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

1.1 Product identifier

Trade name: MIBK, VLSI

CAS-Number: 108-10-1
EC-number: 203-550-1
EU index number: 606-004-00-4

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

General use: Intermediate for electronic industry

1.3 Details of the supplier of the safety data sheet

Company name: Allresist
Gesellschaft für chemische Produkte zur Mikrostrukturierung mbH
Street/POB-No.: Am Biotop 14
Postal Code, city: 15344 Strausberg
Germany
WWW: www.allresist.de
E-mail: info@allresist.de
Telephone: +49 (0)33 41-35 93-0
Telefax: +49 (0)33 41-35 93-29
Dept. responsible for information:
Frau Feldt, Email: doerte.feldt@allresist.de

1.4 Emergency telephone number

Telephone: +49 (0)33 41-35 93-0
Only available during office hours.

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to EC regulation 1272/2008 (CLP)

Flam. Liq. 2; H225 Highly flammable liquid and vapour.
Acute Tox. 4; H332 Harmful if inhaled.
Eye Irrit. 2; H319 Causes serious eye irritation.
STOT SE 3; H335 May cause respiratory irritation.
(EUH066) Repeated exposure may cause skin dryness or cracking.

2.2 Label elements

Labelling (CLP)

Signal word: **Danger**

Hazard statements:

H225	Highly flammable liquid and vapour.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
EUH066	Repeated exposure may cause skin dryness or cracking.

Precautionary statements:

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P243	Take precautionary measures against static discharge.
P261	Avoid breathing vapours.
P264	Wash hands and face thoroughly after handling.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
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 person to fresh air and keep comfortable for breathing.
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 water spray, dry powder, foam or carbon dioxide for extinction.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.

2.3 Other hazards

Narcotic effect possible.

SECTION 3: Composition / information on ingredients

3.1 Substances

Chemical characterisation:

C6 H12 O = (CH3)2CHCH2COCH3, 4-Methylpentan-2-one

CAS-Number: 108-10-1
EC-number: 203-550-1
EU index number: 606-004-00-4
RTECS-Number: SA9275000
Customs tariff number: 2914 13 00

SECTION 4: First aid measures

4.1 Description of first aid measures

In case of inhalation: Provide fresh air.
If breathing becomes irregular or ceases, apply mouth-to-mouth resuscitation or artificial respiration immediately, where required supply oxygen. Immediately get medical attention.

Following skin contact: Take off immediately all contaminated clothing.
Remove residues with water. In case of skin reactions, consult a physician.

After eye contact: Immediately flush eyes with plenty of flowing water for 10 to 15 minutes holding eyelids apart.
Subsequently consult an ophthalmologist.

After swallowing: Rinse mouth immediately and drink plenty of water.
Give activated carbon (20-40 g in a suspension of 10%).
Do not give fatty oils and milk.
Do not induce vomiting. Danger of aspiration!
Keep airway open. Immediately get medical attention.
As a laxative, affected person should drink sodium sulfate (1 tablespoon in 1/4 L water).

4.2 Most important symptoms and effects, both acute and delayed

In case of inhalation:
Harmful by inhalation. Risk of resorption. Pulmonary edema is possible.
Mucous membrane irritation, cough, shortage of breath.
Other symptoms: Headache, dizziness, nausea, inebriation, narcosis.
In case of ingestion:
Risk of resorption.
When swallowed and vomited immediately, aspiration into the lungs may occur resulting in chemical pneumonia or suffocation.
Gastrointestinal complaints
After contact with skin: May cause irritations. Danger of cutaneous absorption.
Repeated exposure may cause skin dryness or cracking.
After eye contact: irritant

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media:

Water fog, extinguishing powder, foam, carbon dioxide.
In case of large fires foam or water fog.

5.2 Special hazards arising from the substance or mixture

Highly flammable. Vapours are heavier than air and will spread at floor level.
Explosive mixtures with air may even form at room temperature. Beware of reignition.
May form dangerous gases and vapours in case of fire.

5.3 Advice for firefighters

Special protective equipment for firefighters:

Wear a self-contained breathing apparatus and chemical protective clothing.

Additional information: Hazchem-Code: •3YE

Cool endangered containers with water spray and, if possible, remove from danger zone. Do not allow water used to extinguish fire to enter drains, ground or waterways. Treat runoff as hazardous. You have to dispose of contaminated extinguishing water according to the regulations of the authorities.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Avoid contact with the substance. Wear suitable protective clothing.
Keep unprotected people away. Do not breathe vapours.
In enclosed areas: Provide fresh air.

6.2 Environmental precautions

Do not empty into drains. Danger of explosion!

6.3 Methods and material for containment and cleaning up

Soak up with absorbent materials such as sand, siliceus earth, acid- or universal binder.
Store in special closed containers and dispose of according to ordinance. Final cleaning.

6.4 Reference to other sections

Refer additionally to section 8 and 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advices on safe handling: Make sure there is sufficient air exchange and / or that working rooms are air suctioned.
Do not breathe vapours. Avoid contact with skin and eyes.

Precautions against fire and explosion:

Keep away from sources of ignition. - No smoking.
Take precautionary measures against static discharges.
Explosive mixtures with air may even form at room temperature. Beware of reignition. Use only spark proof tools.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storerooms and containers:

Store in a well-ventilated place. Keep container tightly closed.
Qualified materials: Tin, stainless steel.
storage temperature 10-22 °C.

Hints on joint storage: Do not store together with combustible or self-igniting materials or any highly flammable solids.

Storage class: 3 = Flammable liquids

7.3 Specific end use(s)

Intermediate for electronic industry

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limit values:

Type	Limit value
Europe: IOELV: STEL	208 mg/m³; 50 ppm
Europe: IOELV: TWA	83 mg/m³; 20 ppm
Great Britain: WEL-STEL	416 mg/m³; 100 ppm
Great Britain: WEL-TWA	208 mg/m³; 50 ppm
Ireland: 15 minutes	208 mg/m³; 50 ppm (May be absorbed through the skin.)
Ireland: 8 hours	83 mg/m³; 20 ppm (May be absorbed through the skin.)

Biological limit values:

Type	Limit value	Parameter	Material	Sample time
Great Britain: BMGV	20 µmol/L	4-methylpentan - 2-one	urine	end of exposure or end of shift

8.2 Exposure controls

Provide good ventilation and/or an exhaust system in the work area.

Personal protection equipment

Occupational exposure controls

Respiratory protection: Respiratory protection must be worn whenever the WEL levels have been exceeded.
Use filter type A (= against vapours of organic substances) according to EN 14387.

Hand protection: Protective gloves according to EN 374.
Glove material: butyl caoutchouc (butyl rubber)-Layer thickness: 0,7 mm.
Breakthrough time: >240 min.
Observe glove manufacturer's instructions concerning penetrability and breakthrough time.

Eye protection: Tightly sealed safety glasses according to EN 166.

Body protection: Wear suitable protective clothing.
In case of handling larger quantities: flame-retardant protective clothing, antistatic

General protection and hygiene measures:

Take off immediately all contaminated clothing.
Wash hands before breaks and after work.
When using do not eat, drink or smoke.
Have eye wash bottle or eye rinse ready at work place.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance:	Form: liquid Colour: colourless, clear
Odour:	characteristic
Odour threshold:	no data available
pH value:	at 20 °C: neutral
Melting point/freezing point:	-84 °C
Initial boiling point and boiling range:	114 - 117 °C
Flash point/flash point range:	14 °C
Evaporation rate:	no data available
Flammability:	no data available
Explosion limits:	LEL (Lower Explosion Limit): 1.20 Vol-% UEL (Upper Explosive Limit): 8.00 Vol-%
Vapour pressure:	at 20 °C: 20 - 21 hPa at 50 °C: 91 hPa
Vapour density:	no data available
Density:	0.8 g/mL
Water solubility:	at 20 °C: 18 - 20 g/L
Partition coefficient: n-octanol/water:	1.31 log P(o/w) (experimental) Appreciable bio-accumulation is not to be expected (log P(o/w 1-3).
Auto-ignition temperature:	no data available
Thermal decomposition:	no data available
Viscosity, dynamic:	at 20 °C: 0.59 mPa*s
Explosive properties:	no data available
Oxidizing characteristics:	no data available

9.2 Other information

Ignition temperature:	460 °C
Additional information:	Molar mass: 100,18 g/mol Relative vapour density at 20 °C (air=1): 3,5

SECTION 10: Stability and reactivity

10.1 Reactivity

Highly flammable. Vapours form potentially explosive mixtures with air. Heavier than air, they proceed at floor level and may backflash over great distances when ignited.

10.2 Chemical stability

Attacks and dissolves many plastics.

10.3 Possibility of hazardous reactions

Violent reaction with strong oxidizing agents, reducing agents, bases (Risk of fire/Danger of explosion).

10.4 Conditions to avoid

Keep away from heat sources, sparks and open flames.
Take precautionary measures against static discharges.

10.5 Incompatible materials

Copper, rubber

10.6 Hazardous decomposition products

Avoid admission of air/oxygene (formation of peroxide).

Thermal decomposition: no data available

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity:

LD50 Rat, oral: 2080 mg/kg (OECD 401)
LC50 Rat, inhalative: 8.2 - 16.4 mg/L/4h (OECD 403)
LD50 Rabbit, dermal: > 16000 mg/kg (IUCLID)

Toxicological effects:

Acute toxicity (oral): Lack of data.

Acute toxicity (dermal): Lack of data.

Acute toxicity (inhalative): Acute Tox. 4; H332 = Harmful if inhaled.

Skin corrosion/irritation: Lack of data.

Eye damage/irritation: Eye Irrit. 2; H319 = Causes serious eye irritation.

Sensitisation to the respiratory tract: Lack of data.

Skin sensitisation: Based on available data, the classification criteria are not met. Not known to cause sensitization. (OECD 406).

Germ cell mutagenicity/Genotoxicity: Based on available data, the classification criteria are not met.
Bacterial mutagenicity: Ames test negative.
In micronucleus test negative (in-vivo).

Carcinogenicity: Lack of data.

Reproductive toxicity: Lack of data.

Effects on or via lactation: Lack of data.

Specific target organ toxicity (single exposure): STOT SE 3; H335 = May cause respiratory irritation.

Specific target organ toxicity (repeated exposure): Lack of data.

Aspiration hazard: Lack of data.

Symptoms

In case of inhalation:
Harmful by inhalation. Risk of resorption. Pulmonary edema is possible.
Mucous membrane irritation, cough, shortage of breath.
Other symptoms: Headache, dizziness, nausea, inebriation, narcosis.
In case of ingestion:
Risk of resorption.
When swallowed and vomited immediately, aspiration into the lungs may occur resulting in chemical pneumonia or suffocation.
Gastrointestinal complaints
After contact with skin: May cause irritations. Danger of cutaneous absorption.
Repeated exposure may cause skin dryness or cracking.
After eye contact: irritant

SECTION 12: Ecological information

12.1 Toxicity

Aquatic toxicity:

Algae toxicity:
IC50 Pseudokirchneriella subcapitata (green algae): 400 mg/L/ 96 h
Bacterial toxicity:
EC50 Photobacterium phosphoreum: 80 mg/L/ 5 min
Daphnia toxicity:
EC50 Daphnia magna (Big water flea): 170 mg/L/ 48 h
Fish toxicity:
LC50 Pimephales promelas (fathead minnow): 505 - 540 mg/L/ 96 h

12.2. Persistence and degradability

Further details:

Substance floats on the water surface. Potentially explosive mixtures with air may form above water surface.

Biodegradation: 83%/ 28 d (OECD 301 F).
Product is readily biodegradable.

Oxygen demand:

CSB: 79 % ThSB

ThSB: 2,72 g/g

12.3 Bioaccumulative potential

Partition coefficient: n-octanol/water:

1.31 log P(o/w) (experimental)

Appreciable bio-accumulation is not to be expected (log P(o/w 1-3).

12.4 Mobility in soil

no data available

12.5 Results of PBT and vPvB assessment

no data available

12.6 Other adverse effects

General information:

Do not allow to enter into ground-water, surface water or drains.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Waste key number: 07 01 04* = organic solvents, halogen-free
* = Evidence for disposal must be provided.

Recommendation: Incinerate as hazardous waste according to applicable local, state, and federal regulations.

Contaminated packaging

Recommendation: Dispose of waste according to applicable legislation. Handle contaminated packages in the same way as the substance itself. Non-contaminated packages may be recycled.

SECTION 14: Transport information

14.1 UN number

ADR/RID, IMDG, IATA: UN 1245

14.2 UN proper shipping name

ADR/RID, IMDG, IATA: UN 1245, METHYL ISOBUTYL KETONE

14.3 Transport hazard class(es)

ADR/RID: Class 3, Code: F1
IMDG: Class 3, Subrisk -
IATA: Class 3

14.4 Packing group

ADR/RID, IMDG, IATA: II

14.5 Environmental hazards

Marine pollutant: No

14.6 Special precautions for user

Land transport (ADR/RID)

Warning board:	ADR/RID: Kemmler-number 33, UN number 1245
Hazard label:	3
Limited quantities:	1 L
EQ:	E2
Contaminated packaging - Instructions:	P001 IBC02 R001
Special provisions for packing together:	MP19
Portable tanks - Instructions:	T4
Portable tanks - Special provisions:	TP1
Tank coding:	LGBF
Tunnel restriction code:	D/E

Sea transport (IMDG)

EmS:	F-E, S-D
Special provisions:	-
Limited quantities:	1 L
EQ:	E2
Contaminated packaging - Instructions:	P001
Contaminated packaging - Provisions:	-
IBC - Instructions:	IBC02
IBC - Provisions:	-
Tank instructions - IMO:	-
Tank instructions - UN:	T4
Tank instructions - Provisions:	TP1
Stowage and handling:	Category B.
Properties and observations:	Colourless liquid with a pleasant odour. Flashpoint: 14°C c.c. Explosive limits: 1,4% to 7,5%. Immiscible with water.

Air transport (IATA)

Hazard:	Flammable liquid
EQ:	E2
Passenger Ltd.Qty.:	Pack.Instr. Y341 - Max. Net Qty/Pkg. 1 L
Passenger:	Pack.Instr. 353 - Max. Net Qty/Pkg. 5 L
Cargo:	Pack.Instr. 364 - Max. Net Qty/Pkg. 60 L
ERG:	3L

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

no data available

SECTION 15: Regulatory information

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

National regulations - Great Britain

Hazchem-Code: •3YE

National regulations - EC member states

Volatile organic compounds (VOC):

100 % by weight = 800 g/L

Labelling of packaging with <= 125mL content

Signal word: **Danger**

Hazard statements:	H332	Harmful if inhaled.
	H335	May cause respiratory irritation.
	EUH066	Repeated exposure may cause skin dryness or cracking.
Precautionary statements:		
	P261	Avoid breathing vapours.
	P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
	P403+P233	Store in a well-ventilated place. Keep container tightly closed.

15.2 Chemical Safety Assessment

no data available

SECTION 16: Other information

Further information

Reason of change: General revision (Regulation (EU) Nr. 2015/830)
Date of first version: 19/8/2010

Department issuing data sheet

Contact person: see section 1: Dept. responsible for information

For abbreviations and acronyms, see: ECHA Guidance on information requirements and chemical safety assessment, chapter R.20 (Table of terms and abbreviations).

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