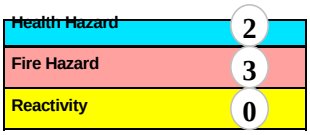
GARDENA, CA
NEW BRUNSWICK, NJ

Material Safety Data Sheet

NFPA	HMIS	Personal Protective Equipment
		 See Section 15.

Section 1. Chemical Product and Company Identification

Common Name/ Trade Name	**Ethyl formate**
Manufacturer	SPECTRUM LABORATORY PRODUCTS INC. 14422 S. SAN PEDRO STREET GARDENA, CA 90248
Commercial Name(s)	Not available.
Synonym	Areginal Ethyl formic ester Ethyl methanoate Ethyle (formiate d') (French) Formic ether
Chemical Name	Formic acid, ethyl ester
Chemical Family	Not available.
Chemical Formula	C3H6O2
Supplier	SPECTRUM LABORATORY PRODUCTS INC. 14422 S. SAN PEDRO STREET GARDENA, CA 90248

Catalog Number(s).	ET113
CAS#	109-94-4
RTECS	LQ8400000
TSCA	TSCA 8(b) inventory: Ethyl formate
CI#	Not available.

IN CASE OF EMERGENCY
CHEMTREC (24hr) 800-424-9300

CALL (310) 516-8000

Section 2.Composition and Information on Ingredients

		Exposure Limits			
Name	**CAS #**	**TWA (mg/m^3)**	**STEL (mg/m^3)**	**CEIL (mg/m^3)**	**% by Weight**
1) Ethyl formate	109-94-4	100			100

Toxicological Data on Ingredients

Ethyl formate:
ORAL (LD50): Acute: 1850 mg/kg [Rat]. 2075 mg/kg [Rabbit]. 1110 mg/kg [Guinea pig].
DERMAL (LD50): Acute: >5000 mg/kg [Rabbit].

Section 3. Hazards Identification

Potential Acute Health Effects

Hazardous in case of eye contact (irritant), of inhalation (lung irritant). Slightly hazardous in case of skin contact (irritant, permeator), of ingestion, .

Potential Chronic Health Effects

CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH.
MUTAGENIC EFFECTS: Not available.
TERATOGENIC EFFECTS: Not available.
DEVELOPMENTAL TOXICITY: Not available.
The substance may be toxic to kidneys, the nervous system, upper respiratory tract, eyes, central nervous system (CNS).
Repeated or prolonged exposure to the substance can produce target organs damage.

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Section 4. First Aid Measures

Eye Contact	Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention.
Skin Contact	Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops. Cold water may be used.
Serious Skin Contact	Not available.
Inhalation	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
Serious Inhalation	Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek medical attention.
Ingestion	Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.
Serious Ingestion	Not available.

Section 5. Fire and Explosion Data

Flammability of the Product	Flammable.
Auto-Ignition Temperature	455°C (851°F)
Flash Points	CLOSED CUP: -20°C (-4°F). OPEN CUP: -28°C (-18.4°F).
Flammable Limits	LOWER: 2.8% UPPER: 16%
Products of Combustion	These products are carbon oxides (CO, CO2).
Fire Hazards in Presence of Various Substances	Highly flammable in presence of open flames and sparks, of heat.
Explosion Hazards in Presence of Various Substances	Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.
Fire Fighting Media and Instructions	Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog.
Special Remarks on Fire Hazards	Not available.
Special Remarks on Explosion Hazards	Not available.

Section 6. Accidental Release Measures

Small Spill	Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.
Large Spill	Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

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Section 7. Handling and Storage

Precautions	Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Avoid contact with eyes. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents, acids, alkalis.
Storage	Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

Section 8. Exposure Controls/Personal Protection

Engineering Controls	Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.
Personal Protection	Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.
Personal Protection in Case of a Large Spill	Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.
Exposure Limits	TWA: 100 (ppm) from OSHA (PEL) [United States] TWA: 100 (mg/m^3) from ACGIH (TLV) [United States] TWA: 100 from NIOSH TWA: 303 (mg/m^3) from NIOSH TWA: 303 (mg/m^3) from OSHA (PEL) [United States] TWA: 100 STEL: 150 (ppm) [Canada] TWA: 100 (ppm) [United Kingdom (UK)] TWA: 308 (mg/m^3) [United Kingdom (UK)] Consult local authorities for acceptable exposure limits.

Section 9. Physical and Chemical Properties

Physical state and appearance	Liquid.	**Odor**	Not available.
Molecular Weight	74.08 g/mole	**Taste**	Not available.
pH (1% soln/water)	Not available.	**Color**	Colorless.
Boiling Point	55℃ (131℉)		
Melting Point	-81℃ (-113.8℉)		
Critical Temperature	Not available.		
Specific Gravity	0.921 (Water = 1)		
Vapor Pressure	25.6 kPa (@ 20℃)		
Vapor Density	2.55 (Air = 1)		
Volatility	Not available.		
Odor Threshold	31 ppm		
Water/Oil Dist. Coeff.	Not available.		
Ionicity (in Water)	Not available.		
Dispersion Properties	See solubility in water.		
Solubility	Easily soluble in cold water. Solubility in Water: 105 g/l at 20 deg. C; 118 g/l at 25 deg. C		

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Section 10. Stability and Reactivity Data

Stability	The product is stable.
Instability Temperature	Not available.
Conditions of Instability	Heat, ignition sources, incompatible materials
Incompatibility with various substances	Reactive with oxidizing agents, acids, alkalis.
Corrosivity	Non-corrosive in presence of glass.
Special Remarks on Reactivity	Decomposes slowly in water to form ethyl alcohol and formic acid
Special Remarks on Corrosivity	Not available.
Polymerization	Will not occur.

Section 11. Toxicological Information

Routes of Entry	Absorbed through skin. Inhalation. Ingestion.
Toxicity to Animals	Acute oral toxicity (LD50): 1110 mg/kg [Guinea pig]. Acute dermal toxicity (LD50): >5000 mg/kg [Rabbit].
Chronic Effects on Humans	**CARCINOGENIC EFFECTS**: A4 (Not classifiable for human or animal.) by ACGIH. May cause damage to the following organs: kidneys, the nervous system, upper respiratory tract, eyes, central nervous system (CNS).R68-
Other Toxic Effects on Humans	Hazardous in case of inhalation (lung irritant). Slightly hazardous in case of skin contact (irritant, permeator), of ingestion, .
Special Remarks on Toxicity to Animals	LDL [Rat]: Route: Inhalation; Dose: 8000 ppm 4 hours LD50 [Rabbit]: Route: Dermal; Dose: >20 ml/kg
Special Remarks on Chronic Effects on Humans	Not available.
Special Remarks on other Toxic Effects on Humans	Acute Potential Health Effects: Skin: May cause skin irritation. Mildly irritating. It may be absorbed through the skin. Eyes: Causes eye irritation. Moderately irritating. Inhalation: May be harmful if inhaled. Inhalation of high concentration of mist or vapors causes respiratory tract and eye irritation. Other symptoms include coughing and shortness of breath. Higher exposures may may cause pulmonary edema (a build-up of fluid in the lungs). It may cause headache and other central nervous system effects. It may also cause nausea and vomiting. Ingestion: May be harmful if swallowed. May cause gastritis. It may affect behavior/central nervous system (anesthesia, somnolence). Chronic Potential Health Effects: Ingestion: Prolonged or repeated ingestion may affect the kidneys. Prolonged or repeated exposure can affect the nervous system

Section 12. Ecological Information

Ecotoxicity	Not available.
BOD5 and COD	Not available.
Products of Biodegradation	Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.
Toxicity of the Products of Biodegradation	The products of degradation are less toxic than the product itself.
Special Remarks on the Products of Biodegradation	Not available.

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Section 13. Disposal Considerations

Waste Disposal Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14. Transport Information

DOT Classification CLASS 3: Flammable liquid.R68-

Identification : Ethyl formate UNNA: 1190 PG: II

Special Provisions for Transport Not available.

DOT (Pictograms)

Section 15. Other Regulatory Information and Pictograms

Federal and State Regulations
Pennsylvania RTK: Ethyl formate
Minnesota: Ethyl formate
Massachusetts RTK: Ethyl formate
New Jersey: Ethyl formate
California Director's List of Hazardpus Substances: Ethyl formate
TSCA 8(b) inventory: Ethyl formate

California Proposition 65 Warnings
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: No products were found.

California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: No products were found.

Other Regulations
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).
EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances (EINECS No. 203-721-0).
Canada: Listed on Canadian Domestic Substance List (DSL).
China: Listed on National Inventory.
Japan: Listed on National Inventory (ENCS).
Korea: Listed on National Inventory (KECI).
Philippines: Listed on National Inventory (PICCS).
Australia: Listed on AICS.

Other Classifications

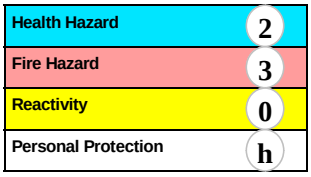
WHMIS (Canada)
CLASS B-2: Flammable liquid with a flash point lower than 37.8℃ (100℉).
CLASS D-2B: Material causing other toxic effects (TOXIC).

DSCL (EEC)

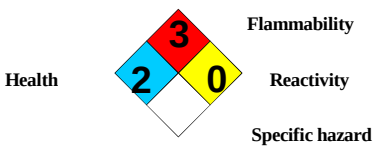
R11- Highly flammable.
R20/22- Harmful by inhalation and if swallowed.
R36/37- Irritating to eyes and respiratory system.

S9- Keep container in a well-ventilated place.
S16- Keep away from sources of ignition - No smoking.
S24- Avoid contact with skin.
S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S33- Take precautionary measures against static discharges.

HMIS (U.S.A.)



National Fire Protection Association (U.S.A.)



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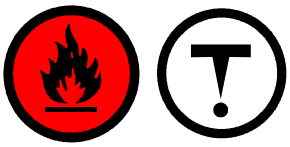
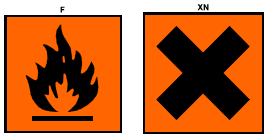
WHMIS (Canada) (Pictograms)



DSCL (Europe) (Pictograms)



TDG (Canada) (Pictograms)

ADR (Europe) (Pictograms)

Protective Equipment

Gloves.

Lab coat.

Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.

Splash goggles.

Section 16. Other Information

MSDS Code	**E3380**
References	Not available.
Other Special Considerations	Not available.

Validated by Sonia Owen on 12/21/2012.

Verified by Sonia Owen.

Printed 12/21/2012.

CALL (310) 516-8000

Notice to Reader