

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form	: Substance
Trade name	: MTBE (tert-butyl methyl ether)
Chemical name	: tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane
EC Index-No.	: 603-181-00-X
EC-No.	: 216-653-1
CAS-No.	: 1634-04-4
REACH registration No	: 01-2119452786-27
Formula	: C5H12O

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

1.2.1. Relevant identified uses

Industrial/Professional use spec	: Manufacture. Formulation of preparations (mixtures). Intermediate Solvent Extraction agents Distribution: Fuels
Use of the substance/mixture	: Fuel additives

Title	Use descriptors
Use as an intermediate	PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15, ERC6a
Use as process solvent and extraction agent	PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15, ERC4
Fuel use - Industrial	PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16, ERC8b
Fuel use - Professional	PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC9, PROC16, ERC8b, ERC8e
Fuel use - Consumer	PC13, ERC8e
Manufacturing	PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15, ERC1
Industrial distribution of MTBE and gasoline containing MTBE	PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15, ERC1, ERC2
Formulation	PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC15, ERC2
Industrial distribution of MTBE and gasoline containing MTBE	PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15, ERC1, ERC2

Full text of use descriptors: see section 16

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Supplier (Only Representative):
Braskem Netherland BV
Weena 238-240, 9th Floor, Tower C
NL - 3012 NJ – Rotterdam

Manufacturer:
BRASKEM S.A.
Rua Eteno, 1561 - Polo Petroquimico de Camacari - Bahia/BA
Brazil - Cep 42810-000

productsafety@braskem.com

1.4. Emergency telephone number

Emergency number (CHEMTREC) : +1 703-527-3887 (International – 24h)
+(44)-870-8200418 (UK – 24h)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Flammable liquids, Category 2 H225
Skin corrosion/irritation, Category 2 H315

Full text of H statements : see section 16

Adverse physicochemical, human health and environmental effects

Highly flammable liquid and vapour. Causes skin irritation.

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :



GHS02

GHS07

Signal word (CLP) :

Danger

Hazard statements (CLP) :

H225 - Highly flammable liquid and vapour.
H315 - Causes skin irritation.

Precautionary statements (CLP) :

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233 - Keep container tightly closed.
P235 - Keep cool.
P264 - Wash hands thoroughly after handling.
P370+P378 - In case of fire: Use carbon dioxide (CO₂), dry extinguishing powder, foam to extinguish.
P403+P235 - Store in a well-ventilated place. Keep cool.

2.3. Other hazards

other hazards which do not result in classification : Heavier than air, vapours may travel long distances along ground, ignite and flash back to source. Absorbed through the skin. May cause minor eye irritation. Excessive concentrations may cause nervous system depression, headache, and weakness leading to unconsciousness.

This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII

This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

SECTION 3: Composition/information on ingredients

3.1. Substances

Substance type : Mono-constituent

Name : Tert-butyl methyl ether

Name	Product identifier	%
Methyl tert-butyl ether	(CAS-No.) 1634-04-4 (EC-No.) 216-653-1 (EC Index-No.) 603-181-00-X (REACH-no) 01-2119452786-27	100

Full text of H-statements: see section 16

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation : Remove victim to fresh air. Do not apply mouth-to-mouth resuscitation. Delayed fatal pulmonary oedema possible. If not breathing, give artificial respiration. Seek medical advice (show the label where possible).

First-aid measures after skin contact : Rinse immediately with plenty of water for 15 minutes. Do not rub the skin and eyes after direct contact with the product. Remove contaminated clothing and shoes. Discard contaminated clothing. Get medical advice if skin irritation persists.

First-aid measures after eye contact : Rinse immediately and thoroughly, pulling the eyelids well away from the eye (15 minutes minimum). Remove contact lenses, if present and easy to do. Continue rinsing. Do not rub the skin and eyes after direct contact with the product. If eye irritation persists: Get medical advice/attention.

First-aid measures after ingestion : Do not induce vomiting. Never give anything by mouth to an unconscious person. Seek immediate medical advice.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/effects after inhalation : Inhalation of airborne droplets or aerosols may cause irritation of the respiratory tract. Excessive concentrations may cause nervous system depression, headache, and weakness leading to unconsciousness.

Symptoms/effects after skin contact : Causes skin irritation. Absorbed through the skin. Repeated or prolonged skin contact may cause dermatitis and defatting.

Symptoms/effects after eye contact : May cause moderate irritation, including burning sensation, tearing, redness or swelling.

Symptoms/effects after ingestion	: May cause gastric irritation. Depression of the central nervous system, headaches, dizziness, drowsiness, loss of coordination.
Chronic symptoms	: Excessive concentrations may cause nervous system depression, headache, and weakness leading to unconsciousness.

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	: carbon dioxide (CO ₂), dry chemical powder, foam. Water fog.
Unsuitable extinguishing media	: Do not use a solid water stream as it may scatter and spread fire.

5.2. Special hazards arising from the substance or mixture

Fire hazard	: Highly flammable liquid and vapour. Exposed to ignition source, vapours can burn in open / explode if confined. Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level. Vapours are heavier than air and may travel considerable distance to an ignition source and flash back to source of vapours. Incomplete combustion releases dangerous carbon monoxide, carbon dioxide and other toxic gases.
Explosion hazard	: Prolonged exposure to fire may cause containers to rupture/explode. Do not allow surface water to enter drains and sewers as this will create a potential explosive hazard. If this occurs inform local authorities immediately.

5.3. Advice for firefighters

Firefighting instructions	: Cool closed containers exposed to fire with water spray. Fight fire from safe distance and protected location. Do not approach fire except upwind and only with proper skin and respiratory protection (supplied air only).
Protective equipment for firefighters	: Wear recommended personal protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures	: Eliminate all ignition sources if safe to do so.
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6.1.1. For non-emergency personnel

Protective equipment	: Use personal protective equipment as required. For further information refer to section 8: "Exposure controls/personal protection".
Emergency procedures	: Eliminate all ignition sources if safe to do so. Stop leak if safe to do so.

6.1.2. For emergency responders

Protective equipment	: Wear suitable protective clothing. For further information refer to section 8: "Exposure controls/personal protection".
Emergency procedures	: Evacuate unnecessary personnel. Eliminate ignition sources. Stop leak if safe to do so.

6.2. Environmental precautions

Use water spray to disperse the vapours. Prevent entry to sewers and public waters. Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.

6.3. Methods and material for containment and cleaning up

For containment	: Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams. Soak up with inert absorbent material (for example sand, sawdust, a universal binder, silica gel). Control the vapours with a fine water spray.
Methods for cleaning up	: Take up liquid spill into dry absorbent material e.g.: dry sand/earth/vermiculite. Sweep or shovel spills into appropriate container for disposal.

6.4. Reference to other sections

For further information refer to section 8: "Exposure controls/personal protection". For disposal of residues refer to section 13: "Disposal considerations".

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling	: Keep container closed when not in use. Use only non-sparking tools. Ground/bond container and receiving equipment. When handling product, avoid contact with oxidation agents and combustible products. Do not re-use empty containers.
Hygiene measures	: Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures	: Keep away from sources of ignition. Proper grounding procedures to avoid static electricity should be followed. Use only explosion-proof equipment. Use only non-sparking tools. Use grounded electrical/mechanical equipment. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.
Storage conditions	: Store only in a limited quantity. Keep in original containers closed. Store in dry, cool, well-ventilated area. Keep away from ignition sources (including static discharges).
Incompatible materials	: Strong acids. Strong oxidizing agents.

7.3. Specific end use(s)

See Heading 1.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

MTBE (tert-butyl methyl ether) (1634-04-4)	
EU - Occupational Exposure Limits	
Local name	Tertiary-butyl-methyl ether
IOELV TWA (mg/m ³)	183.5 mg/m ³
IOELV TWA (ppm)	50 ppm
IOELV STEL (mg/m ³)	367 mg/m ³
IOELV STEL (ppm)	100 ppm
Regulatory reference	COMMISSION DIRECTIVE 2009/161/EU
Austria - Occupational Exposure Limits	
Local name	tert-Butylmethylether
MAK (mg/m ³)	180 mg/m ³
MAK (ppm)	50 ppm
MAK Short time value (mg/m ³)	360 mg/m ³
MAK Short time value (ppm)	100 ppm
Regulatory reference	BGBI. II Nr. 186/2015
Belgium - Occupational Exposure Limits	
Local name	Oxyde de méthyle et de tert-butyle # Methyl tertiair butyl ether
Limit value (mg/m ³)	146 mg/m ³
Limit value (ppm)	40 ppm
Short time value (mg/m ³)	367 mg/m ³
Short time value (ppm)	100 ppm
Regulatory reference	Koninklijk besluit/Arrêté royal 02/09/2018
Bulgaria - Occupational Exposure Limits	
Local name	Метил-третичен-бутил-етер
OEL TWA (mg/m ³)	183.5 mg/m ³
OEL TWA (ppm)	50 ppm
OEL STEL (mg/m ³)	367 mg/m ³
OEL STEL (ppm)	100 ppm
Notes	• (Химични агенти, за които са определени гранични стойности във въздуха на работната среда за Европейската общност)
Regulatory reference	Наредба № 13 от 30.12.2003 г. за защита на работещите от рискове, свързани с експозиция на химични агенти при работа (изм. и доп. ДВ. бр.73 от 4 септември 2018 г.)
Croatia - Occupational Exposure Limits	
Local name	MTBE; terc-butil-metil-eter; 2-metoksi-2-metil-propan
GVI (granična vrijednost izloženosti) (mg/m ³)	183.5 mg/m ³
GVI (granična vrijednost izloženosti) (ppm)	50 ppm

MTBE (tert-butyl methyl ether) (1634-04-4)	
KGVI (kratkotrajna granična vrijednost izloženosti) (mg/m ³)	367 mg/m ³
KGVI (kratkotrajna granična vrijednost izloženosti) (ppm)	100 ppm
Naznake (HR)	Direktiva: 2009/161/EU. Napomena: Koža (razvrstana kao tvar koja nadražuje kožu (H315))
Regulatory reference	Pravilnik o izmjenama i dopunama Pravilnika o graničnim vrijednostima izloženosti opasnim tvarima pri radu i o biološkim graničnim vrijednostima (NN 91/2018)
Czech Republic - Occupational Exposure Limits	
Local name	terc-Butylmethylether
Expoziční limity (PEL) (mg/m ³)	100 mg/m ³
Expoziční limity (PEL) (ppm)	28 ppm
Expoziční limity (NPK-P) (mg/m ³)	200 mg/m ³
Expoziční limity (NPK-P) (ppm)	55 ppm
Remark (CZ)	I (dráždí sliznice (oči, dýchací cesty) resp. kůži)
Regulatory reference	Nařízení vlády č. 361/2007 Sb. (zpracovány změny č. 246/2018 Sb.)
Denmark - Occupational Exposure Limits	
Local name	2-Methoxy-2-methylpropan (Methyl-tert-butylether)
Grænseværdie (langvarig) (mg/m ³)	144 mg/m ³
Grænseværdie (langvarig) (ppm)	40 ppm
Regulatory reference	BEK nr 655 af 31/05/2018
Estonia - Occupational Exposure Limits	
Local name	Tertsiaarbutüülmetüüleeter
OEL TWA (mg/m ³)	183.5 mg/m ³
OEL TWA (ppm)	50 ppm
OEL STEL (mg/m ³)	367 mg/m ³
OEL STEL (ppm)	100 ppm
Regulatory reference	Vabariigi Valitsuse 18. septembri 2001. a määruse nr 293 (RT I, 30.11.2011, 5)
Finland - Occupational Exposure Limits	
Local name	Metyyli-tert-butylieetteri
HTP-arvo (8h) (mg/m ³)	180 mg/m ³
HTP-arvo (8h) (ppm)	50 ppm
HTP-arvo (15 min)	360 mg/m ³
HTP-arvo (15 min) (ppm)	100 ppm
Regulatory reference	HTP-ARVOT 2018 (Sosiaali- ja terveystieteiden ministeriö)
France - Occupational Exposure Limits	
Local name	oxyde de tert-butyle et de méthyle
VME (mg/m ³)	183.5 mg/m ³
VME (ppm)	50 ppm
VLE (mg/m ³)	367 mg/m ³
VLE (ppm)	100 ppm
Note (FR)	Valeurs réglementaires contraignantes
Regulatory reference	Article R4412-149 du Code du travail (réf.: INRS ED 984, 2016)
Germany - Occupational Exposure Limits (TRGS 900)	
TRGS 900 Local name	(tert-Butyl)methylether

MTBE (tert-butyl methyl ether) (1634-04-4)	
TRGS 900 Occupational exposure limit value (mg/m ³)	180 mg/m ³
TRGS 900 Occupational exposure limit value (ppm)	50 ppm
TRGS 900 Limitation of exposure peaks	1,5(l)
TRGS 900 Remark	DFG;EU;Y
TRGS 900 Regulatory reference	TRGS900
Gibraltar - Occupational Exposure Limits	
Name of agent	Tertiary-butyl-methyl ether
Eight hours mg/m ³	183.5 mg/m ³
Eight hours ppm	50 ppm
Short-term mg/m ³	367 mg/m ³
Short-term ppm	100 ppm
Regulatory reference	Factories (Control of Chemical Agents at Work) Regulations 2003 (LN. 2018/181)
Greece - Occupational Exposure Limits	
Local name	Tert-Βουτυλομεθυλαιθέρας
OEL TWA (mg/m ³)	183.5 mg/m ³
OEL TWA (ppm)	50 ppm
OEL STEL (mg/m ³)	367 mg/m ³
OEL STEL (ppm)	100 ppm
Regulatory reference	Π.Δ. 12/2012
Hungary - Occupational Exposure Limits	
Local name	terc-BUTIL-METIL-ÉTER
AK-érték	183.5 mg/m ³
CK-érték	367 mg/m ³
Megjegyzések (HU)	EU3 (2009/161 /EK irányelvben közölt érték)
Regulatory reference	25/2000. (IX. 30.) EüM–SZCSM együttes rendelet a munkahelyek kémiai biztonságáról
Ireland - Occupational Exposure Limits	
Local name	Tert-Butyl-methyl ether
OEL (8 hours ref) (mg/m ³)	183.5 mg/m ³
OEL (8 hours ref) (ppm)	50 ppm
OEL (15 min ref) (mg/m ³)	367 mg/m ³
OEL (15 min ref) (ppm)	100 ppm
Notes (IE)	IOELV (Indicative Occupational Exposure Limit Values)
Regulatory reference	Code of Practice for the Chemical Agents Regulations 2018
Italy - Occupational Exposure Limits	
Local name	Ossido di terz-butile e metile
OEL TWA (mg/m ³)	183.5 mg/m ³
OEL TWA (ppm)	50 ppm
OEL STEL (mg/m ³)	357 mg/m ³
OEL STEL (ppm)	100 ppm
Regulatory reference	Allegato XXXVIII del D.Lgs. 9 aprile 2008, n. 81 e s.m.i.
Latvia - Occupational Exposure Limits	
Local name	Tercbutilmetilēteris
OEL TWA (mg/m ³)	183.5 mg/m ³
OEL TWA (ppm)	50 ppm

MTBE (tert-butyl methyl ether) (1634-04-4)	
OEL STEL (mg/m ³)	367 mg/m ³
OEL STEL (ppm)	100 ppm
Regulatory reference	Ministru kabineta 2007.gada 15.maija noteikumiem Nr.325 (Grozījumi Ministru kabineta 2011.gada 1.februārī noteikumiem Nr.92)
Lithuania - Occupational Exposure Limits	
Local name	Tret-butil-metil-eteris
IPRV (mg/m ³)	183.5 mg/m ³
IPRV (ppm)	50 ppm
TPRV (mg/m ³)	367 mg/m ³
TPRV (ppm)	100 ppm
Remark (LT)	Ū (ūmus poveikis)
Regulatory reference	LIETUVOS HIGIENOS NORMA HN 23:2011 (Nr. V-695/A1-272, 2018-06-12)
Luxembourg - Occupational Exposure Limits	
Local name	Ether butylique tertiaire de méthyle
OEL TWA (mg/m ³)	183.5 mg/m ³
OEL TWA (ppm)	50 ppm
OEL STEL (mg/m ³)	367 mg/m ³
OEL STEL (ppm)	100 ppm
Regulatory reference	Mémorial A N° 684 de 2018
Malta - Occupational Exposure Limits	
Local name	Tert-Butyl methyl ether
OEL TWA (mg/m ³)	183.5 mg/m ³
OEL TWA (ppm)	50 ppm
OEL STEL (mg/m ³)	367 mg/m ³
OEL STEL (ppm)	100 ppm
Regulatory reference	S.L.424.24 (L.N.57 of 2018)
Netherlands - Occupational Exposure Limits	
Local name	tert-Butylmethylether
Grenswaarde TGG 8H (mg/m ³)	180 mg/m ³
Grenswaarde TGG 15MIN (mg/m ³)	360 mg/m ³
Regulatory reference	Arbeidsomstandighedenregeling 2018
Poland - Occupational Exposure Limits	
Local name	Eter tert-butylometylowy
NDS (mg/m ³)	180 mg/m ³
NDSCh (mg/m ³)	270 mg/m ³
Regulatory reference	Dz. U. 2018 poz. 1286
Portugal - Occupational Exposure Limits	
Local name	Éter metil-terc-butílico (MTBE)
OEL TWA (ppm)	50 ppm
Regulatory reference	Norma Portuguesa NP 1796:2014
Romania - Occupational Exposure Limits	
Local name	Terț-butil metil eter/ 2-metoxi-2-metilpropan
OEL TWA (mg/m ³)	183.5 mg/m ³
OEL TWA (ppm)	50 ppm

MTBE (tert-butyl methyl ether) (1634-04-4)	
OEL STEL (mg/m ³)	367 mg/m ³
OEL STEL (ppm)	100 ppm
Regulatory reference	Hotărârea nr. 584/2018
Slovakia - Occupational Exposure Limits	
Local name	terc-Butyl-metyl-éter
NPHV (priemerná) (mg/m ³)	183.5 mg/m ³
NPHV (priemerná) (ppm)	50 ppm
OEL STEL (mg/m ³)	367 mg/m ³
OEL STEL (ppm)	100 ppm
Regulatory reference	Nariadenie vlády č. 33/2018 Z.z.
Slovenia - Occupational Exposure Limits	
Local name	terc-butilmetileter
OEL TWA (mg/m ³)	183.5 mg/m ³
OEL TWA (ppm)	50 ppm
OEL STEL (mg/m ³)	367 mg/m ³
OEL STEL (ppm)	100 ppm
Remark (SI)	Y (Snovi, pri katerih ni nevarnosti za zarodek ob upoštevanju mejnih vrednosti in bat vrednosti), EU
Regulatory reference	Uradni list RS, št. 78/2018 z dne 4.12.2018
Spain - Occupational Exposure Limits	
Local name	Metil terc-butiléter (Éter metil-terc-butílico)
VLA-ED (mg/m ³)	183.5 mg/m ³
VLA-ED (ppm)	50 ppm
VLA-EC (mg/m ³)	367 mg/m ³
VLA-EC (ppm)	100 ppm
Notes	VLI (Agente químico para el que la U.E. estableció en su día un valor límite indicativo).
Regulatory reference	Límites de Exposición Profesional para Agentes Químicos en España 2019. INSHT
Sweden - Occupational Exposure Limits	
Local name	Metyltertiärbutyleter (MTBE)
nivågränsvärde (NVG) (mg/m ³)	110 mg/m ³
nivågränsvärde (NVG) (ppm)	30 ppm
kortidsvärde (KTV) (mg/m ³)	367 mg/m ³
kortidsvärde (KTV) (ppm)	100 ppm
Regulatory reference	Hygieniska gränsvärden (AFS 2018:1)
United Kingdom - Occupational Exposure Limits	
Local name	Methyl-tert-butyl-ether (Tertiary-butyl-methyl-ether)
WEL TWA (mg/m ³)	183.5 mg/m ³
WEL TWA (ppm)	50 ppm
WEL STEL (mg/m ³)	367 mg/m ³
WEL STEL (ppm)	100 ppm
Regulatory reference	EH40/2005 (Third edition, 2018). HSE
Iceland - Occupational Exposure Limits	
Local name	Bútýl-metýleter, þrígreindur
OEL (8 hours ref) (mg/m ³)	183.5 mg/m ³

MTBE (tert-butyl methyl ether) (1634-04-4)	
OEL (8 hours ref) (ppm)	50 ppm
OEL (15 min ref) (mg/m ³)	367 mg/m ³
OEL (15 min ref) (ppm)	100 ppm
Regulatory reference	Reglugerð um mengunarmörk og aðgerðir til að draga úr mengun á vinnustöðum (Nr. 1296/2012)
Norway - Occupational Exposure Limits	
Local name	tert-butylmetyleter (MTBE)
Grenseverdier (AN) (mg/m ³)	183.5 mg/m ³
Grenseverdier (AN) (ppm)	50 ppm
Grenseverdier (Korttidsverdi) (mg/m ³)	367 mg/m ³
Grenseverdier (Korttidsverdi) (ppm)	100 ppm
Merknader (NO)	E (EU har en veiledende grenseverdi for stoffet); S (Korttidsverdi er en verdi for gjennomsnittskonsentrasjonen av et kjemisk stoff i pustesonen til en arbeidstaker som ikke skal overskrides i en fastsatt referanseperiode. Referanseperioden er 15 minutter)
Regulatory reference	FOR-2018-08-21-1255
USA - ACGIH - Occupational Exposure Limits	
Local name	Methyl tert-butyl ether
ACGIH TWA (ppm)	50 ppm
Remark (ACGIH)	TLV® Basis: URT irr; kidney dam. Notations: A3 (Confirmed Animal Carcinogen with Unknown Relevance to Humans)
Regulatory reference	ACGIH 2019
MTBE (tert-butyl methyl ether) (1634-04-4)	
DNEL/DMEL (Workers)	
Acute - systemic effects, dermal	No hazard identified
Acute - systemic effects, inhalation	No hazard identified
Acute - local effects, dermal	No hazard identified
Acute - local effects, inhalation	357 mg/m ³
Long-term - systemic effects, dermal	5100 mg/kg bodyweight/day
Long-term - local effects, dermal	No hazard identified
Long-term - systemic effects, inhalation	178.5 mg/m ³
Long-term - local effects, inhalation	No hazard identified
DNEL/DMEL (General population)	
Acute - systemic effects, dermal	No hazard identified
Acute - systemic effects, inhalation	No hazard identified
Acute - systemic effects, oral	No hazard identified
Acute - local effects, dermal	No hazard identified
Acute - local effects, inhalation	214 mg/m ³
Long-term - systemic effects, oral	7.1 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	53.6 mg/m ³
Long-term - systemic effects, dermal	3570 mg/kg bodyweight/day
Long-term - local effects, dermal	No hazard identified
Long-term - local effects, inhalation	No hazard identified
PNEC (Water)	
PNEC aqua (freshwater)	5.1 mg/l
PNEC aqua (marine water)	0.26 mg/l

MTBE (tert-butyl methyl ether) (1634-04-4)	
PNEC aqua (intermittent, freshwater)	47.2 mg/l
PNEC (Sediment)	
PNEC sediment (freshwater)	23 mg/kg dwt
PNEC sediment (marine water)	1.17 mg/kg dwt
PNEC (Soil)	
PNEC soil	1.56 mg/kg dwt
PNEC (STP)	
PNEC sewage treatment plant	71 mg/l

8.2. Exposure controls

Appropriate engineering controls:

Mechanical ventilation is recommended. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Use only non-sparking tools. Use explosion-proof equipment.

Hand protection:

Protective gloves made of PVC. Nitrile-rubber protective gloves. Choosing the proper glove is a decision that depends not only on the type of material, but also on other quality features, which differ for each manufacturer

Eye protection:

Use splash goggles when eye contact due to splashing is possible

Respiratory protection:

An approved organic vapour respirator/supplied air or self-contained breathing apparatus must be used when vapour concentration exceeds applicable exposure limits

Environmental exposure controls:

Avoid release to the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Molecular mass	: 88.15 g/mol
Colour	: Colourless.
Odour	: Terpenes.
Odour threshold	: No data available
pH	: Not applicable
Relative evaporation rate (butylacetate=1)	: 8.5
Relative evaporation rate (ether=1)	: 1.6
Melting point	: No data available
Freezing point	: -109 °C
Boiling point	: 55.2 °C
Flash point	: -28 °C (closed cup)
Auto-ignition temperature	: 224 °C
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapour pressure	: 201 mm Hg @ 20 °C
Relative vapour density at 20 °C	: 3.1
Relative density	: No data available
Density	: 0.741 g/ml @ 20 °C
Solubility	: Water: Moderately soluble in water Ethanol: Soluble in ethanol
Log Pow	: 1.06
Viscosity, kinematic	: 0.47 mm ² /s @ 20 °C
Viscosity, dynamic	: 0.35 mPa·s @ 20 °C
Explosive properties	: No data available
Oxidising properties	: No data available
Explosive limits	: 1.6 - 8.4 vol %

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

May react violently with oxidants. May react violently with acids.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

Direct sunlight. Open flame. Sparks. Incompatible materials.

10.5. Incompatible materials

Strong acids. Strong oxidizing agents.

10.6. Hazardous decomposition products

No hazardous decomposition products known at room temperature. Incomplete combustion releases dangerous carbon monoxide, carbon dioxide and other toxic gases.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Not classified (Based on available data, the classification criteria are not met)

Acute toxicity (dermal) : Not classified (Based on available data, the classification criteria are not met)

Acute toxicity (inhalation) : Not classified (Based on available data, the classification criteria are not met)

MTBE (tert-butyl methyl ether) (1634-04-4)	
LD50 oral rat	2963 mg/kg
LD50 dermal rabbit	10000 mg/kg
LC50 inhalation rat (mg/l)	85 mg/l/4h

Skin corrosion/irritation : Causes skin irritation.

pH: Not applicable

Serious eye damage/irritation

: Not classified (Based on available data, the classification criteria are not met)

pH: Not applicable

Respiratory or skin sensitisation

: Not classified (Based on available data, the classification criteria are not met)

Germ cell mutagenicity

: Not classified (Based on available data, the classification criteria are not met)

Carcinogenicity

: Not classified (Based on available data, the classification criteria are not met)

MTBE (tert-butyl methyl ether) (1634-04-4)	
IARC group	3 - Not classifiable
Reproductive toxicity	: Not classified (Based on available data, the classification criteria are not met)
STOT-single exposure	: Not classified (Based on available data, the classification criteria are not met)
STOT-repeated exposure	: Not classified (Based on available data, the classification criteria are not met)
Aspiration hazard	: Not classified (Based on available data, the classification criteria are not met)

MTBE (tert-butyl methyl ether) (1634-04-4)	
Viscosity, kinematic	0.47 mm ² /s @ 20 °C
Other information	: Likely routes of exposure: ingestion, inhalation, skin and eye.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - air : Can contribute to the formation of photochemical smog when it reacts with other volatile organic carbon substances in air.

Acute aquatic toxicity : Not classified (Based on available data, the classification criteria are not met)

Chronic aquatic toxicity : Not classified (Based on available data, the classification criteria are not met)

MTBE (tert-butyl methyl ether) (1634-04-4)	
LC50 fish 1	672 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])
LC50 fish 2	929 mg/l (Exposure time: 96 h - Species: Pimephales promelas [static])
EC50 Daphnia 1	542 mg/l (Exposure time: 48 h - Species: Daphnia magna)
EC50 72h algae (1)	491 mg/l (Species: Pseudokirchneriella subcapitata)

12.2. Persistence and degradability

MTBE (tert-butyl methyl ether) (1634-04-4)	
Persistence and degradability	Inherently biodegradable.

12.3. Bioaccumulative potential

MTBE (tert-butyl methyl ether) (1634-04-4)	
Log Pow	1.06
Bioaccumulative potential	Low bioaccumulation potential.

12.4. Mobility in soil

MTBE (tert-butyl methyl ether) (1634-04-4)	
Ecology - soil	Very mobile.

12.5. Results of PBT and vPvB assessment

MTBE (tert-butyl methyl ether) (1634-04-4)	
This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII	
This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII	
Results of PBT assessment	This substance does not meet the criteria for classification as PBT or vPvB.

12.6. Other adverse effects

No additional information available

SECTION 13: Disposal considerations






13.1. Waste treatment methods

Product/Packaging disposal recommendations : Disposal must be done according to official regulations. Consult an expert on waste disposal or treatment.

Additional information : Container remains hazardous when empty. Continue to observe all precautions.

SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

ADR	IMDG	IATA	ADN	RID
14.1. UN number				
UN 2398	UN 2398	UN 2398	UN 2398	UN 2398
14.2. UN proper shipping name				
METHYL tert-BUTYL ETHER	METHYL tert-BUTYL ETHER	Methyl tert-butyl ether	METHYL TERT-BUTYL ETHER	METHYL tert-BUTYL ETHER
Transport document description				
UN 2398 METHYL tert-BUTYL ETHER, 3, II, (D/E)	UN 2398 METHYL tert-BUTYL ETHER, 3, II (< -18°C c.c.)	UN 2398 Methyl tert-butyl ether, 3, II	UN 2398 METHYL TERT-BUTYL ETHER, 3, II	UN 2398 METHYL tert-BUTYL ETHER, 3, II
14.3. Transport hazard class(es)				
3	3	3	3	3
				
14.4. Packing group				
II	II	II	II	II
14.5. Environmental hazards				
Dangerous for the environment : No	Dangerous for the environment : No Marine pollutant : No	Dangerous for the environment : No	Dangerous for the environment : No	Dangerous for the environment : No
No supplementary information available				

14.6. Special precautions for user

Overland transport

Classification code (ADR)	: F1
Limited quantities (ADR)	: 1I
Excepted quantities (ADR)	: E2
Packing instructions (ADR)	: P001, IBC02, R001
Mixed packing provisions (ADR)	: MP19
Portable tank and bulk container instructions (ADR)	: T7
Portable tank and bulk container special provisions (ADR)	: TP1
Tank code (ADR)	: LGBF
Vehicle for tank carriage	: FL
Transport category (ADR)	: 2
Special provisions for carriage - Operation (ADR)	: S2, S20
Hazard identification number (Kemler No.)	: 33
Orange plates	:



Tunnel restriction code (ADR)	: D/E
EAC code	: •3YE

Transport by sea

Packing instructions (IMDG)	: P001
IBC packing instructions (IMDG)	: IBC02
Tank instructions (IMDG)	: T7
Tank special provisions (IMDG)	: TP1
EmS-No. (Fire)	: F-E
EmS-No. (Spillage)	: S-D
Stowage category (IMDG)	: E
Flash point (IMDG)	: below -18°C c.c.
Properties and observations (IMDG)	: Colourless liquid. Flashpoint: below -18°C c.c. Explosive limits: 1.7% to 8.4% Boiling point: 55°C. Immiscible with water.

Air transport

PCA Excepted quantities (IATA)	: E2
PCA Limited quantities (IATA)	: Y341
PCA limited quantity max net quantity (IATA)	: 1L
PCA packing instructions (IATA)	: 353
PCA max net quantity (IATA)	: 5L
CAO packing instructions (IATA)	: 364
CAO max net quantity (IATA)	: 60L
ERG code (IATA)	: 3L

Inland waterway transport

Classification code (ADN)	: F1
Limited quantities (ADN)	: 1 L
Excepted quantities (ADN)	: E2
Carriage permitted (ADN)	: T
Equipment required (ADN)	: PP, EX, A
Ventilation (ADN)	: VE01
Number of blue cones/lights (ADN)	: 1

Rail transport

Classification code (RID)	: F1
Limited quantities (RID)	: 1L
Excepted quantities (RID)	: E2
Packing instructions (RID)	: P001, IBC02, R001
Mixed packing provisions (RID)	: MP19
Portable tank and bulk container instructions (RID)	: T7

Portable tank and bulk container special provisions (RID) : TP1

Tank codes for RID tanks (RID) : LGBF

Transport category (RID) : 2

Colis express (express parcels) (RID) : CE7

Hazard identification number (RID) : 33

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable

SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

No REACH Annex XVII restrictions

MTBE (tert-butyl methyl ether) is not on the REACH Candidate List

MTBE (tert-butyl methyl ether) is not on the REACH Annex XIV List

Methyl tert-butyl ether is not subject to REGULATION (EU) No 649/2012 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 4 July 2012 concerning the export and import of hazardous chemicals.

Methyl tert-butyl ether is not subject to Regulation (EU) No 2019/1021 of the European Parliament and of the Council of 20 June 2019 on persistent organic pollutants

15.1.2. National regulations

Listed on the AICS (Australian Inventory of Chemical Substances)

Listed on the Canadian DSL (Domestic Substances List)

Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory

Listed on the Japanese ISHL (Industrial Safety and Health Law)

Listed on the Korean ECL (Existing Chemicals List)

Listed on NZIoC (New Zealand Inventory of Chemicals)

Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Subject to reporting requirements of United States SARA Section 313

Listed on INSQ (Mexican National Inventory of Chemical Substances)

Listed on EPA Hazardous Air Pollutant (HAPS)

Listed on the TCSI (Taiwan Chemical Substance Inventory)

Germany

Reference to AwSV : Water hazard class (WGK) 1, Slightly hazardous to water (Classification according to VwVwS, Annex 1 or 2; ID No. 1200)

12th Ordinance Implementing the Federal Immission Control Act - 12.BImSchV : Is not subject of the 12. BImSchV (Hazardous Incident Ordinance)

Netherlands

SZW-lijst van kankerverwekkende stoffen : The substance is not listed

SZW-lijst van mutagene stoffen : The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Borstvoeding : The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Vruchtbaarheid : The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Ontwikkeling : The substance is not listed

Denmark

Classification remarks : Emergency management guidelines for the storage of flammable liquids must be followed

15.2. Chemical safety assessment

No additional information available

SECTION 16: Other information

Indication of changes:

Section	Changed item	Change	Comments
1.2	Relevant identified uses	Modified	

2.1	Adverse physicochemical, human health and environmental effects	Modified	
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Abbreviations and acronyms:	
CAS	CAS (Chemical Abstracts Service) number
CLP	CLP - Classification, Labelling and Packaging
CSR	CSR - Chemical Safety Report
EC	EC - European Community
EEC	EEC - European Economic Community
REACH	REACH - Registration, Evaluation, Authorisation and Restriction of Chemicals
SDS	SDS - Safety Data Sheet

Sources of Key data : CSR - Chemical Safety Report. MSDS.

Full text of H- and EUH-statements:	
Flam. Liq. 2	Flammable liquids, Category 2
Skin Irrit. 2	Skin corrosion/irritation, Category 2
H225	Highly flammable liquid and vapour.
H315	Causes skin irritation.

Full text of use descriptors	
ERC1	Manufacture of the substance
ERC2	Formulation into mixture
ERC4	Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
ERC6a	Use of intermediate
ERC8b	Widespread use of reactive processing aid (no inclusion into or onto article, indoor)
ERC8e	Widespread use of reactive processing aid (no inclusion into or onto article, outdoor)
PC13	Fuels
PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
PROC15	Use as laboratory reagent
PROC16	Use of fuels
PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC4	Chemical production where opportunity for exposure arises
PROC5	Mixing or blending in batch processes
PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9	Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

Braskem - SDS_EU_REACH_Annex_II (modified 190806)

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product. It warns that the handling of any chemical substance requires the previous knowledge of its hazards for the user. It is up to the user of the product company providing this SDS to and promote the training of its employees about possible risks come upon of the product. The information contained herein is not absolute, but only general information on the use of the chemical and indication of safety and security measures.