1. PRODUCT AND COMPANY IDENTIFICATION

Product Name
2-Propanol

Cat No.
A415-4; A415-20; A416-1; A416-4; A416-4LC; A416-20; A416-200; A416-200LC; A416-500; A416P-4; A416S-4; A416SK-4; A416FB-19; A416FB-50; A416FB-115; A416FB-200; A416RB-50; A416RB-115; A416RB-200; A416RS-28; A416RS-50; A416RS-115; A416RS-200; A416SS-28; A416SS-50; A416SS-115; A416SS-200; A417-1; A417-4; A419-1; A419-4; A419RS-28; A419RS-115; A419RS-200; A419SS-28; A419SS-50; A419SS-115; A419SS-200; A426F-1GAL; A426P-4; A426S-4; A426S-20; A426S-200; A451-1; A451-4; A451CU-50; A451N-219; A451POP-19; A451RS-19; A451RS-50; A451RS-115; A451RS-200; A451SK-1; A451SK-4; A451SS-200; A461-1; A461-4; A461-212; A461-500; A464-4; A464-4LC; A464RS-200; A464SK-4; A516-1; A516-4; A516-20; A516-200; A516-500; A519-4; A520-4; A520RS-200; A520SS-28; A520SS-50; A520SS-115; A520SS-200; A522-4; A522-20; A522SAM-1; A522SAM-2; A522SAM-3; BP2621100; BP26324; HC-500-1GAL; LCMSKIT; OPTIMAKIT

Synonyms
Isopropanol; Isopropyl Alcohol (Certified ACS, HPLC, Laboratory, Histological, Spectranalyzed, OPTIMA LC/MS, USP, Pesticide, Low Water, USP/EP/BP/JP)

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: 001-703-527-3887

2. HAZARDS IDENTIFICATION

WARNING!

Emergency Overview
Flammable liquid and vapor. Irritating to eyes and skin. May cause irritation of respiratory tract. Vapors may cause drowsiness and dizziness. Aspiration hazard if swallowed - can enter lungs and cause damage. Hygroscopic.

Appearance Colorless
Physical State Liquid
odor Alcohol-like
2. HAZARDS IDENTIFICATION

Target Organs
Skin, Respiratory system, Eyes, Central nervous system (CNS), Liver, Kidney

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>Irritating to skin. May be harmful in contact with skin.</td>
</tr>
<tr>
<td>Inhalation</td>
<td>May be harmful if inhaled. May cause drowsiness and dizziness. May cause irritation of respiratory tract.</td>
</tr>
<tr>
<td>Ingestion</td>
<td>Aspiration hazard if swallowed - can enter lungs and cause damage. May cause central nervous system effects. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.</td>
</tr>
</tbody>
</table>

Chronic Effects
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
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>Isopropyl alcohol</td>
<td>67-63-0</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. 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. Obtain medical attention.

Ingestion
Do not induce vomiting. Obtain medical attention.

Notes to Physician
Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Flash Point
12°C / 53.6°F

Method
No information available.

Autoignition Temperature
425°C / 797°F

Explosion Limits

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper</td>
<td>12 vol %</td>
</tr>
<tr>
<td>Lower</td>
<td>2 vol %</td>
</tr>
</tbody>
</table>
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

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. Take precautionary measures against static discharges. Avoid contact with skin, eyes and 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. Use spark-proof tools and explosion-proof equipment. Keep in suitable, closed containers for disposal. Take precautionary measures against static discharges.

7. HANDLING AND STORAGE

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

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
Ensure that eyewash stations and safety showers are close to the workstation location. Use explosion-proof electrical/ventilating/lighting/equipment.

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>Isopropyl alcohol</td>
<td>TWA: 200 ppm</td>
<td>(Vacated) TWA: 400 ppm</td>
<td>IDLH: 2000 ppm</td>
</tr>
<tr>
<td></td>
<td>STEL: 400 ppm</td>
<td>(Vacated) TWA: 400 ppm</td>
<td>TWA: 400 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Vacated) STEL: 500 ppm</td>
<td>TWA: 980 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Vacated) STEL: 1225 mg/m³</td>
<td>STEL: 500 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA: 400 ppm</td>
<td>STEL: 1225 mg/m³</td>
</tr>
<tr>
<td>Component</td>
<td>Quebec</td>
<td>Mexico OEL (TWA)</td>
<td>Ontario TWA EV</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------------------------</td>
<td>-----------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Isopropyl alcohol</td>
<td>TWA: 400 ppm</td>
<td>TWA: 400 ppm</td>
<td>TWA: 200 ppm</td>
</tr>
<tr>
<td></td>
<td>TWA: 985 mg/m³</td>
<td>TWA: 980 mg/m³</td>
<td>STEL: 400 ppm</td>
</tr>
<tr>
<td></td>
<td>STEL: 500 ppm</td>
<td>STEL: 500 ppm</td>
<td>STEL: 400 ppm</td>
</tr>
<tr>
<td></td>
<td>STEL: 1230 mg/m³</td>
<td>STEL: 1225 mg/m³</td>
<td></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

**Physical State**
Liquid

**Appearance**
Colorless

**odor**
Alcohol-like

**Odor Threshold**
No information available.

**pH**
7 1% aq. sol.

**Vapor Pressure**
43 mmHg @ 20 °C

**Vapor Density**
2.1 (Air = 1.0)

**Viscosity**
2.27 mPa.s at 20 °C

**Boiling Point/Range**
81 - 83°C / 177.8 - 181.4°F @ 760 mmHg

**Melting Point/Range**
-89.5°C / -129.1°F

**Decomposition temperature**
No information available.

**Flash Point**
12°C / 53.6°F

**Evaporation Rate**
(Butyl Acetate = 1.0)

**Specific Gravity**
0.785

**Solubility**
Miscible with water

**log Pow**
No data available

**Molecular Weight**
60.1

**Molecular Formula**
C₃H₈O

### 10. STABILITY AND REACTIVITY

**Stability**
Hygroscopic.

**Conditions to Avoid**
Incompatible products. Heat, flames and sparks. Exposure to moist air or water.

**Incompatible Materials**
Strong oxidizing agents, Acids, Halogens, Acid anhydrides

**Hazardous Decomposition Products**
Carbon monoxide (CO), Carbon dioxide (CO₂), peroxides

**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>Isopropyl alcohol</td>
<td>4396 mg/kg (Rat)</td>
<td>12800 mg/kg (Rat)</td>
<td>72.6 mg/L (Rat) 4 h</td>
</tr>
<tr>
<td></td>
<td>12870 mg/kg (Rabbit)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Irritation

Irritating to eyes and skin

Toxicologically Synergistic Products

No information available.

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

See actual entry in RTECS for complete information.

Endocrine Disruptor Information

No information available

12. ECOLOGICAL INFORMATION

Ecotoxicity

Do not empty into drains.

<table>
<thead>
<tr>
<th>Component</th>
<th>Freshwater Algae</th>
<th>Freshwater Fish</th>
<th>Microtox</th>
<th>Water Flea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isopropyl alcohol</td>
<td>1000 mg/L EC50 &gt; 72 h</td>
<td>1400000 µg/L LC50 96 h</td>
<td>= 35390 mg/L EC50</td>
<td>13299 mg/L EC50 = 48 h</td>
</tr>
<tr>
<td></td>
<td>1000 mg/L EC50 &gt; 96 h</td>
<td>9640 mg/L LC50 96 h</td>
<td>Photobacterium phosphoreum 5 min</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>11130 mg/L LC50 96 h</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Persistence and Degradability

Expected to be biodegradable.

Bioaccumulation/ Accumulation

No information available

Mobility

<table>
<thead>
<tr>
<th>Component</th>
<th>log Pow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isopropyl alcohol</td>
<td>0.05</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>UN1219</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proper Shipping Name</td>
<td>Isopropanol</td>
</tr>
<tr>
<td>Hazard Class</td>
<td>3</td>
</tr>
<tr>
<td>Packing Group</td>
<td>II</td>
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</tbody>
</table>

TDG

<table>
<thead>
<tr>
<th>UN-No</th>
<th>UN1219</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proper Shipping Name</td>
<td>ISOPROPANOL</td>
</tr>
<tr>
<td>Hazard Class</td>
<td>3</td>
</tr>
<tr>
<td>Packing Group</td>
<td>II</td>
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</table>

IATA

<table>
<thead>
<tr>
<th>UN-No</th>
<th>UN1219</th>
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</thead>
<tbody>
<tr>
<td>Proper Shipping Name</td>
<td>Isopropanol</td>
</tr>
<tr>
<td>Hazard Class</td>
<td>3</td>
</tr>
<tr>
<td>Packing Group</td>
<td>II</td>
</tr>
</tbody>
</table>

IMDG/IMO

<table>
<thead>
<tr>
<th>UN-No</th>
<th>UN1219</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proper Shipping Name</td>
<td>Isopropanol (Isopropyl alcohol)</td>
</tr>
<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</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>Isopropyl alcohol</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>-</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 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>Isopropyl alcohol</td>
<td>67-63-0</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
Not applicable

OSHA
Not applicable

CERCLA
Not Applicable

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>Isopropyl alcohol</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>X</td>
</tr>
</tbody>
</table>

U.S. Department of Transportation
- Reportable Quantity (RQ): N
- 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
D2B  Toxic materials

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### 16. OTHER INFORMATION

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

**Creation Date**
01-Sep-2009

**Print Date**
04-Nov-2010

**Revision Summary**
(M)SDS sections updated 3

**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.

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**End of MSDS**