1. MATERIAL AND COMPANY IDENTIFICATION

Material Name : **Isopropyl Alcohol - CBM**
Uses : Use as a solvent only in industrial manufacturing processes.
Product Code : S1119
Company : **Shell Chemical LP**
PO Box 2463
HOUSTON TX 77252-2463
USA
MSDS Request : 1-800-240-6737
Customer Service : 1-866-897-4355

Emergency Telephone Number
Chemtrec Domestic (24 hr) : 1-800-424-9300
Chemtrec International (24 hr) : 1-703-527-3887

2. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	Concentration
Isopropyl Alcohol	67-63-0	88.00 - 100.00 %W

IPA CBM is the azeotrope (constant boiling mixture) of isopropyl alcohol and water.

3. HAZARDS IDENTIFICATION

Emergency Overview

Appearance and Odour : Clear. Liquid. Characteristic.

Health Hazards : Vapours may cause drowsiness and dizziness. Irritating to eyes.

Safety Hazards : Flammable liquid and vapour. Vapours are heavier than air. Vapours may travel across the ground and reach remote ignition sources causing a flashback fire danger. Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire.

Health Hazards
Inhalation : Vapours may cause drowsiness and dizziness.
Skin Contact : Repeated exposure may cause skin dryness or cracking.
Eye Contact : Irritating to eyes.
Signs and Symptoms : Eye irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blurred vision. Defatting dermatitis signs and symptoms may include a burning sensation and/or a dried/cracked appearance. Other signs and symptoms of central nervous system (CNS) depression may include headache, nausea, and lack of coordination.
Aggravated Medical : Pre-existing medical conditions of the following organ(s) or

Condition	organ system(s) may be aggravated by exposure to this material: Eyes. Skin.

4. FIRST AID MEASURES

General Information	:	In general no treatment is necessary, however, obtain medical advice.
Inhalation	:	Remove to fresh air. If rapid recovery does not occur, transport to nearest medical facility for additional treatment.
Skin Contact	:	Remove contaminated clothing. Flush exposed area with water and follow by washing with soap if available.
Eye Contact	:	Immediately flush eyes with large amounts of water for at least 15 minutes while holding eyelids open. Transport to the nearest medical facility for additional treatment.
Ingestion	:	If swallowed, do not induce vomiting: transport to nearest medical facility for additional treatment. If vomiting occurs spontaneously, keep head below hips to prevent aspiration.
Advice to Physician	:	Causes central nervous system depression. Potential for chemical pneumonitis. Consider: gastric lavage with protected airway, administration of activated charcoal. Consult a Poison Control Centre for guidance.

5. FIRE FIGHTING MEASURES

Clear fire area of all non-emergency personnel.

Flash point	:	14 °C / 57 °F (IP 170)
Auto ignition temperature	:	399 °C / 750 °F
Specific Hazards	:	Carbon monoxide may be evolved if incomplete combustion occurs. The vapour is heavier than air, spreads along the ground and distant ignition is possible.
Extinguishing Media	:	Alcohol-resistant foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only. Do not discharge extinguishing waters into the aquatic environment.
Protective Equipment for Firefighters	:	Wear full protective clothing and self-contained breathing apparatus.
Additional Advice	:	Keep adjacent containers cool by spraying with water.

6. ACCIDENTAL RELEASE MEASURES

Observe all relevant local and international regulations.

Protective measures	:	Avoid contact with spilled or released material. Immediately remove all contaminated clothing. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. For guidance on disposal of spilled material see Chapter 13 of this Material Safety Data Sheet. Shut off leaks, if possible without personal risks. Remove all possible sources of ignition in the surrounding area. Use appropriate containment to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using

sand, earth, or other appropriate barriers. Attempt to disperse the vapour or to direct its flow to a safe location for example by using fog sprays. Take precautionary measures against static discharge. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Monitor area with combustible gas indicator.

Clean Up Methods : For large liquid spills (> 1 drum), transfer by mechanical means such as vacuum truck to a salvage tank for recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely.
For small liquid spills (< 1 drum), transfer by mechanical means to a labelled, sealable container for product recovery or safe disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely.

Additional Advice : See Chapter 13 for information on disposal. Notify authorities if any exposure to the general public or the environment occurs or is likely to occur. Vapour may form an explosive mixture with air.

7. HANDLING AND STORAGE

General Precautions : Avoid breathing of or contact with material. Only use in well ventilated areas. Wash thoroughly after handling. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.

Handling : Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Restrict line velocity during pumping in order to avoid generation of electrostatic discharge (<= 10 m/sec). Avoid splash filling. Do NOT use compressed air for filling, discharging, or handling operations. Extinguish any naked flames. Do Not smoke. Remove ignition sources. Avoid sparks. Handling Temperature: Ambient.

Storage : Keep away from aerosols, flammables, oxidizing agents, corrosives and from products harmful or toxic to man or to the environment. Must be stored in a well-ventilated area, away from sunlight, ignition sources and other sources of heat. Storage Temperature: Ambient.

Product Transfer : Keep containers closed when not in use. Do not use compressed air for filling, discharging or handling.

Recommended Materials : For container paints, use epoxy paint, zinc silicate paint. For containers, or container linings use mild steel, stainless steel.

Unsuitable Materials : Aluminium if > 50 °C. Most plastics. Neoprene rubber.

Container Advice : Containers, even those that have been emptied, can contain explosive vapours. Do not cut, drill, grind, weld or perform

similar operations on or near containers.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

Material	Source	Type	ppm	mg/m3	Notation
Isopropyl Alcohol	ACGIH	TWA	200 ppm		
	ACGIH	STEL	400 ppm		
	OSHA Z1	PEL	400 ppm	980 mg/m3	
	OSHA Z1A	TWA	400 ppm	980 mg/m3	
	OSHA Z1A	STEL	500 ppm	1,225 mg/m3	

Additional Information : Shell has adopted as Interim Standards, the OSHA PELs that were established in 1989 and later rescinded.
Wash hands before eating, drinking, smoking and using the toilet.

Exposure Controls : The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include: Adequate explosion-proof ventilation to control airborne concentrations below the exposure guidelines/limits. Eye washes and showers for emergency use.

Personal Protective Equipment : Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.

Respiratory Protection : If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. Select a filter suitable for organic gases and vapours [boiling point >65 °C (149 °F)] meeting EN141. Where air-filtering respirators are unsuitable (e.g., airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing apparatus.

Hand Protection : Longer term protection: Natural rubber. Butyl rubber. Incidental contact/Splash protection: Neoprene rubber. Viton. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced.

Eye Protection : Chemical splash goggles (chemical monogoggles).

Protective Clothing : Use protective clothing which is chemical resistant to this material. Safety shoes and boots should also be chemical resistant.

Monitoring Methods : Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to

		confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate. Examples of sources of recommended air monitoring methods are given below or contact supplier. Further national methods may be available. National Institute of Occupational Safety and Health (NIOSH), USA: Manual of analytical Methods http://www.cdc.gov/niosh/nmam/nmammenu.html Occupational Safety and Health Administration (OSHA), USA: Sampling and Analytical Methods http://www.osha-slc.gov/dts/sltc/methods/toc.html Health and Safety Executive (HSE), UK: Methods for the Determination of Hazardous Substances http://www.hsl.gov.uk/search.htm
Environmental Exposure Controls	:	Local guidelines on emission limits for volatile substances must be observed for the discharge of exhaust air containing vapour.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Clear. Liquid.
Odour	:	Characteristic.
Boiling point	:	78 - 81 °C / 172 - 178 °F 95% distils between these limits
Flash point	:	14 °C / 57 °F (IP 170)
Auto-ignition temperature	:	399 °C / 750 °F
Specific gravity	:	0.81 at 15 °C / 59 °F
Volatile organic carbon content	:	100 %

10. STABILITY AND REACTIVITY

Stability	:	Stable under normal conditions of use. Reacts with strong oxidising agents. Reacts with strong acids.
Conditions to Avoid	:	Avoid heat, sparks, open flames and other ignition sources.
Materials to Avoid	:	Strong oxidising agents. Strong acids.
Hazardous Decomposition Products	:	Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquids and gases, including carbon monoxide, carbon dioxide and other organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation.

11. TOXICOLOGICAL INFORMATION

Basis for Assessment	:	Information given is based on product testing.
Acute Oral Toxicity	:	Low toxicity: LD50 >2000 mg/kg , Rat
Acute Dermal Toxicity	:	Low toxicity: LD50 >2000 mg/kg , Rabbit
Acute Inhalation Toxicity	:	Low toxicity: LC50>5000 ppm / 1 hours, Rat High concentrations may cause central nervous system depression resulting in headaches, dizziness and nausea; continued inhalation may result in unconsciousness and/or death.
Skin Irritation	:	Not irritating to skin. Prolonged/repeated contact may cause defatting of the skin

which can lead to dermatitis.

Eye Irritation : Irritating to eyes.

Respiratory Irritation : Inhalation of vapours or mists may cause irritation to the respiratory system.

Sensitisation : Not a skin sensitiser.

Repeated Dose Toxicity : Kidney: caused kidney effects in male rats which are not considered relevant to humans

Material	:	**Carcinogenicity Classification**
Isopropyl Alcohol	:	ACGIH Group A4: Not classifiable as a human carcinogen.
Isopropyl Alcohol	:	IARC 3: Classification not possible from current data.

Reproductive and Developmental Toxicity : Causes foetotoxicity in animals at doses which are maternally toxic.

Additional Information : Exposure may enhance the toxicity of other materials.

12. ECOLOGICAL INFORMATION

Acute Toxicity

Fish : Low toxicity: LC/EC/IC50 > 100 mg/l

Aquatic Invertebrates : Low toxicity: LC/EC/IC50 > 1000 mg/l

Algae : Expected to have low toxicity: LC/EC/IC50 > 1000 mg/l

Microorganisms : Low toxicity: LC/EC/IC50 > 1000 mg/l

Mobility : If product enters soil, it will be highly mobile and may contaminate groundwater.
Dissolves in water.

Persistence/degradability : Oxidises rapidly by photo-chemical reactions in air.
Readily biodegradable meeting the 10 day window criterion.

Bioaccumulation : Not expected to bioaccumulate significantly.

13. DISPOSAL CONSIDERATIONS

Material Disposal : Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations.

Container Disposal : Drain container thoroughly. After draining, vent in a safe place away from sparks and fire. Residues may cause an explosion hazard. Do not puncture, cut or weld uncleaned drums. Send to drum recoverer or metal reclaimer.

Local Legislation : Disposal should be in accordance with applicable regional, national, and local laws and regulations. Local regulations may be more stringent than regional or national requirements and must be complied with.

14. TRANSPORT INFORMATION

US Department of Transportation Classification (49CFR)

Identification number	UN 1219
Proper shipping name	Isopropanol

Class / Division	3
Packing group	II
Emergency Response Guide No .	129

IMDG

Identification number	UN 1219
Proper shipping name	ISOPROPANOL
Class / Division	3
Packing group	II
Marine pollutant:	No

IATA (Country variations may apply)

Identification number	UN 1219
Proper shipping name	Isopropanol
Class / Division	3
Packing group	II

15. REGULATORY INFORMATION

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

Federal Regulatory Status

Notification Status

AICS	Listed.	
DSL	Listed.	
INV (CN)	Listed.	
ENCS (JP)	Listed.	(2)-207
ISHL (JP)	Listed.	2-(8)-319
TSCA	Listed.	
EINECS	Listed.	200-661-7
KECI (KR)	Listed.	KE-29363
PICCS (PH)	Listed.	

SARA Hazard Categories (311/312)

Immediate (Acute) Health Hazard. Fire Hazard.

State Regulatory Status

California Safe Drinking Water and Toxic Enforcement Act (Proposition 65)

This material does not contain any chemicals known to the State of California to cause cancer, birth

defects or other reproductive harm.

New Jersey Right-To-Know Chemical List

Isopropyl Alcohol (67-63-0) 100.00%		Listed.

Pennsylvannia Right-To-Know Chemical List

Isopropyl Alcohol (67-63-0) 100.00%		Environmental hazard. Listed.

16. OTHER INFORMATION

NFPA Rating (Health, Fire, Reactivity)	:	1, 3, 0
MSDS Version Number	:	1.3
MSDS Effective Date	:	05/10/2005
MSDS Revisions	:	A vertical bar (|) in the left margin indicates an amendment from the previous version.
MSDS Regulation	:	The content and format of this MSDS is in accordance with the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
Uses and Restrictions	:	Use as a solvent only in industrial manufacturing processes.
MSDS Distribution	:	The information in this document should be made available to all who may handle the product
Disclaimer	:	The information contained herein is based on our current knowledge of the underlying data and is intended to describe the product for the purpose of health, safety and environmental requirements only. No warranty or guarantee is expressed or implied regarding the accuracy of these data or the results to be obtained from the use of the product.