



# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 (REACH) and Regulation (EU) No. 2015/830

Revision date: 12/6/2018

Version: 11

Language: en-GB,IE

Date of print: 11/7/2018

## MEK, VLSI

Material number MEK VLSI

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

### 1.1 Product identifier

Trade name: MEK, VLSI  
REACH registration No.: 01-2119457290-43-xxxx

CAS-Number: 78-93-3  
EC-number: 201-159-0  
EU index number: 606-002-00-3

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

General use: Solvent, Intermediate for electronic industry  
Reserved for industrial and professional use.

### 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.  
Eye Irrit. 2; H319 Causes serious eye irritation.  
STOT SE 3; H336 May cause drowsiness or dizziness.  
(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.  
H336 May cause drowsiness or dizziness.  
EUH066 Repeated exposure may cause skin dryness or cracking.



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Precautionary statements: P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P261	Avoid breathing vapours/spray.
P280	Wear protective gloves/protective clothing/eye protection.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P312	Call a POISON CENTER/doctor if you feel unwell.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.

### 2.3 Other hazards

Potentially explosive mixtures may form if adequate ventilation is not provided. Inhaling can lead to irritations of the respiratory tract and mucous membrane. Higher doses may lead to a narcotic effect. Special danger of slipping by leaking/spilling product.

Results of PBT and vPvB assessment:

This substance does not meet the PBT/vPvB criteria of REACH, Annex XIII.

## SECTION 3: Composition / information on ingredients

### 3.1 Substances

Chemical characterisation: C<sub>4</sub> H<sub>8</sub> O = CH<sub>3</sub>-CH<sub>2</sub>-CO-CH<sub>3</sub>  
2-Butanone, Methyl ethyl ketone, MEK

CAS-Number: 78-93-3  
EC-number: 201-159-0  
EU index number: 606-002-00-3  
RTECS-Number: EL6475000

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

General information:	If medical advice is needed, have product container or label at hand. First aider: Pay attention to self-protection!
In case of inhalation:	Move victim to fresh air; if necessary, provide artificial respiration or oxygen. Keep airway open. Immediately get medical attention.
Following skin contact:	Wash with plenty of water. Take off immediately all contaminated clothing and wash it before reuse. 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. Remove contact lenses, if present and easy to do. Continue rinsing. Subsequently consult an ophthalmologist.
After swallowing:	Rinse mouth immediately and drink plenty of water. Never give anything by mouth to an unconscious person. Do not induce vomiting. Immediately get medical attention.

### 4.2 Most important symptoms and effects, both acute and delayed

Causes serious eye irritation. May cause drowsiness or dizziness. Inhaling can lead to irritations of the respiratory tract and mucous membrane. Higher doses may lead to a narcotic effect.

### 4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically.



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## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

Suitable extinguishing media:

Water spray jet, alcohol resistant foam, extinguishing powder, carbon dioxide.

Extinguishing media which must not be used for safety reasons:

Full water jet

### 5.2 Special hazards arising from the substance or mixture

Highly flammable liquid and vapour.

With air, vapours form potentially explosive mixtures, which are heavier than air.

Vapours may proceed on the ground over great distances and cause fire and backflashes. May form dangerous gases and vapours in case of fire.

Furthermore, there may develop: Peroxides, carbon monoxide and carbon dioxide.

### 5.3 Advice for firefighters

Special protective equipment for firefighters:

Wear self-contained positive pressure breathing apparatus and full firefighting protective clothing.

Additional information:

Hazchem-Code: •2YE

Heating will lead to pressure increase: Danger of bursting and explosion. Keep containers cool with water spray.

In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.

Contaminated fire-fighting water must be collected separately. Do not allow fire water to penetrate into surface or ground water.

Fire residuals and contaminated extinguishing water must be disposed of in accordance with the regulations of the local authorities.

## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

Eliminate all ignition sources if safe to do so. Do not breathe vapour/aerosol. Avoid contact with the substance. Provide adequate ventilation. Wear appropriate protective equipment. Take off immediately all contaminated clothing and wash it before reuse. If possible, eliminate leakage. Cordon off downwind area at risk and warn inhabitants. Keep unprotected people away.

### 6.2 Environmental precautions

Do not allow to enter into ground-water, surface water or drains. Danger of explosion! If necessary notify appropriate authorities.

### 6.3 Methods and material for containment and cleaning up

Isolate leaked material using non-flammable absorption agent (e.g. sand, earth, vermiculit, diatomaceous earth) and collect it for disposal in appropriate containers in accordance with the local regulations (see section 13).

Beware of reignition. Thoroughly clean surrounding area.

In case of greater quantities: Collect mechanically (use only explosion-proof equipment when pumping out).

Additional information:

Use explosion-proof equipment and non-sparking tools/utensils.

Special danger of slipping by leaking/spilling product.

### 6.4 Reference to other sections

Refer additionally to section 8 and 13.



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## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

Advices on safe handling: Provide adequate ventilation, and local exhaust as needed. Avoid contact with skin, eyes, and clothing. Do not breathe vapour/aerosol. Wear appropriate protective equipment.

When using do not eat, drink or smoke. Guarantee sufficient ventilation during and after use, in order to prevent vapour accumulation. Take off immediately all contaminated clothing and wash it before reuse. Wash hands before breaks and after work. When handling large quantities, supply emergency spray.

Precautions against fire and explosion:

Keep away from sources of ignition - No smoking.  
Take precautionary measures against static discharges.  
Do not weld. Avoid sparks. Use only spark proof tools.  
Vapours can form explosive mixtures with air.

### 7.2 Conditions for safe storage, including any incompatibilities

Requirements for storerooms and containers:

Keep container tightly closed in a cool, well-ventilated place.  
Keep container dry. Keep only in the original container. Protect from heat and direct sunlight.  
Store containers in upright position.  
Storage temperature: 10 - 22 °C  
Qualified materials: steel, refined steel.  
Unsuitable materials: aluminium.

Hints on joint storage:

Do not store together with combustible or self-igniting materials or any highly flammable solids.  
Do not store together with oxidizing agents, strong alkalis or strong acids.  
Keep away from food, drink and animal feedingstuffs.

### 7.3 Specific end use(s)

No information available.

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

Occupational exposure limit values:

Type	Limit value
Europe: IOELV: STEL	900 mg/m <sup>3</sup> ; 300 ppm
Europe: IOELV: TWA	600 mg/m <sup>3</sup> ; 200 ppm
Great Britain: WEL-STEL	899 mg/m <sup>3</sup> ; 300 ppm
Great Britain: WEL-TWA	600 mg/m <sup>3</sup> ; 200 ppm
Ireland: 15 minutes	900 mg/m <sup>3</sup> ; 300 ppm (may be absorbed through the skin)
Ireland: 8 hours	600 mg/m <sup>3</sup> ; 200 ppm (may be absorbed through the skin)

DNEL/DMEL:

Systemic effects:

DNEL workers, long-term, inhalative: 600 mg/m<sup>3</sup>  
DNEL workers, long-term, dermal: 1161 mg/kg bw/d  
DNEL consumers, long-term, inhalative: 106 mg/m<sup>3</sup>  
DNEL consumers, long-term, dermal: 412 mg/kg bw/d  
DNEL consumers, long-term, oral: 31 mg/kg bw/d



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PNEC: PNEC water (freshwater): 55.8 mg/L  
PNEC water (marine water): 55.8 mg/L  
PNEC water (intermittent release): 55.8 mg/L  
PNEC sewage treatment plant: 709 mg/L  
PNEC sediment (freshwater): 284.74 mg/kg dw  
PNEC sediment (marine water): 284.7 mg/kg dw  
PNEC floor: 22.5 mg/kg dw  
PNEC oral (Secondary Poisoning): 1000 mg/kg

## 8.2 Exposure controls

Provide for good ventilation or exhaust system or work with completely self-contained equipment. Explosion protection required.

## 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. The filter class must be suitable for the maximum contaminant concentration (gas/vapour/aerosol/particulates) that may arise when handling the product.

Hand protection: Protective gloves according to EN 374.  
Glove material: Butyl caoutchouc (butyl rubber) - Layer thickness: 0.5 mm.  
Breakthrough time:  $\geq 60$  min.  
Unsuitable glove material: natural rubber (Caoutchouc), polyvinyl chloride, chloroprene rubber, fluoro rubber, nitrile rubber.  
Observe glove manufacturer's instructions concerning penetrability and breakthrough time.

Eye protection: Tightly sealed goggles according to EN 166.

Body protection: Flame retardant, antistatic and chemical resistant protective clothing.

General protection and hygiene measures:  
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Do not breathe vapour/aerosol.  
Do not get in eyes, on skin, or on clothing. Take off immediately all contaminated clothing and wash it before reuse.  
When using do not eat, drink or smoke. Wash hands before breaks and after work.  
When handling large quantities, supply emergency spray.

## Environmental exposure controls

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

# SECTION 9: Physical and chemical properties

## 9.1 Information on basic physical and chemical properties

Appearance: Physical state at 20 °C and 101.3 kPa: liquid  
Colour: colourless

Odour: characteristic

Odour threshold: No data available

pH value: No data available

Melting point/freezing point: -86 °C

Initial boiling point and boiling range: 80 °C

Flash point/flash point range: -9 °C

Evaporation rate: 5.8

Flammability: Highly flammable liquid and vapour.

Explosion limits: LEL (Lower Explosion Limit): 1.50 Vol-%  
UEL (Upper Explosive Limit): 11.50 Vol-%



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Vapour pressure:	at 20 °C: 101 hPa
Vapour density:	2.5
Density:	at 20 °C: 0.805 g/mL
Solubility:	at 20 °C: soluble in organic solvents
Water solubility:	250 g/L (partially soluble)
Partition coefficient: n-octanol/water:	0.29 log P(o/w) Based on the n-octanol/water partition coefficient accumulation in organisms is not expected.
Auto-ignition temperature:	404 °C
Decomposition temperature:	No data available
Viscosity, dynamic:	at 20 °C: 0.4 mPa*s
Explosive properties:	Product is not explosive. Vapours can form explosive mixtures with air.
Oxidizing characteristics:	not oxidising

## 9.2 Other information

Molecular weight	72.11 g/mol
Additional information:	Surface tension at 20 °C: 24.8 mN/m

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

Highly flammable liquid and vapour. Vapours can form explosive mixtures with air.

### 10.2 Chemical stability

Stable under recommended storage conditions.

### 10.3 Possibility of hazardous reactions

Heating will lead to pressure increase: Danger of bursting and explosion. May form explosive peroxides.

Exothermic reactions with: Oxidising agent: Chromium trioxide, chloroform/alkali hydroxide.

Ignition hazard! Release of highly flammable gases/vapours.

Danger of explosion with: Hydrogen peroxide/nitric acid, hydrogen peroxide/sulphuric acid.

### 10.4 Conditions to avoid

Keep away from heat sources, sparks and open flames. Protect against direct sunlight.

### 10.5 Incompatible materials

Oxidizing agents, aluminium, strong acids, strong alkalis.

### 10.6 Hazardous decomposition products

No hazardous decomposition products when regulations for storage and handling are observed.

Thermal decomposition: No data available

## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

Acute toxicity:	LD50 Rat, oral:	> 2193 mg/kg (OECD 423)
	LD50 Rabbit, dermal:	> 5000 mg/kg (OECD 402)
	LC50 Rat, inhalative:	34 mg/L/4h



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Toxicological effects:

Acute toxicity (oral): Based on available data, the classification criteria are not met.  
Acute toxicity (dermal): Based on available data, the classification criteria are not met.  
Acute toxicity (inhalative): Based on available data, the classification criteria are not met.  
Skin corrosion/irritation: Based on available data, the classification criteria are not met.  
Specific symptoms in animal studies, rabbit: (in-vivo): Not an irritant (OECD 404)  
Repeated exposure may cause skin dryness or cracking.

Serious eye damage/irritation: Eye Irrit. 2; H319 = Causes serious eye irritation.  
Specific symptoms in animal studies: Strongly irritant (Rabbit).  
Sensitisation to the respiratory tract: Based on available data, the classification criteria are not met.  
Skin sensitisation: Based on available data, the classification criteria are not met.  
Specific symptoms in animal studies, guinea pig (in-vivo): not sensitising (OECD 406)

Germ cell mutagenicity/Genotoxicity: Based on available data, the classification criteria are not met. In-vitro:  
Gene-mutations mammalian cells: negative (OECD 476).  
Chromosomal aberrations mammalian cells: negative (OECD 473).  
Bacterial mutagenicity: negative (Ames test, OECD 471) .

In-vivo:  
Micronucleus test: negative (OECD 474).  
Carcinogenicity: Based on available data, the classification criteria are not met.  
Reproductive toxicity: Based on available data, the classification criteria are not met.  
Reproduction toxicity: NOAEL (oral), rat: 3122 mg/kg bw/d  
Developmental toxicity: NOAEC (inhalative), rat: 3003 mg/m<sup>3</sup>  
Effects on or via lactation: Based on available data, the classification criteria are not met.  
Specific target organ toxicity (single exposure): STOT SE 3; H336 = May cause drowsiness or dizziness.  
Specific target organ toxicity (repeated exposure): Based on available data, the classification criteria are not met.  
NOAEC (inhalative), rat: 14.871 mg/m<sup>3</sup> (5041 ppm)  
Aspiration hazard: Based on available data, the classification criteria are not met.

## Symptoms

Can cause deafness.  
Upon direct contact with eyes may cause burning, tearing, redness.  
vision impairment  
Other symptoms: headache, dizziness, Nausea, amyosthenia.  
After eye contact: Upon direct contact with eyes may cause burning, tearing, redness.

## SECTION 12: Ecological information

### 12.1 Toxicity

Aquatic toxicity:

Fish toxicity:  
LC50 Pimephales promelas (fathead minnow): 2990 mg/L/96h (OECD 203)  
Daphnia toxicity:  
EC50 Daphnia magna (Big water flea): 308 mg/L/48h (OECD 202)  
Algae toxicity:  
EC50 Pseudokirchneriella subcapitata (green algae): 1972 mg/L/72h (OECD 201)



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### 12.2 Persistence and degradability

Degree of elimination: DOC reduction  $\geq 70\%$   
Further details: Biodegradability in water:  
98%/28 d (OECD 301 D).  
Product is readily biodegradable.

Oxygen demand: BOD: (of ThOD/5d) 76 %  
COD: (of ThOD) 95 %  
ThOD: 2,44 g/g

Effects in sewage plants: Bacterial toxicity: EC5 *Pseudomonas putida*: 1150 mg/L/16h.

### 12.3 Bioaccumulative potential

Partition coefficient: n-octanol/water:  
0.29 log P(o/w)  
Based on the n-octanol/water partition coefficient accumulation in organisms is not expected.

### 12.4 Mobility in soil

No data available

### 12.5 Results of PBT and vPvB assessment

This substance does not meet the PBT/vPvB criteria of REACH, Annex XIII.

### 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\* = Other organic solvents, washing liquids and mother liquors  
\* = Evidence for disposal must be provided.

Recommendation: Dispose of waste according to applicable legislation.  
Do not dispose of with household waste.  
Do not empty into drains.

#### Contaminated packaging

Recommendation: Dispose of waste according to applicable legislation.  
Handle empty containers with care. Incineration may cause explosion.  
Non-contaminated packages may be recycled.

## SECTION 14: Transport information

### 14.1 UN number

ADR/RID, IMDG, IATA-DGR:  
UN 1193

### 14.2 UN proper shipping name

ADR/RID, IMDG, IATA-DGR:  
UN 1193, ETHYL METHYL KETONE (METHYL ETHYLKETONE)





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### 14.3 Transport hazard class(es)

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



### 14.4 Packing group

ADR/RID, IMDG, IATA-DGR:  
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 UN 1193  
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  
Excepted quantities: 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. Flashpoint: -1°C c.c. Explosive limits: 1,8% to 11,5%.  
Miscible with water.  
Segregation group: none

#### Air transport (IATA)

Hazard label: Flamm. liquid  
Excepted Quantity Code: E2  
Passenger and Cargo Aircraft: Ltd.Qty.: Pack.Instr. Y341 - Max. Net Qty/Pkg. 1 L  
Passenger and Cargo Aircraft: Pack.Instr. 353 - Max. Net Qty/Pkg. 5 L  
Cargo Aircraft only: Pack.Instr. 364 - Max. Net Qty/Pkg. 60 L  
Emergency Response Guide-Code (ERG): 3L

### 14.7 Transport in bulk according to Annex II of Marpol and the IBC Code

No data available



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### SECTION 15: Regulatory information

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

##### National regulations - Great Britain

Hazchem-Code: •2YE  
No data available

##### National regulations - EC member states

Volatile organic compounds (VOC):  
100 % by weight

##### Labelling of packaging with <= 125mL content



Signal word: **Danger**

Hazard statements: EUH066 Repeated exposure may cause skin dryness or cracking.

Precautionary statements: not applicable

Further regulations, limitations and legal requirements:

Directive 2012/18/EU on the control of major-accident hazards involving dangerous substances [Seveso-III-Directive]: P5C

Use restriction according to REACH annex XVII, no.: 3

The placing on the market and the use of the substance is not permitted in decorative articles, games and fun games.

#### 15.2 Chemical Safety Assessment

For this substance a chemical safety assessment has not been carried out.

### SECTION 16: Other information

#### Further information

Reason of change: General revision

Date of first version: 28/3/2011

#### 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).

The information in this data sheet has been established to our best knowledge and was up-to-date at time of revision. It does not represent a guarantee for the properties of the product described in terms of the legal warranty regulations.



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