

## APPENDIX 11

### MTBE – EFOA Safety Data Sheet Guidance

This document has been prepared by EFOA in order to provide guidance on the content of EU Safety Data Sheets (SDS) on MTBE.

Disclaimer: This document is for information only and provides guidance on the preparation of Safety Data Sheets in accordance with various European Directives. While every effort is made to ensure the accuracy of the information, no representations or warranties are made with regard to its completeness and the authors cannot accept responsibility for any consequences of following the guidance contained herein. It is essential to note that this document has no official status; for information on the specific preparation of Safety Data Sheets in individual cases, independent advice should be sought.

It should be emphasised that the current Safety Data Sheets Directive (2001/58/EEC) requires that only competent persons should prepare safety data sheets.

- **Identification of the substance/preparation and of the company/undertaking**
  - Product name – will be company specific to be entered as appropriate
  - Chemical name - methyl tertiary butyl ether
  - CAS number – 1634-04-4
  - Uses – gasoline blending component.  
Note: there may be other uses that also need to be indicated here.
- **Composition/information on ingredients**
  - Where known, all components of the product can be listed together with appropriate classification and labelling, classified components have to be listed according to the Directive 91/155/EC, for example:

<i>Component</i>	<i>CAS No</i>	<i>EU Inventory No</i>	<i>Classification/ Labelling</i>	<i>Concentration</i>
t-butyl methyl ether	1634-04-4	216-653-1	R11, R38	≥ 98 %
Methanol	67-56-1	200-659-6	R11, R23/24/25	< 0.5 %

- **Hazards Identification**
  - Classification: Highly Flammable (F), Irritant (Xi)
  - R Phrases: R11 – Highly Flammable, R38 – Irritating to skin  
(It is not necessary to mention the symbols and R-phrases, the text is sufficient)  
Other advice regarding potential hazards and exposures may be included here – this advice may be specific and related to particular applications/usage of the product.
  - MTBE is not readily biodegradable.

This phrase is optional in this section as it already appears in the ecotoxicology section. Non ready biodegradability is not a hazard in itself and it does not result in an EU classification & labelling requirement. However, it may be appropriate to include this phrase in this section depending on specific circumstances and review by individual companies.

- **First Aid Measures**
  - First Aid advice will be company specific
  
- **Fire Fighting Measures**
  - Fire Fighting Measures will be company specific.  
Advice on use of suitable extinguishing media may include: dry chemicals, CO<sub>2</sub>, water spray/fog or alcohol-resistant foam. Water jets should NOT be used.
  - A warning may also be given indicating that MTBE can form explosive mixtures with air.
  
- **Accidental Release Measures**

May include the following advice:

  - Personal precautions
    - avoid contact with skin and eyes, wear personal protective equipment
    - evacuate people upwind from the spill area
    - keep away from sources of ignition – no smoking
    - vapour heavier than air – prevent vapour accumulating in ground hollows and confined spaces
    - ensure adequate ventilation
  - Environmental precautions
    - do not allow to enter water courses/ sewers or soil
    - avoid penetration into drainage systems/underground voids due to danger of explosion
  
- **Handling and Storage**
  - Protection against fire and explosion may include:  
Avoiding sources of ignition such as static discharges:  
Specifying the use of non-sparking tools  
Atmospheric monitoring, purging, etc.
  - Advice on storage may include:  
Precautionary measures should be taken to prevent product spills into drains or groundwater  
Incompatible materials include most plastics, Viton and Fluorel
  
- **Exposure controls and Personal Protection**
  - There is a need to indicate components with workplace control parameters, for example:

Component	Source	Value/Units	Type	Notation
MTBE	OEL (IT)	40ppm	8hr/TWA	No
Methanol	OEL (IT)	200ppm	8hr/TWA	Skin

The exposure limits should be detailed as appropriate for individual components and country-specific .

- Personal Protective Equipment
 

Selection of appropriate personal protective equipment should be based on an evaluation of the performance characteristics of the protective equipment relative to the task(s) to be performed, conditions present, duration of use, and the hazards and/or potential hazards that may be encountered during use.

  - Respiratory Protection:
 

In the case of dusts/vapours/aerosols being formed, especially in excess of the occupational exposure limits, respiratory equipment with a suitable filter (may be specified for the particular exposure situation) or self-contained breathing apparatus may be necessary.
  - Dermal protection:
 

Chemical-resistant protective gloves (may be specified for the particular exposure situation) should be worn, such as nitrile or polyvinyl alcohol. Also, depending on conditions, apron, boots, head and face protection should be worn.
  - Eye protection:
 

Closed Goggles  
Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.
- **Physical and Chemical Properties**
  - Properties will be product/company specific. The following properties are typical:
 

Form: Liquid  
 Colour: Colourless  
 Odour: Strong characteristic – terpene like  
 pH: Not applicable  
 Melting point: -108°C  
 Boiling point: ~ 55°C (1.013hPa)  
 Flash point: -28.2°C Method: Closed cup  
 Ignition temperature: 460°C Method: DIN 51 794  
 Lower explosion limit: 1,5%(V)  
 Upper explosion limit: 8,5%(V)  
 Vapour Pressure: 270 hPa (20°C)  
 Density: Ca. 0,741 g/cm<sup>3</sup> (20°C)  
 Water solubility: Ca. 42 g/l (20°C)  
 Partition coefficient (n-octanol/water) Log Pow: 1,06 (measured)  
 Viscosity, dynamic: 0,36 mPa.s (20°C)  
 Decomposition temperature: Above 200°C  
 Henry's law constant: 43.8 Pa m<sup>3</sup>/mol at 20°C

- **Stability and Reactivity**

- Advice will be company/product specific advice compatible with physico-chemical properties but may include the following:  
Keep away from heat and sources of ignition  
Materials to avoid, strong oxidizing agent, strong acids, strong bases, halogens

- **Toxicological Information**

Information may be product/company specific. The following information is typical:

- Acute oral toxicity: LD50 rat: 3.870 mg/kg
- Acute inhalation toxicity: LC50 rat: 85-120 mg/l /4h  
Inhalation of high vapour concentrations can cause CNS-depression and narcosis
- Acute dermal toxicity: LD50 rabbit: >10.000 mg/kg
- Skin irritation: Moderately irritating
- Sensitisation: Not sensitising
- Eye irritation: Slightly irritating
- Repeated dose toxicity: Repeated exposures of rodents to high levels of MTBE results in effects in both liver and kidney. The 'no observed adverse effect level' derived from these studies is higher than foreseeable human exposures.
- Mutagenicity assessment: Not classified as mutagenic
- Carcinogenicity: Not classified as carcinogenic
- Reproduction toxicity: Not classified as a reproductive toxicant
- Human experience: Vapour irritates the eyes and the respiratory tract. Over-exposure may lead to dizziness, nausea, headache and finally narcotic effects. Prolonged or repeated contact causes drying and irritation of the skin. When ingested, product may irritate the digestive tract.

- **Ecological Information**

Information may be product/company specific. The following information is typical:

- Environmental fate:
  - Not readily biodegradable
  - Photodegradation half-life (Direct photolysis): 3-6 days
  - This material is volatile and water soluble.
  - This material may enter soil and may contaminate ground water.
  - This material is likely to evaporate from soil and water.
  - This material is not expected to bio-accumulate.
- Ecotoxicity
  - Toxicity to fish: LC50 *Leuciscus idus melanotus*:  
>500,00 mg/l/96h Very low toxicity

- Toxicity to daphnia: EC50 Daphnia magna: >340/48h  
Very low toxicity
- Toxicity to algae: EC50 scenedesmus subspicatus:  
>800,00 mg/l/72h Very low toxicity
- Toxicity to bacteria: EC10 Pseudomonas putida:  
ca. 710 mg/l/18h Very low toxicity

- **Disposal Considerations**

- Disposal of waste containing MTBE needs to be in accordance with the relevant regulations, for example advise may include:
  - Dispose of to suitable waste incineration plant.
  - When handling waste containing MTBE, the hazards need to be assessed and the necessary precautions applied to prevent exposure and environmental emissions.

- **Transport Information**

- Information may be product specific. The following information is current for MTBE:

Land transport ADR/RID

Class	3
ADR/RID-Labels	3
UN-No.	2398
Packaging group	II
orange warning plate	33 / 2398
Description of the goods (Technical name)	
METHYL tert-BUTYL ETHER	

Sea transport IMDG-Code

Class	3
UN-No.	2398

Packaging group	II
EmS	3-07
Proper technical name (Proper shipping name)	
METHYL tert-BUTYL ETHER	

Air transport ICAO-TI/IATA-DGR

Class	3
UN-No.	2398

Packaging group	II
Proper technical name (Proper shipping name)	
METHYL tert-BUTYL ETHER	

Loading instructions/Remarks

IATA-C	ERG-Code 3L
IATA-P	ERG-Code 3L

- **Regulatory Information**

- Labelling according to EU Regulations:

Statutory basis/list      According to Directive 67/548/EEC  
Symbol(s):                      F Highly flammable  
    Xi Irritant

R-phrase(s):                  R11 Highly flammable  
    R38 Irritating to skin

S-phrase(s):                  S9 Keep container in a well ventilated space  
    S16 Keep away from sources of ignition –  
    No smoking  
    S24 Avoid contact with skin

Sources of information that may be useful in compiling a MTBE Safety Data Sheet include the EU Risk Assessment Report on MTBE and MTBE Safety Data Sheet example, both of which are available via EFOA (website address [www.foia.org](http://www.foia.org)).