Isooctane

SECTION 1. IDENTIFICATION

Product Identifier	Isooctane
Other Means of Identification	Hydrocarbon Liquids
Product Family	Hydrocarbons
Recommended Use	Industrial solvent. Diluent. Fuel. Fuel blending component.
Restrictions on Use	Not recommended for uses other than those listed, or for non-industrial purposes.
Manufacturer Identifier	Keyera Alberta Envirofuels Facility 9511 - 17th Street Edmonton, Alberta T6P 1Y3
Main Phone No.	(403) 205-8300 / 1 (888) 699-4853 (Mon. - Fri. 8 AM - 5 PM)
Transportation Emergencies Only	CANUTEC (CAN), Ph.: 1-888-CAN-UTEC (226-8832) Cell: *666, (24 hr) CHEMTREC (US), 1-800-424-9300, (24 hr)

SECTION 2. HAZARD IDENTIFICATION

Classification

Flammable liquid - Category 1; Acute toxicity (Oral) - Category 3; Acute toxicity (Dermal) - Category 3; Acute toxicity (Inhalation) - Category 3; Skin irritation - Category 2; Eye irritation - Category 2; Aspiration hazard - Category 1

Label Elements

Signal Word:
Danger

Hazard Statement(s):

Highly flammable liquid and vapour.
Toxic if swallowed.
May be fatal if swallowed and enters airways.
Causes skin irritation.
Harmful if inhaled.
Causes eye irritation.
May cause respiratory irritation.
May cause drowsiness or dizziness.
Harmful to aquatic life.

Precautionary Statement(s):

Prevention:

Keep away from heat, sparks, open flames, and hot surfaces. – No smoking.
Keep container tightly closed.
Ground/bond container and receiving equipment.

Use explosion-proof electrical, ventilating, lighting, and other equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Avoid breathing vapours.
Wear protective gloves/protective clothing.

Response:

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
IF SWALLOWED: Immediately call a POISON CENTRE or doctor.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
IF INHALED: Call a POISON CENTRE or doctor if you feel unwell.
IF exposed or concerned: Get medical advice or attention.
In case of fire: Evacuate area.
Eliminate all ignition sources if safe to do so.
In case of fire: Use appropriate foam, water spray or fog to extinguish.
Fight fire with normal precautions from a reasonable distance.

Storage:

Store in accordance with local, regional, national and international regulations.
Store in a well-ventilated place. Keep container tightly closed.

Disposal:

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

Other Hazards

EMERGENCY OVERVIEW :

FLAMMABLE LIQUID AND VAPOUR. Extremely flammable. May form flammable/explosive vapour-air mixtures. Electrostatic charges may be generated during handling. Electrostatic discharges may cause fire.

General Hygiene Comments :
Do NOT eat, drink or store food in work areas.
Remove contaminated clothing and protective equipment before entering eating areas or leaving work area.
Wash hands thoroughly after handling this product and before eating, using the washroom or leaving work area.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	%	Other Identifiers
Isooctane	540-84-1	85 - 100	2,2,4-Trimethylpentane
Isododecane	13478-82-6	0 - 10	Undecane
Paraffins & Isoparaffins	N/A	0 - 5	Not available
Benzene	71-43-2	0 - 50 ppm	Benzol

Notes

Concentrations are expressed in % weight/weight.

SECTION 4. FIRST-AID MEASURES

First-aid Measures

Inhalation

Take precautions to ensure your own safety before attempting rescue (e.g. wear appropriate protective equipment). Move to fresh air. Keep at rest in a position comfortable for breathing. If breathing is difficult, trained personnel should administer emergency oxygen if advised to do so by Poison Centre or doctor. If the victim has difficulty breathing or tightness in the chest, is dizzy, vomiting, or unresponsive, administer oxygen with rescue breathing or CPR as required. Obtain medical attention immediately.

Skin Contact

Avoid direct contact. Wear chemical protective clothing if necessary. Take off contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Immediately wash gently and thoroughly with lukewarm, gently flowing water and mild soap for 15-20 minutes.

Eye Contact

Immediately rinse the contaminated eye(s) with lukewarm, gently flowing water for 15-20 minutes, while holding the eyelid(s) open. If eye irritation persists, get medical advice or attention.

Ingestion

Rinse mouth with water. Immediately call a Poison Centre or doctor. Do not induce vomiting.

Most Important Symptoms and Effects, Acute and Delayed

If inhaled:
Can irritate the nose and throat. Symptoms may include headache, nausea, dizziness, drowsiness and confusion.

If in eyes:
May cause moderate to severe irritation. Symptoms include sore, red eyes, and tearing.

If swallowed:
Small amounts can irritate the mouth, throat and stomach.
May be drawn into the lungs if swallowed or vomited, causing severe lung damage. Death can result.

Immediate Medical Attention and Special Treatment

Target Organs

Central nervous system depressant.

Special Instructions

Treat symptomatically. Consult a Poison Control Centre for guidance.

SECTION 5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media

Small fire: Carbon dioxide, dry chemical powder, appropriate foam, water spray or fog.
Large fire: Water spray, fog or regular foam. Do not use straight streams. Move containers from fire area if you can do so without risk.
Fire involving Tanks or Car/Trailer Loads: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

Unsuitable Extinguishing Media
Do not use water in a stream or jet.

Specific Hazards Arising from the Product
May accumulate in hazardous amounts in low-lying areas especially inside confined spaces, resulting in a fire and/or health hazard.

Special Protective Equipment and Precautions for Fire-fighters
Wear full protective clothing and self-contained breathing apparatus. Fight fire from a safe distance or a protected location. For a massive fire, immediately evacuate the area and use unmanned hose holder or monitor nozzles. Chemical protective clothing (e.g. chemical splash suit) and positive pressure SCBA may be necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures
Evacuate the area immediately. Isolate the hazard area. Keep out unnecessary and unprotected personnel. Evacuate downwind locations. Use the personal protective equipment recommended in Section 8 of this safety data sheet. Do not touch damaged containers or spilled product unless wearing appropriate protective equipment. Eliminate all ignition sources. Use grounded, explosion-proof equipment. Before entry, especially into confined areas, check atmosphere with an appropriate monitor.

Environmental Precautions
Do not allow into any sewer, on the ground or into any waterway. If the spill is inside a building, prevent product from entering drains, ventilation systems and confined areas. Minimize the use of water to prevent environmental contamination.

Methods and Materials for Containment and Cleaning Up
Small spills or leaks: stop or reduce leak if safe to do so. Contain and soak up spill with absorbent that does not react with spilled product. Do NOT use combustible materials such as sawdust. Place used absorbent into suitable, covered, labelled containers for disposal.
Large spills or leaks: dike spilled product to prevent runoff. Do not direct water at spill or source. Knock down vapour with fog or fine water spray.

Other Information
Report spills to local health, safety and environmental authorities, as required.

SECTION 7. HANDLING AND STORAGE

Precautions for Safe Handling
Prevent uncontrolled release of product. Eliminate heat and ignition sources such as sparks, open flames, hot surfaces and static discharge. Post "No Smoking" signs. Do not use near welding operations or other high energy sources. Do not weld, cut or perform hot work on empty container until all traces of product have been removed. Electrically bond and ground equipment. Ground clips must contact bare metal. Do not carry or transfer this product in an enclosed space (e.g. in an elevator or inside a vehicle). Wear personal protective equipment to avoid direct contact with this chemical. Do not puncture or incinerate container even when empty.

Conditions for Safe Storage
Store in an area that is: cool, temperature-controlled, well-ventilated, separate from incompatible materials (see Section 10: Stability and Reactivity), clear of combustible and flammable materials (e.g. old rags, cardboard), out of direct sunlight and away from heat and ignition sources.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters	ACGIH TLV®		OSHA PEL		AIHA WEEL	
Chemical Name	TWA	STEL	TWA	Ceiling	8-hr TWA	TWA
Isooctane	5 mg/m3	375 ppm	300 ppm			
Benzene	0.5 ppm A4 Skin	0.5 ppm A4 Skin				

Appropriate Engineering Controls
Do not allow product to accumulate in the air in work or storage areas, or in confined spaces. Use local exhaust ventilation and enclosure, if necessary, to control amount in the air. If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits, additional engineering controls may be required.

Individual Protection Measures

Eye/Face Protection
Wear chemical safety goggles.

Skin Protection
Avoid repeated or prolonged skin contact. Wear chemical protective clothing e.g. gloves, aprons, boots. Wear fire resistant or flame retardant clothing.

Respiratory Protection
Not normally required if product is used as directed. Use appropriate OSHA/NIOSH approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Basic Physical and Chemical Properties

Appearance	Colourless volatile liquid.
Odour	Hydrocarbon
Odour Threshold	Not available
Melting Point/Freezing Point	Not available (melting); Not available (freezing)
Boiling point/Initial boiling point	96 ºC
Flash Point	< -12 ºC (closed cup) (Isooctane)
Evaporation Rate	Not available
Flammability (solid, gas)	Flammable liquid.
Upper/Lower Flammability or Explosive Limit	~ 6.0% (upper); ~ 1.1% (lower)
Vapour Pressure	13 - 20 kPa at 20 ºC (68 ºF)
Vapour Density (air = 1)	> 1 (estimated)
Relative Density (water = 1)	0.68 - 0.71 (estimated) at 15 ºC (59 ºF)
Solubility	Practically insoluble in water; Highly soluble in common organic solvents.
Partition Coefficient, n-Octanol/Water (Log Kow)	Not available
Auto-ignition Temperature	~ 415 ºC
Decomposition Temperature	Not available
Viscosity	~ 0.8 centistokes at 20 ºC (68 ºF) (kinematic)

Other Information

Physical State	Liquid
Molecular Formula	C8H18
Molecular Weight	114.2 g/mol

SECTION 10. STABILITY AND REACTIVITY

Reactivity
Not reactive under normal conditions of use.

Chemical Stability
Normally stable.

Possibility of Hazardous Reactions
Not sensitive to mechanical impact.

Conditions to Avoid
Heat. High temperatures. Open flames, sparks, static discharge, heat and other ignition sources. Incompatible materials.

Incompatible Materials
Strong oxidizing agents (e.g. perchloric acid).

Hazardous Decomposition Products
Combustion releases carbon dioxide, trace amounts of sulfur oxides, and nitrogen oxides. A lack of oxygen during combustion can produce carbon monoxide and other toxic and flammable products. Hazardous decomposition products are not expected to form during normal storage.

SECTION 11. TOXICOLOGICAL INFORMATION

Information presented below is for the entire product, unless otherwise specified.

Likely Routes of Exposure
Inhalation; skin contact; eye contact; ingestion.

Acute Toxicity

Chemical Name	LC50	LD50 (oral)	LD50 (dermal)
Isooctane	47.4 mg/L (rat) (1-hour exposure) (vapour)	> 5000 mg/kg (male rat)	> 2000 mg/kg (rabbit)
Benzene	13700 ppm (rat) (4-hour exposure)	930 mg/kg (rat)	> 8240 mg/kg (rabbit)

Skin Corrosion/Irritation
May cause mild irritation based on information for closely related chemicals. Prolonged or repeated contact with the skin may cause defatting of the skin leading to redness, itching, inflammation, cracking, dermatitis (rash), and possible secondary infection.

Serious Eye Damage/Irritation
May cause mild irritation based on information for closely related chemicals.
May be irritating to eyes. Symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.

STOT (Specific Target Organ Toxicity) - Single Exposure

Inhalation

Vapours may cause irritation of the nose and throat. Causes depression of the central nervous system. Symptoms may include headache, nausea, dizziness, drowsiness and confusion.

Skin Absorption

Liquid may be absorbed through the skin if large areas of skin are exposed. May be harmful.

Ingestion

May be harmful Symptoms may include nausea, vomiting, stomach cramps and diarrhea.
If small amounts are ingested: can irritate the mouth, throat and stomach.
If large amounts are ingested: harmful.

Aspiration Hazard

May be drawn into the lungs (aspirated) if swallowed or vomited.

STOT (Specific Target Organ Toxicity) - Repeated Exposure

Material in general is not expected to cause harm. May cause damage to organs based on studies in people and animals. Following skin contact: symptoms may include dry, red, cracked skin (dermatitis).

Respiratory and/or Skin Sensitization

Not known to be a respiratory sensitizer. Not known to be a skin sensitizer.

Carcinogenicity

Conclusions cannot be drawn from the limited studies available.

Reproductive Toxicity

Development of Offspring

Material in general is not expected to cause harm. The material in general is not expected to produce teratogenic or embryotoxic effects.

Sexual Function and Fertility

Material in general is not expected to cause harm. The material in general is not expected to have toxic reproductive effects. Not known to cause effects on sexual function or fertility.

Effects on or via Lactation

No information was located.

Germ Cell Mutagenicity

Material in general is not expected to cause harm. The material in general is not expected to produce mutagenic effects.

Interactive Effects

No information was located.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Harmful to aquatic life, animals, birds.

Persistence and Degradability

No ingredient of this product or its degradation products is known to be highly persistent.

Bioaccumulative Potential
This product and its degradation products are not expected to bioaccumulate.

Mobility in Soil
If released into the environment, this product is expected to move rapidly through the soil, based on physical and chemical properties. Contamination of groundwater could occur. If released into soil, this material will absorb and may biodegrade in anaerobic conditions. In water it may become volatile. Photo-oxidation products may include phenol, nitrophenols, nitrobenzene, formic acid. If released, this material will move rapidly through and into the environment.

Other Adverse Effects
There is no information available.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal Methods
Material Disposal:
This product and its container must be disposed of as hazardous waste. Do NOT dump into any sewers, on the ground or into any body of water. Do not discharge into areas where there is a risk of forming an explosive mixture with air.

SECTION 14. TRANSPORT INFORMATION

Regulation	UN No.	Proper Shipping Name	Transport Hazard Class(es)	Packing Group
Canadian TDG	1262	OCTANES	3	I
US DOT	1262	OCTANES	3	I

Environmental Hazards Environmentally Hazardous Substance

Special Precautions Please note: No special precautions required.

Emergency Response Guide No. GUIDE 128

Other Information Transport Class and Packing Group assigned are based on the general physical properties and composition of the material and related products.

SECTION 15. REGULATORY INFORMATION

Safety, Health and Environmental Regulations
This section is not required by WHMIS 2015.

SECTION 16. OTHER INFORMATION

NFPA Rating **Health - 2** **Flammability - 4** **Instability - 0**

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Keyera Isooctane

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Key to Abbreviations
ACGIH® = American Conference of Governmental Industrial Hygienists
OSHA = US Occupational Safety and Health Administration
RTECS® = Registry of Toxic Effects of Chemical Substances

References
CHEMINFO database. Canadian Centre for Occupational Health and Safety (CCOHS). Registry of Toxic Effects of Chemical Substances (RTECS®) database. Dassault Systèmes/BIOVIA ("BIOVIA"). Available from Canadian Centre for Occupational Health and Safety (CCOHS).

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SDS representative location(s) :
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Alberta Envirofuels Facility
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