SECTION 1. IDENTIFICATION

Product name : Eastman(TM) MIAK

Product code : 01298-00, P0129801, P0129800, E0129801, P0129810,
P0129811, P0129812, P0129813, P0129809, P0129807,
P0129808

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 : Chemical intermediate
Restrictions on use : None known.

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with 29 CFR 1910.1200
Flammable liquids : Category 3
Acute toxicity (Inhalation) : Category 4
Reproductive toxicity : Category 2

GHS label elements
Hazard pictograms :

Signal Word : Warning
Hazard Statements : H226 Flammable liquid and vapor.
                   H332 Harmful if inhaled.
                   H361d Suspected of damaging the unborn child.
Precautionary Statements : Prevention:
                           P201 Obtain special instructions before use.
SAFETY DATA SHEET

Eastman(TM) MIAK

P202 Do not handle until all safety precautions have been read and understood.
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.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/protective clothing/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.
P308 + P313 IF exposed or concerned: Get medical advice/attention.
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

Storage:
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
May form explosive peroxides.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance name: 01298-00

Ingredients

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>methyl isoamyl ketone</td>
<td>110-12-3</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 plenty of water.
Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash contaminated clothing before reuse.

In case of eye contact: In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice. If easy to do, remove contact lens, if worn.

If swallowed: Seek medical advice.

Most important symptoms and effects, both acute and delayed: Harmful if inhaled. Repeated exposure may cause skin dryness or cracking. Suspected of damaging the unborn child.

Notes to physician: Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

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

Unsuitable extinguishing media: Do not use a solid water stream as it may scatter and spread fire.

Specific hazards during fire fighting: Flash back possible over considerable distance. Prevent buildup of vapors or gases to explosive concentrations. Forms peroxides of unknown stability.

Further information: Flammable liquid and vapor. Material will float and may ignite on surface of water. Use a water spray to cool fully closed 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). Eliminate all ignition sources if safe to do so. Prevent runoff from entering drains, sewers, or streams.
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: None known.

Advice on safe handling: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Ground and bond container and receiving equipment. Use explosion-proof electrical equipment. Use non-sparking tools. Take precautionary measures against static discharges. Do not breathe vapors or spray mist. Use only with adequate ventilation. Avoid prolonged or repeated contact with skin. Wash thoroughly after handling. Minimize exposure to air. After opening, purge container with nitrogen before reclosing. Periodically test for peroxide formation on long-term storage.

Conditions for safe storage: Keep container tightly closed and in a well-ventilated place. Keep away from heat and sources of ignition. Protect against light.

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>
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<tr>
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<td>110-12-3</td>
<td>TWA</td>
<td>20 ppm</td>
<td>ACGIH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL</td>
<td>50 ppm</td>
<td>ACGIH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>50 ppm</td>
<td>NIOSH REL</td>
</tr>
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<td></td>
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<td>TWA</td>
<td>100 ppm</td>
<td>OSHA Z-1</td>
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<td></td>
<td></td>
<td>TWA</td>
<td>50 ppm</td>
<td>OSHA P0</td>
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<td></td>
<td>475 mg/m3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>240 mg/m3</td>
<td></td>
</tr>
</tbody>
</table>

Engineering measures: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne
levels to an acceptable level.

**Personal protective equipment**

**Respiratory protection**: If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn.

**Hand protection**

**Remarks**: Wear suitable gloves.

**Eye protection**: Wear safety glasses with side shields (or goggles).

**Protective measures**: Ensure that eye flushing systems and safety showers are located close to the working place. 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**: 0.012 ppm

**pH**: not determined

**Melting point/freezing point**: -73.9 °C

**Boiling point/boiling range**: 144 °C

**Flash point**: 36 °C
  Method: Tag closed cup

**Evaporation rate**: not determined

**Self-ignition**: 400 °C
  Method: ASTM E659

**Upper explosion limit**: 8.2 % (V)
Lower explosion limit: 1.05 %(V)
Vapor pressure: 6.0 mbar (20 °C)
Relative vapor density: 3.9
Relative density: 0.8119 (20 °C)
Solubility(ies)
Water solubility: 5.4 g/l
Partition coefficient: n-octanol/water
log Pow: 1.88 (25 °C)
Autoignition temperature: not determined
Decomposition temperature: not determined
Viscosity
Viscosity, kinematic: not determined
Explosive properties: Not classified
Oxidizing properties: Not classified
Surface tension: 25.5 mN/m, 22 °C

SECTION 10. STABILITY AND REACTIVITY

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

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 significant adverse effects were reported

**Ingredients:**

methyl isoamyl ketone:

Acute oral toxicity: LD50 Oral (Rat): 5,657 mg/kg

**Skin corrosion/irritation**

Not classified based on available information.

**Product:**

Remarks: No data available

**Ingredients:**

methyl isoamyl ketone:

Species: Guinea pig
Exposure time: 4 h
Result: slight

**Serious eye damage/eye irritation**

Not classified based on available information.

**Product:**

Remarks: No data available

**Ingredients:**

methyl isoamyl ketone:

Species: Rabbit
Result: slight

**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

**Ingredients:**

methyl isoamyl ketone:

Test Type: Skin Sensitization
Species: Guinea pig
Result: non-sensitizing
Germ cell mutagenicity
Not classified based on available information.

Ingredients:
methyl isoamyl ketone:
Genotoxicity in vitro:
Test Type: Mutagenicity - Mammalian
Metabolic activation: +/- activation
Result: negative

Test Type: Chromosome aberration test in vitro
Metabolic activation: +/- activation
Result: negative

Test Type: Mutagenicity - Bacterial
Metabolic activation: +/- activation
Result: negative

Carcinogenicity
Not classified based on available information.

Product:
Remarks: This information is not available.

IARC
No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

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
Suspected of damaging the unborn child.

Product:
Effects on fertility:
Remarks: No data available

Ingredients:
methyl isoamyl ketone:
Effects on fetal development:
Test Type: Developmental Toxicity
General Toxicity Maternal: NOAEC: 1,250 ppm
Developmental Toxicity: NOAEC: 1,250 ppm
Method: OECD Test Guideline 414

STOT-single exposure
Not classified based on available information.
**Product:**
Remarks: No data available

**STOT-repeated exposure**
Not classified based on available information.

**Product:**
Remarks: No data available

**Repeated dose toxicity**

**Ingredients:**

**methyl isoamyl ketone:**
Species: Rat
: 200 ppm
Application Route: Oral Study
Exposure time: 90 d

**Aspiration toxicity**
Not classified based on available information.

**Product:**
No data available

**Ingredients:**

**methyl isoamyl ketone:**
May be harmful if swallowed and enters airways.

**Information on likely routes of exposure**

**Product:**
Inhalation : Remarks: Harmful if inhaled.
Skin contact : Remarks: Repeated exposure may cause skin dryness or cracking.
Eye contact : Remarks: None known.
Ingestion : Remarks: None known.

**Further information**

**Product:**
Remarks: None known.
SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Ingredients:
methyl isoamyl ketone:
Toxicity to fish: LC50 (Fish): 159 mg/l
Exposure time: 96 h

Toxicity to algae: EC50 (Chlorella pyrenoidosa): > 100 mg/l
Remarks: (highest concentration tested)

Persistence and degradability

Ingredients:
methyl isoamyl ketone:
Biodegradability: Result: Readily biodegradable.
Biodegradation: 67 %
Exposure time: 28 d
Method: Ready Biodegradability: Closed Bottle Test

Chemical Oxygen Demand (COD): 2.1 g/g

Bioaccumulative potential

Ingredients:
methyl isoamyl ketone:
Partition coefficient: n-octanol/water: Pow: 62
log Pow: 1.79

Mobility in soil

Product:
Distribution among environmental compartments: log Koc: 2.16

Ingredients:
methyl isoamyl ketone:
Distribution among environmental compartments: log Koc: 1.36 - 2.3
Method: QSAR model

Other adverse effects
No data available
SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods
Waste from residues: Dispose of in accordance with local regulations. Mix with compatible chemical which is less flammable and incinerate.

SECTION 14. TRANSPORT INFORMATION

International Regulations

IATA-DGR
UN/ID No.: UN 2302
Proper shipping name: 5-Methylhexan-2-one
Class: 3
Packing group: III
Labels: Flammable Liquids
Packing instruction (cargo aircraft): 366
Packing instruction (passenger aircraft): 355

IMDG-Code
UN number: UN 2302
Proper shipping name: 5-METHYLHEXAN-2-ONE
Class: 3
Packing group: III
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 AMYL KETONE
Pollution category: Z
Ship type: 3

Domestic regulation

49 CFR
UN/ID/NA number: UN 2302
Proper shipping name: 5-Methylhexan-2-one
Class: 3
Packing group: III
Labels: Class 3 - Flammable Liquid
ERG Code: 127
Marine pollutant: no
SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know

CERCLA Reportable Quantity
This material does not contain any components with a CERCLA RQ.

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.

SARA 311/312 Hazards:
- Flammable (gases, aerosols, liquids, or solids)
- Acute toxicity (any route of exposure)
- Reproductive toxicity

SARA 313:
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

The ingredients of this product are reported in the following inventories:
- DSL: All components of this product are on the Canadian DSL
- AICS: 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.

SECTION 16. OTHER INFORMATION
Full text of other abbreviations

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; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50% of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Further information

NFPA:

HMIS® IV:

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.
**SAFETY DATA SHEET**

**Eastman(TM) MIAK**

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<th>Revision Date:</th>
<th>SDS Number:</th>
<th>Date of last issue:</th>
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<td>Date of first issue: 09/06/2016</td>
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**Revision Date**: 02/08/2018

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.

US / Z8