



SAFETY DATA SHEET

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

Revision date: 12/6/2018
Version: 10
Language: en-GB,IE
Date of print: 6/7/2018

Ethanol, MOS

Material number Ethanol MOS

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

1.1 Product identifier

Trade name: Ethanol, MOS
REACH registration No.: 01-2119457610-43-xxxx

CAS-Number: 64-17-5
EC-number: 200-578-6
EU index number: 603-002-00-5

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

General use: 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.

2.2 Label elements

Labelling (CLP)



Signal word: **Danger**

Hazard statements: H225 Highly flammable liquid and vapour.
H319 Causes serious eye irritation.



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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.
P403+P235	Store in a well-ventilated place. Keep cool.

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: $C_2H_6O = C_2H_5OH$,
>= 95% - =<100% ethyl alcohol, ethanol

CAS-Number: 64-17-5
EC-number: 200-578-6
EU index number: 603-002-00-5
RTECS-Number: KQ6300000

Hazardous ingredients:

Ingredient	Designation	Content	Classification
REACH 01-2119457290-43-xxxx EC No. 201-159-0 CAS 78-93-3	Butanone	< 1 %	Flam. Liq. 2; H225. Eye Irrit. 2; H319. STOT SE 3; H336. (EUH066).

Full text of H- and EUH-statements: see section 16.

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:	Remove person to fresh air and keep comfortable for breathing. If unconscious place in recovery position and seek medical advice.
Following skin contact:	Wash with plenty of water/soap. 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 seek the immediate attention of an ophthalmologist.
After swallowing:	Rinse mouth with water. Never give anything by mouth to an unconscious person. Do not induce vomiting. In case of vomiting, lay at least head on side. Immediately get medical attention.

4.2 Most important symptoms and effects, both acute and delayed

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



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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 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.

On heating or in case of fire toxic gases may form.

Furthermore, there may develop: 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.

Use fine water spray to cool endangered containers.

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

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

Do not breathe vapour/aerosol. Avoid contact with the substance.

Eliminate all ignition sources if safe to do so. If possible, eliminate leakage. Provide adequate ventilation.

Wear appropriate protective equipment. Keep unprotected people away.

Cordon off downwind area at risk and warn inhabitants.

6.2 Environmental precautions

Do not allow to enter into ground-water, surface water or drains. Danger of explosion!

In case of release, notify competent 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). Never return spills in original containers for re-use.

Additional information:

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

Special danger of slipping by leaking/spilling product.



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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: Provide adequate ventilation, and local exhaust as needed. Do not breathe vapour/aerosol. Do not get in eyes, on skin, or on clothing. Wear appropriate protective equipment.

Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Take off immediately all contaminated clothing and wash it before reuse. Guarantee sufficient ventilation during and after use, in order to prevent vapour accumulation.

Work place should be equipped with a shower and an eye rinsing apparatus. Avoid the formation of aerosol.

Precautions against fire and explosion:

Keep away from sources of ignition - No smoking.

Take action to prevent static discharges.

Use only explosion-protected equipment/instruments. Do not weld.

In partially filled containers explosive mixtures may form. 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.

Keep in a cool, well-ventilated place.

Provide solvent resistant flooring. Keep only in the original container.

Protect from heat and direct sunlight.

Store containers in upright position. Explosion protection required.

Unsuitable materials: Various plastics, rubber.

Hints on joint storage:

Do not store together with alkali metals, strong oxidizing agents, strong acids or concentrated nitric acid.

Avoid contact with acetic anhydride.

Do not store together with combustible or self-igniting materials or any highly flammable solids.

Keep away from food, drink and animal feedingstuffs.

Further details:

Temperature class T 2, Explosion group II B/II A.

7.3 Specific end use(s)

No information available.



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SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limit values:

CAS No.	Designation	Type	Limit value
64-17-5	Ethanol, MOS	Great Britain: WEL-TWA	1920 mg/m ³ ; 1000 ppm
		Ireland: 15 minutes	1000 ppm
78-93-3	Butanone	Europe: IOELV: STEL	900 mg/m ³ ; 300 ppm
		Europe: IOELV: TWA	600 mg/m ³ ; 200 ppm
		Great Britain: WEL-STEL	899 mg/m ³ ; 300 ppm
		Great Britain: WEL-TWA	600 mg/m ³ ; 200 ppm
		Ireland: 15 minutes	900 mg/m ³ ; 300 ppm
			(may be absorbed through the skin)
		Ireland: 8 hours	600 mg/m ³ ; 200 ppm
			(may be absorbed through the skin)

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: In case of inadequate ventilation wear respiratory protection. Respiratory protection must be worn whenever the WEL levels have been exceeded.
Recommendation Use combination filter type A/P2 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. If the concentration is exceeded, self-contained breathing apparatus must be used.

Hand protection: Protective gloves according to EN 374.
Glove material:
Butyl caoutchouc (butyl rubber) - Layer thickness 0.5 mm
Fluororubber (Viton) - Layer thickness 0.4 mm
Breakthrough time: >= 480 min.
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. Contaminated work clothing should not be allowed out of the workplace.
When using do not eat or drink.
Wash hands thoroughly after handling.
Work place should be equipped with a shower and an eye rinsing apparatus.

Environmental exposure controls

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



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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, clear
Odour:	alcoholic
Odour threshold:	No data available
pH value:	Neutral
Melting point/freezing point:	approx. -114 °C
Initial boiling point and boiling range:	78.3 °C
Flash point/flash point range:	12 °C
Evaporation rate:	No data available
Flammability:	Highly flammable liquid and vapour.
Explosion limits:	LEL (Lower Explosion Limit): 3.50 Vol-% UEL (Upper Explosive Limit): 15.00 Vol-%
Vapour pressure:	at 20 °C: 85.5 hPa at 50 °C: 280 hPa
Vapour density:	No data available
Density:	at 20 °C: 0.7935 g/mL
Water solubility:	Complete miscible
Partition coefficient: n-octanol/water:	at 24 °C: -0.35 log K(o/w) Based on the n-octanol/water partition coefficient accumulation in organisms is not expected.
Auto-ignition temperature:	363 °C
Decomposition temperature:	No data available
Viscosity, dynamic:	at 20 °C: 1.19 mPa*s
Explosive properties:	Vapours can form explosive mixtures with air.
Oxidizing characteristics:	No data available

9.2 Other information

Additional information: No data available

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.
Reacts with oxidizing agents, peroxides, acids, acid chlorides, anhydrides and alkali metals. Formation of hydrogen!
Violent reaction: concentrated nitric acid.
Reacts with sulphuric acid with development of heat.

10.4 Conditions to avoid

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



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10.5 Incompatible materials

Alkali metals, strong oxidizing agents, strong acids, concentrated nitric acid, acetic anhydride.

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

Toxicological effects: The statements are derived from the properties of the single components. No toxicological data is available for the product as such.

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): Not an irritant. (OECD 404)

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

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 (Mouse): not sensitising.

Germ cell mutagenicity/Genotoxicity: Based on available data, the classification criteria are not met. Bacterial mutagenicity: Ames test, Salmonella typhimurium: negative.

Carcinogenicity: Based on available data, the classification criteria are not met.

Reproductive toxicity: Based on available data, the classification criteria are not met.

Effects on or via lactation: Based on available data, the classification criteria are not met.

Specific target organ toxicity (single exposure): Based on available data, the classification criteria are not met.

Specific target organ toxicity (repeated exposure): Based on available data, the classification criteria are not met.

Aspiration hazard: Based on available data, the classification criteria are not met.

Other information: Information about Ethanol:
LD50 Rat, oral: 10,470 mg/kg (OECD 401)
LD50 Rabbit, dermal: 17,100 mg/kg
LC50 Rat, inhalative: 51 mg/L/4h (OECD 403)

Information about Butanone:
LD50 Rat, oral: > 2,193 mg/kg (OECD 423)
LD50 Rabbit, dermal: > 5,000 mg/kg (OECD 402)
LC50 Rat, inhalative: 34 mg/L/4h

Symptoms

Dizziness, double vision and other characteristics typical of drunkenness, vomiting, loss of consciousness.

Other symptoms: Chronic absorption of ethanol will cause liver damage. depression of central nervous system. Prolonged/repetitive skin contact may cause skin defatting or dermatitis.

After eye contact: Upon direct contact with eyes may cause burning, tearing, redness.



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SECTION 12: Ecological information

12.1 Toxicity

Aquatic toxicity:

Information about Ethanol:

Fish toxicity:

LC50 Pimephales promelas (fathead minnow): 15,300 mg/L/96h (US EPA method)

LC50 Oncorhynchus mykiss: 13,000 mg/L/96h (OECD 203)

LC50 Salmo gairdneri: 11,200 mg/L/24h (US EPA method)

Daphnia toxicity:

LC50 Ceriodaphnia dubia: 5,012 mg/L/48h (ASTM E 729-80)

EC50 Daphnia magna (Big water flea): 12,340 mg/L/48h (ASTM E 729-80)

EC50 Artemia salina: 858 mg/L/24h (OECD 202)

Algae toxicity:

EC10 Chlorella vulgaris: 11.5 mg/L/72h (OECD 201)

Bacterial toxicity:

EC50 Paramecium caudatum: 5,800 mg/L/4h

Information about Butanone:

Fish toxicity:

LC50 Pimephales promelas (fathead minnow): 2,993 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): 1,972 mg/L/72h (OECD 201)

Bacterial toxicity:

EC0 Pseudomonas putida: 1,150 mg/L/16h (DIN 38412)

12.2 Persistence and degradability

Further details:

Biodegradation:

Information about Ethanol

97 % (OECD 301 B).

Easily bio-degradable

Information about Butanone

98 %/28d (OECD 301 D).

Easily bio-degradable

12.3 Bioaccumulative potential

Information about Ethanol:

BCF: 0.66

No evidence of bioaccumulation

Information about Butanone:

Log KOC 0.30 at 40 °C

No evidence of bioaccumulation

Partition coefficient: n-octanol/water:

at 24 °C: -0.35 log K(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.

Do not allow to enter undiluted resp. in large quantities into surface water or into drains.



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SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Waste key number: 16 03 05* = organic wastes containing hazardous substances
* = Evidence for disposal must be provided.

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

Contaminated packaging

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

SECTION 14: Transport information

14.1 UN number

ADR/RID, IMDG, IATA-DGR:
UN 1170

14.2 UN proper shipping name

ADR/RID, IMDG: UN 1170, ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION)
IATA-DGR: UN 1170, ETHANOL (ETHYL ALCOHOL)

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 1170
Hazard label: 3
Special provisions: 144 601
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



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Sea transport (IMDG)

EmS: F-E, S-D
Special provisions: 144
Limited quantities: 1 L
Excepted quantities: E2
Contaminated packaging - Instructions: P001
IBC - Instructions: IBC02
IBC - Provisions: -
Tank instructions - IMO: -
Tank instructions - UN: T4
Tank instructions - Provisions: TP1
Stowage and handling: Category A.
Properties and observations: Colourless, volatile liquids. Pure ETHANOL: Flashpoint 13°C c.c. Explosive limits: 3,3% to 19%. 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
Special provisions: A3 A58 A180
Emergency Response Guide-Code (ERG): 3L

14.7 Transport in bulk according to Annex II of Marpol 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: •2YE
No data available

National regulations - EC member states

Volatile organic compounds (VOC):
100 % by weight = 793.5 g/L

Labelling of packaging with <= 125mL content



Signal word: **Danger**
Hazard statements: not applicable
Precautionary statements: P261 Avoid breathing vapours/spray.
Further regulations, limitations and legal requirements:
Use restriction according to REACH annex XVII, no.: 3

15.2 Chemical Safety Assessment

No data available



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SECTION 16: Other information

Further information

Wording of the H-phrases under paragraph 2 and 3:

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.

Reason of change: Changes in section 2: Labelling

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).

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.

