1. Identification

Product Name 2-Propanol

Cat No. : A464-1; A464-4; A464-4LC; A464RS-200; A464SK-4; A464SS50

Synonyms 2-Propanol; IPA; Isopropyl alcohol; Propan-2-ol; Isopropanol

Recommended Use Laboratory chemicals.

Uses advised against No Information available

Details of the supplier of the safety data sheet

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. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

<table>
<thead>
<tr>
<th>Classification</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammable liquids</td>
<td>2</td>
</tr>
<tr>
<td>Serious Eye Damage/Eye Irritation</td>
<td>2</td>
</tr>
<tr>
<td>Specific target organ toxicity (single exposure)</td>
<td>3</td>
</tr>
<tr>
<td>Target Organs - Respiratory system, Central nervous system (CNS)</td>
<td></td>
</tr>
<tr>
<td>Specific target organ toxicity - (repeated exposure)</td>
<td>2</td>
</tr>
<tr>
<td>Target Organs - Kidney, Liver.</td>
<td></td>
</tr>
</tbody>
</table>

Label Elements

Signal Word Danger

Hazard Statements
Highly flammable liquid and vapor
Causes serious eye irritation
May cause respiratory irritation
May cause drowsiness or dizziness
May cause damage to organs through prolonged or repeated exposure
Precautionary Statements

Prevention
Wash face, hands and any exposed skin thoroughly after handling
Do not breathe dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Keep away from heat/sparks/open flames/hot surfaces. - No smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Use explosion-proof electrical/ventilating/lighting/equipment
Use only non-sparking tools
Take precautionary measures against static discharge
Wear protective gloves/protective clothing/eye protection/face protection
Keep cool

Response
Get medical attention/advice if you feel unwell

Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Call a POISON CENTER or doctor/physician if you feel unwell

Skin
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower

Eyes
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention

Fire
In case of fire: Use CO2, dry chemical, or foam for extinction

Storage
Store in a well-ventilated place. Keep container tightly closed
Store locked up

Disposal
Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)
None identified

3. Composition / information on ingredients

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<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. Get medical attention if symptoms occur.

Inhalation
Move to fresh air. Obtain medical attention. If not breathing, give artificial respiration.

Ingestion
Do not induce vomiting. Obtain medical attention.
Most important symptoms/effects
Breathing difficulties. May cause central nervous system depression: Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.

Notes to Physician
Treat symptomatically

5. Fire-fighting measures

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

Flash Point
12 °C / 53.6 °F
Method - Abel Closed Cup (BS 2000 Part 170, IP 170, AS/NZS 2106)

Autoignition Temperature
425 °C / 797 °F

Explosion Limits
- Upper 12 vol %
- Lower 2 vol %

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.

Hazardous Combustion Products
Carbon monoxide (CO) Carbon dioxide (CO₂) peroxides

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.

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. See Section 12 for additional ecological information.

Methods for Containment and Clean Up
Prevent further leakage or spillage if safe to do so. Remove all sources of ignition. Soak up with inert absorbent material. Take precautionary measures against static discharges. Use spark-proof tools and explosion-proof equipment. Keep in suitable, closed containers for disposal.

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. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded.

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

8. Exposure controls / personal protection
### Exposure Guidelines

#### 9. Physical and chemical properties

<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: 980 mg/m³</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>
</tbody>
</table>

#### Component

<table>
<thead>
<tr>
<th>Quebec</th>
<th>Mexico OEL (TWA)</th>
<th>Ontario TWAEV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isopropyl alcohol</td>
<td>TWA: 400 ppm</td>
<td>TWA: 200 ppm</td>
</tr>
<tr>
<td></td>
<td>TWA: 985 mg/m³</td>
<td>STEL: 400 ppm</td>
</tr>
<tr>
<td></td>
<td>STEL: 500 ppm</td>
<td>STEL: 980 mg/m³</td>
</tr>
<tr>
<td></td>
<td>STEL: 1225 mg/m³</td>
<td>STEL: 1225 mg/m³</td>
</tr>
</tbody>
</table>

#### Legend

- ACGIH - American Conference of Governmental Industrial Hygienists
- OSHA - Occupational Safety and Health Administration
- NIOSH IDLH: The National Institute for Occupational Safety and Health Immediately Dangerous to Life or Health

### Engineering Measures

Ensure that eyewash stations and safety showers are close to the workstation location. Use explosion-proof electrical/ventilating/lighting/equipment. Ensure adequate ventilation, especially in confined areas.

### 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**
  No protective equipment is needed under normal use conditions.

- **Hygiene Measures**
  Handle in accordance with good industrial hygiene and safety practice.

### 9. Physical and chemical properties

- **Physical State**: Liquid
- **Appearance**: Colorless
- **Odor**: Alcohol-like
- **pH**: 7, 1% aq. sol
- **Melting Point/Range**: -89.5 °C / -129.1 °F
- **Boiling Point/Range**: 81 - 83 °C / 177.8 - 181.4 °F @ 760 mmHg
- **Flash Point**: 12 °C / 53.6 °F
  - Method: Abel Closed Cup (BS 2000 Part 170, IP 170, AS/NZS 2106)
- **Evaporation Rate**: 1.7
- **Flammability (solid,gas)**: Not applicable
- **Flammability or explosive limits**
  - **Upper**: 12 vol %
  - **Lower**: 2 vol %
- **Vapor Pressure**: 43 mmHg @ 20 °C
- **Vapor Density**: 2.1 @ 20 °C / 68 °F
- **Specific Gravity**: 0.785
- **Solubility**: Miscible with water
- **Partition coefficient; n-octanol/water**: No data available
- **Autoignition Temperature**: 425 °C / 797 °F
- **Decomposition Temperature**: No information available
- **Viscosity**: 2.27 mPa.s at 20 °C
Molecular Formula: C₃H₈O
Molecular Weight: 60.1
VOC Content(%): 59.9 % (EC/1999/13)
Refractive index: 1.377 at 20 °C / 68 °F (ASTM D-1218)
Surface tension: 22.7 mN/m at 20 °C / 68 °F
Coefficient of expansion: 0.0009 / °C
Dielectric constant: 18.6 at 20 °C / 68 °F
Heat of vapourisation: 665 J/g
Specific heat capacity: 3 kJ/kg °C at 20 °C / 68 °F
Thermal conductivity: 0.137 W/m °C at 20 °C / 68 °F

10. Stability and reactivity

Reactive Hazard: None known, based on information available
Stability: Stable under normal conditions.
Conditions to Avoid: Heat, flames and sparks. Keep away from open flames, hot surfaces and sources of ignition.
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

Product Information
Component Information

<table>
<thead>
<tr>
<th>Component</th>
<th>LD50 Oral</th>
<th>LD50 Dermal</th>
<th>LC50 Inhalation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isopropyl alcohol</td>
<td>5840 mg/kg (Rat)</td>
<td>13900 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>

Toxicologically Synergistic Products: No information available
Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation: Irritating to eyes and skin
Sensitization: No information available
Carcinogenicity: The table below indicates whether each agency has listed any ingredient as a carcinogen.

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>IARC</th>
<th>NTP</th>
<th>ACGIH</th>
<th>OSHA</th>
<th>Mexico</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isopropyl alcohol</td>
<td>67-63-0</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
</tbody>
</table>

Mutagenic Effects: No information available
Reproductive Effects: No information available.
Developmental Effects: No information available.
Teratogenicity: No information available.
STOT - single exposure: Respiratory system Central nervous system (CNS)
STOT - repeated exposure: Kidney Liver
Aspiration hazard: No information available
Symptoms / effects, both acute and delayed: May cause central nervous system depression. Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.

Endocrine Disruptor Information: No information available.

Other Adverse Effects: The toxicological properties have not been fully investigated.

### 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>EC50: &gt; 1000 mg/L, 72h (Desmodesmus subspicatus)</td>
<td>LC50: &gt; 1400000 µg/L, 96h (Lepomis macrochirus)</td>
<td>= 35390 mg/L EC50 Photobacterium phosphoreum 5 min</td>
<td>13299 mg/L EC50 = 48 h 9714 mg/L EC50 = 24 h</td>
</tr>
<tr>
<td></td>
<td>EC50: &gt; 1000 mg/L, 96h (Desmodesmus subspicatus)</td>
<td>LC50: = 11130 mg/L, 96h static (Pimephales promelas)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>LC50: = 9640 mg/L, 96h flow-through (Pimephales promelas)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Persistence and Degradability

- Persistence is unlikely based on information available.

#### Bioaccumulation/ Accumulation

- No information available.

#### Mobility

- Will likely be mobile in the environment due to its volatility.

<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

<table>
<thead>
<tr>
<th>DOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN-No</td>
</tr>
<tr>
<td>Proper Shipping Name</td>
</tr>
<tr>
<td>Hazard Class</td>
</tr>
<tr>
<td>Packing Group</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TDG</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN-No</td>
</tr>
<tr>
<td>Proper Shipping Name</td>
</tr>
<tr>
<td>Hazard Class</td>
</tr>
<tr>
<td>Packing Group</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN-No</td>
</tr>
<tr>
<td>Proper Shipping Name</td>
</tr>
<tr>
<td>Hazard Class</td>
</tr>
<tr>
<td>Packing Group</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IMDG/IMO</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN-No</td>
</tr>
<tr>
<td>Proper Shipping Name</td>
</tr>
<tr>
<td>Hazard Class</td>
</tr>
<tr>
<td>Packing Group</td>
</tr>
</tbody>
</table>

### 15. Regulatory information

- All of the components in the product are on the following Inventory lists: X = listed
International Inventories

<table>
<thead>
<tr>
<th>Component</th>
<th>TSCA</th>
<th>DSL</th>
<th>NDSL</th>
<th>ELINCS</th>
<th>EINECS</th>
<th>NLP</th>
<th>PICCS</th>
<th>ENCS</th>
<th>AICS</th>
<th>IECSC</th>
<th>KECL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isopropyl alcohol</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>200-661-7</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 - Indicating 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 Hazard Categories

- Acute Health Hazard: Yes
- Chronic Health Hazard: Yes
- Fire Hazard: Yes
- Sudden Release of Pressure Hazard: No
- Reactive Hazard: No

CWA (Clean Water Act) Not applicable

Clean Air Act Not applicable

OSHA Occupational Safety and Health Administration Not applicable

CERCLA Not applicable

California Proposition 65 This product does not contain any Proposition 65 chemicals

U.S. State Right-to-Know Regulations

<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

16. Other information

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

Creation Date
01-Sep-2009

Revision Date
15-Aug-2016

Print Date
15-Aug-2016

Revision Summary
This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

Disclaimer
The information provided in 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 guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered 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 materials or in any process, unless specified in the text

End of SDS