1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Methanol
Cat No.:
A408-1; A408-4; A408-4LC; A411-4; A411-20; A412-1; A412-4; A412-4LC;
A412-20; A412-200; A412-200LC; A412-500; A412CU-1300; A412FB-19;
A412FB-50; 412FB-115; A412FB-200; A412P-4; A412POP-19;
A412POPS-200; 412RB-50; A412RB-115; A412RB-200; A412RS-19;
A412RS-28; 412RS-50; 412RS-115; A412RS-200; A412SK-4; A412SS-115;
A413-4; A413-20; 413-200; A413-500; A433F-1GAL; A433P-4;
A433S-4; A433S-20; A433S-200; A434-20; A450-4; A452-1; A452-4; A452-4LC;
A452N-119; A452N-219; A452POP-50; 452POP-200; A452RS-19;
A452RS-28; A452RS-50; 452RS-115; A452RS-200; A452SK-1; A452SK-4;
A452SS-19; A452SS-28; 452SS-50; A452SS-200; A453-1; A453-1LC;
A453-500; A454-1; A454-4; A454-4LC; A454RS-28; A454RS-115; A454RS-200;
A454SK-4; A454SS-28; A454SS-200; A455-1; A456-1; A456-4; A456-212;
A456-500; A457-4; A935-4; A935RB-200; A947-4; A947POP-200;
A947RS-28; A947RS-115; A947RS-200; A947SS-28; A947SS-50; A947SS-115;
A947SS-200; BP1105-1; BP1105-4; BP1105SS-19; BP1105SS-28;
OPTIMAKIT; SC95-1; SW2-1; TIA947-4; TIA947P-200L

Synonyms: Methyl alcohol; (Spectranalyzed; Laboratory; Certified ACS; NF; Histological; Pesticide; HPLC;
OPTIMA; LC/MS; GC Resolv; Electronic; Low Water; Peroxide-Free/Sequencing)

Recommended Use: Laboratory chemicals

Company:
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number
CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 001-703-527-3387

2. HAZARDS IDENTIFICATION
2. HAZARDS IDENTIFICATION

DANGER!

Emergency Overview
Flammable liquid and vapor. Poison, may be fatal or cause blindness if swallowed. Cannot be made non-poisonous. Vapor harmful. Toxic by inhalation, in contact with skin and if swallowed. Irritating to eyes and skin. May cause irritation of respiratory tract. Toxic; danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed.

Appearance Colorless  Physical State Liquid  odor Alcohol-like

Target Organs Gastrointestinal tract (GI), Central nervous system (CNS), Eyes, Respiratory system, Skin, Optic nerve, Liver, Kidney, spleen, Blood

Potential Health Effects

Acute Effects

Principle Routes of Exposure

<table>
<thead>
<tr>
<th>Eyes</th>
<th>Irritating to eyes.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin</td>
<td>Toxic in contact with skin. Irritating to skin.</td>
</tr>
<tr>
<td>Inhalation</td>
<td>Toxic by inhalation. Vapor harmful. May cause irritation of respiratory tract.</td>
</tr>
<tr>
<td>Ingestion</td>
<td>Poison, may be fatal or cause blindness if swallowed. Cannot be made non-poisonous. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.</td>
</tr>
</tbody>
</table>

Chronic Effects
Toxic; danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed. Experiments have shown reproductive toxicity effects on laboratory animals. May cause adverse liver effects. May cause adverse kidney effects.

See Section 11 for additional Toxicological information.

Aggravated Medical Conditions Central nervous system disorders. Gastrointestinal tract. Preexisting eye disorders. Skin disorders.

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Haz/Non-haz</th>
<th>Component</th>
<th>CAS-No</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Methyl alcohol</td>
<td>67-56-1</td>
<td>&gt;95</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

Eye Contact
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.

Skin Contact
Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.

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. Immediate medical attention is required.

Ingestion
Do not induce vomiting. Call a physician or Poison Control Center immediately.

Notes to Physician
Treat symptomatically.
5. FIRE-FIGHTING MEASURES

Flash Point 12°C / 53.6°F
Method No information available.
Autoignition Temperature 455°C / 851°F
Explosion Limits
Upper 31.00 vol %
Lower 6.0 vol %
Suitable Extinguishing Media CO₂, dry chemical, dry sand, alcohol-resistant foam. Use water spray to cool unopened containers.
Unsuitable Extinguishing Media Water may be ineffective
Hazardous Combustion Products No information available.
Sensitivity to mechanical impact No information available.
Sensitivity to static discharge 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.

Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

NFPA Health 1 Flammability 3 Instability 0 Physical hazards N/A

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions Use personal protective equipment. Remove all sources of ignition. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Take precautionary measures against static discharges. Do not get in eyes, on skin, or on clothing.

Environmental Precautions Should not be released into the environment.

Methods for Containment and Clean Up Remove all sources of ignition. Soak up with inert absorbent material. Take precautionary measures against static discharges. Keep in suitable and closed containers for disposal.

7. HANDLING AND STORAGE

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

Storage Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from open flames, hot surfaces and sources of ignition. Flammables area.
8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Measures
Use only under a chemical fume hood. Use explosion-proof electrical/ventilating/lighting/equipment. Ensure that eyewash stations and safety showers are close to the workstation location.

Exposure Guidelines

<table>
<thead>
<tr>
<th>Component</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>NIOSH IDLH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methyl alcohol</td>
<td>TWA: 200 ppm</td>
<td>(Vacated) TWA: 200 ppm</td>
<td>IDLH: 6000 ppm</td>
</tr>
<tr>
<td></td>
<td>STEL: 250 ppm</td>
<td>(Vacated) TWA: 260 mg/m³</td>
<td>TWA: 200 ppm</td>
</tr>
<tr>
<td></td>
<td>Skin</td>
<td>(Vacated) STEL: 325 mg/m³</td>
<td>TWA: 260 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Vacated) STEL: 250 ppm</td>
<td>STEL: 325 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Skin</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA: 200 ppm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL: 260 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component</th>
<th>Quebec</th>
<th>Mexico OEL (TWA)</th>
<th>Ontario TWA EV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methyl alcohol</td>
<td>TWA: 200 ppm</td>
<td>TWA: 200 ppm</td>
<td>TWA: 200 ppm</td>
</tr>
<tr>
<td></td>
<td>TWA: 262 mg/m³</td>
<td>TWA: 260 mg/m³</td>
<td>TWA: 260 mg/m³</td>
</tr>
<tr>
<td></td>
<td>STEL: 328 mg/m³</td>
<td>STEL: 250 ppm</td>
<td>STEL: 325 mg/m³</td>
</tr>
<tr>
<td></td>
<td>STEL: 250 ppm</td>
<td>STEL: 310 mg/m³</td>
<td>STEL: 250 ppm</td>
</tr>
<tr>
<td></td>
<td>Skin</td>
<td></td>
<td>Skin</td>
</tr>
</tbody>
</table>

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/MSHA 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>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical State</td>
<td>Liquid</td>
</tr>
<tr>
<td>Appearance</td>
<td>Colorless</td>
</tr>
<tr>
<td>odor</td>
<td>Alcohol-like</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>128 hPa @ 20 ºC</td>
</tr>
<tr>
<td>Vapor Density</td>
<td>1.11 (Air = 1.0)</td>
</tr>
<tr>
<td>Viscosity</td>
<td>0.55 cP at 20 ºC</td>
</tr>
<tr>
<td>Boiling Point/Range</td>
<td>64.7ºC / 148.5ºF @ 760 mmHg</td>
</tr>
<tr>
<td>Melting Point/Range</td>
<td>-98ºC / -144.4ºF</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>No information available.</td>
</tr>
<tr>
<td>Flash Point</td>
<td>12ºC / 53.8ºF</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>(Ether = 1.0)</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>0.791</td>
</tr>
<tr>
<td>Solubility</td>
<td>Miscible with water</td>
</tr>
<tr>
<td>Log Pow</td>
<td>No data available</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>32.04</td>
</tr>
<tr>
<td>Molecular Formula</td>
<td>C H4 O</td>
</tr>
</tbody>
</table>
10. STABILITY AND REACTIVITY

Stability
Stable under normal conditions.

Conditions to Avoid
Incompatible products. Heat, flames and sparks.

Incompatible Materials
Strong oxidizing agents, Strong acids, Acid anhydrides, Acid chlorides, Strong bases, Metals, Peroxides

Hazardous Decomposition Products
Carbon monoxide (CO), Formaldehyde

Hazardous Polymerization
Hazardous polymerization does not occur.

Hazardous Reactions
No under normal processing.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Component Information

<table>
<thead>
<tr>
<th>Component</th>
<th>LD50 Oral (mg/kg) (Rat)</th>
<th>LD50 Dermal (mg/kg) (Rabbit)</th>
<th>LC50 Inhalation (ppm) (Rat) 4 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methyl alcohol</td>
<td>5628</td>
<td>15800</td>
<td>64000</td>
</tr>
</tbody>
</table>

Irritation
Irritating to eyes and skin

Toxicologically Synergistic Products
Carbon tetrachloride

Chronic Toxicity

Carcinogenicity
There are no known carcinogenic chemicals in this product

Sensitization
No information available.

Mutagenic Effects
Mutagenic effects have occurred in experimental animals.

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

Developmental Effects
Developmental effects have occurred in experimental animals.

Teratogenicity
Teratogenic effects have occurred in experimental animals.

Other Adverse Effects
The toxicological properties have not been fully investigated. See actual entry in RTECS for complete information.

Endocrine Disruptor Information
No information available
12. ECOLOGICAL INFORMATION

Ecotoxicity

<table>
<thead>
<tr>
<th>Component</th>
<th>Freshwater Algae</th>
<th>Freshwater Fish</th>
<th>Microtox</th>
<th>Water Fica</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methyl alcohol</td>
<td>Not listed</td>
<td>Pimephales promelas: LC50 &gt; 10000 mg/L 96h</td>
<td>EC50 = 38000 mg/L 25 min EC50 = 40000 mg/L 15 min EC50 = 43000 mg/L 5 min</td>
<td>EC50 &gt; 10000 mg/L 24h</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>Methyl alcohol</td>
<td>-0.74</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

<table>
<thead>
<tr>
<th>Component</th>
<th>RCRA - U Series Wastes</th>
<th>RCRA - P Series Wastes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methyl alcohol  - 87-56-1</td>
<td>U154</td>
<td>-</td>
</tr>
</tbody>
</table>

14. TRANSPORT INFORMATION

DOT

UN-No: UN1230
Proper Shipping Name: METHANOL
Hazard Class: 3
Packing Group: II

TDG

UN-No: UN1230
Proper Shipping Name: METHANOL
Hazard Class: 3
Subsidiary Hazard Class: 6.1
Packing Group: II

IATA

UN-No: UN1230
Proper Shipping Name: METHANOL
Hazard Class: 3
Subsidiary Hazard Class: 6.1
14. TRANSPORT INFORMATION

Packing Group II

IMDG/IMO
UN-No UN1230
Proper Shipping Name METHANOL
Hazard Class 3
Subsidiary Hazard Class 6.1
Packing Group II

15. REGULATORY INFORMATION

International Inventories

<table>
<thead>
<tr>
<th>Component</th>
<th>TSCA</th>
<th>DSL</th>
<th>NDSL</th>
<th>EINECS</th>
<th>ELINCS</th>
<th>NLP</th>
<th>PICCS</th>
<th>ENCS</th>
<th>AICS</th>
<th>CHINA</th>
<th>KECL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methyl alcohol</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>200-659-6</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>KE-23193</td>
<td>X</td>
</tr>
</tbody>
</table>

Legend:
X - Listed
E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
N - Indicates a polymeric 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 commenced PMN 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 that is the subject of a Section 4 test rule under TSCA.
XU - 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 710(B)).
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 Values %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methyl alcohol</td>
<td>67-56-1</td>
<td>&gt;95</td>
<td>1.0</td>
</tr>
</tbody>
</table>

SARA 311/312 Hazardous Categorization
Acute Health Hazard Yes
Chronic Health Hazard No
Fire Hazard Yes
Sudden Release of Pressure Hazard No
Reactive Hazard No
Clean Water Act
Not applicable

Clean Air Act

<table>
<thead>
<tr>
<th>Component</th>
<th>HAPS Data</th>
<th>Class 1 Ozone Depleters</th>
<th>Class 2 Ozone Depleters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methyl alcohol</td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

OSHA
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 RQs</th>
<th>CERCLA EHS RQs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methyl alcohol</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>Methyl alcohol</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

U.S. Department of Transportation
Reportable Quantity (RQ): 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
D1B Toxic materials
D2A Very toxic materials
D2B Toxic materials
16. OTHER INFORMATION

Prepared By
Regulatory Affairs
Thermo Fisher Scientific
Tel: (412) 490-8929

Creation Date
27-Apr-2009

Print Date
23-Sep-2009

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

Disclaimer
The information provided on this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of MSDS