# MATERIAL SAFETY DATA SHEET

| NFPA | HMIS | Personal Protective Equipment |
|---|---|---|



**See Section 8.**

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

| | |
|---|---|
| **Product code:** | HP752 |
| **Product Name:** | METHYL FORMATE, HPLC GRADE |
| **Chemical Name:** | No information available |
| **Synonyms:** | Methyl methanoate<br>Methyle (formiate de) (French)*** |
| **Recommended use:** | Chemical intermediate. In organic synthesis. Fungicide. Larvicide*** |
| **CAS #:** | 107-31-3*** |
| **Formula:** | HCOOCH3*** |
| **RTECS #** | LQ8925000*** |
| **CI#:** | Not available |
| **Supplier:** | Spectrum Chemicals and Laboratory Products, Inc.<br>14422 South San Pedro St.<br>Gardena, CA 90248<br>(310) 516-8000 |
| **Emergency Telephone Number:** | CHEMTREC: 1-800-424-9300 |
| **Contact Person:** | Martin LaBenz (West Coast) |
| **Contact Person:** | Regina Wachenheim (East Coast) |

## 2. HAZARDS IDENTIFICATION

**EMERGENCY OVERVIEW**

DANGER!. EXTREMELY FLAMMABLE LIQUID AND VAPOR. - Vapor may cause flash fire. Harmful if swallowed. Harmful by inhalation. WARNING! IRRITANT. Irritating to eyes. Irritating to respiratory system. May cause skin irritation***

| **Odor:** | **Physical state:** | **Appearance:** | **Color:** |
|---|---|---|---|
| Agreeable. Pleasant. Ether-like*** | Liquid. | No information available | Colorless. |

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

## 2. HAZARDS IDENTIFICATION

**POTENTIAL HEALTH EFFECTS**

**Principal Routes of Exposure:**
Ingestion. Skin. Inhalation. Eyes.

**Acute Potential Health Effects:**

**Skin Contact:**
May cause skin irritation. It may be absorbed through the skin. If absorbed through skin it may cause systemic effects***

**Eye Contact:**
Causes eye irritation. May cause conjunctivitis.

**Inhalation:**
Irritating to respiratory system. May cause central nervous system effects***

**Ingestion:**
Harmful if swallowed. May cause central nervous system effects***

**Chronic Potential Health Effects:**

| Component | Carcinogen Status: |
|---|---|
| Methyl Formate<br>107-31-3 (100) | No information available |

**Target Organs:** Central nervous system.

**Teratogenic Effects:** No information available

**Mutagenic Effects:** No information available

**Aggravated Medical Conditions:** No information available

**See Section 11 for additional Toxicological Information**

**POTENTIAL ENVIRONMENTAL EFFECTS**

No information available

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

| Components | CAS-No. | Weight % |
|---|---|---|
| Methyl Formate | 107-31-3 | 100 |

## 4. FIRST AID MEASURES

**General Advice:** Poison information centres in each State capital city can provide additional assistance for scheduled poisons (13 1126).

**Skin Contact:** Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Get medical attention if irritation develops. If skin irritation persists, call a physician***

**Eye Contact:** Flush eye with water for 15 minutes. Get medical attention. If symptoms persist, call a physician.

**Inhalation:** Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.

**Ingestion:** Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Obtain medical attention.

**Notes to Physician:** Treat symptomatically

## 5. FIRE-FIGHTING MEASURES

**Flammable Properties**

| | |
|---|---|
| **Flashpoint (°C/°F):** | -19 °C/ -2 °F*** |

**Flash Point Tested according to:**
Closed cup***

| | |
|---|---|
| **Lower Explosion Limit (%):** | 4.5%*** |
| **Upper Explosion Limit (%):** | 23%*** |

| | |
|---|---|
| **Autoignition Temperature (°C/°F):** | 440-449 °C/824-840 °F*** |

**Suitable Extinguishing Media:** Carbon dioxide (CO2). Dry chemical. Water spray mist or foam.

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

**Hazardous Combustion Products:** Carbon monoxide; Carbon dioxide

**Specific hazards:** Extremely flammable. May be ignited by heat, sparks or flames. Container explosion may occur under fire conditions or when heated. Material can burn with invisible flame. Vapor may travel considerable distance to source of ignition and flash back. Vapors may form explosive mixtures with air. Most vapors are heavier than air. They will spread along the ground and collect in low or confined areas (sewers, basements, tanks). Fire may produce irritating, corrosive and/or toxic gases.

**Special Protective Equipment for Firefighters:** As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear

**Specific Methods:** Water mist may be used to cool closed containers. For larger fires, use water spray or fog. Cool containers with flooding quantities of water until well after fire is out.

## 6. ACCIDENTAL RELEASE MEASURES

**Personal Precautions:**
Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Avoid contact with skin, eyes and clothing. Use personal protective equipment. Remove all sources of ignition. Pay attention to flashback. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use spark-proof tools and explosion-proof equipment. 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.

**Environmental Precautions:**
Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. Do not let this chemical enter the environment. Prevent entry into waterways, sewers, basements or confined areas. In case of large spill, dike if needed. Dike far ahead of liquid spill for later disposal.

**Methods for Cleaning Up:**
Absorb spill with inert material (e.g. vermiculite, dry sand or earth), then place in a suitable chemical waste container. Clean contaminated surface thoroughly.

## 7. HANDLING AND STORAGE

**Handling**

**Technical Measures/Precautions:**
Provide sufficient air exchange and/or exhaust in work rooms. Remove all sources of ignition. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Keep away from incompatible materials.

**Safe Handling Advice:**
Wear personal protective equipment. Use only in well-ventilated areas. Avoid contact with skin, eyes and clothing. Keep away from heat and sources of ignition. Do not breathe vapors or spray mist. Do not ingest. When using do not smoke. Handle in accordance with good industrial hygiene and safety practice.

**Storage**

**Technical Measures/Storage Conditions:**
Keep containers tightly closed in a cool, well-ventilated place. Keep away from heat and sources of ignition. Store in a segrated and approved area. Store away from incompatible materials***

**Incompatible Materials:**
Oxidizing agents***

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**Engineering measures to reduce exposure:** Ensure adequate ventilation. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors and mist below their respective threshold limit value.

**Personal Protective Equipment**

**Eye protection:** Goggles. Safety glasses with side-shields.

**Skin and body protection:** Chemical resistant apron. Long sleeved clothing. Gloves.

**Respiratory protection:** Vapor respirator. Be sure to use an approved/certified respirator or equivalent.

**Hygiene measures:** Avoid contact with skin, eyes and clothing. When using, do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product.

**National occupational exposure limits**

**United States**

| Components | OSHA | NIOSH | ACGIH | AIHA WHEEL |
|---|---|---|---|---|
| Methyl Formate - 107-31-3 | 100 ppm TWA<br>250 mg/m$^3$ TWA | 100 ppm TWA<br>250 mg/m$^3$ TWA<br>150 ppm STEL<br>375 mg/m$^3$ STEL | 150 ppm STEL<br>100 ppm TWA | None |

**Canada**

| Components | Alberta | British Columbia | Ontario | Quebec |
|---|---|---|---|---|
| Methyl Formate<br>107-31-3 | 100 ppm TWA<br>246 mg/m$^3$ TWA<br>150 ppm STEL<br>368 mg/m$^3$ STEL | 100 ppm TWA<br>150 ppm STEL | 100 ppm TWA<br>150 ppm STEL*** | 100 ppm TWAEV<br>246 mg/m$^3$ TWAEV<br>150 ppm STEV<br>368 mg/m$^3$ STEV |

**Australia and Mexico**

| Components | Australia | Mexico |
|---|---|---|
| Methyl Formate<br>107-31-3 | 150 ppm STEL<br>368 mg/m$^3$ STEL<br>100 ppm TWA<br>246 mg/m$^3$ TWA | 100 ppm TWA<br>250 mg/m$^3$ TWA<br>150 ppm STEL<br>375 mg/m$^3$ STEL |

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Physical state:**
Liquid.

**Appearance:**
No information available

**Color:**
Colorless.

**Odor:**
Agreeable. Pleasant. Ether-like***

**Taste**
No information available

**Molecular/Formula weight:**
60.05***

**Flash point (°C):**
-19***

**Lower Explosion Limit (%):**
4.5%***

**Upper Explosion Limit (%):**
23%***

**Autoignition Temperature (°C/°F):**
440-449 °C/824-840 °F***

**pH:**
No information available

**Melting point/range(°C/°F):**
-100.4 to -99.8 °C/-149 to -147.64 °F***

**Boiling point/range(°C/°F):**
31.5-32.3 °C/88.7-90.14 °F***

**Decomposition temperature(°C/°F):**
No information available

**Specific gravity:**
0.987 @ 15 °C
0.968-0.975 @ 20 °C***

**Density (g/cm3):**
No information available

**Bulk density:**
No information available

**Vapor pressure @ 20°C (kPa):**
64.4***

**Evaporation rate:**
No information available

**Vapor density:**
2.07***

**VOC content (g/L):**
No information available

**Odor threshold (ppm):**
2000***

**Partition coefficient (n-octanol/water):**
0.03
-0.21 at 25 °C***

**Miscibility:**
No information available

**Solubility:**
Soluble in Water
Solubility in Water: 30%***

## 10. STABILITY AND REACTIVITY

**Stability:** Stable at normal conditions

**Conditions to avoid:** Heat. Ignition sources. Incompatible materials***

| | |
|---|---|
| **Incompatible Materials:** | Oxidizing agents*** |
| **Hazardous decomposition products:** | Carbon monoxide. Carbon dioxide. When heated to decomposition it emits acrid smoke and irritating fumes. |
| **Possibility of Hazardous Reactions:** | Reacts slowly with water to form methanol and formic acid*** |
| **Polymerization:** | Hazardous polymerisation does not occur |
| **Corrosivity:** | No information available |
| **Special Remarks on Corrosivity:** | No information available |

## 11. TOXICOLOGICAL INFORMATION

**Acute Toxicity**

**Component Information**

*Methyl Formate - 107-31-3*

**LD50/oral/rat =** 475 mg/kg Oral LD50 Rat (LOLI and RTECS)
1500 mg/kg (RTECS)***
**LD50/oral/mouse** No information available
**LD50/dermal/rabbit =** > 5000 mg/kg Dermal LD50 Rabbit
**LD50/dermal/rat =** > 4000 mg/kg Dermal LD50 Rat
**LC50/inhalation/rat =** > 5.2 mg/L Inhalation LC50 Rat 4 h***
**LC50/inhalation/mouse =** No infomation available
**Other LD50 or LC50information =**
1600 mg/kg Oral LD50 [Rabbit]***

**Product Information**

**LC50/inhalation/rat** > 5.2 mg/L Inhalation LC50 Rat 4 h***
**LC50/Inhalation/mouse** No information available
**LD50/dermal/rabbit** >5000***mg/kg
**LD50/dermal/rat** >4000***mg/kg
**LD50/oral/mouse** No information available
**LD50/oral/rat** 475-1500***mg/kg

**Local Effects**

| | |
|---|---|
| **Skin irritation:** | May cause skin irritation*** |
| **Eye irritation:** | Causes eye irritation. May cause conjunctivitis. Causes lacrimation*** |
| **Inhalation:** | Harmful by inhalation. Irritating to respiratory system. Causes conjunctivitis. May cause tight feeling in chest and difficulty breathing. Symptoms may include coughing and shortness of breath. May cause central nervous system effects, central nervous system depression. May affect behavior/central nervous system (somnolence). May cause vomiting*** |
| **Ingestion:** | Harmful if swallowed. May cause digestive (gastointestinal) tract irritation. May cause nausea. May cause vomiting. May cause central nervous system effects (affect behavior). May affect behavior/central nervous system (somnolence)*** |
| **Sensitization:** | No information available |

**Chronic Toxicity**

**Chronic Toxicity** No information available

**Carcinogenic effects:** Not considered carcinogenic

| Components | NTP | IARC | OSHA HCS - Carcinogens | ACGIH - Carcinogens | Australia - Prohibited Carcinogenic Substances | Australia - Notifiable Carcinogenic Substances |
|---|---|---|---|---|---|---|
| Methyl Formate | Not listed | Not listed | Not listed | Not listed | Not listed | Not listed |

**Mutagenic Effects:** No information available

**Reproductive Effects:** No information available

**Teratogenic Effects:** No information available

**Target Organs:** Central nervous system.

## 12. ECOLOGICAL INFORMATION

**ECOTOXICITY**

**Toxicity to terrestrial and aquatic plants and animals:** Information given is based on data on the components and the ecotoxicology of similar products

**Ecotoxicity effects:** Aquatic environment.

**Aquatic toxicity:**

*Methyl Formate - 107-31-3*

**Freshwater Algae Data:** 190 mg/L EC50 Desmodesmus subspicatus 96 h
240 mg/L EC50 Desmodesmus subspicatus 72 h

**Freshwater Fish Species Data:** 120 mg/L LC50 Leuciscus idus 96 h static 1

**Water Flea Data:** 500 mg/L EC50 Daphnia magna 48 h

**Mobility:** It is expected to have high mobility***

**Persistence and degradability:** No information available

**Bioaccumulative potential:** Potential for bioconcentration in aquatic organisms is low***

## 13. DISPOSAL CONSIDERATIONS

**Waste from residues / unused products:**
Waste must be disposed of in accordance with Federal, State and Local regulation.

**Contaminated packaging:**
Empty containers should be taken for local recycling, recovery or waste disposal

| Components | RCRA - F Series Wastes | RCRA - K Series Wastes | RCRA - P Series Wastes | RCRA - U Series Wastes |
|---|---|---|---|---|
| Methyl Formate | None | None | None | None |

## 14. TRANSPORT INFORMATION

**DOT**

**UN-No:** UN1243***

**Proper Shipping Name:** Methyl formate ***

| | |
|---|---|
| **Hazard Class:** | 3*** |
| **Packing Group:** | I*** |
| **Subsidiary Risk:** | Not applicable |
| **Marine Pollutant** | No data available |
| **ERG No:** | 129*** |
| **DOT RQ (lbs):** | No information available |

**TDG (Canada)**

| | |
|---|---|
| **UN-No:** | UN1243*** |
| **Proper Shipping Name:** | Methyl formate *** |
| **Hazard Class:** | 3*** |
| **Packing Group:** | I*** |
| **Subsidiary Risk:** | No information available |
| **Description:** | No information available |

**ADR**

| | |
|---|---|
| **UN-No:** | UN1243*** |
| **Proper Shipping Name:** | Methyl formate *** |
| **Hazard Class:** | 3*** |
| **Packing Group:** | I*** |
| **Subsidiary Risk:** | No information available |
| **Classification Code:** | No information available |
| **Description:** | No information available |
| **CEFIC Tremcard No:** | No information available |

**IMO / IMDG**

| | |
|---|---|
| **UN-No:** | UN1243*** |
| **Proper Shipping Name:** | Methyl formate *** |
| **Hazard Class:** | 3*** |
| **Packing Group:** | I*** |
| **Subsidiary Risk:** | No information available |
| **Description:** | No information available |
| **IMDG Page:** | No information available |
| **Marine Pollutant** | No information available |
| **EMS:** | F-E*** |
| **MFAG:** | No information available |
| **Maximum Quantity:** | No information available |

**RID**

| | |
|---|---|
| **UN-No:** | UN1243*** |
| **Proper Shipping Name:** | Methyl formate *** |
| **Hazard Class:** | 3*** |
| **Packing Group:** | I*** |
| **Subsidiary Risk:** | 3*** |
| **Classification Code:** | No information available |
| **Description:** | No information available |

**ICAO**

| | |
|---|---|
| **UN-No:** | UN1243*** |
| **Proper Shipping Name:** | Methyl formate *** |
| **Hazard Class:** | 3*** |
| **Packing Group:** | I*** |
| **Subsidiary Risk:** | No information available |
| **Description:** | No information available |

**IATA**

| | |
|---|---|
| **UN-No:** | UN1243*** |
| **Proper Shipping Name:** | Methyl formate *** |

**Hazard Class:** 3***
**Packing Group:** I***
**Subsidiary Risk:** No information available
**ERG Code:** 3H***
**Description:** No information available

## 15. REGULATORY INFORMATION

### International Inventories

| Components | U.S. TSCA | Philippines (PICCS) | KOREA KECL | Japan ENCS | CHINA | Australia (AICS) | EINECS-No. |
|---|---|---|---|---|---|---|---|
| *Methyl Formate* | Present | Present | KE-17243 | 2-677 | Present | Present | 203-481-7 |

### U.S. Regulations

*Methyl Formate*

**Massachusetts RTK:** Present
**New Jersey RTK Hazardous Substance List:** Present
**New Jersey (EHS) List:** Present
**New Jersey - Discharge Prevention - List of Hazardous Substances** Present
**New Jersey TCPA - EHS:** 10000lbTQ
**Pennsylvania RTK:** Present
**RI RTK - Hazardous Substances List:** Present
**Minnesota - Hazardous Substance List:** Present
**California Directors List of Hazardous Substances:** Present

### California Prop. 65: Safe Drinking Water and Toxic Enforcment Act of 1986.

**Chemicals Known to the State of California to Cause Cancer:**
This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

**Chemicals Known to the State of California to Cause Reproductive Toxicity:**
This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

| Components | Carcinogen | Developmental Toxicity | Male Reproductive Toxicity | Female Reproductive Toxicity: |
|---|---|---|---|---|
| Methyl Formate | Not Listed | Not Listed | Not Listed | Not Listed |

### CERCLA/SARA

| Components | CERCLA - Hazardous Substances and their Reportable Quantities | Section 302 Extremely Hazardous Substances and TPQs | Section 302 Extremely Hazardous Substances and RQs | Section 313 - Chemical Category | Section 313 - Reporting *de minimis* |
|---|---|---|---|---|---|
| *Methyl Formate* | None | None | None | None | None |

### U.S. TSCA

| Components | TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS) | TSCA 8(d) -Health and Safety Reporting |
|---|---|---|
| *Methyl Formate* | Not Applicable | 01/26/199406/30/1998 |

### Canada

**WHMIS hazard class:**
B2 Flammable liquid
D2B Toxic materials ***

**Methyl Formate**
B2 D2B

**Canada Controlled Products Regulation:**
This product has been classified according to the hazard criteria of the CPR (Controlled Products Regulation) and the MSDS contains all of the information required by the CPR.

| Components | WHMIS Ingredient Disclosure List - |
|---|---|
| Methyl Formate | 1 % |

**Inventory**

| Components | Canada (DSL) | Canada (NDSL) |
|---|---|---|
| Methyl Formate | Present | Not Listed |

| Components | CEPA Schedule I - Toxic Substances | CEPA - 2010 Greenhouse Gases Subject to Manditory Reporting |
|---|---|---|
| Methyl Formate | Not listed | Not listed |

**EU Classification**

**R-phrase(s)**
R12 - Extremely flammable. ***
R20/22 - Harmful by inhalation and if swallowed.
R36/37 - Irritating to eyes and respiratory system. ***

| Components | Classification | Safety Phrases |
|---|---|---|
| Methyl Formate | F+; R12<br>Xn; R20/22<br>Xi; R36/37 | S2 S9 S16 S24 S26 S33 |

**The product is classified in accordance with Annex VI to Directive 67/548/EEC**

**Indication of danger:**
F+ - Extremely flammable.
Xn - Harmful.
Xi - Irritant.***


## 16. OTHER INFORMATION

**The MSDS format complies with ANSI Z400.1-2004 standards.**

**Preparation Date:** 21-Jan-2013

**Reason for revision:** Not applicable

**Prepared by:** Sonia Owen

**Literature reference:** No information available

All chemicals may pose unknown hazards and should be used with caution. This Material Safety Data Sheet (MSDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. The physical properties reported in this MSDS are obtained from the literature and do not constitute product specifications. Information contained herein does not constitute a warranty, whether expressed or implied, as to the safety, merchantability or fitness of the goods for a particular purpose. Spectrum Chemicals & Laboratory Products, Inc. assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this MSDS is based on technical data judged to be reliable, Spectrum assumes no responsibility for the completeness or accuracy of the information contained herein.