SAFETY DATA SHEET

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

Product identifier

Product name: Eastman(TM) Methyl Isobutyl Ketone

Product No.: EAN 900416. P020390N

Synonyms, Trade Names: 02039-00

Additional identification

Chemical name:	4-methylpentan-2-one
CAS-No.:	108-10-1

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

Identified uses: Solvent

Uses advised against: None known.

Details of the supplier of the safety data sheet

Manufacturer / Supplier

Eastman Chemical Company
200 South Wilcox Drive
Kingsport, TN 37660-5280 US
+14232292000

Visit our website at www.EASTMAN.com or email emnmsds@eastman.com

Emergency telephone number:

For emergency health, safety, and environmental information, call 1-423-229-4511 or 1-423-229-2000.

For emergency transportation information, in the United States: call CHEMTREC at 800-424-9300 or call 423-229-2000.

SECTION 2: Hazards identification

Hazard classification:

Physical hazards

Flammable liquids	Category 2

Health hazards

Acute toxicity (Inhalation)	Category 4
Eye Damage/Irritation	Category 2A
Specific target organ toxicity - single exposure	Category 3

OSHA Specified Hazards: not applicable

Warning label items including precautionary statement:

Pictogram:

Signal words: Danger

Hazard Statement(s):
H225: Highly flammable liquid and vapor.
H332: Harmful if inhaled.
H319: Causes serious eye irritation.
H335: May cause respiratory irritation.

Precautionary statement:

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.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P261: Avoid breathing dust/fume/gas/mist/vapors/spray.
P271: Use only outdoors or in a well-ventilated area.
P264: Wash hands thoroughly after handling.

Response:
P370 + 378: In case of fire: Use water spray, carbon dioxide, dry chemical or foam for extinction.
P303+P361+P353: IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P312: Call a POISON CENTER or doctor/physician 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.

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

Disposal:
P501: Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Hazard(s) not otherwise classified (HNOC): Potential peroxide former.

SECTION 3: Composition/information on ingredients

Substances / Mixtures

General information:

Chemical name	Concentration	Additional identification	Notes
methyl isobutyl ketone	100%	CAS-No.: 108-10-1	#

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.
# This substance has workplace exposure limit(s).

SECTION 4: First aid measures

Description of first aid measures

Inhalation: Move to fresh air. If breathing stops, provide artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Eye contact: Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention.

Skin contact: Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention if symptoms persist. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.

Ingestion: Seek medical advice.

Most important symptoms and effects, both acute and delayed: May irritate and cause redness and pain.

Indication of any immediate medical attention and special treatment needed

Hazards: None known.

Treatment: Treat symptomatically.

SECTION 5: Firefighting measures

General fire hazards: Flammable liquid and vapor. USE WATER WITH CAUTION. Material will float and may ignite on surface of water.

Extinguishing media

Suitable extinguishing media: Water spray. Dry chemical. Carbon Dioxide. Foam.

Unsuitable extinguishing media: None known.

Special hazards arising from the substance or mixture: Vapors may cause a flash fire or ignite explosively. Vapors may travel considerable distance to a source of ignition and flash back. Prevent buildup of vapors or gases to explosive concentrations. Forms explosive peroxides which may be shock sensitive.

Advice for firefighters

Special fire fighting procedures: Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters: Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures: Wear appropriate personal protective equipment.

Environmental precautions: Avoid release to the environment.

Methods and material for containment and cleaning up: Eliminate sources of ignition. Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Large Spillages: Use water spray to disperse vapors and dilute spill to a nonflammable mixture. Prevent runoff from entering drains, sewers, or streams. Dike for later disposal.

Notification Procedures: In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

SECTION 7: Handling and storage:

Precautions for safe handling: Keep away from heat, sparks and open flame. Use only with adequate ventilation. After opening, purge container with nitrogen before reclosing. Periodically test for peroxide formation on long-term storage. If peroxide formation is suspected, do not open or move container. Do not distill to near dryness. Addition of water or appropriate reducing materials will lessen peroxide formation. Minimize exposure to air.

Conditions for safe storage, including any incompatibilities: Keep container tightly closed and in a well-ventilated place. Store away from other materials. Comply with all national, state, and local codes pertaining to the storage, handling, dispensing, and disposal of flammable liquids.

Specific end use(s): Solvent

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational exposure limits

Country specific exposure limits have not been established or are not applicable unless listed below.

Chemical name	Type	Exposure Limit values	Source
4-methylpentan-2-one; isobutyl methyl ketone	TWA	20 ppm	US. ACGIH Threshold Limit Values (01 2010)
	STEL	75 ppm	US. ACGIH Threshold Limit Values (01 2010)
	PEL	100 ppm 410 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)

Biological limit values

Chemical name	Exposure Limit values	Source
4-methylpentan-2-one; isobutyl methyl ketone (methyl isobutyl ketone: Sampling time: End of shift.)	1 mg/l (Urine)	ACGIH BEL (01 2010)

Exposure controls

Appropriate engineering controls: 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.

Individual protection measures, such as personal protective equipment

General information: Eye bath. Washing facilities. Safety shower.

Eye/face protection: Wear safety glasses with side shields (or goggles). Wear a full-face respirator, if needed.

Skin protection

Hand protection: Wear chemical-resistant gloves, footwear, and protective clothing appropriate for the risk of exposure. Contact health and safety professional or manufacturer for specific information.

Other: No data available.

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. In the United States of America, if respirators are used, a program should be instituted to assure compliance with OSHA Standard 63 FR 1152, January 8, 1998. Respirator type: Air-purifying respirator with an appropriate, government approved (where applicable), air-purifying filter, cartridge or canister. Contact health and safety professional or manufacturer for specific information.

Hygiene measures: Observe good industrial hygiene practices.

Environmental Controls: No data available.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Appearance

Physical State: Liquid

Form: Liquid

Color: Colorless

Odor: ketone

Odor Threshold: No data available.

pH:	No data available.
Melting Point	-85 °C
Boiling Point:	117 °C
Flash Point:	16 °C (Tagliabue Closed Cup)
Evaporation Rate:	No data available.
Flammability (solid, gas):	No data available.
Flammability Limit - Upper (%)–:	8.0 %(V)
Flammability Limit - Lower (%)–:	1.2 %(V)
Vapor pressure:	No data available.
Vapor density (air=1):	3.5
Specific Gravity:	0.80 (20 °C)
Solubility(ies)	
Solubility in Water:	Moderate
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	Pow: 24 log Pow: 1.38
Autoignition Temperature:	443 °C (ASTM D2155)
Decomposition Temperature:	(DTA) No exotherm to boiling
Dynamic Viscosity:	No data available.
Kinematic viscosity:	No data available.
Explosive properties:	No data available.
Oxidizing properties:	No data available.

SECTION 10: Stability and reactivity

Reactivity:	May form peroxides of unknown stability.
Chemical stability:	Stable
Possibility of hazardous reactions:	Forms peroxides of unknown stability.
Conditions to avoid:	Heat, sparks, flames.
Incompatible materials:	Strong oxidizing agents.
Hazardous decomposition products:	Carbon Dioxide. Carbon Monoxide.

SECTION 11: Toxicological information

Information on likely routes of exposure

Inhalation:	Harmful if inhaled.
Ingestion:	None known.
Skin contact:	Prolonged or repeated skin contact may cause drying, cracking, or irritation.
Eye contact:	Causes serious eye irritation.

Information on toxicological effects

Acute Toxicity

Oral

Product: No data available.

Specified substance(s)

4-methylpentan-2-one; isobutyl methyl ketone	Oral LD-50: (Rat): 2,080 mg/kg

Dermal

Product: No data available.

Specified substance(s)

4-methylpentan-2-one; isobutyl methyl ketone	Dermal LD-50: (Rabbit): >10 ml/kg

Inhalation

Product: No data available.

Specified substance(s)

4-methylpentan-2-one; isobutyl methyl ketone	LC50 (Rat, 4 h): 2000 - 4000 ppm

Repeated dose toxicity

Product: No data available.

Specified substance(s)

4-methylpentan-2-one; isobutyl methyl ketone	No data available.

Skin corrosion/irritation:

Product: No data available.

Specified substance(s)

4-methylpentan-2-one; isobutyl methyl ketone	(Rabbit, 72 h): none

Serious eye damage/eye irritation:

Product: No data available.

Specified substance(s)

4-methylpentan-2-one; isobutyl methyl ketone	(Rabbit): slight to moderate

Respiratory or skin sensitization:

Product: No data available.

Specified substance(s)

4-methylpentan-2-one; isobutyl methyl ketone	No data available.

Mutagenicity

In vitro

Product: No data available.

Specified substance(s)

4-methylpentan-2-one; isobutyl methyl ketone — No data available.

In vivo

Product: No data available.

Specified substance(s)

4-methylpentan-2-one; isobutyl methyl ketone — No data available.

Carcinogenicity

Product: No data available.

Specified substance(s)

4-methylpentan-2-one; isobutyl methyl ketone — IARC 2B: possibly carcinogenic to humans.

Reproductive toxicity

Product: No data available.

Specified substance(s)

4-methylpentan-2-one; isobutyl methyl ketone — No data available.

Specific target organ toxicity - single exposure

Product: No data available.

Specified substance(s)

4-methylpentan-2-one; isobutyl methyl ketone — No data available.

Specific target organ toxicity - repeated exposure

Product: No data available.

Specified substance(s)

4-methylpentan-2-one; isobutyl methyl ketone — No data available.

Aspiration hazard

Product: No data available.

Specified substance(s)

4-methylpentan-2-one; isobutyl methyl ketone — May be harmful if swallowed and enters airways.

Other adverse effects: Contains an IARC (International Agency for Research on Cancer) 2B material. IARC 2B is a classification for possible human carcinogen based on sufficient evidence on carcinogenicity in experimental animals, but inadequate evidence for cancer in exposed humans.

SECTION 12: Ecological information

Toxicity

Acute toxicity

Fish

Product: No data available.

Specified substance(s)

4-methylpentan-2-one; isobutyl methyl ketone	LC-50 (goldfish, 24 h): 460 mg/l LC-50 (golden orfe, 48 h): 675 - 750 mg/l

Aquatic invertebrates

Product: No data available.

Specified substance(s)

4-methylpentan-2-one; isobutyl methyl ketone	LC-50 (Water Flea, 24 h): 4,300 mg/l LC-50 (Brown Shrimp, 24 h): 1,250 mg/l

Chronic Toxicity

Fish

Product: No data available.

Specified substance(s)

4-methylpentan-2-one; isobutyl methyl ketone	No data available.

Aquatic invertebrates

Product: No data available.

Specified substance(s)

4-methylpentan-2-one; isobutyl methyl ketone	No data available.

Toxicity to Aquatic Plants

Product: No data available.

Specified substance(s)

4-methylpentan-2-one; isobutyl methyl ketone	No data available.

Persistence and degradability

Biodegradation

Product: No data available.

Specified substance(s)

4-methylpentan-2-one; isobutyl methyl ketone	No data available.

Biological Oxygen Demand:

Product No data available.

Specified substance(s)

4-methylpentan-2-one; isobutyl methyl ketone	BOD-5: 1,940 - 2,060 mg/g

Chemical Oxygen Demand:

Product No data available.

Specified substance(s)

4-methylpentan-2-one; isobutyl methyl ketone	2,160 - 2,460 mg/g

BOD/COD ratio

Product	No data available.

Specified substance(s)

4-methylpentan-2-one; isobutyl methyl ketone	No data available.

Bioaccumulative potential

Product:	No data available.

Specified substance(s)

4-methylpentan-2-one; isobutyl methyl ketone	No data available.

Mobility in soil: No data available.

Known or predicted distribution to environmental compartments

4-methylpentan-2-one; isobutyl methyl ketone	No data available.

Results of PBT and vPvB assessment: No data available.

4-methylpentan-2-one; isobutyl methyl ketone	No data available.

Other adverse effects: No data available.

SECTION 13: Disposal considerations

Waste treatment methods

General information: No data available.

Disposal methods: Dispose of waste and residues in accordance with local authority requirements. Incinerate. Since emptied containers retain product residue, follow label warnings even after container is emptied. Residual vapors may explode on ignition; do not cut, drill, grind, or weld on or near this container.

SECTION 14: Transport information

Important Note: Shipping descriptions may vary based on mode of transport, quantities, package size, and/or origin and destination. Consult your company's Hazardous Materials/Dangerous Goods expert for information specific to your situation.

DOT

Reportable Quantity: 2,270 kg (methyl isobutyl ketone)
Possible Shipping Description(s):

UN 1245 Methyl isobutyl ketone 3 II

IMDG - International Maritime Dangerous Goods Code

Possible Shipping Description(s):

UN 1245 METHYL ISOBUTYL KETONE 3 II

IATA

Possible Shipping Description(s):

UN 1245 Methyl isobutyl ketone 3 II

SECTION 15: Regulatory information

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

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.
WHMIS (Canada) Status: controlled
WHMIS (Canada) Hazard Classification: B/2, D/2/B

SARA 311-312 Hazard Classification(s):
immediate (acute) health hazard
fire hazard

US EPCRA (SARA Title III) Section 313 - Toxic Chemical List
METHYL ISOBUTYL KETONE

OSHA: hazardous

TSCA (US Toxic Substances Control Act): This product is listed on the TSCA inventory. Any impurities present in this product are exempt from listing.

DSL (Canadian Domestic Substances List) and CEPA (Canadian Environmental Protection Act): This product is listed on the DSL or otherwise complies with CEPA new substance notification requirements.

AICS / NICNAS (Australian Inventory of Chemical Substances and National Industrial Chemicals Notification and Assessment Scheme): This product is listed on AICS or otherwise complies with NICNAS.

MITI (Japanese Handbook of Existing and New Chemical Substances): This product is listed in the Handbook or has been approved in Japan by new substance notification.

ECL (Korean Toxic Substances Control Act): This product is listed on the Korean inventory or otherwise complies with the Korean Toxic Substances Control Act.

Philippines Inventory (PICCS) : This product is listed on the Philippine Inventory or otherwise complies with PICCS.

Inventory of Existing Chemical Substances in China: All components of this product are listed on the Inventory of Existing Chemical Substances in China (IECSC).

SECTION 16: Other information

HMIS® Hazard Ratings: Health - 1, Flammability - 3, Chemical Reactivity - 1

HMIS® rating involves data interpretations that may vary from company to company. They are intended only for rapid, general identification of the magnitude of the specific hazard. To deal adequately with the safe handling of this material, all the information contained in this MSDS must be considered.

Revision Information:	Not relevant.
Key literature references and sources for data:	No data available.
Training information:	No data available.
Issue date:	07/07/2014
SDS No.:	
Disclaimer:	This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.