Material Safety Data Sheet

Methyl Tertiary Butyl Ether (RXSOL-19-1381-210)

1. Product and Company Identifaction

Porduct Name	Methyl Tert Butyl Ether
Part Number	RXSOL-19-1381-210

Company Details:

RX MARINE INTERNATIONAL
105, A wing , BSEL , TECH PARK.
VASHI ,NEW BOMBAY 400703 INDIA

Branch : Kandla, Mumbai , Chennai, Vizag, Kolkata, UAE , OMAN , CANADA and KENYA

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2. Composition / informationon ingredients

Product name	Cas No	EC No	Weight	Formula
Tert-Butyl methyl ether	1634-04-4	216-653-1	100%	$C_5H_{12}O$

3. Hazards Identification

Signal Word	Danger
Hazard Statements	H225 Highly flammable liquid and vapor. H315 Causes skin irritation.
Precautionary statements	P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P233 Keep container tightly closed. P240 Ground and bond container and receiving equipment. P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment. P242 Use non-sparking tools. P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
Classification of the substance or mixture	No data available
Supplemental Hazard Statements	No data available
Other hazards	This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

4. First Aid Measures

General advice	First aiders need to protect themselves. Show this material safety data sheet to the doctor in attendance.
If inhaled	After inhalationfresh air.
Eye Contact	After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist. Remove contact lenses.
Swallowed	After swallowing: caution if victim vomits. Risk of aspiration! Keep airways free. Pulmonary failure possible after aspiration of vomit. Call a physician immediately.
Skin Contact	In case of skin contact Take off immediately all contaminated clothing. Rinse skin with water/ shower. Call a physician immediately.
Inhalation	No data available
Ingestion	No data available

Most important symptoms and effects, both acute and delaye	The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11
Indication of any immediate medical attention and special treatment needed	No data available

5. Fire-fighting Measures

Flammability	No data available
Suitable extinguishing media	Water Foam Carbon dioxide (CO2) Dry powder
Unsuitable extinguishing media	For this substance/mixture no limitations of extinguishing agents are given.
Special hazards arising from the substance or mixture	Carbon oxides Combustible.Pay attention to flashback. Vapors are heavier than air and may spread along floors. Development of hazardous combustion gases or vapours possible in the event of fire. Forms explosive mixtures with air at ambient temperatures
Further information	Remove container from danger zone and cool with water. Prevent fire extinguishing water from contaminating surface water or the ground water system.
Hazardous combustion products	No data available
Advice for firefighters	Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.
Protective Equipment	No data available
Specific Hazards Arising from the Chemical	No data available

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures	Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition. Evacuate the danger area, observe emergency procedures, consult an expert. For personal protection see section 8.
Spillage	No data available
Personal Protection	No data available
Enviromental Precaution	Do not let product enter drains. Risk of explosion.
Methods and materials for containment and cleaning	Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area
Reference to other sections	For disposal see section 13.

7. Handling and Storage

Advice on protection against fire and explosion	Keep away from open flames, hot surfaces and sources of ignition.Take precautionary measures against static discharge.
Incompatible materials	No data available
Hygiene measures	Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance. For precautions see section 2.2.
Advice on safe handling	Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.
Conditions for safe storage including any incompatibilities	No data available
Storage conditions	Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition. Protected from light.Keep container tightly closed in a dry and wellventilated place. Keep away from heat and sources of ignition. Recommended storage temperature see product label.
Storage class	Storage class (TRGS 510): 3: Flammable liquids
Specific end use(s)	Apart from the uses mentioned in section 1.2 no other specific uses are stipulated
Advice on general occupational hygiene	No data available

8. Exposure controls and personal protection

Exposure controls	Personal protective equipment
Engineering Control	No data available
Eye/face protection	Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses
Body Protection	Flame retardant antistatic protective clothing.
Skin protection	This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de). Splash contactMaterial: Nitrile rubber Minimum layer thickness: 0,4 mm Break through time: 120 min Material tested:Camatril® (KCL 730 / Aldrich Z677442, Size M)
Respiratory protection	required when vapours/aerosols are generated. Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system. Recommended Filter type: Filter type AX The entrepeneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.
Other Protection Measure	No data available

9. Physical and chemical properties

Physical state	Liquid
Colour	Colorless
Odour	Characteristic
Odor Threshold	No data available
pH	No data available
Melting Point	-108,6 °C at 1.013 hPa
Boiling Point	55,3 °C at 1.013 hPa
Flash Point	-28 °C - closed cup
Evaporation Rate	No data available
Flammability (solid, gas)	Chemically unstable at 20 °C temperature and a standard pressure of 101.3 kPa
Explosive limits	No data Available
Upper/lower flammability or explosive limits	Upper explosion limit: 8,5 %(V) Lower explosion limit: 1,6 %(V)
Autoignition temperature	460 °C at 1013,0 hPa - DIN 51794
Decomposition temperature	Distillable in an undecomposed state at normal pressure.
Vapour pressure	330 hPa at 25 °C - OECD Test Guideline 104
Viscosity	Kinematic: 0,409 mm2/s at 40 °C - OECD Test Guideline 1140,464 mm2/s at 20 °C - OECD Test Guideline 114 Dynamic: 0,36 mPa.s at 20 °C
Density	0,74 g/cm3 at 20 °C.
Relative Density	0,74 at 20 °C
Specific Gravity	No data available
Partition coefficient	log Pow: 1,06 at 20 °C - OECD Test Guideline 107 - Bioaccumulation is not expected.
Explosive properties	No data available
Solubility	42 g/l at 20 °C - OECD Test Guideline 105
Ignition temperature	No data available
Particle characteristics	No data available

10. Stability and reactivity

Reactivity	Vapors may form explosive mixture with air.
Chemical stability	The product is chemically stable under standard ambient conditions (room temperature)
Possibilityof hazardous reactions	Violent reactions possible with: Oxidizing agents Strong acids halogens Strong bases

Conditions to avoid	Heat, flames and sparks. Warming.
Incompatible materials	rubber, various plastics
Hazardous decomposition products	Peroxides In the event of fire: see section 5

11. Toxicological information

Acute toxicity	Acute toxicity estimate Oral - > 2.000 mg/kg (Calculation method) LD50 Oral - Rat - male and female - > 2.000 mg/kg (tert-butyl methyl ether) (OECD Test Guideline 401) Symptoms: Nausea, Vomiting, Pulmonary failure possible after aspiration of vomit., Aspiration may cause pulmonary edema and pneumonitis. Acute toxicity estimate Inhalation - 4 h - > 20 mg/l - vapor(Calculation method) LC50 Inhalation - Rat - male and female - 4 h - 85 mg/l - vapor (tert-butyl methyl ether) (OECD Test Guideline 403) Symptoms: Possible damages:, mucosal irritations Acute toxicity estimate Dermal - > 2.000 mg/kg (Calculation method) LD50 Dermal - Rat - male and female - > 2.000 mg/kg (tert-butyl methyl ether) (OECD Test Guideline 402)
Skin corrosion/irritation	Skin - Rabbit (tert-butyl methyl ether) Result: Skin irritation - 4 h (OECD Test Guideline 404) Remarks: Drying-out effect resulting in rough and chapped skin
Serious eye damage/irritation	Eyes - Rabbit (tert-butyl methyl ether) Result: No eye irritation (OECD Test Guideline 405)
Respiratory or skin sensitization	Maximization Test - Guinea pig (tert-butyl methyl ether) Result: negative (OECD Test Guideline 406)
Carcinogenicity	No data available
Germ cell mutagenicity	Test Type: In vitro mammalian cell gene mutation test (tert-butyl methyl ether) Test system: Chinese hamster lung cells Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 476 Result: negative Test Type: Ames test (tert-butyl methyl ether) Test system: Salmonella typhimurium Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 471 Result: negative Test Type: Mutagenicity (mammal cell test): micronucleus. (tert-butyl methyl ether)Test system: mouse lymphoma cells Metabolic activation: without metabolic activation Method: OECD Test Guideline 473 Result: negative (tert-butyl methyl ether) Test Type: unscheduled DNA synthesis assay Species: Mouse Cell type: Liver cells Application Route: inhalation (vapor) Method: OECD Test Guideline 486 Result: negative (tert-butyl methyl ether) Test Type: Micronucleus test Species: Mouse Cell type: Bone marrow Application Route: inhalation (vapor) Method: US-EPA Result: negative (tert-butyl methyl ether) Test Type: Mutagenicity (mammal cell test): chromosome aberration. Species: Rat Cell type: Bone marrow Application Route: inhalation (vapor) Method: US-EPA Result: negative (tert-butyl methyl ether) Test Type: Transgenic rodent somatic cell gene mutation assay Species: Rat Cell type: Bone marrow Application Route: inhalation (vapor) Method: OECD Test Guideline 488
Reproductive toxicity	No data available
Specific target organ toxicity - single exposure	No data available
Additional Information	The substance/mixture does not contain components considered to have endocrinedisrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher. Repeated dose toxicity - Rat - male and female - Oral - 90 d - NOAEL (No observed adverse effect level) - 3.000 mg/kg Remarks: Subchronic toxicity (tert-butyl methyl ether) Nausea, Vomiting, Dizziness, Central nervous system depression, Aspiration or inhalation may cause chemical pneumonitis., MTBE (methyl-tert-butyl ether) is reported to metabolize to tert-butyl alcohol and formaldehyde by microsomal demethylation, MTBE (methyl-tertbutyl ether) should be considered a "potential human carcinogen" due to an increase in leydig interstitial cell tumors of testes in male rats and an increase in lymphomas, leukemias, and uterine sarcomas in female rats., In another unpublished study MTBE was shown to be carcinogenic due to "increased incidence of a rare type of kidney tumor" in male rats and an "increase in the incidence of hepatocellular adenomas" in female mice. (tert-butyl methyl ether) To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. (tert-butyl methyl ether)

12. Ecological information

Persistence and degradability	Biodegradability aerobic - Exposure time 28 d (tert-butyl methyl ether) Result: 0 % - Not readily biodegradable. (OECD Test Guideline 301D)
Toxicity to fish	Semi-static test LC50 - Menidia beryllina - 574 mg/l - 96 h (tertbutyl methyl ether) (OECD Test Guideline 203)
Toxicity to daphnia and other aquatic invertebrates	flow-through test EC50 - Americamysis bahia (Mysid) - 187 mg/l - 96 h (tert-butyl methyl ether) (US-EPA OPPTS 850.1035)
Toxicity	No data available
Toxicity to bacteria	Static test EC10 - Pseudomonas putida - 710 mg/l - 18 h (tert-butyl methyl ether) Remarks: (ECHA)
Toxicity to algae	Static test IC50 - Pseudokirchneriella subcapitata (green algae) - 491 mg/l - 96 h (tert-butyl methyl ether)
Bioaccumulation potential	Bioaccumulation Cyprinus carpio (Carp) - 28 d at 25 °C(tert-butyl methyl ether) Bioconcentration factor (BCF): 1,5
Mobility in soil	No data availalble

Results of PBT and vPvB assessment	This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.
Endocrine disrupting properties	The substance/mixture does not contain components considered to have endocrine disrupting propertiesaccording to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.
Other adverse effects	No data availalble

13. Disposal considerations

Product	See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions
Contaminated packaging	No data available
Waste treatment Method	No data available

14. Transport information

UN number	ADR/RID:2398	IMDG:2398	IATA:2398
UN proper shipping name	ADR/RID:METHYL tert-BUTYL ETHER	IMDG: METHYL tert-BUTYL ETHER	IATA:METHYL tert-BUTYL ETHER
Transport hazard class(es)	ADR/RID:3	IMDG:3	IATA:3
Packaging group	ADR/RID:II	IMDG:II	IATA:II
Environmental hazards	ADR/RID:No	IMDG:No	IATA:No
Special precautions for user	Tunnel restriction code (D/E)		
Further information	No data available		

15. Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture	This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.
Other regulations	Take note of Dir 94/33/EC on the protection of young people at work
Chemical Safety Assessment	A Chemical Safety Assessment has been carried out for this substance.

16. Other information

Other Information

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and weassume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Rx Marine International has been advised of the possibility of such damages.

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