

**MATERIAL SAFETY DATA SHEET (MSDS)****CYCLOPENTANE****1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**

SUBSTANCE OR PREPARATION TRADE NAME	Cyclopentane
CHEMICAL CLASSIFICATION	Cycloparaffin, Naphthene
COMPANY/ UNDERTAKING NAME AND ADDRESS	Haldia Petrochemicals Limited, PO Box No 12, Haldia Plant PO Durgachak, Dist Midnapore West Bengal, India PIN 721 602
TELEPHONE	091-3224-274384 / 274400
EMERGENCY TELEPHONE NUMBER	091-3224-275916


2. COMPOSTION AND INFORMATION ON INGREDIENTS

CHEMICAL NAME	CHEMICAL FORMULA	CONTENT	CAS NUMBER	EXPOSURE LIMITS IN AIR (ppm)		
				ACGIH TLV-TWA	ACGIH TLV-STEL	IDLH
Cyclopentane	C ₅ H ₁₀	98.20 wt%	287-92-3	600	NA	NA
2,2 Dimethyl butane	(CH ₃) ₃ CCH ₂ CH ₃	0.28 wt%	75-83-2	500	1000	NA
n- pentane	n- C ₅ H ₁₂	1.47 wt%	109-66-0	600	750	NA
i- Pentane	i- C ₅ H ₁₂	0.05 wt%	78-78-4	600	750	NA
Total Sulphur	S	< 1.0 wt. ppm	7704-34-9	NA	NA	NA

3. HAZARD CLASSIFICATION

EMERGENCY OVERVIEW		Highly flammable liquid and vapour. Vapour may cause flash fire. Harmful or Fatal if inhaled. Harmful if swallowed. Causes skin irritation. Causes respiratory irritation. Causes eye irritation.			
POTENTIAL HEALTH HAZARDS					
	EYE	SKIN	INHALATION	INGESTION	OTHERS
ACUTE	To cause prolonged or significant eye irritation	Not expected to be harmful to internal organs if absorbed through the skin.	Dizziness, headache, nausea, Unconsciousness, weakness	Abdominal pain, diarrhoea, dizziness, nausea, sore throat	
CHRONIC	Repeated or prolonged contact with skin may cause dermatitis				
NFPA HAZARD SIGNALS	HEALTH	FLAMMABILITY	REACTIVITY	SPECIAL	
	2	3	0	-	
HAZCHEM CODE	3YE				
GHS-Classification	Flammable liquids Category 2 Aspiration hazard Category 1 Chronic aquatic toxicity, Category 3 Acute aquatic toxicity, Category 3 Target Organ Systemic Toxicant - Single exposure, Category 3, Inhalation, Central nervous system				

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MSDS	Mrityunjoy Sil	Amitava Das	2	4
			Sep 2005	May 2017

GHS- labeling Hazard pictograms	
Signal word (GHS-US)	Danger
Hazard statements	H225 Highly flammable liquid and vapor. H304 May be fatal if swallowed and enters airways. H332 Harmful if inhaled. H336 May cause drowsiness or dizziness. H412 Harmful to aquatic life with long lasting effects.
Precautionary statements	-Prevention: P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking. P240 Ground/bond container and receiving equipment. P261 Avoid breathing dust/fume/gas/mist/vapors/spray. P273 Avoid release to the environment. P280 Wear protective gloves/ protective clothing/ eye protection/ face protection -Response: P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician. P312 Call a POISON CENTER or doctor/ physician if you feel unwell. P331 Do NOT induce vomiting. P370+P378 In case of fire: Evacuate area. Use manufacturer/supplier or the competent authority to specify appropriate media for extinction. -Storage: P403+P235 Store in a well-ventilated place. Keep cool. - Disposal: P501 Dispose of contents/ container to an approved waste disposal plant.

4. FIRST AID MEASURES

SKIN CONTACT	Remove contaminated clothing immediately and wash affected skin with soap and water. Wash contaminated clothing before reuse. If skin irritation persists, call a physician
EYE CONTACT	If the substance has got into the eyes, wash out with water or saline solution for at least 15 minutes. Keep eye wide open while rinsing. Consult a physician for severe cases
INHALATION	Move to fresh air in case of accidental inhalation of vapours. Keep patient warm. In case of shortness of breath, give oxygen. Apply artificial respiration only if patient is not breathing or under medical supervision. No artificial aspiration mouth to mouth or mouth to nose. Use suitable instruments/apparatus.
INGESTION	Rinse mouth, drink water as a precaution. Do not induce vomiting without medical advice. If signs of poisoning appear, treat as for inhalation. Never give anything by mouth to an unconscious person
OTHER INSTRUCTIONS	Note to Physician: For ingestion, consider gastric lavage. Consider oxygen

5. FIRE FIGHTING MEASURES

FLASH POINT		-35 °C (Tag closed cup)		
Document	Compiled By	Approved By	Issue No	Rev. No
MSDS	Mrityunjoy Sil	Amitava Das	2	4
			Sep 2005	May 2017



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AUTO IGNITION TEMP	316 °C
FLAMMABLE LIMITS IN AIR BY VOL%	LEL%: 1.1, UEL%: 8.7
FIRE EXTINGUISHING AGENTS AND SPECIAL PROCEDURES	Carbon dioxide, dry chemical, foam or water spray. Do not use a solid water stream as it may scatter and spread fire.
UNUSUAL FIRE AND EXPLOSION HAZARDS	Severe fire hazard. The vapour is heavier than air. Vapour & gases may ignite at distant ignition sources and flash back. Vapour /air mixtures are explosive above flash point.
SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS	Wear a positive pressure supplied air respirator/full protective flame proof clothing

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS	Evacuate personnel to safe areas. Shut off leaks if without risk. Keep people away from upwind of spill/leak. Do not breathe vapour or spray mist. Avoid contact with skin, eyes and clothing. Take precautionary measures against static discharge.
ENVIRONMENTAL PRECAUTIONS	Contain leaking liquid with sand or earth, consult an expert. Prevent liquid entering sewers, basements and work pits, vapour may create explosion atmosphere. If substance has entered a water course or sewer or contaminated soil or vegetation, advise police
METHOD OF CLEANING	Absorb in earth or sand or other suitable material. Do not absorb in sawdust or other combustible material. Transfer to cover steel drums. Contact waste disposal services. Dispose of as special wastes in compliance with local and national regulations

7. HANDLING AND STORAGE

HANDLING	Use only in areas provided with appropriate exhaust ventilation. Do not breathe vapours or spray mist. Avoid contact with eyes and clothing. Keep away from open flames, hot surfaces and mist. Avoid contact with skin, eyes and clothing. Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures as static discharge
STORAGE	Keep container tightly closed in a dry and well-ventilated area. Store in a place accessible only by authorized person. Store in a original container. electrical equipment should be protected to the appropriate standard

8. EXPOSURE CONTROLS-PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROL	The product should only be used in areas from which all-naked lights and other sources of ignition have been excluded. Ventilation hoods and fans required when working with organic solvents.		
OTHER CONTROL PARAMETERS	Electrical equipment should be protected to the appropriate standard.		
PERSONAL PROTECTION EQUIPMENT			
EYE/ FACE PROTECTION	RESPIRATORY PROTECTION	HAND PROTECTION	BODY PROTECTION
Goggles giving complete protection to eyes	Incase of insufficient ventilation wear suitable respiratory protection	PVC or other plastic material gloves/solvent-resistant gloves (butyl rubber)	Chemical resistant apron/flame retardant antistatic protective clothing, heavy duty

Document	Compiled By	Approved By	Issue No	Rev. No
MSDS	Mrityunjoy Sil	Amitava Das	2	4
			Sep 2005	May 2017



MATERIAL SAFETY DATA SHEET (MSDS)

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9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE	ODOUR	PHYSICAL STATE	BOILING POINT
Colourless	Like gasoline, mild, sweet	Liquid	49.3 ⁰ C
MELTING / FREEZING POINT	SPECIFIC GRAVITY (AT20 ⁰ C) (WATER=1)	PH	SOLUBILITY IN WATER (AT 30 ⁰ C)
-94.4 ⁰ C	0.745	NA	Not Soluble
VAPOUR PRESSURE (AT 20 ⁰ C) IN MM Hg	VAPOUR DENSITY (AIR=1)	OTHER INFORMATIONS	VISCOSITY
400	2.42	Soluble in common organic	0.44 cP @ 20 ⁰ C

10. STABILITY AND REACTIVITY

CONDITIONS TO AVOID	Stable at normal conditions.stable under recommended storage conditions. Keep away from heat and sources of ignition
MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE	Strong acids and strong bases
HAZARDOUS DECOMPOSITION PRODUCTS	Carbon oxides. Simple hydrocarbons
HAZARDOUS POLYMERIZATION	Polymerisation will not occur

11. TOXICOLOGICAL INFORMATION

ANIMAL TOXICITY DATA	
ORAL LD50 (rat): 5480 mg/kg	DERMAL LD50 (rabbit): 5000 mg/kg
REPRODUCTIVE TOXICITY INFORMATION	
REPRODUCTIVE TOXICITY	No information available
MUTAGENICITY	No information available
EMBRYOTOXICITY	No information available
TERATOGENICITY	No information available
TARGET ORGAN	Central nervous system

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL STABILITY	This product is not readily biodegradable
EFFECT OF MATERIAL ON PLANTS OR ANIMALS	Miscible or partly miscible with water. Lighter than water. Risk of bioaccumulation. Slightly Water contaminating.
EFFECT OF CHEMICAL ON AQUATIC LIFE	This material is expected to be harmful to aquatic organism

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL	Can be incinerated, when in compliance with local regulations. If recycle is not practicable, dispose of in compliance with local regulations.
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			Sep 2005	May 2017



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METHODS	
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14. TRANSPORT INFORMATION

	PROPER SHIPPING NAME	HAZARD CLASS	IDENTIFICATION NUMBER	PACKING GROUP	LABEL REQUIRED
DOT	Cyclopentane	3	UN1146	II	3
TDG	Cyclopentane	3	UN1146	II	
IMDG/IMO	Cyclopentane	3	UN1146	II	-
ICAO	Cyclopentane	3	UN1146	II	-

15. REGULATORY INFORMATION

INDIAN REGULATION		Manufacture Import & Storage of hazardous chemical rules. Amended as on 2000
INTERNATIONAL REGULATIONS		
EU CLASSIFICATION	EU SYMBOL: Xn F	Highly flammable, harmful may cause lung damage if swallowed
	RISK PHRASES	R11, R65, R52/53:harmful to aquatic effects
	SAFETY PHRASES	S2, S9, S16, S51, S62
OSHA CLASSIFICATION		Not Regulated

16. OTHER INFORMATION

DISCLAIMER	Information contained in this material safety data sheet is believed to be reliable but no representation, guarantee or warranties of any kind are made as to its accuracy, suitability for a particular application or results to be obtained from them. It is up to the user/ distributor to ensure that the information contained in the material safety data sheet is relevant to the product manufactured/ handled or sold by him as the case may be. HPL makes no warranties, expressed or implied, in respect of the adequacy of this document for any particular purpose.
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