SAFETY DATA SHEET

Eastman(TM) Methyl Isobutyl Ketone

Version: 2.2  Revision Date: 11/12/2018  SDS Number: 1500000001084  Date of last issue: 11/22/2017
PRID  SDSUS / Z8 / 0001  Date of first issue: 09/06/2016

SECTION 1. IDENTIFICATION

Product name : Eastman(TM) Methyl Isobutyl Ketone
Product code : 02039-00, P0203907, P0203911, P0203908, P0203909, P0203900, P0203901

Manufacturer or supplier's details
Company name of supplier : Eastman Chemical Company
Address : 200 South Wilcox Drive
          Kingsport TN 37660-5280
Telephone : (423) 229-2000
Emergency telephone : CHEMTREC: +1-800-424-9300, +1-703-527-3887 CCN7321

Recommended use of the chemical and restrictions on use
Recommended use : Solvent
Restrictions on use : None known.

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with 29 CFR 1910.1200
Flammable liquids : Category 2
Acute toxicity (Inhalation) : Category 4
Eye irritation : Category 2A
Specific target organ systemic toxicity - single exposure : Category 3 (Respiratory system)

GHS label elements
Hazard pictograms :

Signal Word : Danger
Hazard Statements : H225 Highly flammable liquid and vapor.
H319 Causes serious eye irritation.
H332 Harmful if inhaled.
H335 May cause respiratory irritation.
Precautionary Statements:

Prevention:
P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P233 Keep container tightly closed.
P240 Ground/bond container and receiving equipment.
P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
P264 Wash skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/ eye protection/ face protection.

Response:
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

Storage:
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P403 + P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up.

Disposal:
P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards
None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>methyl isobutyl ketone</td>
<td>108-10-1</td>
<td>100</td>
</tr>
</tbody>
</table>

SECTION 4. FIRST AID MEASURES

If inhaled: Move to fresh air.
Treat symptomatically.
If symptoms persist, call a physician.
In case of skin contact: Wash off with soap and water. If symptoms persist, call a physician. Wash contaminated clothing before re-use.

In case of eye contact: Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

If swallowed: Seek medical advice. Do NOT induce vomiting. If victim is fully conscious, give a cupful of water. Never give anything by mouth to an unconscious person. Hold person's head low, to prevent aspiration.

Most important symptoms and effects, both acute and delayed: Causes serious eye irritation. Harmful if inhaled. May cause respiratory irritation.

Notes to physician: Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media: Carbon dioxide (CO2)
Dry chemical
Water spray
Foam

Specific hazards during fire fighting: Water may be ineffective. The product will float on water and can be reignited on surface water.

Hazardous combustion products: No hazardous combustion products are known

Further information: Highly flammable liquid and vapor. Use water spray to cool unopened containers.

Special protective equipment for fire-fighters: Wear an approved positive pressure self-contained breathing apparatus in addition to standard fire fighting gear.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Wear appropriate personal protective equipment. Local authorities should be advised if significant spillages cannot be contained.

Environmental precautions: Avoid release to the environment.

Methods and materials for containment and cleaning up: Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).
After cleaning, flush away traces with water. Eliminate all ignition sources if safe to do so.

SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion: Keep away from heat and sources of ignition.

Advice on safe handling: Avoid inhalation of vapor or mist. Do not get in eyes. Do not swallow. Ensure adequate ventilation. Wash thoroughly after handling. Keep away from fire (No Smoking). Keep away from fire, sparks and heated surfaces. Do not use sparking tools.

Conditions for safe storage: Keep container closed when not in use. Store locked up.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS-No.</th>
<th>Value type (Form of exposure)</th>
<th>Control parameters / Permissible concentration</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>methyl isobutyl ketone</td>
<td>108-10-1</td>
<td>TWA</td>
<td>20 ppm</td>
<td>ACGIH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL</td>
<td>75 ppm</td>
<td>ACGIH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ST</td>
<td>75 ppm 300 mg/m3</td>
<td>NIOSH REL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>50 ppm 205 mg/m3</td>
<td>NIOSH REL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>100 ppm 410 mg/m3</td>
<td>OSHA Z-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>50 ppm 205 mg/m3</td>
<td>OSHA P0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL</td>
<td>75 ppm 300 mg/m3</td>
<td>OSHA P0</td>
</tr>
</tbody>
</table>

Engineering measures: Ensure adequate ventilation.

Personal protective equipment

Respiratory protection: Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines.

Eye protection: Wear safety glasses with side shields (or goggles). Face-shield Always wear eye protection when the potential for inadvertent eye contact with the product cannot be excluded.
Protective measures: Remove respiratory and skin/eye protection only after vapors have been cleared from the area. Ensure that eye flushing systems and safety showers are located close to the working place. Use personal protective equipment as required.

Hygiene measures: Handle in accordance with good industrial hygiene and safety practice.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: liquid
Color: colorless
Odor: alcohol-like
Odor Threshold: not determined
pH: not determined
Melting point/range: -121 °F / -85 °C
Boiling point/boiling range: 243 °F / 117 °C
Flash point: 61 °F / 16 °C
   Method: Tag closed cup
Evaporation rate: not determined
Self-ignition: 829 °F / 443 °C
   Method: ASTM D2155
Upper explosion limit / Upper flammability limit: 8.0 %(V)
Lower explosion limit / Lower flammability limit: 1.2 %(V)
Vapor pressure: not determined
Relative vapor density: 3.5
Relative density: 0.80 (68 °F / 20 °C)
Solubility(ies)
   Water solubility: Moderate
Partition coefficient: n-octanol/water
   Pow: 24
   log Pow: 1.38
Autoignition temperature: not determined
Decomposition temperature  :  Method: DTA  
                           :  No exotherm to boiling  

Viscosity  
Viscosity, dynamic  :  not determined  
Viscosity, kinematic  :  not determined  

Explosive properties  :  No data available  
Oxidizing properties  :  No data available  

**SECTION 10. STABILITY AND REACTIVITY**

Reactivity  :  Forms peroxides of unknown stability.  
Chemical stability  :  Stable under normal conditions.  
Conditions to avoid  :  Heat, flames and sparks.  
Incompatible materials  :  Strong oxidizing agents  
Hazardous decomposition products  :  Carbon dioxide (CO2)  
                                      :  Carbon monoxide  

**SECTION 11. TOXICOLOGICAL INFORMATION**

Acute toxicity  
Harmful if inhaled.  

**Product:**  
Acute oral toxicity  :  Remarks: None.  
Acute inhalation toxicity  :  Remarks: Harmful if inhaled.  
Acute dermal toxicity  :  Remarks: No data available  

**Ingredients:**  
**methyl isobutyl ketone:**  
Acute oral toxicity  :  LD50 Oral (Rat): 2,080 mg/kg  
Acute inhalation toxicity  :  LC50 (Rat): 16.4 mg/l  
                         :  Exposure time: 4 h  
                         :  Test atmosphere: vapor  

Skin corrosion/irritation  
Not classified based on available information.
Product:
Remarks : No data available

Ingredients:
methyl isobutyl ketone:
Species : Rabbit
Exposure time : 72 h
Result : none

Serious eye damage/eye irritation
Causes serious eye irritation.

Product:
Remarks : Causes eye irritation.

Ingredients:
methyl isobutyl ketone:
Species : Rabbit
Result : Eye irritation

Respiratory or skin sensitization

Skin sensitization
Not classified based on available information.

Respiratory sensitization
Not classified based on available information.

Product:
Remarks : No data available

Germ cell mutagenicity
Not classified based on available information.

Carcinogenicity
Not classified based on available information.

Product:
Remarks : This information is not available.

IARC    Group 2B: Possibly carcinogenic to humans
methyl isobutyl ketone  108-10-1

OSHA    No component of this product present at levels greater than or equal to 0.1% is on OSHA’s list of regulated carcinogens.

NTP     No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
Reproductive toxicity
Not classified based on available information.

Product:
Effects on fertility  Remarks: No data available

STOT-single exposure
May cause respiratory irritation.

Product:
Remarks  No data available

STOT-repeated exposure
Not classified based on available information.

Product:
Remarks  No data available

Aspiration toxicity
Not classified based on available information.

Product:
No aspiration toxicity classification

Ingredients:
methyl isobutyl ketone:
May be harmful if swallowed and enters airways.

Information on likely routes of exposure

Product:
Inhalation  Remarks: Harmful if inhaled.
May cause respiratory irritation.

Skin contact  Remarks: None known.

Eye contact  Remarks: Causes serious eye irritation.

Ingestion  Remarks: None known.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Ingredients:
methyl isobutyl ketone:
Toxicity to fish  LC50 (goldfish): 460 mg/l
Exposure time: 24 h
LC50 (golden orfe): 675 - 750 mg/l
Exposure time: 48 h

Toxicity to daphnia and other aquatic invertebrates:
LC50 (Daphnia magna (Water flea)): 4,300 mg/l
Exposure time: 24 h
LC50 (Crangon crangon (shrimp)): 1,250 mg/l
Exposure time: 24 h

Persistence and degradability

Ingredients:

methyl isobutyl ketone:
Biodegradability: Result: Readily biodegradable
Biochemical Oxygen Demand (BOD): BOD-5: 1,940 - 2,060 mg/g
Chemical Oxygen Demand (COD): 2,160 - 2,460 mg/g
ThOD: 2,720 mg/g

Bioaccumulative potential

Ingredients:

methyl isobutyl ketone:
Partition coefficient: n-octanol/water: Pow: 24
            log Pow: 1.38

Mobility in soil
No data available

Other adverse effects
No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods
Waste from residues: Dispose of in accordance with local regulations.

SECTION 14. TRANSPORT INFORMATION

International Regulations

IATA-DGR
UN/ID No.: UN 1245
Proper shipping name: Methyl isobutyl ketone
Class : 3
Packing group : II
Labels : Flammable Liquids
Packing instruction (cargo aircraft) : 364
Packing instruction (passenger aircraft) : 353

IMDG-Code
UN number : UN 1245
Proper shipping name : METHYL ISOBUTYL KETONE

Class : 3
Packing group : II
Labels : 3
EmS Code : F-E, S-D
Marine pollutant : no

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Product name : METHYL ISOBUTYL KETONE
Pollution category : Z
Ship type : 3

Domestic regulation
49 CFR
UN/ID/NA number : UN 1245
Proper shipping name : Methyl isobutyl ketone

Class : 3
Packing group : II
Labels : Class 3 - Flammable Liquid
ERG Code : 127
Marine pollutant : no

Special precautions for user
The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know

CERCLA Reportable Quantity

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS-No.</th>
<th>Component RQ (lbs)</th>
<th>Calculated product RQ (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>methyl isobutyl ketone</td>
<td>108-10-1</td>
<td>5000</td>
<td>5000</td>
</tr>
</tbody>
</table>

SARA 304 Extremely Hazardous Substances Reportable Quantity
This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity
This material does not contain any components with a section 302 EHS TPQ.
11

SARA 311/312 Hazards
- Fire Hazard
- Acute Health Hazard

SARA 313
- The following components are subject to reporting levels established by SARA Title III, Section 313:
  - methyl isobutyl ketone 108-10-1

California Prop. 65
WARNING: This product can expose you to chemicals including methyl isobutyl ketone, which is/are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

The ingredients of this product are reported in the following inventories:
- CH INV: On the inventory, or in compliance with the inventory
- DSL: On the inventory, or in compliance with the inventory
- AICS: On the inventory, or in compliance with the inventory
- NZIoC: On the inventory, or in compliance with the inventory
- ENCS: On the inventory, or in compliance with the inventory
- ISHL: On the inventory, or in compliance with the inventory
- KECI: On the inventory, or in compliance with the inventory
- PICCS: On the inventory, or in compliance with the inventory
- IECSC: On the inventory, or in compliance with the inventory
- TCSI: On the inventory, or in compliance with the inventory
- TSCA: On the inventory, or in compliance with the inventory

TSCA list
No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.
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Revision Date: 11/12/2018
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SDSUS / Z8 / 0001

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SECTION 16. OTHER INFORMATION

Further information

NFPA 704:

HMIS® IV:

Flammability

HEALTH / 2

PHYSICAL HAZARD 0

Special hazard.

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

Full text of other abbreviations

ACGIH : USA. ACGIH Threshold Limit Values (TLV)
NIOSH REL : USA. NIOSH Recommended Exposure Limits
OSHA P0 : USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
OSHA Z-1 : USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
ACGIH / TWA : 8-hour, time-weighted average
ACGIH / STEL : Short-term exposure limit
NIOSH REL / TWA : Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek
NIOSH REL / ST : STEL - 15-minute TWA exposure that should not be exceeded at any time during a workday
OSHA P0 / TWA : 8-hour time weighted average
OSHA P0 / STEL : Short-term exposure limit
OSHA Z-1 / TWA : 8-hour time weighted average

AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; Ems - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECSI - Korea Existing Chemi-
Revision Date    : 11/12/2018

The information provided in this Material 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.