

# Material Safety Data Sheet

| HAZARD WARNINGS | RISK PHRASES  | PROTECTIVE CLOTHING   |
|-----------------|---|---|
|                 | Combustible material; avoid heat and sources of ignition.<br>Refrigerate. |     |

## Section I. Chemical Product and Company Identification

|                  |  |                                 |   |
|------------------|--|---------------------------------|---|
| Chemical Name    | <b>Standard Mixture of Fatty Acid Methyl Esters</b><br>(consists of Methyl Hexanoate, Heptanoate, Octanoate, Nonanoate and Decanoate)                    |                                 |   |
| Catalog Number   | S0459  | Supplier                        | TCl America<br>9211 N. Harborgate St.<br>Portland OR<br>1-800-423-8616                    |
| Synonym          | Not available.   |                                 |   |
| Chemical Formula | Not available.   |                                 |   |
| CAS Number       | 106-70-7 (Methyl Hexanoate)<br>106-73-0 (Methyl Heptanoate)<br>111-11-5 (Methyl Octanoate)<br>1731-84-6 (Methyl Nonanoate)<br>110-42-9(Methyl Decanoate) | In case of<br>Emergency<br>Call | <b>Chemtrec®</b><br><b>(800) 424-9300 (U.S.)</b><br><b>(703) 527-3887 (International)</b> |

## Section II. Composition and Information on Ingredients

| Chemical Name   | CAS Number   | Percent (%)  | TLV/PEL        | Toxicology Data  |
|---|--|--|----------------|--|
| Standard Mixture of Fatty Acid Methyl Esters<br><small>(consists of Methyl Hexanoate, Heptanoate, Octanoate, Nonanoate and Decanoate)</small> | 106-70-7<br>(Methyl Hexanoate)<br>106-73-0<br>(Methyl Heptanoate)<br>111-11-5<br>(Methyl Octanoate)<br>1731-84-6<br>(Methyl Nonanoate)<br>110-42-9(Methyl Decanoate) | 20%(Methyl Hexanoate)<br>20% (Methyl Heptanoate)<br>20% (Methyl Octanoate)<br>20% (Methyl Nonanoate)<br>20% (Methyl Decanoate) | Not available. | (Methyl Hexanoate)<br>Rat LD <sub>50</sub> (oral) >5000 mg/kg<br>Mouse LC <sub>50</sub> (inhalation) 14000 mg/m <sup>3</sup><br>Guinea Pig LD <sub>50</sub> (dermal) >5000 mg/kg<br>(Methyl Heptanoate)<br>Rat LD <sub>50</sub> (oral) >5000 mg/kg<br>Rabbit LD <sub>50</sub> (dermal) >5000 mg/kg |

## Section III. Hazards Identification

|                        |  |
|------------------------|--|
| Acute Health Effects   | No specific information is available in our data base regarding the toxic effects of this material for humans. However, exposure to any chemical should be kept to a minimum. Skin and eye contact may result in irritation. May be harmful if inhaled or ingested. Always follow safe industrial hygiene practices and wear proper protective equipment when handling this compound.<br>Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound. |
| Chronic Health Effects | <b>CARCINOGENIC EFFECTS</b> : Not available.<br><b>MUTAGENIC EFFECTS</b> : Not available.<br><b>TERATOGENIC EFFECTS</b> : Not available.<br><b>DEVELOPMENTAL TOXICITY</b> : Not available.<br>Repeated or prolonged exposure to this compound is not known to aggravate existing medical conditions.   |

## Section IV. 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. Get medical attention.  |
| Skin Contact | In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.  |
| Inhalation   | If the victim is not breathing, perform mouth-to-mouth resuscitation. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, oxygen can be administered. Seek medical attention if respiration problems do not improve.   |
| Ingestion    | INDUCE VOMITING by sticking finger in throat. Lower the head so that the vomit will not reenter the mouth and throat. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive. |

| <b>Section V. Fire and Explosion Data</b> |   |                  |                |
|---|---|------------------|----------------|
| Flammability                              | Combustible.  | Auto-Ignition    | Not available. |
| Flash Points                              | 43 °C (109.4 °F). (Methyl Hexanoate)<br>52 °C (125.6 °F). (Methyl Heptanoate)<br>69 °C (156.2 °F). (Methyl Octanoate)<br>87 °C (188.6 °F). (Methyl Nonanoate)<br>90 °C (194 °F). (Methyl Decanoate)   | Flammable Limits | Not available. |
| Combustion Products                       | These products include toxic carbon oxides (CO,CO <sub>2</sub> )  |                  |                |
| Fire Hazards                              | Not available.  |                  |                |
| Explosion Hazards                         | Risks of explosion of the product in presence of mechanical impact: Not available.<br>Risks of explosion of the product in presence of static discharge: Not available.   |                  |                |
| Fire Fighting Media and Instructions      | Combustible Liquid.<br>SMALL FIRE: Use DRY chemical powder.<br>LARGE FIRE: Use alcohol foam, water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion. Consult with local fire authorities before attempting large scale fire-fighting operations. |                  |                |

| <b>Section VI. Accidental Release Measures</b> |  |
|--|--|
| Spill Cleanup Instructions                     | Combustible material.<br>Keep away from heat. Mechanical exhaust required. 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. Consult federal, state, and/or local authorities for assistance on disposal. |

| <b>Section VII. Handling and Storage</b> |  |
|--|--|
| Handling and Storage Information         | COMBUSTIBLE. REFRIGERATE. Keep away from heat. Mechanical exhaust required. Avoid excessive heat and light. Do not breathe gas/fumes/ vapor/spray.<br>Always store away from incompatible compounds such as oxidizing agents, reducing agents, acids, alkalis (bases). |

| <b>Section VIII. Exposure Controls/Personal Protection</b> |   |
|--|---|
| 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 station and safety shower is proximal to the work-station location. |
| Personal Protection  | Splash goggles. Full suit. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product. Be sure to use a MSHA/NIOSH approved respirator or equivalent.                            |
|  |    |
| Exposure Limits  | Not available.  |

| <b>Section IX. Physical and Chemical Properties</b> |  |                       |                |
|---|--|-----------------------|----------------|
| Physical state @ 20°C                               | Liquid. (Clear, colorless.)  | Solubility            | Not available. |
| Specific Gravity                                    | 0.884 (water=1) (Methyl Hexanoate)<br>0.88 (water=1)(Methyl Heptanoate)<br>0.877 (water=1)(Methyl Octanoate)<br>0.874 (water=1)(Methyl Nonanoate)<br>0.87 (water=1)(Methyl Decanoate)  |                       |                |
| Molecular Weight                                    | 130.19 (Methyl Hexanoate)<br>144.22 (Methyl Heptanoate)<br>158.24 (Methyl Octanoate)<br>172.27 (Methyl Nonanoate)<br>186.3 (Methyl Decanoate)  | Partition Coefficient | Not available. |
| Boiling Point                                       | 150 to 151 °C (302 to 303.8 °F) (Methyl Hexanoate)<br>171 to 172 °C (339.8 to 341.6 °F) (Methyl Heptanoate)<br>193 to 194 °C (379.4 to 381.2 °F) (Methyl Octanoate)<br>213 to 214 °C (415.4 to 417.2 °F) @ 760 mmHg (Methyl Nonanoate)<br>224 °C (435.2 °F) (Methyl Decanoate) | Vapor Pressure        | Not available. |
| Melting Point                                       | -71 °C (-95.8 °F) (Methyl Hexanoate)   | Vapor Density         | Not available. |
| Refractive Index                                    | 1.405 (Methyl Hexanoate)<br>1.411 (Methyl Heptanoate)<br>1.418 (Methyl Octanoate)<br>1.422 (Methyl Nonanoate)<br>1.425 (Methyl Decanoate)  | Volatility            | Not available. |
| Critical Temperature                                | Not available.   | Odor                  | Not available. |
| Viscosity   | Not available.   | Taste                 | Not available. |

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Emergency phone number (800) 424-9300

| <b>Section X. Stability and Reactivity Data</b> |  |
|---|--|
| Stability                                       | This material is stable if stored under proper conditions. (See Section VII for instructions)        |
| Conditions of Instability                       | Avoid excessive heat and light.  |
| Incompatibilities                               | Reactive with strong oxidizing agents, strong reducing agents, strong acids, strong alkalis (bases). |

| <b>Section XI. Toxicological Information</b> |  |
|--|--|
| RTECS Number                                 | MO8401400 (Methyl Hexanoate)<br>MJ2297500 (Methyl Heptanoate)<br>RH0778000 (Methyl Octanoate)<br>RA6906000 (Methyl Nonanoate)<br>HD9830000 (Methyl Decanoate)  |
| Routes of Exposure                           | Eye Contact. Ingestion. Inhalation.  |
| Toxicity Data                                | (Methyl Hexanoate)<br>Rat LD <sub>50</sub> (oral) >5000 mg/kg<br>Mouse LC <sub>50</sub> (inhalation) 14000 mg/m <sup>3</sup><br>Guinea Pig LD <sub>50</sub> (dermal) >5000 mg/kg<br>(Methyl Heptanoate)<br>Rat LD <sub>50</sub> (oral) >5000 mg/kg<br>Rabbit LD <sub>50</sub> (dermal) >5000 mg/kg   |
| Chronic Toxic Effects                        | <b>CARCINOGENIC EFFECTS</b> : Not available.<br><b>MUTAGENIC EFFECTS</b> : Not available.<br><b>TERATOGENIC EFFECTS</b> : Not available.<br><b>DEVELOPMENTAL TOXICITY</b> : Not available.<br>Repeated or prolonged exposure to this compound is not known to aggravate existing medical conditions.   |
| Acute Toxic Effects                          | No specific information is available in our data base regarding the toxic effects of this material for humans. However, exposure to any chemical should be kept to a minimum. Skin and eye contact may result in irritation. May be harmful if inhaled or ingested. Always follow safe industrial hygiene practices and wear proper protective equipment when handling this compound.<br>Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound. |

| <b>Section XII. Ecological Information</b> |   |
|--|---|
| Ecotoxicity                                | Not available.  |
| Environmental Fate                         | (Methyl Octanoate)<br>Methyl n-octanoate's production and use as an intermediate for caprylic acid detergents, plasticizer and its use as a flavoring agent may result in its release to the environment from its use and through various waste streams. Methyl n-octanoate was detected in cassava roots, nectarines and grape juice. If released to air, a vapor pressure of 0.54 mm Hg at 25 deg C indicates methyl n-octanoate will exist solely as a vapor in the ambient atmosphere. Vapor-phase methyl n-octanoate will be degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be 2 days. Methyl n-octanoate may also undergo direct photolysis since it contains a functional group that can absorb UV light at greater than 290 nm, but the kinetics of this reaction are unknown. If released to soil, methyl n-octanoate is expected to have low mobility based upon an estimated Koc of 1,500. Volatilization from moist soil surfaces is expected to be an important fate process based upon a Henry's Law constant of 7.83X10 <sup>-4</sup> atm-cu m/mole. Volatilization from dry soil surfaces is not expected to be an important fate process based upon the vapor pressure. Methyl n-octanoate was shown to be biodegradable under aerobic conditions using an activated sludge in a single screening study. If released into water, methyl n-octanoate is expected to adsorb to suspended solids and sediment in water based upon the estimated Koc. Volatilization from water surfaces is expected to be an important fate process based upon this compound's Henry's Law constant. Estimated volatilization half-lives for a model river and model lake are 2 hours and 5 days, respectively. Hydrolysis is expected to be a slow environmental fate process based on estimated hydrolysis half-lives of 121 days and 3.3 years at pH 8 and 7, respectively. An estimated BCF of 72 suggests the potential for bioconcentration in aquatic organisms is moderate. Occupational exposure to methyl n-octanoate may occur through inhalation and dermal contact with this compound at workplaces where methyl n-octanoate is produced or used. The general population may be exposed to methyl n-octanoate through the ingestion of foods containing this compound and from consumer products containing this product.<br>(Methyl Decanoate)<br>Methyl decanoate's production and use as a synthetic intermediate and flavoring may result in its release to the environment through various waste streams. Methyl decanoate also occurs naturally as a component of some foods. If released to air, a vapor pressure of 0.037 mm Hg at 25 deg C indicates methyl decanoate will exist solely as a vapor in the ambient atmosphere. Vapor-phase methyl decanoate will be degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be 37 hours. If released to soil, methyl decanoate is expected to have moderate mobility based upon an estimated Koc of 470. Volatilization from moist soil surfaces is expected to be an important fate process based upon an estimated Henry's Law constant of 0.0017 atm-cu m/mole. Methyl decanoate is expected to rapidly biodegrade in aerobic soils as suggested by the rapid biodegradation of structurally similar long-chain fatty acid esters. If released into water, methyl decanoate is expected to adsorb to suspended solids and sediment in the water column based upon the estimated Koc. Methyl decanoate is expected to rapidly biodegrade in aerobic waters as suggested by the rapid biodegradation of structurally similar long-chain fatty acid esters. Volatilization from water surfaces is expected to be an important fate process based upon this compound's estimated Henry's Law constant. Estimated volatilization half-lives for a model river and model lake are 5 hours and 6 days, respectively. An estimated BCF of 50 suggests the potential for bioconcentration in aquatic organisms is moderate. An estimated base-catalyzed second-order hydrolysis rate constant of 0.03 L/mole-sec corresponds to half-lives of 7 years and 270 days at pH values of 7 and 8, respectively. Occupational exposure to methyl decanoate may occur through inhalation and dermal contact with this compound at workplaces where methyl decanoate is produced or used. The general population may be exposed to methyl decanoate due to its use in a number of commercial products. |

### Section XIII. Disposal Considerations

|                |   |
|----------------|---|
| Waste Disposal | Recycle to process, if possible. Consult your local regional authorities. You may be able to dissolve or mix material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber system. Observe all federal, state and local regulations when disposing of the substance. |
|----------------|---|

### Section XIV. Transport Information

|                      |  |
|----------------------|--|
| DOT Classification   | DOT Class 3: Flammable liquid  |
| PIN Number           | UN3272   |
| Proper Shipping Name | Esters, n.o.s.<br>(Standard Mixture of Fatty Acid Methyl Esters (ca. 20% Methyl Hexanoate, 20% Methyl Heptanoate)) |
| Packing Group (PG)   | III  |
| DOT Pictograms       |  |



### Section XV. Other Regulatory Information and Pictograms

|                               |   |
|-------------------------------|---|
| TSCA Chemical Inventory (EPA) | This compound is <b>ON</b> the EPA Toxic Substances Control Act (TSCA) inventory list.  |
| WHMIS Classification (Canada) | On DSL. (Methyl Hexanoate)<br>On DSL. (Methyl Heptanoate)<br>On DSL. (Methyl Octanoate)<br>On DSL. (Methyl Decanoate)   |
| EINECS Number (EEC)           | 203-425-1 (Methyl Hexanoate)<br>203-428-8 (Methyl Heptanoate)<br>203-835-0 (Methyl Octanoate)<br>217-052-7 (Methyl Nonanoate)<br>203-766-6 (Methyl Decanoate)                                 |
| EEC Risk Statements           | Not available.  |
| Japanese Regulatory Data      | ENCS No. 2-782 (Methyl Hexanoate)<br>ENCS No. 2-782 (Methyl Heptanoate)<br>ENCS No. 2-782 (Methyl Octanoate)<br>ENCS No. 2-782 (Methyl Nonanoate)<br>ENCS No. 2-782; 2-798 (Methyl Decanoate) |

### Section XVI. Other Information

**Version 1.0**  
**Validated on 7/26/2006.**  
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#### Notice to Reader

TCI laboratory chemicals are for research purposes only and are NOT intended for use as drugs, food additives, households, or pesticides. The information herein is believed to be correct, but does not claim to be all inclusive and should be used only as a guide. Neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All chemical reagents must be handled with the recognition that their chemical, physiological, toxicological, and hazardous properties have not been fully investigated or determined. All chemical reagents should be handled only by individuals who are familiar with their potential hazards and who have been fully trained in proper safety, laboratory, and chemical handling procedures. Although certain hazards are described herein, we can not guarantee that these are the only hazards which exist. Our MSDS sheets are based only on data available at the time of shipping and are subject to change without notice as new information is obtained. Avoid long storage periods since the product is subject to degradation with age and may become more dangerous or hazardous. It is the responsibility of the user to request updated MSDS sheets for products that are stored for extended periods. Disposal of unused product must be undertaken by qualified personnel who are knowledgeable in all applicable regulations and follow all pertinent safety precautions including the use of appropriate protective equipment (e.g. protective goggles, protective clothing, breathing equipment, facial mask, fume hood). For proper handling and disposal, always comply with federal, state, and local regulations.