Isopentane

Safety Data Sheet E-4612

according to the Hazardous Products Regulation (February 11, 2015)

Date of issue: 10-15-1979 Revision date: 09-23-2016 Supersedes: 10-15-2016

SECTION 1: Identification

1.1. Product identifier

Product form	:	Substance
Name	:	Isopentane
CAS No	:	78-78-4
Formula	:	C5H12
Other means of identification	:	Isoamylhydride, Ethyldimethylmethane, 2-Methylbutane
Product group	:	Core Products

1.2. Recommended use and restrictions on use

Recommended uses and restrictions	:	Industrial use Use as directed

1.3. Supplier

Praxair Canada inc.
1200 – 1 City Centre Drive
Mississauga - Canada L5B 1M2
T 1-905-803-1600 - F 1-905-803-1682
www.praxair.ca

1.4. Emergency telephone number

Emergency number	:	1-800-363-0042 Call emergency number 24 hours a day only for spills, leaks, fire, exposure, or accidents involving this product. For routine information, contact your supplier or Praxair sales representative.

SECTION 2: Hazard identification

2.1. Classification of the substance or mixture

GHS-CA classification

Flam. Liq. 1	H224
Skin Irrit. 2	H315
Eye Irrit. 2A	H319
STOT SE 3	H335
Asp. Tox. 1	H304

2.2. GHS Label elements, including precautionary statements

GHS-CA labelling

Hazard pictograms :

GHS02 GHS07 GHS08

Signal word : DANGER

Hazard statements : EXTREMELY FLAMMABLE LIQUID AND VAPOUR
MAY BE FATAL IF SWALLOWED AND ENTERS AIRWAYS
CAUSES SKIN IRRITATION
CAUSES SERIOUS EYE IRRITATION
MAY CAUSE RESPIRATORY IRRITATION
MAY CAUSE DROWSINESS OR DIZZINESS
MAY FORM EXPLOSIVE MIXTURES WITH AIR

Precautionary statements : Do not handle until all safety precautions have been read and understood
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No

smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Use explosion-proof electrical, lighting, ventilating equipment
Use only non-sparking tools
Take precautionary measures against static discharge
Avoid breathing gas, vapours
Wash hands, forearms and face thoroughly after handling
Use and store only outdoors or in a well-ventilated area
Wear eye protection, face protection, protective clothing
Do NOT induce vomiting
Store in a well-ventilated place. Keep container tightly closed
Store in a well-ventilated place. Keep cool
Store locked up
Dispose of contents/container in accordance with container Supplier/owner instructions

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS-CA)

No data available

SECTION 3: Composition/information on ingredients

3.1. Substances

Name	CAS No.	% (Vol.)	Common Name (synonyms)
Isopentane (Main constituent)	(CAS No) 78-78-4	100	Butane, 2-methyl- / 2-Methylbutane / ISOPENTANE / Methylbutane

3.2. Mixtures

Not applicable

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures after inhalation : Remove to fresh air and keep at rest in a position comfortable for breathing. If not breathing, give artificial respiration. If breathing is difficult, trained personnel should give oxygen. Call a physician.

First-aid measures after skin contact : Remove contaminated clothing. Wash with plenty of soap and water. If irritation persists, consult a doctor.

First-aid measures after eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes. Hold the eyelids open and away from the eyeballs to ensure that all surfaces are flushed thoroughly. Contact an ophthalmologist immediately.

First-aid measures after ingestion : Do NOT induce vomiting. Obtain emergency medical attention.

4.2. Most important symptoms and effects (acute and delayed)

Symptoms/injuries after inhalation : MAY CAUSE RESPIRATORY IRRITATION.

Symptoms/injuries after skin contact : CAUSES SKIN IRRITATION.

Symptoms/injuries after eye contact : CAUSES EYE IRRITATION.

Symptoms/injuries after ingestion : MAY BE FATAL IF SWALLOWED AND ENTERS AIRWAYS.

Potential adverse human health effects and symptoms : Based on available data, the classification criteria are not met.

4.3. Immediate medical attention and special treatment, if necessary

No additional information available

SECTION 5: Fire-fighting measures

5.1. Suitable extinguishing media

Suitable extinguishing media : Carbon dioxide, dry chemical powder, water spray, fog.

5.2. Unsuitable extinguishing media

No additional information available

5.3. Specific hazards arising from the hazardous product

Fire hazard : EXTREMELY FLAMMABLE LIQUID AND VAPOUR.

Explosion hazard : Vapours may form explosive mixture with air and oxidizing agents.

Reactivity : Forms explosive mixtures with air and oxidizing agents.

5.4. Special protective equipment and precautions for fire-fighters

Firefighting instructions : **DANGER: FLAMMABLE LIQUID AND VAPOR.** Evacuate all personnel from danger area. Use self-contained breathing apparatus. Immediately cool surrounding containers with water spray from maximum distance, taking care not to extinguish flames. Avoid spreading burning liquid with water. Remove ignition sources if safe to do so. If flames are accidentally extinguished, explosive reignition may occur. Reduce vapors with water spray or fog. Stop flow of liquid if safe to do so, while continuing cooling water spray. Remove all containers from area of fire if safe to do so. Allow fire to burn out. On-site fire brigades must comply with their provincial and local fire code instructions

Vapor forms explosive mixtures with air and oxidizing agents. If leaking gas catches fire, do not extinguish flames. Flammable and toxic vapors may spread from leak and could explode if reignited by sparks or flames. Vapors are heavier than air and may collect in low spots. Explosive atmospheres may linger. Before entering area, especially confined areas, check with an appropriate device.

Special protective equipment for fire fighters : Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : **DANGER: FLAMMABLE LIQUID AND VAPOR.**. Vapors form explosive mixtures with air and oxidizing agents. Immediately evacuate all personnel from danger area. Use self-contained breathing apparatus where needed. Remove all sources of ignition if safe to do so. Reduce vapors with fog or fine water spray, taking care not to spread liquid with water. Stop flow of material if safe to do so. Ventilate area or move container to a well-ventilated area. Flammable vapors may spread from leak and could explode if reignited by sparks or flames. Explosive atmospheres may linger. Before entering area, especially confined areas, check atmosphere with an appropriate device.

6.2. Methods and materials for containment and cleaning up

6.3. Reference to other sections

For further information refer to section 8: Exposure controls/personal protection

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : May irritate skin, eyes, and respiratory tract. Use only with adequate ventilation or respiratory protection. Do not get liquid or vapor in eyes, on skin, or on clothing. Have safety showers and eyewash fountains immediately available. May form explosive mixtures with air. Keep away from heat, sparks, and open flame. Use only spark-proof tools and explosion-proof equipment. Protect containers from damage. Use a suitable hand truck to move containers; do not drag, roll, slide, or drop. For other precautions in using this product, see section 16.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store in orginal container or approved alternative

Keep container tightly closed

Store only where temperature will not exceed 125°F (52°C). Post “No Smoking/No Open Flames” signs in storage and use areas. There must be no sources of ignition. Separate packages and protect against potential fire and/or explosion damage following appropriate codes and requirements (e.g, NFPA 30, NFPA 55, NFPA 70, and/or NFPA 221 in the U.S.) or according to requirements determined by the Authority Having Jurisdiction (AHJ). Always secure containers upright to keep them from falling or being knocked over. Install valve protection cap, if provided, firmly in place by hand when the container is not in use. Store full and empty containers separately. Use a first-in, first-out inventory system to prevent storing full containers for long periods. For other precautions in using this product, see section 16.

Conditions to avoid : Sources of ignition. Heat sources.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Isopentane (78-78-4)		
USA - ACGIH	ACGIH TLV-TWA (ppm)	1000 ppm
Alberta	OEL TWA (mg/m³)	1770 mg/m³
Alberta	OEL TWA (ppm)	600 ppm
British Columbia	OEL TWA (ppm)	600 ppm
Manitoba	OEL TWA (ppm)	1000 ppm
New Foundland & Labrador	OEL TWA (ppm)	1000 ppm
Nova Scotia	OEL TWA (ppm)	1000 ppm
Nunavut	OEL STEL (ppm)	750 ppm
Nunavut	OEL TWA (ppm)	600 ppm
Northwest Territories	OEL STEL (ppm)	750 ppm
Northwest Territories	OEL TWA (ppm)	600 ppm
Ontario	OEL TWA (ppm)	600 ppm
Prince Edward Island	OEL TWA (ppm)	1000 ppm
Saskatchewan	OEL STEL (ppm)	750 ppm
Saskatchewan	OEL TWA (ppm)	600 ppm

8.2. Appropriate engineering controls

Appropriate engineering controls : An explosion-proof local exhaust system or a mechanical system is acceptable if it can prevent oxygen deficiency and keep hazardous fumes and gases below all applicable exposure limits in the worker's breathing area.

8.3. Individual protection measures/Personal protective equipment

Personal protective equipment : Safety glasses. Face shield. Gloves.

Hand protection : Wear work gloves when handling containers. Wear heavy rubber gloves where contact with product may occur.

Eye protection : Wear goggles and a face shield when transfilling or breaking transfer connections. Select in accordance with the current CSA standard Z94.3, "Industrial Eye and Face Protection", and any provincial regulations, local bylaws or guidelines.

Respiratory protection : **Respiratory protection:** Use respirable fume respirator or air supplied respirator when working in confined space or where local exhaust or ventilation does not keep exposure below TLV. Select in accordance with provincial regulations, local bylaws or guidelines. Selection should be based on the current CSA standard Z94.4, "Selection, Care, and Use of Respirators." Respirators should also be approved by NIOSH and MSHA. For emergencies or instances with unknown exposure levels, use a self-contained breathing apparatus (SCBA).

Other information : **Other protection :** Safety shoes for general handling at customer sites. Metatarsal shoes and cuffless trousers for cylinder handling at packaging and filling plants. Select in accordance with the current CSA standard Z195, "Protective Foot Wear", and any provincial regulations, local bylaws or guidelines. For working with flammable and oxidizing materials, consider the use of flame resistant anti-static safety clothing.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Liquid

Appearance : Colorless liquid.

Colour : Colourless.

Odour : gasoline-like.

Odour threshold : No data available

pH	:	No data available
pH solution	:	No data available
Relative evaporation rate (butylacetate=1)	:	No data available
Relative evaporation rate (ether=1)	:	No data available
Melting point	:	-160 °C (-256°F)
Freezing point	:	No data available
Boiling point	:	27.8 °C (82°F)
Flash point	:	< -51 °C (-60°F)
Critical temperature	:	187.9 °C (370°F)
Auto-ignition temperature	:	420 °C (788°F)
Decomposition temperature	:	No data available
Vapour pressure	:	0.76 bar (11.1 psia)
Vapour pressure at 50 °C	:	No data available
Relative vapour density at 20 °C	:	No data available
Relative density	:	No data available
Relative density of saturated gas/air mixture	:	No data available
Density	:	624 kg/m³ (at 15 °C)
Relative gas density	:	2.48
Solubility	:	Water: 48 mg/l (at 20 °C)
Log Pow	:	3.2 - 3.3
Log Kow	:	No data available
Viscosity, kinematic	:	No data available
Viscosity, kinematic (calculated value) (40 °C)	:	No data available
Explosive properties	:	No data available
Oxidizing properties	:	No data available
Flammability (solid, gas)	:	EXTREMELY FLAMMABLE LIQUID AND VAPOUR

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity	:	Forms explosive mixtures with air and oxidizing agents.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	May occur.
Conditions to avoid	:	Extremely high or low temperatures. Open flame.
Incompatible materials	:	Oxidizing agents. especially. Oxygen. Fluorine. Chlorine.
Hazardous decomposition products	:	Carbon monoxide. Carbon dioxide.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral)	:	Not classified
Acute toxicity (dermal)	:	Not classified
Acute toxicity (inhalation)	:	Not classified
Skin corrosion/irritation	:	CAUSES SKIN IRRITATION.
Serious eye damage/irritation	:	CAUSES SERIOUS EYE IRRITATION.
Respiratory or skin sensitization	:	Not classified
Germ cell mutagenicity	:	Not classified

Carcinogenicity	:	Not classified
Reproductive toxicity	:	Not classified
Specific target organ toxicity (single exposure)	:	MAY CAUSE RESPIRATORY IRRITATION.
Specific target organ toxicity (repeated exposure)	:	Not classified
Aspiration hazard	:	MAY BE FATAL IF SWALLOWED AND ENTERS AIRWAYS.
Potential adverse human health effects and symptoms	:	Based on available data, the classification criteria are not met.

SECTION 12: Ecological information

12.1. Toxicity

Isopentane (78-78-4)	
EC50 Daphnia 1	2.3 mg/l (Exposure time: 48 h - Species: Daphnia magna)

12.2. Persistence and degradability

Isopentane (78-78-4)	
Persistence and degradability	Not established.

12.3. Bioaccumulative potential

Isopentane (78-78-4)	
Log Pow	3.2 - 3.3
Bioaccumulative potential	Not established.

12.4. Mobility in soil

Isopentane (78-78-4)	
Log Pow	3.2 - 3.3

12.5. Other adverse effects

Other information : Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste disposal recommendations	:	Dispose of contents/container in accordance with local/regional/national/international regulations. Contact supplier for any special requirements.
Additional information	:	Handle empty containers with care because residual vapours are flammable.
Ecology - waste materials	:	Avoid release to the environment.

SECTION 14: Transport information

14.1. Basic shipping description

In accordance with TDG

TDG

UN-No. (TDG)	:	UN1265
Packing group	:	II - Medium Danger
TDG Primary Hazard Classes	:	3 - Class 3 - Flammable Liquids
Proper shipping name	:	PENTANES liquid
Explosive Limit and Limited Quantity Index	:	1 L
Passenger Carrying Ship Index	:	Forbidden
Passenger Carrying Road Vehicle or Passenger Carrying Railway Vehicle Index	:	5 L

14.3. Air and sea transport

IMDG

UN-No. (IMDG)	:	1265
Proper Shipping Name (IMDG)	:	PENTANES
Class (IMDG)	:	3 - Flammable liquids
Packing group (IMDG)	:	I - substances presenting high danger

IATA

UN-No. (IATA)	:	1265
Proper Shipping Name (IATA)	:	Pentanes
Class (IATA)	:	3 - Flammable Liquids
Packing group (IATA)	:	I - Great Danger

SECTION 15: Regulatory information

15.1. National regulations

Isopentane (78-78-4)

Listed on the Canadian DSL (Domestic Substances List)

15.2. International regulations

Isopentane (78-78-4)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on the United States TSCA (Toxic Substances Control Act) inventory
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on CICR (Turkish Inventory and Control of Chemicals)

SECTION 16: Other information

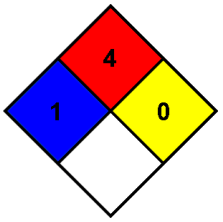
Date of issue	:	15/10/1979
Revision date	:	23/09/2016
Supersedes	:	15/10/2016

Indication of changes:

Other information : Praxair asks users of this product to study this SDS and become aware of the product hazards and safety information. To promote safe use of this product, a user should (1) notify employees, agents, and contractors of the information in this SDS and of any other known product hazards and safety information, (2) furnish this information to each purchaser of the product, and (3) ask each purchaser to notify its employees and customers of the product hazards and safety information

The opinions expressed herein are those of qualified experts within Praxair Canada Inc. We believe that the information contained herein is current as of the date of this Safety Data Sheet. Since the use of this information and the conditions of use are not within the control of Praxair Canada Inc, it is the user's obligation to determine the conditions of safe use of the product. Praxair Canada Inc, SDSs are furnished on sale or delivery by Praxair Canada Inc, or the independent distributors and suppliers who package and sell our products. To obtain current SDSs for these products, contact your Praxair sales representative, local distributor, or supplier, or download from www.praxair.ca. If you have questions regarding Praxair SDSs, would like the document number and date of the latest SDS, or would like the names of the Praxair suppliers in your area, phone or write Praxair Canada Inc, (Phone: 1-888-257-5149; Address: Praxair Canada Inc, 1 City Centre Drive, Suite 1200, Mississauga, Ontario, L5B 1M2).

NFPA health hazard	:	1 - Exposure could cause irritation but only minor residual injury even if no treatment is given.
NFPA fire hazard	:	4 - Will rapidly or completely vaporize at normal pressure and temperature, or is readily dispersed in air and will burn readily.
NFPA reactivity	:	0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



HMIS III Rating

Health	:	1 Slight Hazard - Irritation or minor reversible injury possible
Flammability	:	4 Severe Hazard - Flammable gases, or very volatile flammable liquids with flash points below 73 F, and boiling points below 100 F. Materials may ignite spontaneously with air. (Class IA)
Physical	:	0 Minimal Hazard - Materials that are normally stable, even under fire conditions, and will NOT react with water, polymerize, decompose, condense, or self-react. Non-Explosives.

SDS Canada (GHS) - Praxair

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.