MATERIAL SAFETY DATA SHEET (MSDS) - ISOPROPYL ETHER

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: ISOPROPYL ETHER
Product Description: Ether
Intended Use: Solvent

COMPANY IDENTIFICATION

Supplier: Pon Pure Chemicals Group
CHENNAI, TAMILNADU, INDIA

24 Hour Health Emergency
(91) 8939878447
(91) 9444038694

Transportation Emergency Phone
(91) 8939768680

Company Name | Place       | EMERGENCY TELEPHONE NUMBER
--------------|-------------|-----------------------------
Pon Pure Chemicals Group | India | Day Emergency – 044-26161803-26161809

2. COMPOSITION / INFORMATION ON INGREDIENTS

Reportable Hazardous Substance(s) or Complex Substance(s)

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS#</th>
<th>Concentration*</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISOPROPYL ETHER</td>
<td>108-20-3</td>
<td>&gt; 99.0%</td>
</tr>
</tbody>
</table>

* All concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume.

3. HAZARDS IDENTIFICATION

This material is considered to be hazardous according to regulatory guidelines (see (M)SDS Section 15).

POTENTIAL PHYSICAL / CHEMICAL EFFECTS

Flammable. May form explosive peroxides. Material can release vapors that readily form flammable mixtures. Vapor accumulation could flash and/or explode if ignited. Material can accumulate static charges which may cause an ignition.

POTENTIAL HEALTH EFFECTS

Repeated exposure may cause skin dryness or cracking. If swallowed, may be aspirated and cause lung damage. May cause central nervous system depression.
4. FIRST AID MEASURES

**Inhalation**
Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

**SKIN CONTACT**
Wash contact areas with soap and water. Remove contaminated clothing. Launder contaminated clothing before reuse.

**EYE CONTACT**
Flush thoroughly with water. If irritation occurs, get medical assistance.

**Ingestion**
Seek immediate medical attention. Do not induce vomiting.

**NOTE TO PHYSICIAN**
If ingested, material may be aspirated into the lungs and cause chemical pneumonitis. Treat appropriately.

5. FIRE FIGHTING MEASURES

**EXTINGUISHING MEDIA**
Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.
Inappropriate Extinguishing Media: Straight Streams of Water

**FIRE FIGHTING**
Fire Fighting Instructions: Evacuate area. If a leak or spill has not ignited, use water spray to disperse the vapors and to protect personnel attempting to stop a leak. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Firefighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water
spray to cool fire exposed surfaces and to protect personnel.

Unusual Fire Hazards: Extremely Flammable. Vapors are flammable and heavier than air. Vapors may travel across the ground and reach remote ignition sources causing a flashback fire danger. Hazardous material. Firefighters should consider protective equipment indicated in Section 8.


**FLAMMABILITY PROPERTIES**

- Flash Point [Method]: -28°C (-18°F) [ ASTM D-56]
- Flammable Limits (Approximate volume % in air): LEL: 1.4  UEL: 7.9
- Autoignition Temperature: 443°C (829°F)

### 6. ACCIDENTAL RELEASE MEASURES

#### NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

#### PROTECTIVE MEASURES

Avoid contact with spilled material. Warn or evacuate occupants in surrounding and downwind areas if required due to toxicity or flammability of the material. See Section 5 for fire fighting information. See the Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for Personal Protective Equipment.

#### SPILL MANAGEMENT

**Land Spill:** Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do it without risk. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Prevent entry into waterways, sewer, basements or confined areas. A vapor suppressing foam may be used to reduce vapors. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Large Spills: Use clean non-sparking tools to collect absorbed material. Large Spills: Water spray may reduce vapor; but may not prevent ignition in closed spaces.

**Water Spill:** Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do it without risk. Do not confine in area of spill. Advise occupants and shipping in downwind areas of fire and explosion hazard and warn them to stay clear. Allow liquid to evaporate from the surface. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill
scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Large Spills: Dike far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

7. HANDLING AND STORAGE

HANDLING

Avoid contact with skin. Prevent exposure to ignition sources, for example use non-sparking tools and explosion-proof equipment. Potentially toxic/irritating fumes/vapors may be evolved from heated or agitated material. Use only with adequate ventilation. Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source). Use proper bonding and/or ground procedures. However, bonding and grounds may not eliminate the hazard from static accumulation. Consult local applicable standards for guidance.

Loading/Unloading Temperature : [Ambient]
Transport Temperature : [Ambient]
Transport Pressure : [Ambient]
Static Accumulator : This material is a static accumulator.

A liquid is typically considered a nonconductive, static accumulator if its conductivity is below 100 pS/m (100x10E-12 Siemens per meter) and is considered a semiconductive, static accumulator if its conductivity is below 10,000 pS/m. Whether a liquid is nonconductive or semiconductive, the precautions are the same. A number of factors, for example liquid temperature, presence of contaminants, anti-static additives and filtration can greatly influence the conductivity of a liquid.

STORAGE

Ample fire water supply should be available. A fixed sprinkler/deluge system is recommended. The container choice, for example storage vessel, may effect static accumulation and dissipation. Keep container closed. Handle containers with care. Open slowly in order to control possible pressure release. Store in a cool, well-ventilated area. Outside or detached storage preferred. Storage containers should be grounded and bonded. Fixed storage containers, transfer
containers and associated equipment should be grounded and bonded to prevent accumulation of static charge.

Storage Temperature : [Ambient]
Storage Pressure : [Ambient]
Suitable Containers/Packing : Tank Cars; Tank Trucks; Drums; Pipelines
Suitable Materials and Coatings (Chemical Compatibility): Carbon Steel; Butyl Rubber; CAF Joints
Unsuitable Materials and Coatings : Natural Rubber

### 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

#### EXPOSURE LIMIT VALUES

Exposure limits/standards (Note: Exposure limits are not additive)

<table>
<thead>
<tr>
<th>Source</th>
<th>Form</th>
<th>Limit / Standard</th>
<th>NOTE</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISOPROPYL ETHER</td>
<td>TWA</td>
<td>2100 mg/m³</td>
<td>500 ppm</td>
<td>N/A</td>
</tr>
<tr>
<td>ISOPROPYL ETHER</td>
<td>STEL</td>
<td>310 ppm</td>
<td>N/A</td>
<td>ACGIH</td>
</tr>
<tr>
<td>ISOPROPYL ETHER</td>
<td>TWA</td>
<td>250 ppm</td>
<td>N/A</td>
<td>ACGIH</td>
</tr>
</tbody>
</table>

**NOTE:** Limits/standards shown for guidance only. Follow applicable regulations.

#### ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

Adequate ventilation should be provided so that exposure limits are not exceeded. Use explosion-proof ventilation equipment.

#### PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be
considered for this material include:

Half-face filter respirator

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

Chemical resistant gloves are recommended.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

Chemical/oil resistant clothing is recommended.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

ENVIRONMENTAL CONTROLS

See Sections 6, 7, 12, 13.

9. PHYSICAL AND CHEMICAL PROPERTIES

Typical physical and chemical properties are given below. Consult the Supplier in Section 1 for additional data.

GENERAL INFORMATION

Physical State : Liquid
Form: Clear  
Color: Colorless  
Odor: N/D 
Odor Threshold: N/D  

**IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION**  
Relative Density (at 20 °C): 0.724  
Flash Point [Method]: -28°C (-18°F) [ASTM D-56]  
Flammable Limits (Approximate volume % in air): LEL: 1.4 UEL: 7.9  
Autoignition Temperature: 443°C (829°F)  
Boiling Point / Range: 68°C (154°F)  
Vapor Density (Air = 1): 3.5 at 101 kPa  
Vapor Pressure: 15.96 kPa (120 mm Hg) at 20 °C, 34.3 kPa (257.25 mm Hg at 38°C)  
Evaporation Rate (n-butyl acetate = 1): 8.4  
pH: N/A  
Log Pow (n-Octanol/Water Partition Coefficient): N/D  
Solubility in Water: Appreciable  
Viscosity: [N/D at 40 °C]  
Oxidizing Properties: See Hazards Identification Section.  

**OTHER INFORMATION**  
Freezing Point: -60°C (-76°F)  
Melting Point: N/A  
Molecular Weight: 102.2  
Coefficient of Thermal Expansion: 0.00103 V/VDEGC  

**10. STABILITY AND REACTIVITY**  
**STABILITY:** Material is stable under normal conditions. Forms peroxide unless inhibited.  
**CONDITIONS TO AVOID:** Do not evaporate to dryness. Avoid heat, sparks, open flames and other ignition sources.  
**MATERIALS TO AVOID:** Air, Caustics, Amines, Alkanolamines, Strong oxidizers, Chlorinated Compounds, Aldehydes, Acids  
**HAZARDOUS DECOMPOSITION PRODUCTS:** Material does not decompose at ambient temperatures.  
**HAZARDOUS POLYMERIZATION:** Will not occur.  

**11. TOXICOLOGICAL INFORMATION**  
**ACUTE TOXICITY**
Inhalation

Toxicity: Data available. May cause central nervous system effects. Based on available literature

Irritation: Data available. Negligible hazard at ambient/normal handling temperatures. Based on available literature

Ingestion

Toxicity (Rabbit): LD50 5-6.5 g/kg Minimally Toxic. Based on available literature

Skin

Toxicity (Rabbit): LD50 > 3.16 g/kg Minimally Toxic. Based on available literature

Irritation: Data available. Mildly irritating to skin with prolonged exposure. Based on available literature

Eye

Irritation: Data available. May cause mild, short-lasting discomfort to eyes. Based on available literature

CHRONIC/OTHER EFFECTS

For the product itself:

Vapor concentrations above recommended exposure levels are irritating to the eyes and the respiratory tract, may cause headaches and dizziness, are anesthetic and may have other central nervous system effects.

Prolonged and/or repeated skin contact with low viscosity materials may defat the skin resulting in possible irritation and dermatitis.

Small amounts of liquid aspirated into the lungs during ingestion or from vomiting may cause chemical pneumonitis or pulmonary edema.

Diisopropyl ether (DIPE) : Inhalation exposure of animals to DIPE produced decreased motor activity, maternal toxicity, and toxicity to the fetus of laboratory animals. Additional information is available by request.

The following ingredients are cited on the lists below: None.

-- REGULATORY LISTS SEARCHED --

1 = NTP CARC 3 = IARC 1 5 = IARC 2B
2 = NTP SUS 4 = IARC 2A 6 = OSHA CARC
12. ECOLOGICAL INFORMATION

The information given is based on data available for the material, the components of the material, and similar materials.

**ECOTOXICITY**

Material -- Not expected to be harmful to aquatic organisms.

**MOBILITY**

Material -- Expected to partition to water. Some partitioning to sediment and wastewater solids. Minimally volatile.

**PERSISTENCE AND DEGRADABILITY**

Biodegradation:

Material -- Expected to biodegrade slowly.

Hydrolysis:

Material -- Transformation due to hydrolysis not expected to be significant.

Photolysis:

Material -- Transformation due to photolysis not expected to be significant.

Atmospheric Oxidation:

Material -- Expected to degrade rapidly in air

13. DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

**DISPOSAL RECOMMENDATIONS**

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products.

**REGULATORY DISPOSAL INFORMATION**

RCRA Information: Disposal of unused product may be subject to RCRA regulations (40 CFR 261). Disposal of the used product may also be regulated due to ignitability, corrosivity, reactivity or toxicity as determined by the Toxicity Characteristic Leaching Procedure (TCLP). Potential RCRA characteristics: IGNITABILITY.

Empty Container Warning: Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean
containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

### 14. TRANSPORT INFORMATION

**LAND (DOT)**

<table>
<thead>
<tr>
<th>Proper Shipping Name</th>
<th>DIISOPROPYL ETHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazard Class &amp; Division</td>
<td>3</td>
</tr>
<tr>
<td>ID Number</td>
<td>1159</td>
</tr>
<tr>
<td>Packing Group</td>
<td>II</td>
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<tr>
<td>ERG Number</td>
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<tr>
<td>Transport Document Name</td>
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**LAND (TDG)**

<table>
<thead>
<tr>
<th>Proper Shipping Name</th>
<th>DIISOPROPYL ETHER</th>
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</thead>
<tbody>
<tr>
<td>Hazard Class &amp; Division</td>
<td>3</td>
</tr>
<tr>
<td>UN Number</td>
<td>1159</td>
</tr>
<tr>
<td>Packing Group</td>
<td>II</td>
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</table>

**SEA (IMDG)**

<table>
<thead>
<tr>
<th>Proper Shipping Name</th>
<th>DIISOPROPYL ETHER</th>
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<tbody>
<tr>
<td>Hazard Class &amp; Division</td>
<td>3</td>
</tr>
<tr>
<td>EMS Number</td>
<td>F-E, S-D</td>
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<td>UN Number</td>
<td>1159</td>
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<tr>
<td>Packing Group</td>
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**AIR (IATA)**

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<th>DIISOPROPYL ETHER</th>
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<tbody>
<tr>
<td>Hazard Class &amp; Division</td>
<td>3</td>
</tr>
<tr>
<td>UN Number</td>
<td>1159</td>
</tr>
<tr>
<td>Packing Group</td>
<td>II</td>
</tr>
</tbody>
</table>
15. REGULATORY INFORMATION

OSHA HAZARD COMMUNICATION STANDARD: When used for its intended purpose, this material is classified as hazardous in accordance with OSHA 29CFR 1910.1200.

NATIONAL CHEMICAL INVENTORY LISTING: AICS, IECSC, DSL, EINECS, ENCS, KECI, PICCS, TSCA

EPCRA: This material contains no extremely hazardous substances.

SARA (311/312) REPORTABLE HAZARD CATEGORIES: Fire.

SARA (313) TOXIC RELEASE INVENTORY: This material contains no chemicals subject to the supplier notification requirements of the SARA 313 Toxic Release Program.

The following ingredients are cited on the lists below:

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS Number</th>
<th>List Citations</th>
</tr>
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<tbody>
<tr>
<td>ISOPROPYL ETHER</td>
<td>108-20-3</td>
<td>1, 4, 13, 16, 17, 18, 19</td>
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</table>

--REGULATORY LISTS SEARCHED--

1 = ACGIH ALL  
2 = ACGIH A1   
3 = ACGIH A2   
4 = OSHA Z     
5 = TSCA 4     
6 = TSCA 5a2   
7 = TSCA 5e    
8 = TSCA 6     
9 = TSCA 12b   
10 = CA P65 CARC 
11 = CA P65 REPRO 
12 = CA RTK    
13 = IL RTK    
14 = LA RTK    
15 = MI 293    
16 = MN RTK    
17 = NJ RTK    
18 = PA RTK    
19 = RI RTK    

Code key: CARC=Carcinogen; REPRO=Reproductive

16. OTHER INFORMATION

N/D = Not determined, N/A = Not applicable

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:

Revision Changes:
Section 04: First Aid Inhalation - Header was modified.
Section 04: First Aid Ingestion - Header was modified.
Section 12: Ecological Information - Acute Aquatic Toxicity was deleted.

PRECAUTIONARY LABEL TEXT:
Contains: ISOPROPYL ETHER
DANGER!

HEALTH HAZARDS
Repeated exposure may cause skin dryness or cracking. If swallowed, may be aspirated and cause lung damage.

PHYSICAL HAZARDS
Flammable Gas. May form explosive peroxides. Material can accumulate static charges which may cause an ignition.

PRECAUTIONS
Avoid contact with skin. Prevent exposure to ignition sources, for example use non-sparking tools and explosion-proof equipment. Potentially toxic/irritating fumes/vapors may be evolved from heated or agitated material. Use only with adequate ventilation. Use proper bonding and/or ground procedures. However, bonding and grounds may not eliminate the hazard from static accumulation.

FIRST AID
Inhalation: Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.
Eye: Flush thoroughly with water. If irritation occurs, get medical assistance.
Oral: Seek immediate medical attention. Do not induce vomiting.
Skin: Wash contact areas with soap and water. Remove contaminated clothing. Launder contaminated clothing before reuse.

FIRE FIGHTING MEDIA
Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

SPILL/LEAK
Land Spill: Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do it without risk. Prevent entry into waterways, sewer, basements or confined areas. A vapor suppressing foam may be used to reduce vapors. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Large Spills: Use clean non-sparking tools to collect absorbed material.
Water Spill: Eliminate all ignition sources (no smoking, flares, sparks or flames in
immediate area). Stop leak if you can do it without risk. Do not confine in area of spill. Advise occupants and shipping in downwind areas of fire and explosion hazard and warn them to stay clear. Allow liquid to evaporate from the surface. Report spills as required to appropriate authorities. Seek the advice of a specialist before using dispersants.

Disclaimer:
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