



# MATERIAL SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Date of issue: 03/10/2013

Version 1.0

## SECTION 1. Identification

### Product identifier

Product number	808157
Product name	Thiophene for synthesis

### Relevant identified uses of the substance or mixture and uses advised against

Identified uses	Chemical for synthesis
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### Details of the supplier of the safety data sheet

Company	EMD Millipore Corporation   290 Concord Road, Billerica, MA 01821, United States of America   SDS Phone Support: +1-978-715-1335   General Inquiries: +1-978-715-4321   Monday to Friday, 9:00 AM to 4:00 PM Eastern Time (GMT-5)  e-mail: mm_sds@merckgroup.com
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Emergency telephone	800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week
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## SECTION 2. Hazards identification

### GHS Classification

Flammable liquid, Category 2, H225  
Acute toxicity, Category 4, Oral, H302  
Eye irritation, Category 2, H319  
Chronic aquatic toxicity, Category 3, H412

For the full text of the H-Statements mentioned in this Section, see Section 16.

### GHS-Labeling

#### *Hazard pictograms*



*Signal Word*  
Danger

*Hazard Statements*  
H225 Highly flammable liquid and vapor.

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H302 Harmful if swallowed.  
H319 Causes serious eye irritation.  
H412 Harmful to aquatic life with long lasting effects.

## *Precautionary Statements*

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.  
P260 Do not breathe vapors.  
P262 Do not get in eyes, on skin, or on clothing.  
P273 Avoid release to the environment.  
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P403 + P235 Store in a well-ventilated place. Keep cool.

## OSHA Hazards

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

## Other hazards

None known.

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## SECTION 3. Composition/information on ingredients

Formula	C <sub>4</sub> H <sub>4</sub> S (Hill)
CAS-No.	110-02-1
Molar mass	84.14 g/mol

## Hazardous ingredients

*Chemical Name ( Concentration)*

CAS-No.  
*thiophene ( >= 90 % - <= 100 % )*  
110-02-1

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## SECTION 4. First aid measures

### Description of first-aid measures

#### *Inhalation*

After inhalation: fresh air.

#### *Skin contact*

After skin contact: wash off with plenty of water. Remove contaminated clothing.

#### *Eye contact*

After eye contact: rinse out with plenty of water. Call in ophthalmologist.

#### *Ingestion*

After swallowing: caution if victim vomits. Risk of aspiration! Keep airways free. Pulmonary failure possible after aspiration of vomit. Call a physician immediately.

Never give anything by mouth to an unconscious person.

## Most important symptoms and effects, both acute and delayed

irritant effects, respiratory paralysis, Shortness of breath, Dizziness, narcosis, agitation, spasms, Nausea, Vomiting, Circulatory collapse, Headache

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### Indication of any immediate medical attention and special treatment needed

Laxative: Sodium sulfate (1 tablespoon/1/4 l water).

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## SECTION 5. Fire-fighting measures

### Extinguishing media

*Suitable extinguishing media*

Water, Carbon dioxide (CO<sub>2</sub>), Foam, Dry powder

*Unsuitable extinguishing media*

For this substance/mixture no limitations of extinguishing agents are given.

### Special hazards arising from the substance or mixture

Combustible material

Vapors are heavier than air and may spread along floors.

Forms explosive mixtures with air at ambient temperatures.

Pay attention to flashback.

In the event of decomposition: danger of explosion!

Development of hazardous combustion gases or vapors possible in the event of fire.

Fire may cause evolution of:

Sulfur oxides

### Advice for firefighters

*Special protective equipment for fire-fighters*

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

*Further information*

Suppress (knock down) gases/vapors/mists with a water spray jet. Cool closed containers exposed to fire with water spray. Pay attention to flashback. Prevent fire extinguishing water from contaminating surface water or the ground water system.

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## SECTION 6. Accidental release measures

### Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from open flames, hot surfaces and sources of ignition. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders: Protective equipment see section 8.

### Environmental precautions

Do not empty into drains. Risk of explosion.

### Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills.

Observe possible material restrictions (see sections 7 and 10).

Take up with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

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## SECTION 7. Handling and storage

### Precautions for safe handling

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Observe label precautions.

### *Advice on protection against fire and explosion*

Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

### **Conditions for safe storage, including any incompatibilities**

Keep away from heat and sources of ignition. Keep container tightly closed in a dry and well-ventilated place.

Store at +15°C to +25°C (+59°F to +77°F).

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## **SECTION 8. Exposure controls/personal protection**

### **Exposure limit(s)**

Contains no substances with occupational exposure limit values.

### **Engineering measures**

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

### **Individual protection measures**

Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled. The chemical resistance of the protective equipment should be inquired at the respective supplier.

### *Hygiene measures*

Immediately change contaminated clothing. Apply skin- protective barrier cream. Wash hands and face after working with substance.

### *Eye/face protection*

Safety glasses

### *Hand protection*

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

### *Other protective equipment:*

Flame retardant antistatic protective clothing

### *Respiratory protection*

required when vapors/aerosols are generated.

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

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## **SECTION 9. Physical and chemical properties**

Physical state	liquid
Color	colorless
Odor	slightly benzene-like
Odor Threshold	No information available.

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pH	No information available.
Melting point	-38 °C
Boiling point/boiling range	181 - 183 °F ( 83 - 84 °C) at 1,013 mbar
Flash point	16 °F ( -9 °C)
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	1.5 %(V)
Upper explosion limit	12.5 %(V)
Vapor pressure	80 hPa at 68 °F ( 20 °C)  175 hPa at 122 °F ( 50 °C)
Relative vapor density	No information available.
Relative density	1.06 g/cm <sup>3</sup> at 68 °F ( 20 °C)
Water solubility	at 68 °F ( 20 °C) insoluble
Partition coefficient: n-octanol/water	log Pow: 1.86 Bioaccumulation is not expected (log Pow <1). (External MSDS)
Autoignition temperature	No information available.
Decomposition temperature	No information available.
Viscosity, dynamic	0.66 mPa.s at 68 °F ( 20 °C)
Explosive properties	No information available.
Ignition temperature	743 °F ( 395 °C)

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### SECTION 10. Stability and reactivity

#### Reactivity

Vapors may form explosive mixture with air.

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### Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

### Possibility of hazardous reactions

Violent reactions possible with:

Strong oxidizing agents, Nitric acid

### Conditions to avoid

Warming.

A range from approx. 15 Kelvin below the flash point is to be rated as critical.

### Incompatible materials

Copper, Copper alloys

### Hazardous decomposition products

in the event of fire: See section 5.

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## SECTION 11. Toxicological information

### Information on toxicological effects

#### *Likely route of exposure*

Inhalation, Eye contact, Skin contact

#### *Acute oral toxicity*

LD50 rat: 1,400 mg/kg (RTECS)

#### *absorption*

Symptoms: Nausea, Vomiting, Risk of aspiration upon vomiting., Aspiration may cause pulmonary edema and pneumonitis.

#### *Acute inhalation toxicity*

LCLO rat: 10.5 mg/l; 4 h (RTECS)

Symptoms: Possible damages:, Irritation symptoms in the respiratory tract.

#### *Skin irritation*

Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product.

#### *Eye irritation*

Causes serious eye irritation.

#### *Specific target organ systemic toxicity - single exposure*

The substance or mixture is not classified as specific target organ toxicant, single exposure.

#### *Specific target organ systemic toxicity - repeated exposure*

The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

#### *Aspiration hazard*

Regarding the available data the classification criteria are not fulfilled.

### Carcinogenicity

IARC

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

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OSHA

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

NTP

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

ACGIH

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

### Further information

After absorption:

Headache, Dizziness, Cardiac irregularities, Shortness of breath, agitation, spasms, narcosis, Circulatory collapse, respiratory paralysis

Other dangerous properties can not be excluded.

Handle in accordance with good industrial hygiene and safety practice.

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## SECTION 12. Ecological information

### Ecotoxicity

*Toxicity to fish*

LC50 *Oryzias latipes* (Orange-red killifish): 15.6 mg/l; 48 h (External MSDS)

*Toxicity to daphnia and other aquatic invertebrates*

EC50 *Daphnia*: 13 mg/l; 48 h (External MSDS)

### Persistence and degradability

*Biodegradability*

Not readily biodegradable.

### Bioaccumulative potential

*Partition coefficient: n-octanol/water*

log Pow: 1.86

Bioaccumulation is not expected (log Pow <1). (External MSDS)

### Mobility in soil

No information available.

### Other adverse effects

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## SECTION 13. Disposal considerations

The information presented only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.

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## SECTION 14. Transport information

### Land transport (DOT)

UN number	UN 2414
Proper shipping name	THIOPHENE
Class	3
Packing group	II
Environmentally hazardous	--

### Air transport (IATA)

UN number	UN 2414
Proper shipping name	THIOPHENE
Class	3
Packing group	II
Environmentally hazardous	--
Special precautions for user	no

### Sea transport (IMDG)

UN number	UN 2414
Proper shipping name	THIOPHENE
Class	3
Packing group	II
Environmentally hazardous	--
Special precautions for user	yes
EmS	F-E S-D

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## SECTION 15. Regulatory information

### United States of America

#### OSHA Hazards

Flammable Liquid  
Harmful if swallowed.  
Eye irritant

This information is based on 29 CFR 1910.1200 criteria prior to adoption of the GHS, and may deviate from the GHS information on the label and in section 2.

#### SARA 311/312 Hazards

Fire Hazard  
Acute Health Hazard

#### SARA 313

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.



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### **SARA 302**

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

### **Clean Water Act**

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

### **DEA List I**

Not listed

### **DEA List II**

Not listed

### **Massachusetts Right To Know**

*Ingredients*

thiophene

### **Pennsylvania Right To Know**

*Ingredients*

thiophene

### **New Jersey Right To Know**

*Ingredients*

thiophene

### **Notification status**

TSCA:

On TSCA Inventory

DSL:

All components of this product are on the Canadian DSL.

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## **SECTION 16. Other information**

### **Training advice**

Provide adequate information, instruction and training for operators.

### **Full text of H-Statements referred to under sections 2 and 3.**

H225

Highly flammable liquid and vapor.

H302

Harmful if swallowed.

H319

Causes serious eye irritation.

H412

Harmful to aquatic life with long lasting effects.

### **Key or legend to abbreviations and acronyms used in the safety data sheet**

Used abbreviations and acronyms can be looked up at [www.wikipedia.org](http://www.wikipedia.org).

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The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to appropriate safety precautions. It does not represent a warranty of any product properties and we assume no liability for any loss or injury which may result from the use of this information. Users should conduct their own investigations to determine the suitability of the information.

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