

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

SUBSTANCE OR PREPARATION TRADE NAME	<b>Methyl Tert-Butyl Ether</b>
CHEMICAL CLASSIFICATION	Ether
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. COMPOSITION AND INFORMATION ON INGREDIENTS**

CHEMICAL NAME	CHEMICAL FORMULA	CONTENT	CAS NUMBER	EXPOSURE LIMITS IN AIR		
				ACGIH TLV-TWA	ACGIH TLV-STEL	LD50/LC50
Methyl Tert-Butyl Ether	C5-H12-O	100% By weight	1634-04-4	50PPM	NA	ORAL (LD50): Acute: 4000 mg/kg [Rat]. 5960 mg/kg [Mouse]. VAPOR (LC50): Acute: 23576 ppm 4 hour(s) [Rat].

**3. HAZARD CLASSIFICATION**

EMERGENCY OVERVIEW		Clear colour less liquid with ether like odor Eye and mucous membrane irritant-effects nervous system-harmful or fatal if swallowed- aspiration hazard High fire hazard-keep away from heat, sparks etc If ingested do not induce vomiting as this may cause chemical pneumonia Obtain prompt medical attention, keep away from children			
POTENTIAL HEALTH HAZARDS					
	EYE	SKIN	INHALATION	INGESTION	OTHERS
ACUTE	Extremely hazardous in case of eye contact (irritant)	Hazardous in case of skin contact (permeator)	Very hazardous in case of, of inhalation	Extremely hazardous in case of Ingestion	

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CHRONIC	. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated or prolonged inhalation of vapours may lead to chronic respiratory irritation.			
NFPA HAZARD SIGNALS	HEALTH 2	FLAMMABILITY 3	REACTIVITY 0	SPECIAL
HAZCHEMCODE	3YE			

### 4. FIRST AID MEASURES

SKIN CONTACT	After contact with skin, wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cold water may be used. Cover the irritated skin with an emollient. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.
EYE CONTACT	Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Do not use an eye ointment. Seek medical attention.
INHALATION	Allow the victim to rest in a well ventilated area. Seek immediate medical attention. . If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.
INGESTION	Do not induce vomiting. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention
OTHER INSTRUCTIONS	

### 5. FIRE FIGHTING MEASURES

FLASH POINT	CLOSED CUP: -28°C (-18.4°F).
AUTO IGNITION TEMP	224°C (435.2°F)
FLAMMABLE LIMITS IN AIR BY VOL%	LOWER: 2.5% UPPER: 15.1%
FIRE EXTINGUISHING AGENTS AND SPECIAL PROCEDURES	SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog.
UNUSUAL FIRE AND EXPLOSION HAZARDS	Not available.
SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS	Wear positive pressure self contained breathing apparatus(SCBA),structural fire fighters protective clothing will only provide limited protection

### 6. ACCIDENTAL RELEASE MEASURES

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PERSONAL PRECAUTIONS	Isolate area. Keep unnecessary personnel away. Alert stand-by emergency and fire fighting personnel. Do not touch spilled material
ENVIRONMENTAL PRECAUTIONS	Restrict access to area until completion of cleanup. Notify government occupational and environmental authorities. . Prevent material from entering sewers or confined space. Contain spill with earth, sand or absorbent material which does not react with spilled material
CLEAN UP	<p><b>Small Spill:</b> Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.</p> <p><b>Large Spill:</b> Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all ignition sources.</p>

### 7. HANDLING AND STORAGE

HANDLING	Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material, use non sparking tool, Do not eat , drink or smoke in areas of use or storage, wash hands before eating , drinking ,smoking
STORAGE	Flammable materials should be stored in a separate safety storage cabinet or room. Keep away from heat. Keep away from sources of ignition. Keep container tightly closed. Keep in a cool, well-ventilated place. Ground all equipment containing material. A refrigerated room would be preferable for materials with a flash point lower than 37.8°C (100°F).

### 8. EXPOSURE CONTROLS-PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROL	Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapours below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.		
OTHER CONTROL PARAMETERS	Ensure that eye wash stations and safety showers are proximal to the workstation location.		
PERSONAL PROTECTION EQUIPMENT			
EYE/ FACE PROTECTION	RESPIRATORY PROTECTION	HAND PROTECTION	BODY PROTECTION
Wear safety glasses wear chemical goggles	Organic vapour cartridge respirators or SCBA	Chemically resistant gloves and footwear with good traction to avoid slipping.	Impervious over coat. Fire resistant or natural fiber clothing is recommended.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE	ODOUR	PHYSICAL STATE	BOILING POINT
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Colourless	Characteristic (strong)	Liquid	55.2°C (131.4°F)
MELTING / FREEZING POINT	SPECIFIC GRAVITY (AT20°C) (WATER=1)	PH	SOLUBILITY IN WATER (AT 30°C)
-109°C (-164.2°F)	0.7405 (Water = 1)	NA	Partially soluble in cold water.
VAPOUR PRESSURE (AT 20°C) IN MM Hg	VAPOUR DENSITY (AIR=1)	OTHER INFORMATIONS	VISCOSITY
245 mm of Hg	3.1 (Air = 1)		NA

### 10. STABILITY AND REACTIVITY

CONDITIONS TO AVOID	Keep away from heat, sparks, or open flame, High temperature
MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE	Reactive with strong oxidizing agents, acids and bases
HAZARDOUS DECOMPOSITION PRODUCTS	Combustion may produce Carbon monoxide, carbon dioxide and or low molecular weight hydrocarbons
HAZARDOUS POLYMERIZATION	Not likely to occur

### 11. TOXICOLOGICAL INFORMATION

ANIMAL TOXICITY DATA	
ORAL: LD50 IN (rat) mg/kg 930	THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 4000 mg/kg [Rat]. Acute toxicity of the vapor (LC50): 23576 ppm 4 hour(s) [Rat].
IRRITANCY OF PRODUCT	Mild Skin and eye irritation
REPRODUCTIVE TOXICITY INFORMATION	
REPRODUCTIVE TOXICITY	Exposure to very high concentrations of MTBE has produced maternal/or foetal toxicity and malformations in laboratory animals
MUTAGENICITY	Product was tested in a variety of mutagenicity assays and the results were generally negative
EMBRYOTOXICITY/ TERATOGENICITY	
CARCINOGENICITY	Rats developed an increasing incidence of chronic progressive kidney damage, an effect typically noted in aging rats, these effects in the 3000 and 8000 ppm groups were accompanied by an increased incidence of kidney tumours in the males. Benign testicular tumours were numerically increased in the high dose group. The significance of these findings for human health is not clear

### 12. ECOLOGICAL INFORMATION

ENVIRONMENTAL STABILITY	Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.
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EFFECT OF MATERIAL ON PLANTS OR ANIMALS	Not available
EFFECT OF CHEMICAL ON AQUATIC LIFE	Does not bio accumulate significantly, it is strongly advised not to let the chemical enter into environment because it persists in the environment

### 13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHODS	Recover or recycle if possible, it is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations
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### 14. TRANSPORT INFORMATION

	PROPER SHIPPING NAME	HAZARD CLASS	IDENTIFICATION NUMBER	PACKING GROUP	LABEL REQUIRED
DOT	Methyl tert-butyl ether	3	2398	II	Flammable liquid
TDG	Methyl tert-butyl ether	3	2398	II	Flammable liquid
IMDG/IA CO	Methyl tert-butyl ether	3	2398	II	Flammable liquid

### 15. REGULATORY INFORMATION

INDIAN REGULATION	Manufacture Import & Storage of hazardous chemical rules. Amended as on 2000
INTERNATIONAL REGULATIONS	
DSCL (EEC):	R11- Highly flammable. R38- Irritating to skin. R41- Risk of serious damage to eyes.
WHMIS(CANADA) CLASSIFICATION	CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).
OSHA CLASSIFICATION	Meets criteria of hazardous material, as defined by 29CFR 1910.1200.

### 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 upto 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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