SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Product Name	MEK (Methyl Ethyl Ketone)
Chemical Name	Methyl Ethyl Ketone
CAS Number	78-93-3
EC Number	201-159-0
IUPAC	Butanone (MEK)

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

Identified Use(s)	Dispersing agent.
Uses Advised Against	None known.

1.3 Details of the supplier of the safety data sheet

Company Identification	VISHAY MEASUREMENTS GROUP GmBH Tatschenweg 1 74078 Heilbronn Germany
Telephone	+49 (0) 7131-39099-0
Fax	+49 (0) 7131-39099-229
Website	www.micro-measurements.com
E-mail	mm.de@vpgsensors.com
E-Mail (competent person)	sdb@vpgsensors.com

1.4 Emergency telephone number

Emergency Phone No.	+49 (0) 89-19240	(24 hours)
Languages spoken	English	

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

2.1.1 Regulation (EC) No. 1272/2008 (CLP)

Flam. Liq. 2; H225
Eye Irrit. 2; H319
STOT SE 3; H336

2.2 Label elements

According to Regulation (EC) No. 1272/2008 (CLP)

Product Name: MEK (Methyl Ethyl Ketone)

Hazard Pictogram(s)

Signal Word(s): DANGER

Hazard Statement(s):
H225: Highly flammable liquid and vapour.
H319: Causes serious eye irritation.
H336: May cause drowsiness or dizziness.

Precautionary Statement(s):
P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P264: Wash hands and exposed skin thoroughly after handling.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P303+P361+P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

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.

Supplemental information — EUH066: Repeated exposure may cause skin dryness or cracking.

2.3 Other hazards — Can form explosive mixture with air.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances Not applicable

Chemical identity of the substance	%W/W	CAS No.	EC No.	REACH Registration No.
Methyl Ethyl Ketone	>99	7664-38-2	231-633-2	Not yet assigned in the supply chain

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

Self-protection of the first aider — Use personal protective equipment as required. Wear appropriate personal protective equipment, avoid direct contact. Ensure adequate ventilation. Do not breathe vapour. Avoid contact with skin and eyes. Contaminated clothing should be laundered before reuse.

Inhalation — IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell. IF exposed or concerned: Get medical advice/attention.

Skin Contact — IF ON SKIN: Remove contaminated clothing and wash all affected areas with plenty of water. Wash contaminated clothing before reuse. If irritation (redness, rash, blistering) develops, get medical attention.

Eye Contact — IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Ingestion — IF SWALLOWED: Rinse mouth. Make victim drink plenty of water. Do not give anything by mouth to an unconscious person. Do not induce vomiting unless instructed to do so by medical personnel. Call a POISON CENTER/doctor if you feel unwell. IF exposed or concerned: Get medical advice/attention.

4.2 Most important symptoms and effects, both acute and delayed — Causes serious eye irritation. May cause drowsiness or dizziness. Repeated exposure may cause skin dryness or cracking.

4.3 Indication of any immediate medical attention and special treatment needed — Treat symptomatically

Notes to a physician: — IF SWALLOWED: Material may be aspirated into the lungs and cause chemical pneumonitis

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable Extinguishing media — Extinguish with carbon dioxide, dry chemical, foam or waterspray.

Unsuitable extinguishing media — Do not use water jet.

5.2 Special hazards arising from the substance or mixture — Highly flammable liquid and vapour. Decomposes in a fire giving off toxic fumes: Carbon monoxide, Carbon dioxide. Prevent liquid entering sewers, basements and workpits; vapour may create explosive atmosphere. Vapours are heavier than air and may travel considerable distances to a source of ignition and flashback. Prevent liquid entering sewers, basements and workpits; vapour may create explosive atmosphere.

5.3	**Advice for fire-fighters**	Fire fighters should wear complete protective clothing including self-contained breathing apparatus. Do not breathe fumes. Keep containers cool by spraying with water if exposed to fire. Avoid run off to waterways and sewers.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1	**Personal precautions, protective equipment and emergency procedures**	Caution - spillages may be slippery. Ensure operatives are trained to minimise exposures. Ensure suitable personal protection during removal of spillages. Ensure adequate ventilation. Stop leak if safe to do so. Eliminate all ignition sources if safe to do so. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take precautionary measures against static discharge. Use personal protective equipment as required. See Section: 8. Do not breathe vapour.
6.2	**Environmental precautions**	Avoid release to the environment. Do not allow to enter drains, sewers or watercourses. Vapours are heavier than air and may travel considerable distances to a source of ignition and flashback. Spillages or uncontrolled discharges into watercourses must be alerted to the Environment Agency or other appropriate regulatory body.
6.3	**Methods and material for containment and cleaning up**	Provided it is safe to do so, isolate the source of the leak. Use non-sparking equipment when picking up flammable spill. Adsorb spillages onto sand, earth or any suitable adsorbent material. Transfer to a container for disposal. Dispose of this material and its container as hazardous waste. Allow small spillages to evaporate provided there is adequate ventilation.
6.4	**Reference to other sections**	See Section: 8, 13

SECTION 7: HANDLING AND STORAGE

7.1	**Precautions for safe handling**	Ensure operatives are trained to minimise exposures. Ensure adequate ventilation. Do not breathe vapour. In case of inadequate ventilation wear respiratory protection. Avoid contact with skin and eyes. Do not ingest. Wear protective gloves/eye protection. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. May form explosive mixture with air particularly in enclosed spaces. Take precautionary measures against static discharges. Do not eat, drink or smoke when using this product. Wash hands before breaks and after work.
7.2	**Conditions for safe storage, including any incompatibilities**	Ground/bond container and receiving equipment. Keep only in original container. Store in a well-ventilated place. Keep container tightly closed. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. May form explosive mixture with air particularly in enclosed spaces. Keep away from direct sunlight.
	Storage temperature	15 - 25°C
	Storage life	Stable under normal conditions.
	Incompatible materials	Strong oxidising agents, strong bases, Amines, Aldehydes, Ammonia
7.3	**Specific end use(s)**	See Section: 1.2.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

8.1.1 Occupational Exposure Limits

SUBSTANCE	CAS No.	LTEL (8 hr TWA ppm)	LTEL (8 hr TWA mg/m³)	STEL (ppm)	STEL (mg/m³)	Note
Methyl Ethyl Ketone	78-93-3	200	600	300	899	WEL, Sk, BMGV
		200	600	300	900	IOELV

Source: WEL: Workplace Exposure Limit (UK HSE EH40), Sk - Can be absorbed through skin., IOELV: Indicative Occupational Exposure Limit Value

8.1.2 Biological limit value

SUBSTANCE	CAS No.	Biological monitoring guidance value	Sampling Time
Methyl ethyl ketone	78-93-3	70 µmol butan-2-one/L in urine	Post shift

Note: Bmgv: Biological monitoring guidance value (UK HSE EH40)

8.1.3 PNECs and DNELs Not established.

8.2 Exposure controls

8.2.1 Appropriate engineering controls Ensure operatives are trained to minimise exposures. Ensure adequate ventilation. Atmospheric levels should be controlled in compliance with the occupational exposure limit.

8.2.2 Individual protection measures, such as personal protective equipment (PPE) General hygiene measures for the handling of chemicals are applicable. Keep good industrial hygiene. Avoid contact with skin and eyes. Do not breathe vapour. Wash hands before breaks and after work. Keep work clothes separately. Do not eat, drink or smoke at the work place.
IF exposed: Flush with fresh water if contact with skin or eyes.

Eye/ face protection

Wear protective eye glasses for protection against liquid splashes. Wear eye protection with side protection (EN166).

Skin protection

Hand protection:
Wear impervious gloves (EN374). Protective index 6, corresponding > 480 minutes of permeation time according to EN 374 Gloves should be changed regularly to avoid permeation problems. Breakthrough time of the glove material: refer to the information provided by the gloves' producer.

Suitable materials: Butyl rubber (Minimum thickness: 0.7mm), Nitrile rubber (Minimum thickness: 0.4mm)

Body protection:
Wear impervious protective clothing, including boots, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Respiratory protection

In case of inadequate ventilation wear respiratory protection. A suitable mask with filter type A (EN141 or EN405) may be appropriate. A suitable mask with filter type A (EN141 or EN405) may be appropriate.

Thermal hazards Not applicable

8.2.3 Environmental Exposure Controls Avoid release to the environment.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Colourless liquid
Odour	Ketone Odour
Odour threshold	Not available.
pH	Not established.
Melting point/freezing point	-86°C
Initial boiling point and boiling range	79.59°C

Flash point	-9 °C [Closed cup]
Evaporation rate	1 (BuAc = 1)
Flammability (solid, gas)	Not applicable - liquid mixture
Upper/lower flammability or explosive limits	LEL: 1% UEL: 11%
Vapour pressure	104hPa @ 20ºC
Vapour density	>1 (Air = 1)
Relative density	0.81 g/cm³ (H2O = 1)
Solubility(ies)	>10% (Water)
Partition coefficient: n-octanol/water	0.3 log Pow (40 °C)
Auto-ignition temperature	404 °C
Decomposition Temperature	Not available.
Viscosity	2.038 mPa s (Dynamic viscosity) 25 °C
Explosive properties	Not available.
Oxidising properties	Not oxidising.

9.2 Other information None known

SECTION 10: STABILITY AND REACTIVITY

10.1	**Reactivity**	Stable under normal conditions. Reacts with strong oxidizing substances.
10.2	**Chemical stability**	Stable under normal conditions.
10.3	**Possibility of hazardous reactions**	Highly flammable liquid and vapour. The vapour may be invisible, heavier than air and spread along ground. May form explosive mixture with air particularly in enclosed spaces.
10.4	**Conditions to avoid**	Keep away from heat, sources of ignition and direct sunlight.
10.5	**Incompatible materials**	Strong oxidising agents, strong bases, Amines, Aldehydes, Ammonia
10.6	**Hazardous decomposition product(s)**	Decomposes in a fire giving off toxic fumes: Carbon monoxide, Carbon dioxide.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity - Ingestion	Based upon the available data, the classification criteria are not met. LD50 (oral,rat) mg/kg: 2193 (OECD 423)
Acute toxicity - Inhalation	Based upon the available data, the classification criteria are not met. Estimated LC50 >20.0 mg/l.
Acute toxicity - Skin Contact	Based upon the available data, the classification criteria are not met. LD50 (Dermal, (rabbit)) ml/kg bw >10 (OECD 402)
Skin corrosion/irritation	Repeated exposure may cause skin dryness or cracking. No data
Serious eye damage/irritation	Eye Irrit. 3; Causes serious eye irritation. Irritating to eyes. (rabbit) (OECD 405)
Respiratory or skin sensitization	Based upon the available data, the classification criteria are not met. Skin Sensitisation (guinea pig) - Negative (OECD 406)
Germ cell mutagenicity	Based upon the available data, the classification criteria are not met. In vitro: Negative (OECD 471) In vivo: Negative (OECD 474)
Carcinogenicity	Based upon the available data, the classification criteria are not met. No data
Reproductive toxicity	Based upon the available data, the classification criteria are not met. Reproductive toxicity: NOAEL 10000 mg/l No observed fetotoxicity, viability or teratogenicity (OECD 416) Developmental toxicity: NOAEC 1002ppm (OECD 414)
STOT - single exposure	STOT SE 3; May cause drowsiness or dizziness. Central nervous depression. Human Experience (Smith R & Mayers MR, 1944)
STOT - repeated exposure	Based upon the available data, the classification criteria are not met.
Aspiration hazard	Based upon the available data, the classification criteria are not met.

11.2 Other information None known.

SECTION 12: ECOLOGICAL INFORMATION

12.1	**Toxicity**	Based upon the available data, the classification criteria are not met. LC50 (fish) mg/l 2993 (OECD 203)
12.2	**Persistence and degradability**	Readily biodegradable.
12.3	**Bioaccumulative potential**	The product has low potential for bioaccumulation.
12.4	**Mobility in soil**	The product has high mobility in soil. Methyl Ethyl Ketone: Very soluble
12.5	**Results of PBT and vPvB assessment**	Not classified as PBT or vPvB.
12.6	**Other adverse effects**	None known.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1	**Waste treatment methods**	Dispose of this material and its container as hazardous wasteSend after pre-treatment to a appropriate hazardous waste incinerator facility according to legislation.
13.2	**Additional Information**	Dispose of contents in accordance with local, state or national legislation.

SECTION 14: TRANSPORT INFORMATION

		ADR/RID	**IMDG**	**IATA/ICAO**
14.1	**UN number**	UN 1193	UN 1193	UN 1193
14.2	**UN proper shipping name**	ETHYL METHYL KETONE (METHYL ETHYL KETONE)	ETHYL METHYL KETONE (METHYL ETHYL KETONE)	ETHYL METHYL KETONE (METHYL ETHYL KETONE)
14.3	**Transport hazard class(es)**	3	3	3
14.4	**Packing group**	II	II	II
14.5	**Environmental hazards**	Not classified	Not classified as a Marine Pollutant.	Not classified
14.6	**Special precautions for user**	See Section: 2		
14.7	**Transport in bulk according to Annex II of MARPOL 73/78 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**	
	Authorisations and/or Restrictions On Use	Not restricted
	CoRAP Substance Evaluation	Substance identified for evaluation in 2018
15.1.2	**National regulations**	
	Germany	Water hazard class: 1
15.2	**Chemical Safety Assessment**	A chemical safety assessment is not required under REACH.

SECTION 16: OTHER INFORMATION

The following sections contain revisions or new statements: New format has been issued, all sections have been updated to include new information. Review SDS with care.

References: Existing Safety Data Sheet (SDS), Harmonised Classification and Existing ECHA registration(s) for Methyl Ethyl Ketone (CAS No. 7664-38-2).

Literature References:

1. Smith R & Mayers MR, 1944, Study of poisoning and fire hazards of butanone and acetone, Industrial Hygiene: 23, 174-176

EU Classification: This Safety Data Sheet was prepared in accordance with EC Regulation (EC) 1907/2006 (REACH), 1272/2008 (CLP) & 2015/830.

LEGEND

LTEL: Long Term Exposure Limit
STEL: Short Term Exposure Limit
DNEL: Derived No Effect Level
PNEC: Predicted No Effect Concentration

PBT: PBT: Persistent, Bioaccumulative and Toxic
NOAEL: No Observed Adverse Effect Level

vPvB: very Persistent and very Bioaccumulative
NOAEC: no observed adverse effect concentration

Hazard classification / Classification code:
Flam. Liq. 2; Flammable Liquid, Category 2
Eye Irrit. 2; Eye Irritation, Category 2
STOT SE 3; Specific target organ toxicity — single exposure, Category 3

Hazard Statement(s)
H225: Highly flammable liquid and vapour.
H319: Causes serious eye irritation.
H336: May cause drowsiness or dizziness.
EUH066: Repeated exposure may cause skin dryness or cracking.

Disclaimers

Information contained in this publication or as otherwise supplied to Users is believed to be accurate and is given in good faith, but it is for the Users to satisfy themselves of the suitability of the product for their own particular purpose. Vishay Precision Group gives no warranty as to the fitness of the product for any particular purpose and any implied warranty or condition (statutory or otherwise) is excluded except to the extent that exclusion is prevented by law. Vishay Precision Group accepts no liability for loss or damage (other than that arising from death or personal injury caused by defective product, if proved), resulting from reliance on this information. Freedom under Patents, Copyright and Designs cannot be assumed.