

SAFETY DATA SHEET

according to 1907/2006/EC, Article 3

Version no. : 2.1
Prepared on : 30.03.2019
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SECTION 1: Identification of the substance/mixture and of the company/undertaking.

1.1 Product identifiers

Product name Methyl t-Butyl Ether
Product Number PSR44966 / PSR41972 / PSR42946/ PSR50227
Brand PureSynth research chemicals
CAS No. 1634-04-4

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Solvent for analytical purpose

1.3 Details of the supplier of the safety data sheet

Company PureSynth Research Chemicals GmbH.
64683 Einhausen Marie-Curie-StraBe. 3, Germany

1.4 Emergency telephone number

Worldwide Helpline No.: 1800-8908-260

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

Flammable liquids (Category 2), H225

Skin irritation (Category 2), H315

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 Label elements

Labelling according Regulation (EC) No 1272/2008

Pictogram



Signal word Danger

Hazard statement(s)

H225 Highly flammable liquid and vapor

H315 Causes skin irritation.

Precautionary statement(s)

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.
Supplemental Hazard Statements	None

2.3 Other hazards:

This substance/mixture contains no components considered to be either persistent, bio accumulative and toxic (PBT), or very persistent and very bio accumulative (vPvB) at levels of 0.1% or higher

SECTION 3: Composition / information on ingredients

3.1 Substances

Common names & Synonyms	Mol. Formula	CAS number
MTBE Methyl tert-butyl ether	C ₅ H ₁₂ O	1634-04-4
Component	Classification	Concentration
tert-butyl methyl ether	Flam. Liq. 2; Skin Irrit. 2; H225, H315	<= 100 %

SECTION 4: First aid measures

Description of first aid measures

General advice	Consult a physician. Show this safety data sheet to the doctor in attendance.
If inhaled	After inhalation: fresh air.
In case of skin contact	In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower.
In case of eye contact	After eye contact: rinse out with plenty of water. Remove contact lenses.
If swallowed	After swallowing: caution if victim vomits. Risk of aspiration! Keep airways free. Pulmonary failure possible after aspiration of vomit. Call a physician immediately.
Most important symptoms and effects, both acute and delayed	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

SECTION 5: Fire fighting measures

Extinguishing media	
Suitable extinguishing media	Carbon dioxide (CO ₂) Foam Dry powder
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 vapors possible in the event of fire.
Advice for fire-fighters	Forms explosive mixtures with air at ambient temperatures. Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

Further information

Remove container from danger zone and cool with water. Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system

SECTION 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, and consult an expert. For personal protection see section 8.

**Environmental precautions
Methods and materials for containment and cleaning up**

Do not let product enter drains. Risk of explosion. Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully with liquid-absorbent material. Dispose of properly. Clean up affected area.

Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

Precautions for safe handling

Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge. Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance. For precautions see section 2.2.

Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition.

Specific end use(s)

Storage class (TRGS 510): 3: Flammable liquids
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls / Personal protection

Control parameters

Components with workplace control parameters

Exposure controls

Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment:

Eye / face protection

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses.

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. The selected protective gloves have to satisfy the specifications of Regulation (EU) 2016/425 and the standard EN 374 derived from it. If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection

Flame retardant antistatic protective clothing.

Respiratory protection

The entrepreneur 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.

Control of environmental exposure

Do not let product enter drains. Risk of explosion.

SECTION 9: Physical and chemical properties

Appearance	Form: Liquid Colour: Colorless
Odour	Characteristic
pH - Value	No data available
Density	0.74 g/cm ³ at 20 °C - lit.
Boiling Point	55 - 56 °C - lit.
Melting Point	-108.6 °C at 1.013 hPa
Solubility in water	42 g/l at 20 °C - OECD Test Guideline 105
Flash point	-28 °C - closed cup
Vapour pressure	330 hPa at 25 °C - OECD Test Guideline 104
Auto-ignition temperature	460 °C at 1013.0 hPa - DIN 51794
Vapour density	No data available
Flammability (solid, gas)	No data available
Evaporation rate	No data available
Partition coefficient: n- octanol / water	log Pow: 1.06 at 20 °C - OECD Test Guideline 107 - Bioaccumulation is not expected.
Viscosity	Viscosity, kinematic: 0.409 mm ² /s at 40 °C - OECD Test Guideline 114.0464 mm ² /s at 20 °C - OECD Test Guideline 114 Viscosity, dynamic: 0.36 mPa.s at 20 °C
Explosive properties	No data available
Upper / lower flammability or explosive limits	Upper explosion limit: 8.5 %(V) Lower explosion limit: 1.6 %(V)
Oxidizing properties	No data available

Other safety information: No data available
Surface tension

72.5 mN/m at 1,07g/l at 21.5 °C
- Surface tension

SECTION 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).
Possibility of hazardous reactions	Violent reactions possible with: Oxidizing agents Strong acids halogens Strong bases
Condition to avoid	Heat, flames and sparks. Warming.
Incompatible materials	rubber, various plastics
Hazardous decomposition products	In the event of fire: see section 5

SECTION 11: Toxicological information

Acute toxicity	<p>LD50 Oral - Rat - male and female - > 2000 mg/kg (OECD Test Guideline 401) Symptoms: Nausea, Vomiting, Pulmonary failure possible after aspiration of vomit., Aspiration may cause pulmonary edema and pneumonitis. LC50 Inhalation - Rat - male and female - 4 h - 85 mg/l (OECD Test Guideline 403) Symptoms: Possible damages:, mucosal irritations LD50 Dermal - Rat - male and female - > 2000 mg/kg (OECD Test Guideline 402)</p>
Skin corrosion/irritation	<p>Skin - Rabbit Result: Skin irritation - 4 h (OECD Test Guideline 404) Drying-out effect resulting in rough and chapped skin</p>
Serious eye damage/eye irritation	<p>Eyes - Rabbit Result: No eye irritation (OECD Test Guideline 405)</p>
Respiratory or skin sensitization	<p>Maximization Test - Guinea pig Result: negative (OECD Test Guideline 406)</p>
Germ cell mutagenicity	<p>Test Type: In vitro mammalian cell gene mutation test Test system: Chinese hamster lung cells Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 476 Result: negative Test Type: Ames test 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. Test system: mouse lymphoma cells Metabolic activation: without metabolic activation Method: OECD Test Guideline 473 Result: negative Test Type: unscheduled DNA synthesis assay Species: Mouse Cell type: Liver cells Application Route: inhalation (vapour) Method: OECD Test Guideline 486 Result: negative Test Type: Micronucleus test Species: Mouse Cell type: Bone marrow Application Route: inhalation (vapour) Method: US-EPA Result: negative Test Type: Mutagenicity (mammal cell test): chromosome aberration.</p>

Species: Rat Cell type: Bone marrow
Application Route: inhalation (vapour)
Method: US-EPA
Result: negative
Test Type: Transgenic rodent somatic cell gene mutation assay

Species: Rat
Cell type: Bone marrow
Application Route: inhalation (vapour)
Method: OECD Test Guideline 488
Result: negative

Carcinogenicity

No data available

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

Additional Information

Repeated dose toxicity - Rat - male and female - Oral - 90 d - NOAEL (No observed adverse effect level) - 3000 mg/kg

Remarks: Sub chronic toxicity

RTECS: KN5250000

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.

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

SECTION 12: Ecological information

Toxicity

Toxicity to fish

semi-static test LC50 - Menidia beryllina - 574 mg/l - 96 h
(OECD Test Guideline 203)

Toxicity to daphnia and other aquatic invertebrates

flow-through test EC50 - Americamysis bahia (Mysid) - 187 mg/l - 96 h
(US-EPA OPPTS 850.1035)

Toxicity to algae

static test IC50 - Pseudokirchneriella subcapitata (green algae) – 491 mg/l - 96 h

Toxicity to bacteria

static test EC10 - Pseudomonas putida - 710 mg/l - 18 h
Remarks: (ECHA)

Persistence and degradability

Biodegradability

aerobic - Exposure time 28 d
Result: 0 % - Not readily biodegradable.
(OECD Test Guideline 301D)

Bio accumulative potential

No data available

Bioaccumulation

Cyprinus carpio (Carp) - 28 d
at 25 °C(tert-butyl methyl ether)

Mobility in soil	Bio concentration factor (BCF): 1.5 No data available
Results of PBT and vPvB assessment	This substance/mixture contains no components considered to be either persistent, bio accumulative and toxic (PBT), or very persistent and very bio accumulative (vPvB) at Levels of 0.1% or higher.
Other adverse effects	No data available.

SECTION 13: Disposal considerations

Waste treatment methods	Offer surplus and non-recyclable solutions to a licensed disposal company. Waste material must be disposed of in accordance with the Directive on waste 2008/98/EC as well as other national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.
Products	
Contaminated packaging	Dispose of as unused product.

SECTION 14: Transport information

	UN no.	UN proper shipping name	Hazard Class(es)	Packaging group	Marine Pollutant
ADR / RID	2398	METHYL tert-BUTYL ETHER	3	II	No
IMDG	2398	METHYL tert-BUTYL ETHER	3	II	No
IATA	2398	Methyl tert-butyl ether	3	II	No

SECTION 15: Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

National legislation

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous Substances. : FLAMMABLE LIQUIDS

Other regulations

Take note of Dir 94/33/EC on the protection of young people at work.

Chemical safety assessment

For this product a chemical safety assessment was not carried out.

SECTION 16: Other information

The information in this SDS is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. The user must be determined suitability of this information for his application.