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Avoid static electricity.

Wear protective equipment. Keep unprotected persons away.

· **6.2 Environmental precautions:**

Suppress gases/fumes/haze with water spray.

Inform respective authorities in case of seepage into water course or sewage system.

Prevent seepage into sewage system, workpits and cellars.

· **6.3 Methods and material for containment and cleaning up:**

Ensure adequate ventilation.

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Send for recovery or disposal in suitable receptacles.

Dispose of the material collected according to regulations.

· **6.4 Reference to other sections**

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

SECTION 7: Handling and storage

· **7.1 Precautions for safe handling**

Keep receptacles tightly sealed.

Prolonged or repeated contact with skin.

Providing good ventilating/suction at work.

Avoid splashes or spray in enclosed areas.

Ensure good interior ventilation, especially at floor level. (Fumes are heavier than air).
at least 7-fold air changes per hour

· **Information about fire - and explosion protection:**

Highly volatile, flammable constituents are released during processing.

Keep ignition sources away - Do not smoke.

Fumes can combine with air to form an explosive mixture.

Only explosion-proof equipment.

Use explosion-proof apparatus / fittings and spark-proof tools.

Protect against electrostatic charges.

Do not spray onto a naked flame or any incandescent material.

Handle only outside or in explosion protected rooms.

Protect from heat.

· **7.2 Conditions for safe storage, including any incompatibilities**

· **Storage:**

· **Requirements to be met by storerooms and receptacles:**

Store only in the original receptacle.

Laws and regulations for storage and handling of water hazarding.

Regulations for storage of flammable liquids.

Store in a cool location.

· **Information about storage in one common storage facility:** Store away from foodstuffs.

· **Further information about storage conditions:**

Store in cool, dry conditions in well sealed receptacles.

For gaskets and sealants could use: PTFE.

Suitable storage materials are: Stainless carbon steel, stainless steel.

Keep container tightly sealed.

· **7.3 Specific end use(s)** No further relevant information available.

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(Contd. on page 5)

(Contd. of page 4)

SECTION 8: Exposure controls/personal protection

· Additional information about design of technical facilities:

Ensure adequate ventilation at the workplace.

· 8.1 Control parameters

· Ingredients with limit values that require monitoring at the workplace:

141-78-6 ethyl acetate (50-100%)

WEL	Short-term value: 1468 mg/m ³ , 400 ppm
	Long-term value: 734 mg/m ³ , 200 ppm

· DNELs

141-78-6 ethyl acetate

Oral	DNEL (population)	4.5 mg/kg bw/day (Long-term - systemic effects)
Dermal	DNEL	63 mg/kg bw/day (Long-term - systemic effects)
	DNEL (population)	37 mg/m ³ (Long-term - systemic effects)
Inhalative	DNEL (worker)	1,468 mg/m ³ (Acute - local effects)
		1,468 mg/m ³ (Acute - systemic effects)
		734 mg/m ³ (Long-term - systemic effects)
		734 mg/m ³ (Long-term - local effects)
	DNEL (population)	734 mg/m ³ (Acute - local effects)
		734 mg/m ³ (Acute - systemic effects)
		367 mg/m ³ (Long-term - systemic effects)
		367 mg/m ³ (Long-term - local effects)

· PNECs

141-78-6 ethyl acetate

PNEC	0.22 mg/kg (ground)
	0.34 mg/kg (sediment)
PNEC	0.26 mg/l (water)

· **Additional information:** The lists valid during the making were used as basis.

· **8.2 Exposure controls** Ensure adequate ventilation at the workplace.

· Personal protective equipment:

· General protective and hygienic measures:

Avoid contact with the eyes and skin.

Immediately remove all soiled and contaminated clothing

Wash hands before breaks and at the end of work.

Use skin protection cream for skin protection.

Keep away from foodstuffs, beverages and feed.

Do not carry product impregnated cleaning cloths in trouser pockets.

Do not eat, drink, smoke or sniff while working.

Avoid contact with the eyes.

· Respiratory protection:

Short term filter device:



Filter A/P2

· Protection of hands:

Solvent resistant gloves

(Contd. on page 6)

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The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

Check protective gloves prior to each use for their proper condition.

Solvent resistant gloves.

Check the permeability prior to each renewed use of the glove.

To avoid skin problems reduce the wearing of gloves to the required minimum.

Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

- **Material of gloves**



Butyl rubber gloves - butyl

Recommended thickness of the material: ≥ 0.7 mm

e.g. KCL BUTOJET

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

- **Penetration time of glove material**

Our Recommendation is mainly on a one-time use as a short-term protection Liquid splashes. For other applications, you should contact a glove manufacturer.

At the first sign of wear protective gloves should be replaced.

Permeation / Breakthrough time: ≥ 120 min (EN 374)

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

- **For the permanent contact in work areas without heightened risk of injury (e.g. Laboratory) gloves made of the following material are suitable:**

Butyl rubber, BR

- **For the permanent contact gloves made of the following materials are suitable:** Butyl rubber, BR

- **Not suitable are gloves made of the following materials:**

Fluorocarbon rubber (Viton)

Natural rubber, NR

Chloroprene rubber, CR

Nitrile rubber, NBR

PVC gloves

Leather gloves

- **Eye protection:**



Tightly sealed goggles EN standard: EN 166

- **Body protection:**

Solvent resistant protective clothing



Protective work clothing

- **Limitation and supervision of exposure into the environment**

Not discharge into drains / surface water bodies / groundwater.

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(Contd. on page 7)

(Contd. of page 6)

SECTION 9: Physical and chemical properties

· 9.1 Information on basic physical and chemical properties	
· General Information	
· Appearance:	
Form:	Fluid
Colour:	Colourless
· Odour:	Fruit-like
· Odour threshold:	0.006 - 0.686 mg/l (gas in air)
· pH-value:	Slightly alkaline
· Change in condition	
Melting point/freezing point:	-84 °C (DIN 51751)
Initial boiling point and boiling range:	74-78 °C (DIN 53757)
· Flash point:	-4--1 °C (DIN 51755)
· Flammability (solid, gas):	No data available.
· Ignition temperature:	≥425 °C (DIN 51794)
· Auto-ignition temperature:	Product is not selfigniting.
· Explosive properties:	Not determined.
· Explosion limits:	
Lower:	2.1 Vol %
Upper:	11.5 Vol %
· Oxidising properties	not classified as oxidizing
· Vapour pressure at 20 °C:	~100 hPa
· Density at 20 °C:	0.9 g/cm ³ (DIN 51757)
· Evaporation rate	4,5 (n-BuAc = 1)
· Solubility in / Miscibility with water at 20 °C:	
	~80 g/l
	Not miscible or difficult to mix.
· Partition coefficient: n-octanol/water:	0,66 - 0,68 log POW
· Viscosity:	
Dynamic at 20 °C:	~0.45 mPas (EN ISO 2555)
Kinematic:	No data available.
· Solvent content:	
Organic solvents:	100.0 %
VOC (EC)	100.00 %
· 9.2 Other information	No further relevant information available.

SECTION 10: Stability and reactivity

- **10.1 Reactivity** see Section 10.2
- **10.2 Chemical stability**
- **Thermal decomposition / conditions to be avoided:**
At atmospheric pressure distilled without decomposition.
Avoid: heat, flames, sparks.
No decomposition if used according to specifications.

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(Contd. of page 7)

Shock, avoid friction, heat, sparks, static electricity.

· **10.3 Possibility of hazardous reactions**

Used empty containers may contain product gases which form explosive mixtures with air.

Develops readily flammable gases/fumes.

Danger of receptacles bursting because of high vapour pressure when heated.

· **10.4 Conditions to avoid** No further relevant information available.

· **10.5 Incompatible materials:**

Highly oxidizing agents

strong acids

Alkalis (bases, alkalis)

metals

· **10.6 Hazardous decomposition products:** Carbon monoxide (CO) and carbon dioxide (CO₂)

· **Additional information:**

Emergency procedures will vary depending on individual circumstances. The customer should have a contingency plan to the workplace may be present.

SECTION 11: Toxicological information

· **11.1 Information on toxicological effects** There were no toxicological findings to the mixture.

· **Acute toxicity** Based on available data, the classification criteria are not met.

· **LD/LC50 values relevant for classification:**

141-78-6 ethyl acetate

Oral	LD50	4,934 mg/kg (rabbit) (OECD 401)
Dermal	LD50	>18,000 mg/kg (rabbit)
	LC50	>18,000 mg/kg (rat)
Inhalative	LC50/4h	56 mg/l (rat)

· **Specific symptoms in biological assay:**

Mice that were exposed for 7 days 6 hours per 4300 ppm developed, slight blood changes, and loss of appetite. Rabbits that were exposed for 40 days one hour per day 4400 ppm, developed secondary anemia, blood effects and minor Milzerweiterung. There was no evidence of carcinogenicity in mice were observed.

· **Primary irritant effect:**

· **Skin corrosion/irritation**

Prolonged or repeated skin contact may defat the skin and result in skin irritation.

· **Serious eye damage/irritation**

Short-term, reversible irritation.

Causes serious eye irritation.

· **Respiratory or skin sensitisation** Based on available data, the classification criteria are not met.

· **Other information (about experimental toxicology):** Ames test: negative

· **Subacute to chronic toxicity:**

In vitro mutagenicity:

Ames test: negative - with and without metabolic activation method: OECD 471

Cytogenicity assay in Chinese hamster cells: negative - with and without metabolic activation - Method: OECD 473

Mouse lymphoma cell gene mutation: negative - with and without metabolic activation - Method: OECD 476 (Reference substance: Ethanol)

in vivo Mutagenicity:

Mammalian Erythrocyte Micronucleus test in Chinese hamster and male mice: negative - Method: OECD 474

Carcinogenic effects: No evidence of carcinogenicity, reproductive toxicity: No effects on fertility

(Contd. on page 9)

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(Reference substance: Ethanol)

Routes of exposure oral gavage (species mouse, Method OECD 416)

NOAEL: 26400 mg / kg bw / day (for ethyl acetate on a molar basis)

Rat species, type of study Two-generation study

Development Damaging effects: No teratogenic, maternally or developmental effects (Reference substance: Ethanol)

Rat species, method OECD 414, NOAEC: 73,300 mg / Type of study Prenatal Developmental

Repeated exposure: No negative impact.

Routes of exposure oral gavage: rat species, method EPA OTS 795.2600, NOAEL: 900 mg / kg bw / day

Repeated exposure: No negative impact

Inhalation routes of exposure: rat species, method EPA OTS 798.2450, NOEC 1.28 mg / l, 90-day inhalation study

subchronic toxicity study

- **Additional toxicological information:**

Inhalation of concentrated vapors may lead to anesthesia-like conditions and headache, dizziness, etc.

- **CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)**

Based on current information known no CMR effects.

- **Germ cell mutagenicity** Based on available data, the classification criteria are not met.

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

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

- **STOT-single exposure**

May cause drowsiness or dizziness.

- **STOT-repeated exposure** Based on available data, the classification criteria are not met.

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

SECTION 12: Ecological information

- **12.1 Toxicity**

- **Aquatic toxicity:**

141-78-6 ethyl acetate

EC50/24h	3,090 mg/l (daphnia magna) (DIN 38412, Part 11)
EC50/48h	164 mg/l (daphnia magna)
	3,300 mg/l (scenedesmus subspicatus)
LC50/96h	230 mg/l (fish)
	455 mg/l (pimephales promelas)
NOEC/72h	>100 mg/l (Alge (Desmodesmus subspicatus)) (OECD 201)
NOEC/21d	2.4 mg/l (daphnia magna)

- **12.2 Persistence and degradability** Easily biodegradable

- **Other information:**

DOC: > 70 %

Biodegradability 100% in 28 days (OECD 301 D)

- **12.3 Bioaccumulative potential**

log P (o/w): 0,66 - 0,68

Due to the distribution coefficient n-octanol/water an appreciable enrichment (bioaccumulation) in organisms is not to be expected (log P (o / w): 1-3).

- **12.4 Mobility in soil** No further relevant information available.

- **Additional ecological information:**

- **COD-value:** 1816 mg O₂/g

(Contd. on page 10)

(Contd. of page 9)

- **BOD5-value:** 293 mg O₂/g
- **General notes:**
Water hazard class 1 (German Regulation) (Assessment by list): slightly hazardous for water
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
Do not allow product to reach ground water, water course or sewage system.
- **12.5 Results of PBT and vPvB assessment**
- **PBT:** Does not meet the PBT-criteria of Annex XIII of REACH (self assessment).
- **vPvB:** Does not meet the vPvB-criteria of Annex XIII of REACH (self assessment).
- **12.6 Other adverse effects** No further relevant information available.

SECTION 13: Disposal considerations

- **13.1 Waste treatment methods**
Hazardous waste according to Waste Catalogue (EWC). If recycling is not possible, waste must be in compliance with local regulations to be removed.
- **Recommendation**



Must not be disposed together with household garbage. Do not allow product to reach sewage system.

Uncured product residues are special waste.
Cured product residues are not hazardous waste.
Must be specially treated adhering to official regulations.


- **Waste disposal key:**
Please get in touch to arrange the waste code contact with the disposal of your choice.
- The following Waste Codes of the European Waste Catalogue (EWC), are considered a recommendation.
The disposal must be coordinated with the local waste disposal company.
- Liquid product:
080111 * paint and varnish containing organic solvents or other dangerous substances
080199 waste nec
- Cured product residues:
080112 paint and varnish wastes other than those mentioned in 080111
080410 adhesive waste adhesives and sealants other than those mentioned in 080409
- **European waste catalogue**
The allocation of waste identity numbers to EWC have to branch and process specific.
- **Uncleaned packaging:**
- **Recommendation:** Disposal must be made according to official regulations.

SECTION 14: Transport information

- | | |
|---------------------------------------|--------------------|
| · 14.1 UN-Number | |
| · ADR, IMDG, IATA | UN1173 |
| · 14.2 UN proper shipping name | |
| · ADR | 1173 ETHYL ACETATE |
| · IMDG, IATA | ETHYL ACETATE |

(Contd. on page 11)

(Contd. of page 10)

<ul style="list-style-type: none"> · 14.3 Transport hazard class(es) · ADR, IMDG, IATA 	
	
<ul style="list-style-type: none"> · Class · Label 	3 Flammable liquids. 3
<ul style="list-style-type: none"> · 14.4 Packing group · ADR, IMDG, IATA 	
II	
<ul style="list-style-type: none"> · 14.5 Environmental hazards: · Marine pollutant: 	
No	
<ul style="list-style-type: none"> · 14.6 Special precautions for user · Danger code (Kemler): · EMS Number: · Stowage Category 	
Warning: Flammable liquids. 33 F-E,S-D B	
<ul style="list-style-type: none"> · 14.7 Transport in bulk according to Annex II of Marpol and the IBC Code 	
Not applicable.	
<ul style="list-style-type: none"> · Transport/Additional information: 	
<ul style="list-style-type: none"> · ADR · Limited quantities (LQ) · Excepted quantities (EQ) 	
1L Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml	
<ul style="list-style-type: none"> · Transport category · Tunnel restriction code 	
2 D/E	
<ul style="list-style-type: none"> · IMDG · Limited quantities (LQ) · Excepted quantities (EQ) 	
1L Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml	
<ul style="list-style-type: none"> · UN "Model Regulation": 	
UN 1173 ETHYL ACETATE, 3, II	

SECTION 15: Regulatory information

- 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
- Labelling according to Regulation (EC) No 1272/2008 GHS label elements
- Directive 2012/18/EU
- Named dangerous substances - ANNEX I Substance is not listed.
- Seveso category P5c FLAMMABLE LIQUIDS
- Qualifying quantity (tonnes) for the application of lower-tier requirements 5,000 t
- Qualifying quantity (tonnes) for the application of upper-tier requirements 50,000 t
- REGULATION (EC) No 1907/2006 ANNEX XVII Conditions of restriction: 3

(Contd. on page 12)

(Contd. of page 11)

- **National regulations:**
- **Information about limitation of use:**
Employment restrictions under the Maternity Protection Directive (94/33/EC).
Employment restrictions for maternity Directive (92/85/EEC) for expectant and nursing mothers.
- **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

These figures relate to the product as delivered.

Sector of Use

Relevant identified uses of the mixture

SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites

SU19 Building and construction work

SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

Uses advised against

SU21 Consumer uses: Private households / general public / consumers

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Training hints**

Teaching about hazards and precautions to hand the operating instructions (Technical Rule 555).
Instruction must take place before the start of employment and at least annually thereafter.

- **Abbreviations and acronyms:**

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

ICAO: International Civil Aviation Organisation

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

GHS: Globally Harmonised System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

VOC: Volatile Organic Compounds (USA, EU)

DNEL: Derived No-Effect Level (REACH)

PNEC: Predicted No-Effect Concentration (REACH)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

vPvB: very Persistent and very Bioaccumulative

Flam. Liq. 2: Flammable liquids – Category 2

Eye Irrit. 2: Serious eye damage/eye irritation – Category 2

STOT SE 3: Specific target organ toxicity (single exposure) – Category 3

- **Sources**

www.gestis.de

www.echa.eu

logkow.cisti.nrc.ca