Material Safety Data Sheet

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: n-Hexane
Cat No.: H306-1; H306-4; H306-4LC; H306-SK4, H306-RS260

2. HAZARDS IDENTIFICATION

DANGER! Emergency Overview
Extremely flammable liquid and vapor. Inhalation may cause central nervous system effects. Irritating to eyes and skin. May cause irritation of mucous membranes. Inhalation hazard if swallowed - can enter lungs and cause damage. Danger of serious damage to health by prolonged exposure. Possible risk of impaired fertility. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Appearance: Colorless
Physical State: Liquid
Odor: Petroleum distillate

Target Organs: Skin, Respiratory system, Eyes, Central nervous system (CNS), Heart, Blood, Liver, Reproductive System

Potential Health Effects
Acute Effects
Eyes: Irritating to eyes.
Skin: Irritating to skin. May be harmful in contact with skin.
Inhalation: May cause irritation of respiratory tract. May cause irritation of central nervous system effects. May cause irritation of respiratory tract. May be harmful if inhaled.
Ingestion: Aspiration hazard. May be harmful if swallowed. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazard: No hazard
Component: CAS-No: Weight %
Hexane: 110-54-3 > 96
2-Methylpentane: 107-03-5 < 2.5
3-Methylpentane: 86-14-9 < 1

4. FIRST AID MEASURES

Eye Contact: Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Obtain medical attention.
Skin Contact: Wash off immediately with plenty of water for at least 15 minutes. Obtain medical attention.
Inhalation: Move to fresh air. If breathing is difficult, give oxygen. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance. Induce artificial respiration with a respiratory medical device. Obtain medical attention.
Ingestion: Do not induce vomiting. Call a physician or Poison Control Center immediately.

Notes to Physician: Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Flash Point: -22°C / -7.8°F
Method: No information available.
Autoignition Temperature: 233°C / 437°F
Explosion Limits: Upper 7.5 vol % 1.1 vol %
Suitable Extinguishing Media: CO₂, dry chemical, dry sand, alcohol-resistant foam. Cool closed containers exposed to fire with water spray.
Unsuitable Extinguishing Media: Water may be ineffective. This material is lighter than water and insensible to water. The fire may easily spread by the use of water in an area where the water cannot be contained.
Hazardous Combustion Products: No information available.
Specific Hazards Arising from the Chemical: Flammable. Risk of ignition. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back.
Containers may explode when heated.

Thermo Fisher Scientific - n-Hexane
Revision Date: 31-Jan-2013

Chronic Effects: None known
Aggravated Medical Conditions: Central nervous system disorders. Pre-existing eye disorders. Skin disorders.
See Section 11 for additional Toxicological Information.
6. ACCIDENTAL RELEASE MEASURES

**Personal Precautions**  
Use personal protective equipment. Ensure adequate ventilation. Evacuate personnel to safe areas. Remove all sources of ignition. Take precautionary measures against static discharges.

**Environmental Precautions**  
Should not be released into the environment.

**Methods for Containment and Clean Up**  
Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

7. HANDLING AND STORAGE

**Handling**  
Use only under a chemical fume hood. Wear personal protective equipment. Do not get in eyes, on skin, or on clothing. Do not breathe vapors or spray mist. Keep away from open flames, hot surfaces and sources of ignition. Use only non-sparkling tools. Use explosion-proof equipment. Take precautionary measures against static discharges.

**Storage**  
Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat and sources of ignition. Flammables area.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Engineering Measures**  
Use only under a chemical fume hood. Use explosion-proof exhaust/ventilation/lighting/equipment. Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the work station location.

**Exposure Guidelines**

<table>
<thead>
<tr>
<th>Component</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>NIOSH IDLH</th>
</tr>
</thead>
</table>
| Hexane    | TWA: 50 ppm  
STEL: 1000 ppm  
Skin       | (Vacuums) TWA: 50 ppm  
(Vapor): TWA: 50 ppm  
(Vapor): STEL: 3000 mg/m³  
(Vapor): STEL: 3000 mg/m³  
Skin         | TWA: 100 ppm  
Stel: 1000 ppm  
Skin            | TWA: 1100 ppm  
TWA: 100 ppm  
Stel: 50 ppm  
Stel: 1000 ppm  
Stel: 1000 ppm  
Skin            |
| 2-Methylpentane | TWA: 500 ppm  
STEL: 1000 ppm  
Skin       | (Vacuums) TWA: 500 ppm  
(Vapor): TWA: 1000 ppm  
(Vapor): STEL: 1000 ppm  
(Vapor): STEL: 3000 mg/m³  
(Vapor): STEL: 3000 mg/m³  
Skin            | TWA: 500 ppm  
TWA: 100 ppm  
STEL: 3000 mg/m³  
STEL: 1000 ppm  
STEL: 3000 mg/m³  
Skin            | TWA: 300 ppm  
TWA: 50 ppm  
STEL: 300 mg/m³  
STEL: 1000 ppm  
STEL: 1000 ppm  
Skin            |
| 2-Methylpentane | TWA: 500 ppm  
STEL: 1000 ppm  
Skin       | (Vacuums) TWA: 500 ppm  
(Vapor): TWA: 1000 ppm  
(Vapor): STEL: 1000 ppm  
(Vapor): STEL: 3000 mg/m³  
(Vapor): STEL: 3000 mg/m³  
Skin            | TWA: 500 ppm  
TWA: 100 ppm  
STEL: 3000 mg/m³  
STEL: 1000 ppm  
STEL: 3000 mg/m³  
Skin            | TWA: 300 ppm  
TWA: 50 ppm  
STEL: 300 mg/m³  
STEL: 1000 ppm  
STEL: 1000 ppm  
Skin            |

**NIOSH IDLH:** Immediately Dangerous to Life or Health

**Personal Protective Equipment**

**Eye/face protection**  
Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

**Skin and body protection**  
Wear appropriate protective gloves and clothing to prevent skin exposure.

**Respiratory protection**

Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/NIOSH or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Physical State</th>
<th>Liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Colorless</td>
</tr>
<tr>
<td>Odor</td>
<td>Petroleum distillates</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>No information available</td>
</tr>
<tr>
<td>pH</td>
<td>No information available</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>160 mbar @ 20 °C</td>
</tr>
<tr>
<td>Vapor Density</td>
<td>2.97 (Air = 1.0)</td>
</tr>
</tbody>
</table>
9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Viscosity</td>
<td>0.33 mPa s at 20 °C</td>
</tr>
<tr>
<td>Boiling Point/Range</td>
<td>68°C / 156.2 °F 760 mmHg</td>
</tr>
<tr>
<td>Melting Point/Range</td>
<td>95°C / 199°F</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>No information available.</td>
</tr>
<tr>
<td>Flash Point</td>
<td>-22°C / -7.6°F</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>No information available.</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>0.859</td>
</tr>
<tr>
<td>Solubility</td>
<td>Insoluble in water</td>
</tr>
<tr>
<td>log Pow</td>
<td>No data available</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>86.18</td>
</tr>
<tr>
<td>Molecular Formula</td>
<td>C9 H14</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

Stability: Stable under normal conditions.


Incompatible Materials: Strong oxidizing agents, Halogenes

Hazardous Decomposition Products: Carbon monoxide (CO), Carbon dioxide (CO2)

Hazardous Polymerization: Hazardous polymerization does not occur.

Hazardous Reactions: None under normal processing.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

<table>
<thead>
<tr>
<th>Component Information</th>
<th>LD50 Oral</th>
<th>LD50 Dermal</th>
<th>LC50 Inhalation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hexane</td>
<td>25 mg/kg (Rat)</td>
<td>3000 mg/kg (Rabbit)</td>
<td>4800 ppm (Rat) x 4 h</td>
</tr>
</tbody>
</table>

Irritation: Irritating to eyes and skin

Toxicologically Synergistic Products: No information available.

Chemical Toxicity: There are no known carcinogenic chemicals in this product.

Carcinogenicity: No information available.

Sensitization: No information available.

Mutagenic Effects: Mutagenic effects have occurred in experimental animals.

Reproductive Effects: Experiments have shown reproductive toxicity effects on laboratory animals.

12. ECOLOGICAL INFORMATION

Esotoxicity: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

<table>
<thead>
<tr>
<th>Component</th>
<th>Freshwater Algae</th>
<th>Freshwater Fish</th>
<th>Microbes</th>
<th>Water Flea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hexane</td>
<td>Not listed</td>
<td>2.1-2.68 mg/L</td>
<td>Not listed</td>
<td>EC50: 3.67 mg/L, 48 h</td>
</tr>
</tbody>
</table>

Persistence and Degradability: No information available.

Bioaccumulation/Accumulation: No information available.

Mobility

<table>
<thead>
<tr>
<th>Component</th>
<th>log Pow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hexane</td>
<td>4.11</td>
</tr>
</tbody>
</table>

13. DISPOSAL CONSIDERATIONS

Waste Disposal Methods: Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. TRANSPORT INFORMATION

DOT

<table>
<thead>
<tr>
<th>UN-No</th>
<th>Proper Shipping Name</th>
<th>Hazard Class</th>
<th>Packing Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN1208</td>
<td>Hexanes</td>
<td>3</td>
<td>II</td>
</tr>
</tbody>
</table>

TDG

<table>
<thead>
<tr>
<th>UN-No</th>
<th>Proper Shipping Name</th>
<th>Hazard Class</th>
<th>Packing Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN1208</td>
<td>HEXANES</td>
<td>3</td>
<td>II</td>
</tr>
</tbody>
</table>

IATA
14. TRANSPORT INFORMATION

<table>
<thead>
<tr>
<th>UN-No</th>
<th>UN1208</th>
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<tbody>
<tr>
<td>Proper Shipping Name</td>
<td>Hexanes</td>
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<tr>
<td>Hazard Class</td>
<td>3</td>
</tr>
<tr>
<td>Packing Group</td>
<td>II</td>
</tr>
</tbody>
</table>

IMDG/IMO

<table>
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<tr>
<th>UN-No</th>
<th>UN1208</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proper Shipping Name</td>
<td>Hexanes</td>
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<tr>
<td>Hazard Class</td>
<td>3</td>
</tr>
<tr>
<td>Packing Group</td>
<td>II</td>
</tr>
</tbody>
</table>

15. REGULATORY INFORMATION

International Inventories

<table>
<thead>
<tr>
<th>Component</th>
<th>TSCA</th>
<th>DSL</th>
<th>NDSL</th>
<th>EINECS/EINS</th>
<th>NLP</th>
<th>PGCS</th>
<th>ENCS</th>
<th>AICS</th>
<th>CHINA</th>
<th>KECL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Methylpentane</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>203-377-6</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>3-Methylpentane</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>202-481-4</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

Legend:
X - Listed
E - Indicates a substance that is subject to a Section 5(c) Consent order under TSCA.
F - Indicates a substance that is subject to a Section 5(b) Rule under TSCA.
N - Indicates a polymer substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
P - Indicates a commercial FRP substance
R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
T - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 711.70).
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) Not applicable
SARA 313

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-no</th>
<th>Weight %</th>
<th>SARA 313 - Threshold Value %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hexane</td>
<td>110-84-3</td>
<td>&gt; 99</td>
<td>10</td>
</tr>
</tbody>
</table>

SARA 311/312 Hazardous Categories

Acute Health Hazard

Chronic Health Hazard

Clean Water Act

Not applicable

Clean Air Act

<table>
<thead>
<tr>
<th>Component</th>
<th>HAPS Data</th>
<th>Class 2 Ozone Depletors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hexane</td>
<td>X</td>
<td>-</td>
</tr>
</tbody>
</table>

CSHA

Not applicable

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302).

<table>
<thead>
<tr>
<th>Component</th>
<th>Hazardous Substances ROe</th>
<th>CERCLA EMS ROe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hexane</td>
<td>5000 lb</td>
<td>-</td>
</tr>
</tbody>
</table>

California Proposition 65

This product does not contain any Proposition 65 chemicals.

State Right-to-Know

<table>
<thead>
<tr>
<th>Component</th>
<th>Massachusetts</th>
<th>New Jersey</th>
<th>Pennsylvania</th>
<th>Illinois</th>
<th>Rhode Island</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hexane</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>2-Methylpentane</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>3-Methylpentane</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

U.S. Department of Transportation

Reportable Quantity (ROQ): Y

DOT Marine Pollutant: N

DOT Severe Marine Pollutant: N

U.S. Department of Homeland Security

This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade

Serious risk, Grade 3

Canada

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

WHMIS Hazard Class

B2 Flammable liquid

D0A Very toxic materials

D0B Toxic materials
16. OTHER INFORMATION

Prepared By
Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date
27-Jul-2012

Print Date
31-Jan-2013

Revision Summary
****, and red text indicates revision

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