



<b>MATERIALS SAFETY DATA SHEET (MSDS) Isopentane (C5H12)</b>	<b>MSDS Number:</b>	
	<b>Version number:</b>	
	<b>Date issued:</b>	
	<b>Page No:</b>	

## 1. Product Identification

<b>Chemical name</b>	Isopentane
<b>Other means of identification</b>	2-methylbutane; Butane, 2-methyl-; Iso-Pentane; Isoamyl hydride; Ethyl dimethyl methane; Isopentan (2-methylbutane);Methyl butane; 1,1,2-Trimethylethane
<b>Product use</b>	Synthetic/Analytical chemistry
<b>CAS No</b>	78-78-4

## Manufacturer/Importer/Supplier/Distributor information

Manufacturer Supplier	
E-Mail	Entity 1   Made by India
Contact Person	
Emergency Telephone	

## 2. Hazard(s) identification

<b>OSHA/HCS status</b>	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
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## Classification of the substance or mixture



Flammable Liquids	Category 1
Aquatic Hazard (Long-Term)	Aquatic Hazard (Long-Term) - Category 2
Specific Target Organ Toxicity (Single Exposure) (Narcotic effects) -	Category 3

<b>GHS label elements</b>	
<b>Hazard pictograms</b>	
<b>Signal word</b>	<b>Danger</b>
<b>Hazard statements</b>	Extremely flammable liquid and vapor. May cause drowsiness or dizziness. Toxic to aquatic life with long lasting effects. May form explosive mixtures with air. May be fatal if swallowed and enters airways.
<b>Precautionary statements</b>	
<b>General</b>	Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.
<b>Prevention</b>	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use explosion-proof electrical, ventilating or lighting equipment. Use non sparking tools. Take action to prevent static discharges. Use only outdoors or in a well ventilated area. Avoid release to the environment. Avoid breathing vapor.
<b>Response</b>	Collect spillage. Call a POISON CENTER or doctor if you feel unwell.
<b>Storage</b>	Store locked up. Store in a well-ventilated place. Keep container tightly closed. Keep cool.
<b>Disposal</b>	Dispose of contents and container in accordance with all local, regional, national and international regulations.
<b>Hazards not otherwise classified</b>	None known.

### 3. Composition and ingredient information

Chemical name	CAS number	%
isopentane	78-78-4	7



## 4. First-aid measures

<b>General advice</b>	Consult a physician. Show this safety data sheet to the doctor in attendance.
<b>Inhaled</b>	If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
<b>Skin contact</b>	Wash off with soap and plenty of water. Consult a physician.
<b>Eye contact</b>	Flush eyes with water as a precaution.
<b>Swallowed</b>	Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

## 5. Fire-fighting measures

<b>Extinguishing media</b>	
<b>Suitable extinguishing media</b>	BC powder. Carbon dioxide. Sand/earth. MAJOR FIRE: Polyvalent foam. Water spray.
<b>Unsuitable extinguishing media</b>	Solid water jet ineffective as extinguishing medium.
<b>Special hazards arising from the substance or mixture</b>	Upon combustion: CO and CO <sub>2</sub> are formed.
<b>Advice for firefighters</b>	<p><b>Instructions:</b></p> <p>If no hazard for/from the surroundings: controlled burning.</p> <p>If hazardous substances are nearby: consider extinguishment. Extinguish only if gas supply/leak can be shut afterwards. Cool tanks/drums with water spray/remove them into safety.</p> <p>Physical explosion risk: extinguish/cool from behind cover. Do not move the load if exposed to heat.</p> <p>After cooling: persistent risk of physical explosion. Take account of environmentally hazardous firefighting water. Use water moderately and if possible collect or contain it.</p> <p><b>Special protective equipment for fire-fighters:</b> Gloves. Protective clothing.</p> <p>Large spills/in enclosed spaces: compressed air apparatus. Heat/fire exposure: compressed air/oxygen apparatus</p>



## 6. Accidental Release Measures

<b>Personal precautions, protective equipment and emergency procedures</b>	Remove all sources of ignition. Ensure adequate ventilation. Use personal protective equipment as required. Take precautionary measures against static discharges.
<b>Environmental precautions</b>	Do not flush into surface water or sanitary sewer system.
<b>Methods and materials for containment and cleaning up</b>	Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment. Take precautionary measures against static discharges.

## 7. Handling and storage

<b>Precautions To Be Taken in Handling</b>	Avoid inhalation of vapor or mist. Keep away from heat, sparks and flame. Keep away from sources of ignition - No smoking. Use spark-proof tools and explosion proof equipment. Use in a closed system. Secure the cylinder to prevent it from falling or being knocked over. Install check valves or traps to prevent suck back to the cylinder. Ground all lines and equipment. Leak check the lines and equipment. Have an emergency plan covering steps to be taken in the event of an accidental release. Wear leather safety gloves and safety shoes when handling cylinders. Protect cylinders from physical damage; do not drag, roll, slide or drop. While moving cylinder, always keep in place removable valve cover. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Never insert an object (e.g., wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Slowly open the valve. If the valve is hard to open, discontinue use and contact your supplier. Close the container valve after each use; keep closed even when empty. Never apply flame or localized heat directly to any part of the container. High temperatures may damage the container and could cause the pressure relief device to fail prematurely, venting the container contents.
<b>Precautions To Be Taken in Storing</b>	Cylinders should be stored and used in dry, well-ventilated areas away from sources of heat or ignition. Store away from oxidizers. Do not store in direct sunlight.



<b>Other Precautions</b>	When handling product under pressure, use piping and equipment adequately designed to withstand the pressures to be encountered. Never work on a pressurized system. Use a back flow preventive device in the piping. Gases can cause rapid suffocation because of oxygen deficiency; store and use with adequate ventilation. If a leak occurs, close the container valve and blow down the system in a safe and environmentally correct manner in compliance with all international, federal/national, state/provincial, and local laws; then repair the leak. Never place a container where it may become part of an electrical circuit.
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## 8. Exposure Control / Personal Protection

### Control parameters

#### Occupational exposure limits

Ingredient name	Exposure limits
isopentane	<b>ACGIH TLV (United States, 3/2019).</b> TWA: 1000 ppm 8 hours.

<b>Appropriate engineering controls</b>	Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.
<b>Environmental exposure controls</b>	Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

### Individual protection measures

<b>Hygiene measures</b>	Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
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<b>Eye/face protection</b>	Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side shields.
<b><u>Skin protection</u></b>	
<b>Hand protection</b>	Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
<b>Body protection</b>	Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear antistatic protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.
<b>Other skin protection</b>	Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
<b>Respiratory protection</b>	Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

## 9. Physical and chemical properties

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<b>Physical State</b>	Liquid
<b>Appearance</b>	Colorless
<b>Odor</b>	Petroleum distillates
<b>Odor Threshold</b>	No data available
<b>Melting Point/Range</b>	-160 °C / -256 °F
<b>Softening Point</b>	No data available
<b>Boiling Point/Range @ 760 mmHg</b>	30 °C / 86 °F
<b>Flammability (liquid)</b>	Extremely flammable
<b>Flammability (solid,gas)</b>	Not applicable



<b>Explosion Limits</b>	<b>Lower</b> 1.4 vol% <b>Upper</b> 7.6 vol%
<b>Flash Point</b>	-51 °C / -59.8 °F
<b>Autoignition Temperature</b>	420 °C / 788 °F
<b>Decomposition Temperature</b>	No data available
<b>pH</b>	Not applicable
<b>Viscosity</b>	No data available
<b>Water Solubility</b>	Insoluble
<b>Solubility in other solvents</b>	No information available
<b>Partition Coefficient (n-octanol/water)</b>	
<b>Component</b>	<b>log Pow</b>
Isopentane	4
<b>Vapor Pressure</b>	990 mbar @ 20 °C
<b>Density / Specific Gravity</b>	0.620
<b>Bulk Density</b>	Not applicable
<b>Vapor Density</b>	2.48 (Air = 1.0)
<b>Particle characteristics</b>	Not applicable
<b>Molecular Formula</b>	C5 H12
<b>Explosive Properties</b>	Vapors may form explosive mixtures with air

## 10. Stability and reactivity

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<b>Reactivity</b>	No specific test data related to reactivity available for this product or its ingredients.
<b>Chemical stability</b>	The product is stable
<b>Possibility of hazardous reactions</b>	Under normal conditions of storage and use, hazardous reactions will not occur.
<b>Conditions to avoid</b>	Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.
<b>Incompatible materials</b>	Reactive or incompatible with the following materials: oxidizing materials.
<b>Hazardous decomposition products</b>	Under normal conditions of storage and use, hazardous decomposition products should not be produced.



<b>Hazardous polymerization</b>	Under normal conditions of storage and use, hazardous polymerization will not occur.
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## 11. Toxicological information

### Information on hazard classes as defined in Regulation (EC) No 1272/2008

#### Product Information

#### Acute Toxicity

<b>Oral</b>	Based on available data, the classification criteria are not met.
<b>Dermal</b>	Based on available data, the classification criteria are not met.
<b>Inhalation</b>	Based on available data, the classification criteria are not met.
<b>Skin corrosion/irritation</b>	Based on available data, the classification criteria are not met.
<b>Serious eye damage/irritation</b>	Based on available data, the classification criteria are not met.
<b>Respiratory or skin sensitization</b>	
<b>Respiratory</b>	Based on available data, the classification criteria are not met
<b>Skin</b>	Based on available data, the classification criteria are not met
<b>Germ cell mutagenicity;</b>	Based on available data, the classification criteria are not met
<b>Carcinogenicity</b>	Based on available data, the classification criteria are not met. There are no known carcinogenic chemicals in this product.
<b>Reproductive toxicity</b>	Based on available data, the classification criteria are not met.
<b>STOT-single exposure</b>	Category 3
<b>Results / Target organs</b>	Central nervous system (CNS).
<b>STOT-repeated exposure</b>	Based on available data, the classification criteria are not met.
<b>Target Organs</b>	None known.
<b>Aspiration hazard</b>	Category 1
<b>Symptoms / effects, both acute and delayed</b>	Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.
<b>Information on other hazards</b>	
<b>Endocrine Disrupting Properties</b>	Assess endocrine disrupting properties for human health. This product does not contain any known or suspected endocrine disruptors.





## 12. Ecological information

### Toxicity

<b>Ecotoxicity effects</b>	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. The product contains following substances which are hazardous for the environment.
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Component	Freshwater Fish	Water Flea	Freshwater Algae
Isopentane	Oncorhynchus mykiss: LC50: 3.1 mg/L/96h	EC50: = 2.3 mg/L, 48h (Daphnia magna)	-

### Persistence and degradability

<b>Persistence</b>	Persistence is unlikely, based on information available.
<b>Degradation in sewage treatment plant</b>	Contains substances known to be hazardous to the environment or not degradable in waste water treatment plants
<b>Bio accumulative potential</b>	Bio accumulation is unlikely

Component	log Pow	Bioconcentration factor (BCF)
Isopentane	4	No data available






<b>Mobility in soil</b>	The product contains volatile organic compounds (VOC) which will evaporate easily from all surfaces Will likely be mobile in the environment due to its volatility. Disperses rapidly in air.
<b>Results of PBT and vPvB assessment</b>	Substance is not considered persistent, bio accumulative and toxic (PBT) / very persistent and very bio accumulative (vPvB).
<b>Endocrine disrupting Properties/ Endocrine Disruptor Information</b>	This product does not contain any known or suspected endocrine disruptors.
<b>Other adverse effects</b>	
<b>Persistent Organic Pollutant</b>	This product does not contain any known or suspected substance.
<b>Ozone Depletion Potential</b>	This product does not contain any known or suspected substance.

## 13. Disposal considerations



<b>Disposal methods</b>	The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.
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## 14. Transport information

	DOT	TDG	Mexico	IMDG	IATA
<b>UN number</b>	UN1265	UN1265	UN1265	UN1265	UN1265
<b>UN proper shipping name</b>	Pentanes	Pentanes	Pentanes	Pentanes	Pentanes
<b>Transport hazard class(es)</b>	3 	3 	3 	3 	3 
<b>Packing group</b>	I	I	I	I	I
<b>Environmental hazards</b>	No.	No.	No.	No.	No.

**“Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product.”**

### Additional information

<b>TDG Classification</b>	Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.18-2.19 (Class 3). <b>Passenger Carrying Vessel Index:</b> Forbidden <b>Passenger Carrying Road or Rail Index :</b> 1
<b>Special precautions for user</b>	<b>Transport within user’s premises:</b> always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage
<b>Transport in bulk according to IMO instruments</b>	Not available.



## 15. Regulatory information

<b>Safety, health and environmental regulations/legislation specific for the substance or mixture</b>	This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.
<b>Chemical safety assessment</b>	For this product a chemical safety assessment was not carried out.

## 16. Any other relevant information

### History

<b>Product name</b>	
<b>Product code</b>	
<b>Date of printing</b>	
<b>Date of issue/Date of revision</b>	
<b>Date of previous issue</b>	
<b>Version</b>	
<b>Prepared by</b>	

## 17. Change Details

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<b>Product name</b>	
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