

SAFETY DATA SHEET

Creation Date 28-May-2009	Revision Date 24-May-2017	Revision Number 2
	1. Identification	
Product Name	tert-Butyl methyl ether	
Cat No. :	AC177040000; AC177040010; AC17704002 AC177040100; AC177040250; AC17704250	5; AC177040051; 0
Synonyms	2-Methyl-2-methoxy propane; MTBE; Methyl tert-butyl e	ether

Synonyms

Recommended Use Uses advised against

Laboratory chemicals. Not for food, drug, pesticide or biocidal product use

Details of the supplier of the safety data sheet

Company
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Acros Organics One Reagent Lane Fair Lawn, NJ 07410

Emergency Telephone Number

For information US call: 001-800-ACROS-01 / Europe call: +32 14 57 52 11 Emergency Number US:001-201-796-7100 / Europe: +32 14 57 52 99 CHEMTREC Tel. No.US:001-800-424-9300 / Europe:001-703-527-3887

2. Hazard(s) identification

Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids Skin Corrosion/irritation Specific target organ toxicity (single exposure) Target Organs - Lungs.

Category 2 Category 2 Category 3

Label Elements

Signal Word Danger

Hazard Statements Highly flammable liquid and vapor Causes skin irritation May cause respiratory irritation



Precautionary Statements Prevention

Wash face, hands and any exposed skin thoroughly after handling Wear protective gloves/protective clothing/eye protection/face protection Use only outdoors or in a well-ventilated area Keep away from heat/sparks/open flames/hot surfaces. - No smoking Keep container tightly closed Ground/bond container and receiving equipment Use explosion-proof electrical/ventilating/lighting/equipment Use only non-sparking tools Take precautionary measures against static discharge Keep cool Avoid breathing dust/fume/gas/mist/vapors/spray Response Get medical attention/advice if you feel unwell Inhalation IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing Call a POISON CENTER or doctor/physician if you feel unwell Skin If skin irritation occurs: Get medical advice/attention IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower Wash contaminated clothing before reuse Eves IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing If eye irritation persists: Get medical advice/attention Fire In case of fire: Use CO2, dry chemical, or foam for extinction Storage Store in a well-ventilated place. Keep container tightly closed Store locked up

Disposal

Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)

Other hazards

Aspiration hazard if swallowed - can enter lungs and cause damage.

3. Composition / information on ingredients

Component	CAS-No	Weight %
Methyl tert-butyl ether	1634-04-4	>95

4. First-aid measures

Eye Contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Obtain medical attention.
Skin Contact	Wash off immediately with plenty of water for at least 15 minutes. Obtain medical attention.

Inhalation	Move to fresh air. If breathing is difficult, give oxygen. Get medical attention immediately if symptoms occur.		
Ingestion	Do not induce vomiting. Obtain medical attention.		
Most important symptoms/effects	Breathing difficulties. Inhalation of high vapor concentrations may cause symptoms like		
Notes to Physician	Treat symptomatically		
	5. Fire-fighting measures		
Suitable Extinguishing Media	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Cool closed containers exposed to fire with water spray.		
Unsuitable Extinguishing Media	No information available		
Flash Point	-28 °C / -18.4 °F		
Method -	No information available		
Autoignition Temperature	224 °C / 435.2 °F		
Explosion Limits			
Upper	15.1 vol %		
Lower	1.6 vol %		
Sensitivity to Mechanical Impac	t No information available		

Sensitivity to Static Discharge No information available

Specific Hazards Arising from the Chemical

Flammable. Containers may explode when heated. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back.

Hazardous Combustion Products

Carbon monoxide (CO) Carbon dioxide (CO₂)

Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

NFPA Health 2	Flammability 3	Instability 0	Physical hazards N/A
	6. Accidental rel	ease measures	
Personal Precautions Environmental Precautions	Use personal protective equipment. Remove all sources of ignition. Take precautionary measures against static discharges. Ensure adequate ventilation. Should not be released into the environment. See Section 12 for additional ecological information.		
Methods for Containment and Clear Up	Soak up with inert absorber Remove all sources of igniti precautionary measures ag	It material. Keep in suitable, clo on. Use spark-proof tools and ainst static discharges.	osed containers for disposal. explosion-proof equipment. Take
	7. Handling a	ind storage	
Handling	Wear personal protective ee ingestion and inhalation. Ke Use only non-sparking tools against static discharges. U by static electricity discharg	auipment. Do not get in eyes, co ep away from open flames, ho build be explosion-proof equipme se only under a chemical fume e, all metal parts of the equipm	on skin, or on clothing. Avoid It surfaces and sources of ignition. ent. Take precautionary measures a hood. To avoid ignition of vapors ment must be grounded.
Storage	Flammables area. Keep aw	ay from heat and sources of ig	nition. Keep container tightly

closed in a dry and well-ventilated place. May form explosive peroxides on prolonged storage.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL (TWA)
Methyl tert-butyl ether	TWA: 50 ppm			

<u>Legend</u>

ACGIH - American Conference of Governmental Industrial Hygienists

Engineering Measures	Ensure that eyewash stations and safety showers are close to the workstation location Ensure adequate ventilation, especially in confined areas. Use explosion-proof electrical/ventilating/lighting/equipment.		
Personal Protective Equipment			
Eye/face Protection	Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.		
Skin and body protection	Wear appropriate protective gloves and clothing to prevent skin exposure.		
Respiratory Protection	No protective equipment is needed under normal use conditions.		
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice.		

9. Physical and chemical properties				
Physical State	Liquid			
Appearance	Colorless			
Odor	Petroleum distillates			
Odor Threshold	No information available			
рН	No information available			
Melting Point/Range	-110 °C / -166 °F			
Boiling Point/Range	54 - 56 °C / 129.2 - 132.8 °F			
Flash Point	-28 °C / -18.4 °F			
Evaporation Rate	No information available			
Flammability (solid,gas)	Not applicable			
Flammability or explosive limits				
Upper	15.1 vol %			
Lower	1.6 vol %			
Vapor Pressure	268 mbar @ 20 °C			
Vapor Density	0.2			
Specific Gravity	0.740			
Solubility	Slightly soluble in water			
Partition coefficient; n-octanol/water	No data available			
Autoignition Temperature	224 °C / 435.2 °F			
Decomposition Temperature	No information available			
Viscosity	0.36 mPa.s at 20 °C			
Molecular Formula	C5 H12 O			
Molecular Weight	88.15			

10. Stability and reactivity

Reactive Hazard

None known, based on information available

Stability	Stable under normal conditions.	
Conditions to Avoid	Incompatible products. Excess heat. Keep away from open flames, hot surfaces and sources of ignition.	
Incompatible Materials	Strong oxidizing agents	
Hazardous Decomposition Products Carbon monoxide (CO), Carbon dioxide (CO2)		
Hazardous Polymerization	Hazardous polymerization does not occur.	
Hazardous Reactions	None under normal processing.	

11. Toxicological information

Acute Toxicity

Product Information Component Informatio

Component Information						
Component	LD50 Oral	LD50 Dermal	LC50 Inhalation			
Methyl tert-butyl ether	LD50 = 2963 mg/kg (Rat)	LD50 = 10000 mg/kg(Rabbit)	LC50 = 23576 ppm (Rat) 4 h			
Toxicologically Synergistic Products	No information available	No information available				
Delayed and immediate effects	as well as chronic effects from	n short and long-term exposure	<u>e</u>			
Irritation	Irritating to eyes and skin	Irritating to eyes and skin				
Sensitization	No information available	No information available				
Carcinogenicity	The table below indicates Limited evidence of a carc	The table below indicates whether each agency has listed any ingredient as a carcinogen. Limited evidence of a carcinogenic effect.				

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Methyl tert-butyl ether	1634-04-4	Not listed	Not listed	A3	Not listed	Not listed
ACGIH: (Americar	Conference of G	overnmental Industr	ial A1 - Known	Human Carcinogen		
Hygienists) A2 - Suspected Human Carcinogen						
		A3 - Animal Carcinogen				
			ACGIH: (A	merican Conference	of Governmental Ind	ustrial Hygienists)
Mutagenic Effects		Mutagenic effects	have occurred in e	experimental animation	als.	
Denne due the Effect	_			e tovicity offecte o		
Reproductive Effects	S	Experiments have	snown reproductiv	e toxicity effects o	n laboratory anima	lis.
Developmental Effec	ts	Developmental eff	ects have occurred	t in experimental a	nimals	
Developmental Ener						
Teratogenicity		Teratogenic effects have occurred in experimental animals.				
STOT single exper						
STOT - single exposure Lungs						
STOT - repeated exp	osure	None known				
Aspiration hazard		No information available				
Symptoms / effects.	both acute and	Inhalation of high v	apor concentratio	ns may cause sym	ptoms like headad	he, dizziness,
delayed		tiredness, nausea	and vomiting	, ,	•	

Endocrine Disruptor Information

Component	EU - Endocrine Disrupters Candidate List	EU - Endocrine Disruptors - Evaluated Substances	Japan - Endocrine Disruptor Information	
Methyl tert-butyl ether	Group III Chemical	Not applicable	Not applicable	
Other Adverse Effects	Tumorigenic effects have been reported in experimental animals. See actual entry in RTECS for complete information.			

12. Ecological information

Ecotoxicity

Do not empty into drains.

Component	Freshwat	er Algae	Freshwater Fish		Microtox		Water Flea
Methyl tert-butyl ether	er 800 mg/L EC50 > 72 h 184 mg/L EC50 = 96 h		887 mg/L LC50 96 h 100 mg/L LC50 96 h 929 mg/L LC50 96 h 672 mg/L LC50 96 h		EC50 = 11.4 mg/L 30 min EC50 = 8.23 mg/L 5 min EC50 = 9.67 mg/L 15 min		EC50: = 542 mg/L, 48h (Daphnia magna)
Persistence and Degrad	ability	Persistence i	s unlikely bas	ed on inform	nation availab	ole.	
Bioaccumulation/ Accur	nulation	No informatio	on available.				
Mobility	,	Will likely be	mobile in the	environmen	t due to its vo	olatility.	
	Component					log Pow	
Me	thyl tert-butyl et	her				1.06	
		13. Di	sposal c	onsider	ations		
Waste Disposal Methods	5	Chemical wa nazardous w national haza	ste generator aste. Chemic ardous waste	s must deter al waste ger regulations t	mine whethe nerators mus o ensure con	r a discarded of talso consult l nplete and acc	chemical is classified as a ocal, regional, and urate classification.
		14. T	ranspor	t inform	ation		
DOT UN-No Proper Shipping Nar Hazard Class Packing Group TDG UN-No	ne	UN2398 METHYL TE 3 I UN2398	RT-BUTYL E	THER			
Proper Shipping Nar Hazard Class	ne	METHYLTE 3 	RI-BUIYL E	IHER			
IATA							
Proper Shipping Nar Hazard Class	ne	METHYL TE 3	RT-BUTYL E	THER			
IMDG/IMO							
Proper Shipping Nar	ne	Methyl butyl	ether				
Packing Group		I					
		15 R	egulator	v inform	nation		

International Inventories

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
Methyl tert-butyl ether	Х	Х	-	216-653-1	-		Х	Х	Х	Х	Х
Legend:											

X - Listed

E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.

F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.

N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.

P - Indicates a commenced PMN substance

R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.

S - Indicates a substance that is identified in a proposed or final Significant New Use Rule

T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.

XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).

Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.

Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) Not applicable

SARA 313

Component	CAS-No	Weight %	SARA 313 - Threshold Values %
Methyl tert-butyl ether	1634-04-4	>95	1.0

SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	Yes
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

CWA (Clean Water Act)

Not applicable

Clean Air Act

Component	HAPS Data	Class 1 Ozone Depletors	Class 2 Ozone Depletors
Methyl tert-butyl ether	Х		-

OSHA Occupational Safety and Health Administration Not applicable

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs		
Methyl tert-butyl ether	1000 lb	-		
		· ·		

This product does not contain any Proposition 65 chemicals **California Proposition 65**

U.S. State Right-to-Know Populations

Regulations					
Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Methyl tert-butyl ether	Х	Х	Х	Х	-

U.S. Department of Transportation

Reportable Quantity (RQ):	Υ
DOT Marine Pollutant	Ν
DOT Severe Marine Pollutant	Ν

U.S. Department of Homeland Security

This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade

Serious risk, Grade 3

16. Other information

Prepared By	Regulatory Affairs Thermo Fisher Scientific Email: EMSDS.RA@thermofisher.com				
Creation Date	28-May-2009				
Revision Date	24-May-2017				
Print Date 24-May-2017					
Revision Summary	This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).				

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS