

Safety Data Sheet



1. Identification of the Substance/Mixture and the Supplier

Supplier : National Institute of Advanced Industrial Science and Technology (AIST)
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 Office in Charge : Reference Materials Office, Center for Quality Management of Metrology,
 National Metrology Institute of Japan
 Person in Charge : Certified Reference Material Staff
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 Emergency Contact : Same as above

Prepared on : May 14, 2019
 Revised on : August 31, 2022
 Reference No. : 4067001

Identity of : Certified reference material NMIJ CRM 4067-a
 Substance/Mixture : Isopentane
 Recommended Use and Restrictions on Use : This reference material can be used for calibration of analysis equipment and also used as raw material in preparation of isopentane standard gas which is used for natural gas composition analysis. Do not use this reference material for other purposes than testing/research.
 This CRM is a reference material (specified in the Japanese Industrial Standard (JIS) Q 0030).

2. Hazards Identification

GHS classification : Flammable liquids : Category 1
 Specific target organ toxicity/systemic toxicity (Single exposure) : Category 3 (Narcotic effects)
 Aspiration hazard : Class 1
 Hazardous to the aquatic environment, acute hazard : Class 2

GHS label element :



Signal Word : Danger
 Hazards Statement : Extremely flammable liquid and vapor
 May be fatal if swallowed and enters airways
 May cause drowsiness or dizziness
 Toxic to aquatic life
 Other Hazards Statement : May cause dry or cracked skin through repeated exposure
 Precautionary Statement : [Safety Precaution]
 Keep away from ignition sources such as heat, sparks, open flames and hot surfaces. No smoking.
 [First-Aid Measures]

If swallowed: Immediately call a doctor/physician.

If inhaled: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a doctor/physician if you feel unwell. Do not induce vomiting.

[Storage]

Protect container from direct sunlight. Store in well-ventilated place at temperatures of 0 °C to 40 °C. Keep away from flames. Secure container with chains to prevent it from falling.

[Disposal]

Return this reference material back to the function in charge given in “1. Identification of the Substance/Mixture and the Supplier” when it becomes no longer necessary to use it or it becomes beyond its shelf life.

The other hazards than the above do not result in classification or are not classifiable.

3. Composition/Information on Ingredients

Substance or mixture	:	Single substance
Chemical name	:	Isopentane
Synonym	:	2-methylbutane
Chemical formula	:	C ₅ H ₁₂
Molecular weight	:	72.15
CAS number	:	78-78-4
Content	:	99 % or more
Reference Number in Gazetted List in Japan	:	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. : (2)-5 Industrial Safety and Health Act : -

4. First-aid Measures

If inhaled	:	Remove victim to fresh air and keep at rest and warm. Get medical advice/attention.
If on skin	:	Rinse skin with clean water thoroughly. Remove/Take off all contaminated clothing, shoes, etc. If skin irritation or rash occurs: Get medical advice/attention.
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 with water thoroughly. Call a doctor/physician.
Protection of First-Aid Responder	:	Wear personal protective equipment.

5. Fire-fighting Measures

Extinguishing Media	:	In the early stages of fire, use powder, carbon dioxide and dry chemical extinguisher/tool. Foam extinguishing agent for water-soluble liquid (Alcohol-resistant foam), Carbon dioxide, Powder, Sand, Water
Fire-Specific Hazards	:	May emit irritating or toxic fume (or gas) in case of fire.

- Specific Fire-Fighting Method : Eliminate combustion sources at the origin of fire and put out fire by using extinguishing media. Move movable containers promptly to a safe place. If containers are immovable, cool their surroundings with water fog.
- Protection of Fire-Fighters : Fight fire upwind to avoid breathing hazardous gas. Use personal protective equipment such as fire protection clothing, heat-resistant clothing, protective clothing, compressed air open-circuit self-contained breathing apparatus, circulating oxygen respirator, rubber gloves, and rubber boots.

6. Accidental Release Measures

- Personal Precaution : Remove potential ignition sources from surrounding areas. Make fire extinguishing media/equipment available to prepare for potential ignition.
- Personal Protective Equipment and Emergency Procedures : Ventilate the affected areas thoroughly, if it is in an indoor environment, until the clean-up operation is completed. Use appropriate personal protective equipment during the operation to avoid skin contact of splash etc. and inhalation of dust and gas.
- Environmental Precautions : Take precautions to prevent spillage from draining into rivers etc. to adversely impact the environment. Make it sure to appropriately treat contaminated wastewater to prevent untreated wastewater from being released into the surrounding environment.
- Recovery and Neutralization : Collect spillage by using explosion-proof electric vacuum cleaner or wet brush and store in container to dispose of it in accordance with local rules.
- Prevention of Secondary Disaster : Mark the restricted area with rope etc. to keep out unauthorized people. Carry out the clean-up operation from the upwind side and make people on the downwind side evacuate.

7. Handling and Storage

- Handling
 - Engineering Precautions : Strict ban on fire.
Use appropriate personal protective equipment in order to avoid contact on skin and inhalation of vapor.
 - Local and General Ventilation : If vapor/mist is emitted: Seal the emission source and install local ventilation system.
 - Precautions for Safe Handling : Avoid rough handling such as knocking over, dropping, giving a shock to and dragging container.
Prevent this reference material from leaking, overflowing and splashing. Do not allow vapor to be emitted.
Keep container tightly closed after using this reference material.
Wash hands, face, etc. thoroughly and gargle after handling.
Restrict drinking, eating and smoking to a designated area.
Do not bring gloves and other contaminated personal protective equipment into staff room.
Make a place handling this reference material a restricted area to keep out unauthorized people.
Wear appropriate personal protective equipment to avoid inhalation

and contact with eyes, skin and clothing.
Use local ventilation equipment in indoor handling areas.

Storage

- Appropriate Storage Conditions : Protect container from direct sunlight. Store in well-ventilated place at temperatures of 0 °C to 40 °C. Keep away from flames. Secure container with chains to prevent it from falling.
 - Incompatible Materials : Oxidizing agent
 - Safe Container Packaging Material : Use containers specified by High-Pressure Gas Safety Act and UN Model Regulations.
- ※ See the Certificate for the details on appropriate storage conditions and instructions for use as a reference material.

8. Exposure Controls/Personal Protection

Threshold Limit Value

Not specified

Permissible Concentration (Isopentane)

- ACGIH TLV-TWA : 600 ppm
- Values recommended by : Not specified

Japan Society for Occupational Health

Engineering Controls

- Ventilation/Exhaust : Local ventilation system or general ventilation system
- Safety Control/Gas Detection : Measuring equipment, Detecting tube
- Storage Precautions : Ventilation along floor surface. Keep this reference material sealed. Keep away from combustible and reducing substances and strong oxidizers.

Personal Protective Equipment

- Respiratory System : Gas mask against organic gas, Compressed air open-circuit self-contained breathing apparatus
- Hands : Protective gloves
- Eyes : Safety goggles
- Skin and Body : Protective clothing, Face shield

Hygiene Measures

Handle this reference material in accordance with the industrial health and safety codes.

9. Physical and Chemical Properties

- Appearance, etc. : Liquid
- Color : Colorless
- Odor : No data available
- pH : No data available
- Melting point : No data available
- Boiling point : 28 °C to 29 °C (1.013 hPa)
- Flashing point : -51 °C Closed cup flash test
- Explosive range : Lower limit: 1.4 vol%, upper limit: 8.3 vol%
- Vapor pressure : 770 hPa(20 °C), 2355 hPa (55 °C)
- Relative vapor : 2.49

density(Air=1)	
Specific gravity or bulk specific gravity	: 0.620 g/cm ³
Solubility	: Water: 48.0mg/l (25 °C) Organic solvent: Mixed with ethanol and diethyl ether at any mixing ratios.
<i>n</i> -Octanol/water partition coefficient (Log Po/w)	: 2.72
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Flammability	: No data available
Viscosity	: 0.215 cP(25 °C)

10. Stability and Reactivity

Stability	: No data available
Reactivity	: No data available
Possibility of hazardous reactions	: No data available
Conditions to avoid	: Heat, spark, open flame. High temperature and direct sunlight.
Incompatible materials	: Oxidizers
Hazardous decomposition products	: Hazardous decomposition products are generated in the presence of fire – Carbon

11. Toxicological information

Acute toxicity	: Not classifiable due to insufficient data Inhalation: Respiratory tract irritation
Skin corrosivity/irritation	: Not classifiable due to insufficient data
Severe damage to eyes/eye irritation	: Not classifiable due to insufficient data
Respiratory sensitization	: Not classifiable due to insufficient data
Skin sensitization	: Not classifiable due to insufficient data
Germ cell mutagenicity	: Not classifiable due to insufficient data
Carcinogenicity	: Not classifiable due to insufficient data
Reproductive toxicity	: Not classifiable due to insufficient data
Effect on or via lactation	: Not classifiable due to insufficient data
Specific Target Organ Toxicity/Systemic Toxicity (Single Exposure)	: May cause drowsiness or dizziness
Specific Target Organ Toxicity/Systemic Toxicity (Repeated Exposure)	: Not classifiable due to insufficient data
Aspiration Hazard	: May be fatal if swallowed and enters airways.

12. Ecological Information

Ecotoxicity	: Fathead minnow LC50 = 12.8 mg/l/96 hours
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	Daphnia magna EC50 = 2.3 mg/l/48 hours
Persistence and Degradability	: 71.43 % Easily degradable
Bioaccumulation	: Not accumulated in large volume in living organisms
Mobility in soil	: No data available
Ozone depletion potential	: No data available

13. Disposal Considerations

Residual Waste	: Dispose of this reference material in accordance with applicable legislation and local government ordinance. Entrust disposal of residual waste to a professional waste disposal company licensed by prefectural governor etc., or to a local government if it provides disposal services. If entrusting disposal of residual waste, make a waste disposal company etc. fully understand relevant risks and hazards.
Contaminated Container and Package	: Return this reference material back to the function in charge given in “1. Identification of the Substance/Mixture and the Supplier” when it becomes no longer necessary to use it or it becomes beyond its shelf life. Users must not dispose of containers at their discretion since containers must be disposed of by their owner in accordance with relevant laws and regulations.

14. Transport Information

UN Number	: 1265
UN Classification	: Class 3 (Flammable liquid); Grade I I
Material name	: PENTANES, liquid
Container grade	: —
ICAO/IATA	: Class 3; Grade I
Marine pollutant	: Hazardous liquid substance (Class Y)
Precautions	: Transport this reference material carefully while keeping it away from direct sunlight and fire and preventing accidental release due to falling, being knocked over, etc.

15. Regulatory Information

- ◇ Fire Service Act
 - Dangerous substance Class 4; Flammable liquid; Special flammables; Non water-soluble liquid (50 L)
- ◇ Industrial Safety and Health Law
 - Enforcement Order Appendix 1; Dangerous substance (Flammable material)
 - Article 57-1 of the Law (Article 18 of the Order); Dangerous substance and hazardous substance whose name must be indicated (Cabinet Order 543)
 - Article 57-2 of the Law (Article 18-2 of the Order); Dangerous substance and hazardous substance whose name must be notified (Cabinet Order 543)
- ◇ Act for the Prevention of Marine Pollution and Maritime Disasters
 - Enforcement Order Appendix 1; Hazardous liquid substance (Class Y)
- ◇ Civil Aeronautics Act
 - Enforcement Regulation Article 194; Dangerous Material Announcement Appendix; Class 1

Flammable liquids

◇ Ship Safety Law

- Dangerous Material Rule Article 3; Dangerous Material Announcement Appendix; Class 1
Flammable liquids

◇ Act on Port Regulations

- Enforcement Regulation Article 12; Dangerous Material Announcement; Flammable liquids

◎ **This SDS is originally prepared for the use of the material in Japan, thus the stated laws and regulations are stipulated and carried out in Japan. The use of the material in other countries should be referred to and by application of the relevant laws and regulations of the country in which the material will be used.**

16. Other Information

Others

The information in this document is not intended to be exhaustive and is based on currently available information and data. The measures given in this document are applicable only to normal handling conditions. When handling this reference material under special conditions etc., it is recommended to take safety measures appropriate to each specific application and context of use. This document is intended to provide information and not intended to guarantee anything in handling this reference material.
