

SAFETY DATA SHEET

Version 4.12
 Revision Date 02/26/2015
 Print Date 06/25/2018

1. PRODUCT AND COMPANY IDENTIFICATION

Product name	: 2-Methylbutane		
Product Number	: M32631		
Brand	: Sigma-Aldrich		
Product Use	: For laboratory research purposes.		
Supplier	: Sigma-Aldrich Canada Co. 2149 Winston Park Drive OAKVILLE ON L6H 6J8 CANADA	Manufacturer	: Sigma-Aldrich Corporation 3050 Spruce St. St. Louis, Missouri 63103 USA
Telephone	: +1 9058299500		
Fax	: +1 9058299292		
Emergency Phone # (For both supplier and manufacturer)	: +1-703-527-3887 (CHEMTREC)		
Preparation Information	: Sigma-Aldrich Corporation Product Safety - Americas Region 1-800-521-8956		

2. HAZARDS IDENTIFICATION

Emergency Overview

Target Organs

Central nervous system, Heart, Liver

WHMIS Classification

B2 Flammable liquid

Flammable liquid
 Specific target organ toxicity - single exposure
 Moderate respiratory irritant

GHS Classification

Flammable liquids (Category 1)
 Specific target organ toxicity - single exposure (Category 3)
 Aspiration hazard (Category 1)
 Acute aquatic toxicity (Category 2)

GHS Label elements, including precautionary statements

Pictogram



Signal word Danger

Hazard statement(s)

H224	Extremely flammable liquid and vapour.
H304	May be fatal if swallowed and enters airways.
H336	May cause drowsiness or dizziness.
H401	Toxic to aquatic life.

Precautionary statement(s)

P210	Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
P331	Do NOT induce vomiting.

HMIS Classification

Health hazard: 2
Chronic Health Hazard: *
Flammability: 4
Physical hazards: 0

NFPA Rating

Health hazard: 2
Fire: 4
Reactivity Hazard: 0

Potential Health Effects

Inhalation May be harmful if inhaled. Causes respiratory tract irritation. Vapours may cause drowsiness and dizziness.
Skin May be harmful if absorbed through skin. Causes skin irritation.
Eyes Causes eye irritation.
Ingestion May be harmful if swallowed. Aspiration hazard if swallowed - can enter lungs and cause damage.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : Isopentane
Formula : C₅H₁₂
Molecular weight : 72.15 g/mol

CAS-No.	EC-No.	Index-No.	Concentration
Isopentane			
78-78-4	201-142-8	601-006-00-1	<=100%

4. FIRST AID MEASURES**General advice**

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

In case of eye contact

Flush eyes with water as a precaution.

If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIREFIGHTING MEASURES**Conditions of flammability**

Flammable in the presence of a source of ignition when the temperature is above the flash point. Keep away from heat/sparks/open flame/hot surface. No smoking.

Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Specific hazards arising from the chemical

Flash back possible over considerable distance. Container explosion may occur under fire conditions. Vapours may form explosive mixture with air.

Special protective equipment for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

Hazardous combustion products

Hazardous decomposition products formed under fire conditions. - Carbon oxides
 Hazardous decomposition products formed under fire conditions. - Carbon oxides

Explosion data - sensitivity to mechanical impact

No data available

Explosion data - sensitivity to static discharge

No data available

Further information

Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES**Personal precautions**

Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

Methods and materials for containment and cleaning up

Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

7. HANDLING AND STORAGE**Precautions for safe handling**

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

Use explosion-proof equipment. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

Conditions for safe storage

Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Recommended storage temperature 2 - 8 °C

Refrigerate before opening. Handle and open container with care.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Components with workplace control parameters**

Components	CAS-No.	Value	Control parameters	Basis
Isopentane	78-78-4	TWA	600.000000 ppm 1,770.000000 mg/m3	Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)
		TWA	600.000000 ppm	Canada. British Columbia OEL
		STEL	750.000000 ppm 2,210.000000 mg/m3	Ontario Table of Occupational Exposure Limits made under the Occupational Health and Safety Act.
		TWA	600.000000 ppm 1,770.000000 mg/m3	Ontario Table of Occupational Exposure Limits made under the Occupational Health and Safety Act.

Personal protective equipment

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact

Material: Nitrile rubber

Minimum layer thickness: 0.4 mm

Break through time: 480 min

Material tested: Camatril® (KCL 730 / Aldrich Z677442, Size M)

Splash contact

Material: Nitrile rubber

Minimum layer thickness: 0.4 mm

Break through time: 480 min

Material tested: Camatril® (KCL 730 / Aldrich Z677442, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Eye protection

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection

Complete suit protecting against chemicals, Flame retardant antistatic protective clothing., The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Specific engineering controls

Use mechanical exhaust or laboratory fumehood to avoid exposure.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form liquid, clear

Colour colourless

Safety data

pH No data available

Melting point/freezing point No data available

Boiling point 28 - 29 °C (82 - 84 °F) at 1,013 hPa (760 mmHg)

Flash point -51 °C (-60 °F) - closed cup

Ignition temperature 420 °C (788 °F)

Auto-ignition temperature No data available

Lower explosion limit 1.4 %(V)

Upper explosion limit	8.3 %(V)
Vapour pressure	769.92 hPa (577.49 mmHg) at 20 °C (68 °F) 2,355.26 hPa (1,766.59 mmHg) at 55 °C (131 °F)
Density	0.620 g/cm ³
Water solubility	No data available
Partition coefficient: n-octanol/water	No data available
Relative vapour density	2.49 - (Air = 1.0)
Odour	No data available
Odour Threshold	No data available
Evaporation rate	No data available

10. STABILITY AND REACTIVITY

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

Vapours may form explosive mixture with air.

Conditions to avoid

Heat, flames and sparks. Extremes of temperature and direct sunlight.

Materials to avoid

Oxidizing agents

Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides

Hazardous decomposition products formed under fire conditions. - Carbon oxides

Other decomposition products - No data available

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Oral LD50

No data available

Inhalation LC50

Irritating to respiratory system.

Dermal LD50

No data available

Other information on acute toxicity

No data available

Skin corrosion/irritation

Serious eye damage/eye irritation

No data available

Respiratory or skin sensitisation

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as

probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

Reproductive toxicity

No data available

Teratogenicity

No data available

Specific target organ toxicity - single exposure (Globally Harmonized System)

May cause drowsiness or dizziness.

Specific target organ toxicity - repeated exposure (Globally Harmonized System)

No data available

Aspiration hazard

May be fatal if swallowed and enters airways.

Potential health effects

Inhalation	May be harmful if inhaled. Causes respiratory tract irritation. Vapours may cause drowsiness and dizziness.
Ingestion	May be harmful if swallowed. Aspiration hazard if swallowed - can enter lungs and cause damage.
Skin	May be harmful if absorbed through skin. Causes skin irritation.
Eyes	Causes eye irritation.

Signs and Symptoms of Exposure

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Synergistic effects

No data available

Additional Information

RTECS: EK4430000

12. ECOLOGICAL INFORMATION

Toxicity

Toxicity to fish	LC50 - Pimephales promelas (fathead minnow) - 12.8 mg/l - 96 h Remarks: The preceding data, or interpretation of data, was determined using Quantitative Structure Activity Relationship (QSAR) modeling.
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 2.3 mg/l - 48 h

Persistence and degradability

Biodegradability Result: 71.43 % - Readily biodegradable

Bioaccumulative potential

Does not significantly accumulate in organisms.

Mobility in soil

No data available

PBT and vPvB assessment

No data available

Other adverse effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Toxic to aquatic life.

13. DISPOSAL CONSIDERATIONS

Product

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging

Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)

UN number: 1265 Class: 3 Packing group: I
Proper shipping name: Pentanes
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG

UN number: 1265 Class: 3 Packing group: I EMS-No: F-E, S-D
Proper shipping name: PENTANES
Marine pollutant: No

IATA

UN number: 1265 Class: 3 Packing group: I
Proper shipping name: Pentanes

15. REGULATORY INFORMATION

WHMIS Classification

B2	Flammable liquid	Flammable liquid Specific target organ toxicity - single exposure Moderate respiratory irritant
----	------------------	---

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

16. OTHER INFORMATION

Text of H-code(s) and R-phrases mentioned in Section 3

Further information

Copyright 2015 Sigma-Aldrich Co. LLC. License granted to make unlimited paper copies for internal use only. The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.