



## MATERIAL SAFETY DATA SHEET

### 1. PRODUCT AND COMPANY IDENTIFICATION:

**PRODUCT CODE** N0049  
**PRODUCT NAME** NAT. ETHYL FORMATE  
**SUPPLIER** Shanghai M & U International Trade Co., Ltd.  
Rm 1717, No 598 North NuJiang Road  
200333 Shanghai, China  
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sales@mu-intel.com

**FOR EMERGENCIES CALL CHEMTREC: 800-424-9300 (24-HOURS)**

### 2. HAZARD IDENTIFICATION:

#### Emergency Overview

#### OSHA Hazards

Flammable Liquid, Target Organ Effect, Harmful by Ingestion, Irritant

#### Target Organs

Central Nervous System

#### GHS Classification

Flammable liquids (Category 2)

Acute toxicity, Oral (Category 4)

Acute toxicity, Inhalation (Category 4)

Skin irritation (Category 3)

Eye irritation (Category 2A)

Specific target organ toxicity - single exposure (Category 3)

#### GHS Label elements, including precautionary statements

Pictogram

Signal word Danger

#### Hazard statement(s)

H225 Highly flammable liquid and vapor.

H302 H332 Harmful if swallowed or if inhaled

H316 Causes mild skin irritation.

H319 Causes serious eye irritation.

H335 May cause respiratory irritation.

#### Precautionary statement(s)

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.

P305 P351 P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

#### HMIS Classification

Health hazard 2  
Flammability 3  
Physical hazards 2

**NFPA Rating**

Health hazard 2  
Fire 3  
Reactivity Hazard 0

**Potential Health Effects**

Inhalation May be harmful if inhaled. Causes respiratory tract irritation.  
Skin Harmful if absorbed through skin. Causes skin irritation.  
Eyes Causes eye irritation.  
Ingestion Harmful if swallowed.

**3. COMPOSITION AND INFORMATION ON INGREDIENTS:**

**Synonym** Formic acid ethyl ester  
**Formula** C3 H6 O2  
**Molecular Weight** 74.08 g/mol

CAS-No	EC-No	Index-No.	Concentration
109-94-4	203-721-0	607-015-00-7	

**4. FIRST-AID GUIDE:**

**General advice**

Consult a physician. Show this safety data sheet to the doctor in attendance.

**If inhaled**

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

**In case of skin contact**

Wash off with soap and plenty of water. Consult a physician.

**In case of eye contact**

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

**If swallowed**

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

**5. FIRE-FIGHTING GUIDE:**

**Conditions of flammability**

Flammable in the presence of a source of ignition when the temperature is above the flash point. Keep away from heat/sparks/open flame/hot surface. No smoking.

**Suitable extinguishing media**

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

**Special protective equipment for firefighters**

Wear self contained breathing apparatus for fire fighting if necessary.

**Hazardous combustion products**

Hazardous decomposition products formed under fire conditions. - Carbon oxides

**Further information**

Use water spray to cool unopened containers.

**6. ACCIDENTAL RELEASE GUIDE:**

**Personal precautions**

Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

**Environmental precautions**

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

**Methods and materials for containment and cleaning up**

Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 12).

**7. HANDLING AND STORAGE:**

**Precautions for safe handling**

Avoid contact with skin and eyes. Avoid inhalation of vapor or mist. Use explosion-proof equipment. Keep away from sources of ignition - No smoking. Take measures to prevent the buildup of electrostatic charge.

**Conditions for safe storage**

Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Moisture sensitive

**8. EXPOSURE AND PERSONAL PROTECTION:**

**Components with workplace control parameters**

Component	CAS-No.	Value	Control parameters	Update	Basis
Ethyl formate	109-94-4	TWA	100 ppm 303 mg/m3	1994-09-01	USA.ACGIH Threshold Limit Values (TLV)
		TWA	100ppm 300mg/m3	1989-03-01	USA.OSHA-TABLE Z-1 Limits for Air Contaminants-1910.1000
		TWA	100ppm 300mg/m3	1993-06-30	USA.Occupational Exposure Limits (OSHA)-Table Z-1 Limits for Air Contaminants.

**Personal protective equipment:**

**Respiratory protection**

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

**Hand protection**

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

**Eye protection**

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

**Skin and body protection**

Complete suit protecting against chemicals, Flame retardant antistatic protective clothing, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Hygiene measures**

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

**9. PHYSICAL AND CHEMICAL PROPERTIES:**

**Appearance**

Form	LIQUID
Color	COLORLESS TO PALE YELLOW

**Safety data**

pH	no data available
Melting point (°C)	-80
Boiling point (°C)	54
Flash point (°F) Closed cup	-2
Ignition temperature (°C)	455
Lower explosion limit	2.7 %(V)
Upper explosion limit	13.5%(V)
Vapor pressure (mm Hg @20 °C)	100
Density @25 °C	0.917
Water solubility	SOLUBLE
Relative vapor density	2.5
Odor	SHARP, RUM-LIKE

**10. STABILITY AND REACTIVITY:**

**Chemical stability**

Stable under recommended storage conditions.

**Possibility of hazardous reactions**

Vapors may form explosive mixture with air.

**Conditions to avoid**

Heat, flames and sparks. Extremes of temperature and direct sunlight.

**Materials to avoid**

Bases, oxidizing agents

**Hazardous decomposition products**

Hazardous decomposition products formed under fire conditions. - Carbon oxides

**11. TOXICOLOGICAL INFORMATION:****Acute toxicity****Oral LD50**

LD50 Oral-rat- 1,850 mg.kg

Remarks; Behavioral: Somnolence (general depressed activity).Lungs,thorax, or Respiratory: Dyspnea.

**Dermal LD50**

LD50 Dermal-rabbit->18,420 mg/kg.

**Skin Irritation and corrosion**

Skin-rabbit-Mild skin irritation

**Carcinogenicity**

Carcinogenicity-mouse-skin

Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Skin and Appendages: Other: Tumors.

**IARC:**

No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

**ACGIH:**

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

**NTP:**

No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

**OSHA:**

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

**Specific target organ toxicity - single exposure (Globally Harmonized System)**

Inhalation - May cause respiratory irritation.

**Potential health effects**

Inhalation May be harmful if inhaled. Causes respiratory tract irritation.

Ingestion Harmful if swallowed.

Skin May be harmful if absorbed through skin. May cause skin irritation.

Eyes Causes eye irritation.

Target organs Central Nervous System

**Signs and Symptoms of Exposure**

Cough, Shortness of breath, Headache, Nausea, Vomiting, narcosis.

**Additional Information**

RTECS: LQ8400000

## 12. DISPOSAL RECOMMENDATIONS:

### Product

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Observe all federal, state, and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material.

### Contaminated packaging

Dispose of as unused product.

## 13. TRANSPORTATION INFORMATION:

### DOT (US)

UN Number: 1190 Class: 3 Packing group: II  
Proper shipping name: ETHYL FORMATE

### IMDG

UN number: 1190 Class: 3 Packing group: II  
Proper shipping name: ETHYL FORMATE

### IATA

UN-Number: 1190 Class: 3 Packing group: II  
Proper shipping name: ETHYL FORMATE

## 14. REGULATORY INFORMATION:

### OSHA Hazards

Flammable Liquid, Target Organ Effect, Harmful by ingestion., Irritant

### DSL Status

All components of this product are on the Canadian DSL list.

### SARA 302 Components

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

### SARA 313 Components

SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

### SARA 311/312 Hazards

Fire Hazard, Acute Health Hazard, Chronic Health Hazard

### Massachusetts Right To Know Components

Ethyl formate	CAS-No.	Revision Date
	109-94-4	1991-07-01

### Pennsylvania Right To Know Components

Ethyl formate	CAS-No.	Revision Date
	109-94-4	1991-07-01

### New Jersey Right To Know Components

Ethyl formate	CAS-No.	Revision Date
	109-94-4	1991-07-01

**California Prop. 65 Components**

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

**15. OTHER INFORMATION:**

The information in this MSDS was obtained from current and reliable sources. However, the data is provided without any warranty, expressed or implied, regarding its correctness or accuracy. Since the conditions for use, handling, storage and disposal of this product are beyond M&U's control, it is the responsibility of the user both to determine safe conditions for use of this product and to assume liability for loss, damage, or expense arising out of the products improper use. No warranty expressed or implied regarding the product described herein will be created by or inferred from any statement or omission in the MSDS. Various federal, state, or provincial agencies may have specific regulations concerning the transportation, handling, storage, use, or disposal of this product which may not be reflected in the MSDS. The user should review these regulations to ensure full compliance.