

# Material Safety Data Sheet

acc. to OSHA and ANSI

Printing date 11/17/2009

Reviewed on 11/16/2009

**1 Identification of substance:****Product details:****Product name:** Thallium (I) malonate/formate (Clerici's solution)**Stock number:** 89118**Manufacturer/Supplier:**

Alfa Aesar, A Johnson Matthey Company  
 Johnson Matthey Catalog Company, Inc.  
 30 Bond Street  
 Ward Hill, MA 01835-8099  
 Emergency Phone: (978) 521-6300  
 CHEMTREC: (800) 424-9300  
 Web Site: [www.alfa.com](http://www.alfa.com)

**Information Department:** Health, Safety and Environmental Department**Emergency information:**

During normal hours the Health, Safety and Environmental Department. After normal hours call Chemtrec at (800) 424-9300.

**2 Composition/Data on components:****Chemical characterization:****Description: (CAS#)**

Thallium (I) malonate/formate (CAS# 61971-47-9): 100%

**Identification number(s):****Index number:** 081-002-00-9**3 Hazards identification****Hazard description:**

T+ Very toxic  
 N Dangerous for the environment

**Information pertaining to particular dangers for man and environment**

R 26/28 Very toxic by inhalation and if swallowed.

R 33 Danger of cumulative effects.

R 51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

**Classification system****HMIS ratings (scale 0-4)****(Hazardous Materials Identification System)**

HEALTH	3
FIRE	0
REACTIVITY	1

Health (acute effects) = 3

Flammability = 0

Reactivity = 1

**GHS label elements****Danger**

3.1/2 - Fatal if swallowed.

3.1/2 - Fatal if inhaled.

**Warning**

3.9/2 - May cause damage to organs through prolonged or repeated exposure.



4.1/2 - Toxic to aquatic life with long lasting effects.

**Prevention:**

Do not breathe dust/fume/gas/mist/vapours/spray.

Wash thoroughly after handling.

Do not eat, drink or smoke when using this product.

Use only outdoors or in a well-ventilated area.

Avoid release to the environment.

Wear respiratory protection.

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**Response:**

IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

Immediately call a POISON CENTER or doctor/physician.

Get medical advice/attention if you feel unwell.

Specific treatment is urgent (see on this label).

Specific treatment (see on this label).

Rinse mouth.

Collect spillage.

**Storage:**

Store in a well-ventilated place. Keep container tightly closed.

Store locked up.

**Disposal:**

Dispose of contents/container in accordance with local/regional/national/international regulations.

**4 First aid measures****General information**

Immediately remove any clothing soiled by the product.

Remove breathing apparatus only after contaminated clothing has been completely removed.

In case of irregular breathing or respiratory arrest provide artificial respiration.

**After inhalation**

Supply fresh air. If required, provide artificial respiration. Keep patient warm.

Seek immediate medical advice.

**After skin contact**

Immediately wash with water and soap and rinse thoroughly.

Seek immediate medical advice.

**After eye contact**

Rinse opened eye for several minutes under running water. Then consult a doctor.

**After swallowing**

Do not induce vomiting; immediately call for medical help.

Seek immediate medical advice.

**5 Fire fighting measures****Suitable extinguishing agents**

Use carbon dioxide, extinguishing powder or foam. Water may be ineffective but may be used for cooling exposed containers.

**Special hazards caused by the material, its products of combustion or resulting gases:**

In case of fire, the following can be released:

Carbon monoxide and carbon dioxide

Toxic metal oxide fume

**Protective equipment:**

Wear self-contained respirator.

Wear fully protective impervious suit.

**6 Accidental release measures****Person-related safety precautions:**

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

**Measures for environmental protection:**

Do not allow material to be released to the environment without proper governmental permits.

**Measures for cleaning/collecting:**

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Dispose contaminated material as waste according to item 13.

Ensure adequate ventilation.

**Additional information:**

See Section 7 for information on safe handling

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

**7 Handling and storage****Handling****Information for safe handling:**

Keep container tightly sealed.

Store in cool, dry place in tightly closed containers.

Ensure good ventilation at the workplace.

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Open and handle container with care.

**Information about protection against explosions and fires:** The product is not flammable**Storage****Requirements to be met by storerooms and receptacles:** No special requirements.**Information about storage in one common storage facility:** Store away from oxidizing agents.**Further information about storage conditions:**

Keep container tightly sealed.

Store in cool, dry conditions in well sealed containers.

### 8 Exposure controls and personal protection

**Additional information about design of technical systems:**

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

**Components with limit values that require monitoring at the workplace:**

Thallium and soluble thallium compounds (as Tl)

mg/m<sup>3</sup>

ACGIH TLV	0.1 (skin)
Austria MAK	0.1
Belgium TWA	0.1 (skin)
Denmark TWA	0.1 (skin)
Finland TWA	0.1 (skin)
France VME	0.1
Germany MAK	0.1
Ireland TWA	0.1 (skin)
Korea TLV	0.1 (skin)
Netherlands MAC-TGG	0.1 (skin)
Norway TWA	0.1
Poland TWA	0.1; 0.3-STEEL
Switzerland MAK-W	0.1 (skin)
United Kingdom LTEL	0.1 (skin)
USA PEL	0.1 (skin)

**Additional information:** No data**Personal protective equipment****General protective and hygienic measures**

The usual precautionary measures for handling chemicals should be followed.

Keep away from foodstuffs, beverages and feed.

Remove all soiled and contaminated clothing immediately.

Wash hands before breaks and at the end of work.

Store protective clothing separately.

**Breathing equipment:** Use suitable respirator when high concentrations are present.**Protection of hands:**

Impervious gloves

Check protective gloves prior to each use for their proper condition.

**Material of gloves**

The selection of suitable gloves not only depends on the material, but also on quality. Quality will vary from manufacturer to manufacturer.

**Eye protection:** Safety glasses**Body protection:** Protective work clothing.

### 9 Physical and chemical properties:

**General Information**

<b>Form:</b>	Liquid
<b>Odor:</b>	Not determined

**Change in condition**

<b>Melting point/Melting range:</b>	Not determined
<b>Boiling point/Boiling range:</b>	Not determined
<b>Sublimation temperature / start:</b>	Not determined

**Flash point:** Not determined**Ignition temperature:** Not determined**Decomposition temperature:** Not determined**Danger of explosion:** Product does not present an explosion hazard.**Explosion limits:****Lower:** Not determined

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<b>Upper:</b>	Not determined
<b>Vapor pressure:</b>	Not determined
<b>Density at 20°C (68°F):</b>	4.3 g/cm <sup>3</sup>
<b>Solubility in / Miscibility with Water:</b>	Fully miscible

### 10 Stability and reactivity

**Thermal decomposition / conditions to be avoided:**

Decomposition will not occur if used and stored according to specifications.

**Materials to be avoided:** Oxidizing agents**Dangerous reactions** No dangerous reactions known
**Dangerous products of decomposition:**

Carbon monoxide and carbon dioxide

Toxic metal oxide fume

### 11 Toxicological information

**Acute toxicity:**
**Primary irritant effect:**
**on the skin:** Irritant to skin and mucous membranes.**on the eye:** Irritating effect.**Sensitization:** No sensitizing effects known.
**Subacute to chronic toxicity:**

The main symptoms of thallium poisoning are peripheral neuropathy and loss of hair. Acute poisoning causes paresthesias, ataxia, alopecia, fever, coryza, abdominal pain, nausea and vomiting. Symptoms may progress to lethargy, speech disorders, tremors, convulsions, cyanosis, pulmonary edema, bronchopneumonia and death. Kidney, liver and brain damage can occur. Thallium poisoning during the first trimester of pregnancy can cause skeletal deformities, alopecia, low birth weight and premature birth. Chronic thallium poisoning may produce alopecia, salivation and a blue line on the gums. Damage to the gastrointestinal, endocrine system and kidneys may also occur.

**Additional toxicological information:**

To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

### 12 Ecological information:

**Ecotoxicological effects:**
**Remark:** Toxic for fish
**General notes:**

Do not allow product to reach ground water, water course or sewage system, even in small quantities.

Danger to drinking water if even extremely small quantities leak into the ground.

Also poisonous for fish and plankton in water bodies.

Do not allow material to be released to the environment without proper governmental permits.

Toxic for aquatic organisms

### 13 Disposal considerations

**Product:**
**Recommendation** Consult state, local or national regulations to ensure proper disposal.
**Uncleaned packagings:**
**Recommendation:** Disposal must be made according to official regulations.**Recommended cleansing agent:** Water, if necessary with cleansing agents.

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## 14 Transport information

### DOT regulations:



**Hazard class:** 6.1  
**Identification number:** UN1707  
**Packing group:** II  
**Proper shipping name (technical name):** THALLIUM COMPOUNDS, N.O.S.  
**Label:** 6.1

### Land transport ADR/RID (cross-border)



**ADR/RID class:** 6.1 (T5) Toxic substances  
**Danger code (Kemler):** 60  
**UN-Number:** 1707  
**Packaging group:** II  
**Special marking:** Symbol (fish and tree)  
**Description of goods:** 1707 THALLIUM COMPOUNDS, N.O.S. (Thallium (I) malonate/formate solution)

### Maritime transport IMDG:



**IMDG Class:** 6.1  
**UN Number:** 1707  
**Label:** 6.1  
**Packaging group:** II  
**Marine pollutant:** No  
**Proper shipping name:** THALLIUM COMPOUNDS, N.O.S.

### Air transport ICAO-TI and IATA-DGR:



**ICAO/IATA Class:** 6.1  
**UN/ID Number:** 1707  
**Label:** 6.1  
**Packaging group:** II  
**Proper shipping name:** THALLIUM COMPOUNDS, N.O.S.

UN "Model Regulation": UN1707, THALLIUM COMPOUNDS, N.O.S., 6.1, II

Environmental hazards: Environmentally hazardous substance, liquid; Marine Pollutant

## 15 Regulations

### Product related hazard informations:

#### Hazard symbols:

T+ Very toxic

N Dangerous for the environment

#### Risk phrases:

26/28 Very toxic by inhalation and if swallowed.

33 Danger of cumulative effects.

51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

#### Safety phrases:

13 Keep away from food, drink and animal feedingstuffs.

28 After contact with skin, wash immediately with plenty of water

45 In case of accident or if you feel unwell, seek medical advice immediately.

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61 Avoid release to the environment. Refer to special instructions/Safety data sheets

**National regulations**

This product is not listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical Substance Inventory. Use of this product is restricted to research and development only.

**Information about limitation of use:**

For use only by technically qualified individuals.

This product contains thallium and is subject to the reporting requirements of section 313 of the Emergency Planning and Community Right to Know Act of 1986 and 40CFR372.

**16 Other information:**

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

**Department issuing MSDS:** Health, Safety and Environmental Department.

**Contact:** Zachariah Holt

**Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)

ICAO: International Civil Aviation Organization

ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

CAS: Chemical Abstracts Service (division of the American Chemical Society)

HMIS: Hazardous Materials Identification System (USA)

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