPOR. MAY BE HARMFUL IF SWALLOWED. HARMFUL IF INHALED OR ABSORBED THROUGH SKIN. CAUSES IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT. MAY CAUSE CENTRAL NERVOUS SYSTEM EFFECTS. PROLONGED EXPOSURE MAY CAUSE CHRONIC EFFECTS.

Safety Ratings:		
	Health: 3, Severe	Reactivity: 1, Slight
	Flammability: 4, Extreme	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: Harmful if inhaled. May cause irritation of respiratory tract. May cause drowsiness, dizziness, or central nervous system effects. May cause lung damage.

Ingestion: Harmful if swallowed. Aspiration hazard – can enter the lungs and cause lung damage. May cause blindness if swallowed.

Skin Contact: May cause irritation. May be harmful if absorbed through the skin.

Eye Contact: May cause irritation.

Chronic Health Effects: Repeated or prolonged exposure may cause dermatitis, kidney effects, cancer, heritable genetic damage, or blindness.

Target Organs: Skin, central nervous system, reproductive system, kidneys, eyes, lungs.

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

Components	CAS#	Hazardous	% by Weight
Petroleum Ether	8032-32-4	Yes	75.9
Methanol	67-56-1	Yes	10.0
Ethyl Acetate	141-78-6	Yes	11.3
Acetic Acid	64-19-7	Yes	2.65
1,8-Diazafluoren-9-one	54078-29-4	No	0.0632

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. Do not provide mouth-to-month resuscitation. 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. Monitor all inhalations and ingestions for signs of toxicity and development of pulmonary edema for at least 6 hours.

5. FIRE FIGHTING MEASURES

NFPA Ratings: Health: 1 Flammability: 4 Reactivity: 0

Flammable Properties: HIGHLY FLAMMABLE! Vapors may cause a flash fire or ignite explosively. Vapors may travel considerable distance to a source of ignition and flashback. Because vapors are generally heavier than air, they will flow and accumulate in confined and low areas. Heat may cause sealed containers to explode.

Flash Point: < 17.8 °C (< 0 °F) (estimate)

Auto-ignition Temp: 287.8 °C (550 °F) (estimate)

Explosion Limits in Air (% by volume):	Lower Explosion Limit:	1.1% (estimate)
	Upper Explosion Limit	5.9% (estimate)

Suitable Extinguishing Media: Dry powder, alcohol resistant foam, carbon dioxide.

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

Hazardous Combustion Products: Carbon oxides, nitrogen oxides.

Specific Hazards: 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.

Special Protective Equipment 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.

Specific Methods: 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

Personal Precautions: 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 and confined 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.

Environmental Precautions: Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground. If needed, dike large spills.

Methods for Containment: 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.

Methods for Cleanup: 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). Do not handle with plastics, rubber, or polymer coatings. 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 (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 because 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. If possible, store in a segregated and approved area. Keep out of light. 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:

Petroleum Ether:	ACGIH:	TWA:	300 ppm
	OSHA:	TWA:	300 ppm
		STEL:	400 ppm
Methanol:	ACGIH:	TWA:	200 ppm
		STEL:	250 ppm
		BEL:	15 mg/L
	OSHA:	PEL:	200 ppm
			260 mg/m^3
Ethyl Acetate:	ACGIH:	TWA:	400 ppm
	OSHA:	PEL:	400 ppm
			1400 mg/m^3
Acetic Acid:	ACGIH:	TWA:	10 ppm
		STEL:	15 ppm
	OSHA:	PEL:	10 ppm
			25 mg/m^3
1,8-Diazafluoren-9-one:	No information found.		

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:

Eye/Face Protection: Wear goggles or safety glasses with side shields and a face shield.

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

Respiratory Protection: Use a positive-pressure, air-supplied respirator if there is any potential for an uncontrolled release, if exposure levels are not known, or if any other circumstances exist where air-purifying respirators may not provide adequate protection.

General Hygiene Considerations:	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

Physical State:	Liquid
Appearance:	Clear, transparent
Color:	Slight yellow
Odor:	Ethereal, kerosene
Molecular Formula:	Mixture
Molecular Weight:	Mixture
pH:	No information found.
Specific Gravity:	0.77 (estimate)
Freezing/Melting Point:	-73 °C (-99.4 °F) (estimate)
Boiling Range:	20-90 °C (68-194 °F) (estimate)
Flash Point:	< 17.8 °C (< 0 °F) (estimate)
Auto Ignition Temperature:	287.8 °C (550 °F) (estimate)
Flammable Limits in Air (% by Volume):	
Upper:	5.9% (estimate)
Lower:	1.1% (estimate)
Solubility:	Immiscible with water; Miscible with alcohols, chloroform, ether, benzene, carbon tetrachloride, and most oils.
Vapor Pressure:	5.3 kPa at 20 °C (estimate)
Vapor Density:	2.5 (estimate)
Percent Volatile:	100%
Odor threshold (ppm):	No information found.
Evaporation Rate:	10 (estimate, butyl acetate = 1)
Partition Coefficient (n-octanol/water):	No information found.

10. STABILITY AND REACTIVITY

Stability:	Stable under normal conditions. Highly flammable.
Conditions to Avoid:	Heat, flames, sparks, ignition sources, light, incompatible materials.
Incompatible Materials:	Oxidizing agents, alkali metals, inorganic salts, inorganic hydrides, polymers, organic materials.
Hazardous Decomposition Products:	Carbon oxides, nitrogen oxides.
Possibility of Hazardous Reactions:	Can react vigorously, violently or explosively with the incompatible materials listed above. May attack polymers and organic materials.
Hazardous Polymerization:	Will not occur.

11. TOXICOLOGICAL INFORMATION

Toxicological Data:

Product:	No toxicological data available for this product.

Components:	Petroleum Ether:	Inhalation Rat LC50:	3400 ppm 4 h
	Methanol:	Oral Rat LD50:	5628 mg/kg
		Inhalation Rat LC50:	87.5 mg/L 6 h
		Skin Rabbit LD50:	15,800 mg/kg
	Ethyl Acetate:	Oral Rat LD50:	5620 mg/ kg
		Inhalation Rat LC50:	4000 ppm 4 h
		Skin Rabbit LD50:	18,000 mg/kg
	Acetic Acid:	Oral Rat LD50:	3310 mg/ kg
		Inhalation Mouse LC50:	5620 ppm 1 h
		Skin Rabbit LD50:	1060 mg/kg
	1,8-Diazafluoren-9-one:	No information found.	

Acute Effects: May be harmful 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 and respiratory tract.

Sensitization: Not a skin sensitizer.

Chronic Effects: Prolonged or repeated exposure may cause central nervous system effects and possible blindness. Prolonged or repeated skin contact may cause dermatitis and skin damage. Prolonged or repeated inhalation may cause impairment of motor functions and may affect kidney function.

Carcinogenic Effects: This product contains one or more ingredients that may cause cancer.

IARC:	Petroleum Ether:	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: May cause genetic defects.

Neurological Effects: High vapor/aerosol concentrations may cause central nervous system effects such as dizziness, drowsiness, headaches, or decreased motor function. May cause central and/or peripheral nervous system damage.

Reproductive Effects: May cause adverse reproductive effects based on animal data.

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

Target Organs: Skin, central nervous system, reproductive system, kidneys, eyes, lungs.

12. ECOLOGICAL INFORMATION

Ecotoxicological Data:

Product: No ecotoxicological data available for this product.

Components:

Petroleum Ether:

EC50 Freshwater algae (Pseudokirchneriella subcapitata) :	4700 mg/L 72 h

Methanol:

EC50 Water flea (Daphnia magna):	> 10,000 mg/L 48 h
LC50 Fathead minnow (Pimephales promelas):	> 100 mg/L 96 h

Ethyl Acetate:

EC50 Water flea (Daphnia magna):	560 mg/L 48 h
LC50 Fathead minnow (Pimephales promelas):	220 mg/L 96 h
LC50 Rainbow trout (Oncorhynchus mykiss):	352 mg/L 96 h

Acetic Acid:

EC50 Water flea (Daphnia magna):	> 100 mg/L 96 h
LC50 Fathead minnow (Pimephales promelas):	88 mg/L 96 hr

1,8-Diazafluoren-9-one:

No information found.

Ecotoxicity: This product may be harmful to aquatic organisms, especially because it will disperse on the surface of water due to its immiscibility in water.

Environmental Effects: No information found.

Persistence and Degradability: No information found.

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: Because 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: US RCRA Hazardous Waste U List: Methanol: U154

14. TRANSPORT INFORMATION

DOT:

UN Number: UN1268

Proper Shipping Name: Petroleum distillates, n.o.s. (Petroleum Ether)

Hazard Class: 3

Packaging Group: II

ERG Number: 128

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

U.S. EPCRA (SARA Title III):

Section 302: No information found.

Sections 311/312:

Hazard Categories	List (Yes/No)
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:	Methanol
De Minimis Concentration:	1.0%

CERCLA:

Methanol:	5000 lb
Ethyl Acetate:	5000 lb
Acetic Acid:	5000 lb

International Inventories:

Country(s) 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
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:	November 19, 2015
Reason for Revision:	Update of Section 1, 3 over 07/22/2014 version.