COMET CHEMICAL COMPANY LTD.

Comet Chemical Company Ltd.
3463 Thomas Street
Innisfill, ON, Canada, L9S 3W4
Telephone: (705) 436 5580

SAFETY DATA SHEET

SECTION 1. IDENTIFICATION

Product identifier used on the label
: **Isophorone**

Other means of identification : None assigned.

Recommended use of the chemical and restrictions on use
: Petroleum industry, Solvent, Cleaning agent.
Use pattern: professional use
Recommended restrictions: None known.

Chemical family : Ketones

Name, address, and telephone number of the supplier:

Comet Chemical Company Ltd.

3463 Thomas Street
Innisfill, ON, Canada
L9S 3W4

Supplier's Telephone # : (705) 436-5580

24 Hr. Emergency Tel # : GFL Environmental - 1-888-772-2543

Name, address, and telephone number of the manufacturer:

Refer to supplier

SECTION 2. HAZARDS IDENTIFICATION

Classification of the chemical

Clear to light yellow. Peppermint odor.

This material is classified as hazardous under U.S. OSHA regulations (29CFR 1910.1200) (Hazcom 2012) and Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015).

Hazard classification:
Flammable liquid - Category 4
Acute toxicity, Oral - Category 4
Acute toxicity, Dermal - Category 4
Eye irritation - Category 2A
Specific target organ toxicity, single exposure - Category 3 (Respiratory irritation)

Label elements

Hazard pictogram(s)

Signal Word

WARNING!

Hazard statement(s)

Combustible liquid.
Harmful if swallowed or in contact with skin.
Causes serious eye irritation.
May cause respiratory irritation.

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Precautionary statement(s)

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No Smoking
Wear protective gloves/eye protection/face protection.
Avoid breathing mist, vapors or spray.
Use only outdoors or in a well-ventilated area.
Wash hands and face thoroughly after handling.
Do not eat, drink or smoke when using this product.

Call a POISON CENTER or doctor/physician if you feel unwell.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
IF ON SKIN: Wash with plenty of soap and water.
Take off contaminated clothing and wash before re-use.
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.
IF SWALLOWED: Rinse mouth.
In case of fire: Use alcohol-resistant foam, carbon dioxide or dry chemical to extinguish.

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

Dispose of contents/container in accordance with local/regional/national/international regulations.

Other hazards

Other hazards which do not result in classification:
Burning produces obnoxious and toxic fumes.
May cause mild skin irritation.
May cause central nervous system effects.
May be an aspiration hazard.
Prolonged exposure may result in kidney or lung effects

Ecological information:
Not expected to be harmful to aquatic organisms. Avoid release to the environment. See Section 12 for more environmental information.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance with impurities

Chemical name	Common name and synonyms	CAS #	Concentration (% by weight)
Isophorone	Isoacetophorone	78-59-1	**100.00**

SECTION 4. FIRST-AID MEASURES

Description of first aid measures

Ingestion : Rinse mouth. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. If vomiting occurs spontaneously, keep victim's head lowered (forward) to reduce the risk of aspiration. Aspiration may cause pulmonary oedema and pneumonitis. Call a POISON CENTRE or doctor/physician if you feel unwell.

Inhalation : Remove exposed person to fresh air immediately. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen by qualified medical personnel only. Call a POISON CENTRE or doctor/physician if you feel unwell.

Skin contact : Wash off with soap and plenty of water. Take off contaminated clothing and wash before re-use. Call a POISON CENTRE or doctor/physician if exposed or you feel unwell.

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Eye contact : 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.

Most important symptoms and effects, both acute and delayed

: Harmful if swallowed. Symptoms include: Gastrointestinal discomfort, nausea, vomiting, cramping and diarrhea. Ingestion of large amounts may cause nausea, vomiting, diarrhea, as well as depression of the central nervous system.
May be an aspiration hazard. Aspiration into the lungs during swallowing or subsequent vomiting may cause chemical pneumonitis, which can be fatal.
Harmful in contact with skin. May be absorbed through the skin, producing symptoms similar to ingestion or inhalation.
May cause mild skin irritation. Direct skin contact may cause slight or mild, transient irritation.
Causes serious eye irritation. Symptoms may include severe pain, tearing, redness, swelling and blurred vision.
May cause respiratory irritation. Symptoms may include coughing, mucous production and difficulty breathing. In extremely high concentrations, may also cause nausea, vomiting, dizziness, drowsiness and other symptoms of central nervous system depression.
Prolonged exposure may result in kidney or lung effects

Indication of any immediate medical attention and special treatment needed

: Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

Extinguishing media

Suitable extinguishing media

: Carbon dioxide (CO2); Dry chemical; Alcohol resistant foam; Water spray, Water fog

Unsuitable extinguishing media

: Do not use a solid water stream as it may scatter and spread fire.

Special hazards arising from the substance or mixture / Conditions of flammability

: Combustible liquid and vapor. Heating can release vapours which can be ignited. Burning produces obnoxious and toxic fumes. Material will float on water and can be re-ignited at the water's surface. Vapors are heavier than air and may spread along floors. Vapors may travel considerable distance to a source of ignition and flash back. Closed containers may rupture if exposed to excess heat or flame due to a build-up of internal pressure.

Flammability classification (OSHA 29 CFR 1910.106)

: Flammable liquid - Category 4

Hazardous combustion products

: Carbon oxides;Other irritating fumes and smoke.

Special protective equipment and precautions for firefighters

Protective equipment for fire-fighters

: Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. Do not enter without wearing specialized protective equipment suitable for the situation. Firefighter's normal protective clothing (Bunker Gear) will not provide adequate protection. A full-body encapsulating chemical protective suit with positive pressure self-contained breathing apparatus (NIOSH approved or equivalent) may be necessary.

Special fire-fighting procedures

: Move containers from fire area if safe to do so. Cool closed containers exposed to fire with water spray. Do not allow run-off from fire fighting to enter drains or water courses. Dike for water control.

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SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

: Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Ventilate the area. Restrict access to area until completion of clean-up. Keep people away from and upwind of spill/leak. Do not touch or walk through spilled material. Ensure clean-up is conducted by trained personnel only. All persons dealing with the clean-up should wear the appropriate personal protective equipment.Refer to protective measures listed in sections 7 and 8.

Environmental precautions : Do not allow material to contaminate ground water system. If necessary, dike well ahead of the spill to prevent runoff into drains, sewers, or any natural waterway or drinking supply.

Methods and material for containment and cleaning up

: Ventilate the area. Remove all sources of ignition. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Prevent further leakage or spillage if safe to do so.Avoid breathing mist, vapors or spray.
Contain and absorb spilled liquid with non-combustible, inert absorbent material (e.g. sand). Do not use combustible absorbents, such as sawdust. Use only non-sparking tools and equipment in the clean-up process. Pick up and transfer to properly labeled containers. Contaminated absorbent material may pose the same hazards as the spilled product.
Refer to Section 13 for disposal of contaminated material. Contact the proper local authorities.

Special spill response procedures

: In Canada: For 24-hour emergency assistance, call: 1-613-996-6666 (CANUTEC).
EPA/CERCLA Reportable quantity (RQ): Isophorone (5000 lbs / 2270 kg)

SECTION 7. HANDLING AND STORAGE

Precautions for safe handling

: Use only outdoors or in a well-ventilated area. Wear suitable protective equipment. Wear protective gloves/clothing and eye/face protection. See Section 8 for additional personal protection advice when handling this product.
Avoid breathing mist, vapors or spray. Avoid contact with skin, eyes and clothing. Do not eat, drink or smoke when using this product. Wash hands and face thoroughly after handling. Wash contaminated clothing before reuse.
Keep away from flames and hot surfaces. - No smoking.Use proper bonding and grounding techniques when transferring liquid. Use only non-sparking tools with this material. Keep away from incompatibles. Keep containers closed when not in use. Empty containers retain residue (liquid and/or vapour) and can be dangerous.

Conditions for safe storage : Store in a well-ventilated place. Keep cool. Store locked up. Keep away from heat, flame, sparks, or ignition sources. Keep container tightly closed. Store out of direct sunlight. Product may discolor and form residues on prolonged storage.
Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. No smoking. Inspect periodically for damage or leaks. Have appropriate fire extinguishers and spill clean-up equipment in or near storage area.

Incompatible materials : Heat. Strong oxidizing agents. Strong acids. Alkalies. Amines .

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SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limits:

Chemical Name	ACGIH TLV		OSHA PEL	
	TWA	STEL	PEL	STEL
Isophorone	5 ppm (Ceiling)	N/Av	25 ppm ; 140 mg/m³	N/Av

Exposure controls

Ventilation and engineering measures
: Use only in well-ventilated areas. Apply technical measures to comply with the occupational exposure limits. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. In case of insufficient ventilation wear suitable respiratory equipment.

Respiratory protection : If airbourne concentrations are above the permissible exposure limit or are not known, use NIOSH-approved respirators. Respirators should be selected based on the form and concentration of contaminants in air, and in accordance with OSHA (29 CFR 1910.134) or CSA Z94.4-02. Advice should be sought from respiratory protection specialists.

Skin protection : Wear protective gloves/clothing. Wear appropriate chemical resistant gloves. The suitability for a specific workplace should be discussed with the producers of the protective gloves.Wear appropriate protective clothing to prevent skin contact, such as coveralls or long sleeved shirt, long pants, and shoes and socks.

Eye / face protection : Wear eye/face protection. Chemical splash goggles are recommended. A full face shield may also be necessary.

Other protective equipment : Ensure that eyewash stations and safety showers are close to the workstation location. Other equipment may be required depending on workplace standards.

General hygiene considerations
: Avoid breathing vapours, fumes, or mists. Avoid contact with skin, eyes and clothing. Do not eat, drink or smoke when using this product. Wash hands thoroughly after using this product, and before eating, drinking or smoking. Remove and wash contaminated clothing before re-use. Handle in accordance with good industrial hygiene and safety practice.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State : Liquid.
Colour : Clear to light yellow.
Odour : Peppermint odor.
Odour threshold : 0.19ppm (detectable); 0.53 ppm (recognizable) (literature)
pH : neutral
Melting Point/Freezing point : 17.4°F / -8.1°C Freezing point
Initial boiling point and boiling range
: 420°F / 215.3°C
Flash point : 185°F / 85°C
Flashpoint (Method) : closed cup
Evaporation rate (BuAe = 1) : N/Av
Flammability : N/Ap
Lower explosion or flammability limit (% by vol.)
: 0.8%

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Upper explosion or flammability limit (% by vol.)
: 3.8%

Oxidizing properties : None known.

Explosive properties : Not explosive

Vapour pressure : 0.04 kPa at 68°F / 20°C

Relative vapour density : 4.77 (Air = 1) (literature)

Relative density / Specific gravity
: 0.92

Solubility in water : Soluble (Moderate 14.5g/l)

Other solubility(ies) : N/Av

Partition coefficient: n-octanol/water or Coefficient of water/oil distribution
: log Pow = 1.67

Auto-ignition temperature : 878°F / 470°C

Decomposition temperature : N/Av

Viscosity : 2.83mm²/s 68°F / 20°C

Particle characteristics : N/Ap

Volatiles (% by weight) : N/Av

Volatile organic Compounds (VOC's)
: N/Av

Absolute pressure of container
: N/Ap

Flame projection length : N/Av

Other physical/chemical comments
: No additional information.

SECTION 10. STABILITY AND REACTIVITY

Reactivity : Not normally reactive.

Chemical stability : Stable under normal conditions. Product may discolor and form residues on prolonged storage.

Possibility of hazardous reactions
: Vapors may form explosive mixtures with air. Hazardous polymerization does not occur.

Conditions to avoid : Heat, flames and sparks. Exposure to light.Contact with incompatible materials. Do not use in areas without adequate ventilation.

Incompatible materials : Incompatible materials (see Section 7).

Hazardous decomposition products
: None known, refer to hazardous combustion products in Section 5.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure:

Routes of entry inhalation : YES

Routes of entry skin & eye : YES

Routes of entry Ingestion : YES

Routes of exposure skin absorption
: YES

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Potential Health Effects:

Signs and symptoms of short-term (acute) exposure

Sign and symptoms Inhalation

: May cause respiratory irritation. Symptoms may include coughing, mucous production and difficulty breathing. In extremely high concentrations, may also cause nausea, vomiting, dizziness, drowsiness and other symptoms of central nervous system depression.

Sign and symptoms ingestion

: Harmful if swallowed. Symptoms include: Gastrointestinal discomfort, nausea, vomiting, cramping and diarrhea. Ingestion of large amounts may cause nausea, vomiting, diarrhea, as well as depression of the central nervous system.
May be an aspiration hazard. Aspiration into the lungs during swallowing or subsequent vomiting may cause chemical pneumonitis, which can be fatal.

Sign and symptoms skin : Harmful in contact with skin. May be absorbed through the skin, producing symptoms similar to ingestion or inhalation.
May cause mild skin irritation. Direct skin contact may cause corrosive skin burns, deep ulcerations and possibly permanent scarring.

Sign and symptoms eyes : Causes serious eye irritation. Symptoms may include severe pain, tearing, redness, swelling and blurred vision.

Potential Chronic Health Effects

: Prolonged exposure may result in kidney or lung effects

Mutagenicity : Not expected to be mutagenic in humans.

Carcinogenicity : Contains: Isophorone. ACGIH has proposed a carcinogenicity designation of A3 (animal carcinogen). An animal study showed an increase in kidney neoplasms in male rats. This type of tumour appears to be specific to male rats and is not relevant to humans.

Reproductive effects & Teratogenicity

: Not expected to cause reproductive effects.

Sensitization to material : Not expected to be a skin or respiratory sensitizer.

Specific target organ effects : Target Organs: Eyes, skin, respiratory system and digestive system.

May cause respiratory irritation.

The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

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Medical conditions aggravated by overexposure

: Pre-existing skin, eye and respiratory disorders.

Synergistic materials : No information available.

Toxicological data : Harmful if swallowed or in contact with skin.

See below for individual ingredient acute toxicity data.

Chemical name	LC_{50}(4hr) inh, rat	LD_{50} (Oral, rat)	LD_{50} (Rabbit, dermal)
Isophorone	7 mg/L 4 hours (mist)	1500 mg/kg	1200 mg/kg

Other important toxicological hazards

: None reported by the manufacturer.

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SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity : Not expected to be harmful to aquatic organisms. The product should not be allowed to enter drains or water courses, or be deposited where it can affect ground or surface waters.

See the following tables for the substance's ecotoxicity data.

Ecotoxicity data:

Ingredients	CAS #	Toxicity to Fish		
		LC50 / 96h	NOEC / 21 day	M Factor
Isophorone	78-59-1	140 mg/L (sheepshead minnow)	4.2 mg/L (32 days) (Fathead minnow)	None.

Ingredients	CAS #	Toxicity to Daphnia		
		EC50 / 48h	NOEC / 21 day	M Factor
Isophorone	78-59-1	120 mg/L (Daphnia magna (Water flea))	N/Av	None.

Ingredients	CAS #	Toxicity to Algae		
		EC50 / 96h or 72h	NOEC / 96h or 72h	M Factor
Isophorone	78-59-1	475 mg/L/72hr (Green algae)	N/Av	None.

Persistence and degradability
: Expected to be readily biodegradable.

Bioaccumulation potential : Not expected to bioaccumulate. See the following data for ingredient information.

Components	Partition coefficient n-octanol/water (log Kow)	Bioconcentration factor (BCF)
Isophorone (CAS 78-59-1)	1.67	7

Mobility in soil : There is no data available for this product.

Other Adverse Environmental effects
: No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

SECTION 13. DISPOSAL CONSIDERATIONS

Handling for Disposal : Handle in accordance with good industrial hygiene and safety practice. Since emptied containers may retain product residue, follow label warnings even after container is emptied. Refer to protective measures listed in sections 7 and 8.

Methods of Disposal : Dispose in accordance with all applicable federal, state, provincial and local regulations.

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RCRA : If this product, as supplied, becomes a waste in the United States, it may meet the criteria of a hazardous waste as defined under RCRA, Title 40 CFR 261. It is the responsibility of the waste generator to determine the proper waste identification and disposal method. For disposal of unused or waste material, check with local, state and federal environmental agencies.

SECTION 14. TRANSPORT INFORMATION

Regulatory Information	UN Number	UN proper shipping name	Transport hazard class(es)	Packing Group	Label
49CFR/DOT	NA1993	Combustible liquid, n.o.s. (Isophorone)	Combustible.	III	
49CFR/DOT Additional information	The 'label' appearing here is the placard to be used for bulk shipments. Not regulated for road or rail shipment if packaged in non-bulk containers (450 Litres or less each).				
TDG	None.	Not regulated.	not regulated	none	
TDG Additional information	None.				
IMDG	None.	Not regulated.	not regulated	none	
IMDG Additional information	None.				
ICAO/IATA	None.	Not regulated.	not regulated	none	
ICAO/IATA Additional information	None.				

Special precautions for user : Keep away from heat, sparks and open flame - No smoking. Appropriate advice on safety must accompany the package.

Environmental hazards : This product does not meet the criteria for an environmentally hazardous mixture, according to the IMDG Code. See ECOLOGICAL INFORMATION, Section 12.

SECTION 15 - REGULATORY INFORMATION

US Federal Information:

Components listed below are present on the following U.S. Federal chemical lists:

Ingredients	CAS #	TSCA Inventory	CERCLA Reportable Quantity(RQ) (40 CFR 117.302):	SARA TITLE III: Sec. 302, Extremely Hazardous Substance, 40 CFR 355:	SARA TITLE III: Sec. 313, 40 CFR 372, Specific Toxic Chemical	
					Toxic Chemical	de Minimis Concentration
Isophorone	78-59-1	Yes	5000 lbs / 2270 kg	N/Ap	No	No

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SARA TITLE III: Sec. 311 and 312, SDS Requirements, 40 CFR 370 Hazard Classes: Fire Hazard; Immediate (Acute) health hazard.

US State Right to Know Laws:

The following chemicals are specifically listed by individual States:

Ingredients	CAS #	California Proposition 65		State "Right to Know" Lists					
		Listed	Type of Toxicity	CA	MA	MN	NJ	PA	RI
Isophorone	78-59-1	No	N/Ap	Yes	Yes	Yes	Yes	Yes	No

Canadian Information:
All ingredients are present on the DSL.

International Information:

Components listed below are present on the following International Inventory list:

Ingredients	CAS #	European EINECs	Australia AICS	Philippines PICCS	Japan ENCS	Korea KECI/KECL	China IECSC	NewZealand IOC
Isophorone	78-59-1	201-126-0	Present	Present	(3)-2389; (3)-2381	KE-34467	Present	HSR001178

SECTION 16. OTHER INFORMATION

Legend :

ACGIH: American Conference of Governmental Industrial Hygienists
AICS: Australian Inventory of Chemical Substances
CAS: Chemical Abstract Services
CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR: Code of Federal Regulations
CSA: Canadian Standards Association
DOT: Department of Transportation
EC50: Effective Concentration 50%
EINECS: European Inventory of Existing Commercial chemical Substances
ENCS: Existing and New Chemical Substances
EPA: Environmental Protection Agency
IARC: International Agency for Research on Cancer
IATA: International Air Transport Association
IBC: Intermediate Bulk Container
ICAO: International Civil Aviation Organisation
IECSC: Inventory of Existing Chemical Substances
Inh: Inhalation
IMDG: International Maritime Dangerous Goods
IOC: Inventory of Chemicals
KECI: Korean Existing Chemicals Inventory
KECL: Korean Existing Chemicals List
LC: Lethal Concentration
LD: Lethal Dose
N/Ap: Not Applicable
N/Av: Not Available
NIOSH: National Institute of Occupational Safety and Health
NOEC: No observable effect concentration
NTP: National Toxicology Program

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OSHA: Occupational Safety and Health Administration
PEL: Permissible exposure limit
PICCS: Philippine Inventory of Chemicals and Chemical Substances
RCRA: Resource Conservation and Recovery Act
SARA: Superfund Amendments and Reauthorization Act
SDS: Safety Data Sheet / Material Safety Data Sheet
STEL: Short Term Exposure Limit
TDG: Canadian Transportation of Dangerous Goods Act & Regulations
TLV: Threshold Limit Values
TSCA: Toxic Substance Control Act
TWA: Time Weighted Average
WHMIS: Workplace Hazardous Materials Identification System

References : 1. ACGIH, Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices
2. ECHA - European Chemical Agency
3. Canadian Centre for Occupational Health and Safety, CCInfoWeb databases
4. Safety Data Sheets from manufacturer.
5. US EPA Title III List of Lists
6. California Proposition 65 List
7. OECD - The Global Portal to Information on Chemical Substances - eChemPortal

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: 13/10/2023

Revision No. : 2

Revision Information : Updated SDS to the comply with new 2023 WHMIS format

Other special considerations for handling
: Provide adequate information, instruction and training for operators.

Prepared for: Comet Chemical Company Ltd. 3463 Thomas Street Innisfill, ON L9S 3W4 Information (M-F 8:00-5:00): 705-436-5580 www.cometchemical.com	COMET CHEMICAL COMPANY LTD.
Prepared by: ICC The Compliance Center Inc. Telephone: (888) 442-9628 (U.S.): (888) 977-4834 (Canada) http://www.thecompliancecenter.com	icc ComplianceCenter

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