

**Safety data sheet**  
according to Regulation (EC) No 1907/2006, Article 31

Printing date 20.11.2025

Version 95 (replaces version 94)

Revision: 20.11.2025

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

◊ **1.1 Product identifier**

◊ Trade name: **Campher rac. EuAB (WHO-GMP zert.)/ 06-2432**

◊ Article number: S0404128

◊ CAS Number:

76-22-2

◊ EC number:

200-945-0

◊ Registration number -

◊ **1.2 Relevant identified uses of the substance or mixture and uses advised against** No further relevant information available.

◊ Application of the substance / the mixture Flavour/Fragrance

◊ **1.3 Details of the supplier of the safety data sheet**

◊ Manufacturer/Supplier:

Frey & Lau GmbH

Immenhacken 12, D-24558 Henstedt-Ulzburg

Tel: ++49-4193-9953 Fax: +49-4193-9955-80

◊ Further information obtainable from:

Sachkundige Person Frey + Lau

info@freylau.com

◊ **1.4 Emergency telephone number:** ++49-40-54.77.99.56 WAKO

**. SECTION 2: Hazards identification**

◊ **2.1 Classification of the substance or mixture**

◊ Classification according to Regulation (EC) No 1272/2008

Flam. Sol. 1 H228 Flammable solid.

Acute Tox. 4 H302 Harmful if swallowed.

Acute Tox. 4 H332 Harmful if inhaled.

Skin Irrit. 2 H315 Causes skin irritation.

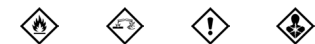
Eye Dam. 1 H318 Causes serious eye damage.

STOT SE 2 H371 May cause damage to the lung. Route of exposure: Inhalation.

◊ **2.2 Label elements**

◊ Labelling according to Regulation (EC) No 1272/2008 The substance is classified and labelled according to the CLP regulation.

◊ Hazard pictograms



GHS02 GHS05 GHS07 GHS08

◊ Signal word Danger

◊ Hazard-determining components of labelling:

Bornan-2-one

◊ Hazard statements

H228 Flammable solid.

H302+H332 Harmful if swallowed or if inhaled.

H315 Causes skin irritation.

H318 Causes serious eye damage.

H371 May cause damage to the lung. Route of exposure: Inhalation.

◊ Precautionary statements

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310 Immediately call a POISON CENTER/doctor.

P330 Rinse mouth.

P362+P364 Take off contaminated clothing and wash it before reuse.

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

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- ◊ **2.3 Other hazards**
- ◊ Results of PBT and vPvB assessment
- ◊ PBT: Not applicable.
- ◊ vPvB: Not applicable.

**. SECTION 3: Composition/information on ingredients**

- ◊ **3.1 Substances**
- ◊ CAS No. Description
- 76-22-2 Bornan-2-one
- ◊ Identification number(s)
- ◊ EC number: 200-945-0

**. SECTION 4: First aid measures**

- ◊ **4.1 Description of first aid measures**
- ◊ General information:  
Immediately remove any clothing soiled by the product.  
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.  
Seek immediate medical advice.
- ◊ After inhalation:  
Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.  
In case of unconsciousness place patient stably in side position for transportation.  
Seek immediate medical advice.
- ◊ After skin contact:  
Immediately wash with water and soap and rinse thoroughly.  
Seek medical treatment.
- ◊ After eye contact:  
Rinse opened eye for several minutes under running water. Then consult a doctor.  
Seek immediate medical advice.
- ◊ After swallowing:  
Call for a doctor immediately.  
Drink plenty of water and provide fresh air. Call for a doctor immediately.  
Seek immediate medical advice.
- ◊ **4.2 Most important symptoms and effects, both acute and delayed** No further relevant information available.
- ◊ **4.3 Indication of any immediate medical attention and special treatment needed** No further relevant information available.

**. SECTION 5: Firefighting measures**

- ◊ **5.1 Extinguishing media**
- ◊ Suitable extinguishing agents: CO<sub>2</sub>, sand, extinguishing powder. Do not use water.
- ◊ For safety reasons unsuitable extinguishing agents: Water with full jet
- ◊ **5.2 Special hazards arising from the substance or mixture** During heating or in case of fire poisonous gases are produced.
- ◊ **5.3 Advice for firefighters**
- ◊ Protective equipment: Mouth respiratory protective device.

**. SECTION 6: Accidental release measures**

- ◊ **6.1 Personal precautions, protective equipment and emergency procedures**
- Mount respiratory protective device.
- Wear protective equipment. Keep unprotected persons away.
- ◊ **6.2 Environmental precautions:**
- Do not allow product to reach sewage system or any water course.
- Inform respective authorities in case of seepage into water course or sewage system.

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- Do not allow to enter sewers/ surface or ground water.
- ◊ **6.3 Methods and material for containment and cleaning up:**  
Use neutralising agent.  
Dispose contaminated material as waste according to section 13.  
Treat with 2 % sodium hydroxide solution.  
Ensure adequate ventilation.
- ◊ **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**  
Thorough dedusting.  
Prevent formation of dust.
- ◊ **Information about fire - and explosion protection:**  
Keep ignition sources away - Do not smoke.  
Protect from heat.  
Protect against electrostatic charges.  
Keep respiratory protective device available.
- ◊ **7.2 Conditions for safe storage, including any incompatibilities**  
◊ **Storage:**  
◊ **Requirements to be met by storerooms and receptacles:** No special requirements.  
◊ **Information about storage in one common storage facility:** Not required.  
◊ **Further information about storage conditions:** Keep container tightly sealed.
- ◊ **Storage class:** 4.1 B
- ◊ **7.3 Specific end use(s)** No further relevant information available.

**. SECTION 8: Exposure controls/personal protection**

- ◊ **8.1 Control parameters**  
◊ **Ingredients with limit values that require monitoring at the workplace:**  
**76-22-2 Bornan-2-one**  
MAK Long-term value: 13 mg/m<sup>3</sup>, 2 ppm  
◊ **Additional information:** The lists valid during the making were used as basis.
- ◊ **8.2 Exposure controls**  
◊ **Appropriate engineering controls** No further data; see section 7.  
◊ **Individual protection measures, such as personal protective equipment**  
◊ **General protective and hygienic measures:**  
Keep away from foodstuffs, beverages and feed.  
Immediately remove all soiled and contaminated clothing  
Wash hands before breaks and at the end of work.  
Store protective clothing separately.  
Avoid contact with the skin.  
Avoid contact with the eyes and skin.
- ◊ **Respiratory protection:**  
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.
- ◊ **Hand protection**  
Protective gloves  
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

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- ◊ **Material of gloves**  
Multichemical-resistant gloves, Category III acc. to Regulation (EC) 2016/425  
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**  
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
- ◊ **Eye/face protection** Tightly sealed goggles

**. SECTION 9: Physical and chemical properties**

◊ **9.1 Information on basic physical and chemical properties**

- ◊ **General Information**
- ◊ **Physical state** Solid
- ◊ **Colour:** Not determined.
- ◊ **Odour:** Characteristic
- ◊ **Odour threshold:** Not determined.
- ◊ **Melting point/freezing point:** 174 °C
- ◊ **Flammability** Highly flammable.
- ◊ **Lower and upper explosion limit**
- ◊ **Lower:** 0,6 Vol % (76-22-2 Bornan-2-one)
- ◊ **Upper:** 4,5 Vol % (76-22-2 Bornan-2-one)
- ◊ **Flash point:** 65 °C (76-22-2 Bornan-2-one)
- ◊ **Auto-ignition temperature:** 460 °C (76-22-2 Bornan-2-one)
- ◊ **Decomposition temperature:** Not determined.
- ◊ **pH** Mixture is non-polar/aprotic.
- ◊ **Solubility**
- ◊ **water:** Not miscible or difficult to mix.
- ◊ **Partition coefficient n-octanol/water (log value)** Not determined.
- ◊ **Density and/or relative density**
- ◊ **Density at 20 °C:** 1 g/cm<sup>3</sup>
- ◊ **Relative density** Not determined.
- ◊ **Bulk density:** 2 kg/m<sup>3</sup>
- ◊ **Vapour density** Not applicable.
- ◊ **Particle characteristics** See section 3.

◊ **9.2 Other information**

- ◊ **Appearance:**
- ◊ **Form:** Solid
- ◊ **Important information on protection of health and environment, and on safety.**
- ◊ **Ignition temperature:** Not determined.
- ◊ **Explosive properties:** Not determined.
- ◊ **VOC (EC)** 0,00 %
- ◊ **Evaporation rate** Not applicable.
- ◊ **Information with regard to physical hazard classes**
- ◊ **Explosives** Void
- ◊ **Flammable gases** Void
- ◊ **Aerosols** Void
- ◊ **Oxidising gases** Void
- ◊ **Gases under pressure** Void
- ◊ **Flammable liquids** Void
- ◊ **Flammable solids** Flammable solid.
- ◊ **Self-reactive substances and mixtures** Void
- ◊ **Pyrophoric liquids** Void
- ◊ **Pyrophoric solids** Void
- ◊ **Self-heating substances and mixtures** Void
- ◊ **Substances and mixtures, which emit flammable gases in contact with water** Void

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- |                           |      |
|---------------------------|------|
| ◊ Oxidising liquids       | Void |
| ◊ Oxidising solids        | Void |
| ◊ Organic peroxides       | Void |
| ◊ Corrosive to metals     | Void |
| ◊ Desensitised explosives | Void |

**. SECTION 10: Stability and reactivity**

- ◊ **10.1 Reactivity** No further relevant information available.
- ◊ **10.2 Chemical stability**
- ◊ Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
- ◊ **10.3 Possibility of hazardous reactions** No dangerous reactions known.
- ◊ **10.4 Conditions to avoid** No further relevant information available.
- ◊ **10.5 Incompatible materials:** No further relevant information available.
- ◊ **10.6 Hazardous decomposition products:** No dangerous decomposition products known.

**. SECTION 11: Toxicological information**

- ◊ **11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008**
- ◊ Acute toxicity Harmful if swallowed or if inhaled.
- ◊ LD/LC50 values relevant for classification:
- ATE (Acute Toxicity Estimates)**
- Oral LD50 1.500 mg/kg (rat)
- Inhalative LC50 1,5 mg/l
- 76-22-2 Bornan-2-one**
- Oral LD50 1.500 mg/kg (rat)
- Dermal LD50 >5.000 mg/kg (rabbit)
- Inhalative LC50 1,5 mg/l (ATE)
- ◊ Primary irritant effect:
- ◊ Skin corrosion/irritation Causes skin irritation.
- ◊ Serious eye damage/irritation Causes serious eye damage.
- ◊ Respiratory or skin sensitisation Based on available data, the classification criteria are not met.
- ◊ 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 damage to the lung. Route of exposure: Inhalation.
- ◊ 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.
- ◊ **11.2 Information on other hazards**
- ◊ Endocrine disrupting properties Substance is not listed.

**. SECTION 12: Ecological information**

- ◊ **12.1 Toxicity**
- ◊ Aquatic toxicity: No further relevant information available.
- ◊ **12.2 Persistence and degradability** No further relevant information available.
- ◊ **12.3 Bioaccumulative potential** No further relevant information available.
- ◊ **12.4 Mobility in soil** No further relevant information available.
- ◊ **12.5 Results of PBT and vPvB assessment**
- ◊ PBT: Not applicable.
- ◊ vPvB: Not applicable.
- ◊ **12.6 Endocrine disrupting properties** The product does not contain substances with endocrine disrupting properties.

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- ◊ **12.7 Other adverse effects**
- ◊ Remark: Harmless to fish up to the tested concentration
- ◊ Additional ecological information:
- ◊ 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.  
Must not reach sewage water or drainage ditch undiluted or unneutralised.

. SECTION 13: Disposal considerations

- ◊ **13.1 Waste treatment methods**
- ◊ Recommendation Must not be disposed together with household garbage. Do not allow product to reach sewage system.
- ◊ Uncleaned packaging:
- ◊ Recommendation: Disposal must be made according to official regulations.

. SECTION 14: Transport information

- |   |  |
|---|--|
| ◊ <b>14.1 UN number or ID number</b>                                  | UN2717   |
| ◊ ADR, IMDG, IATA   |  |
| ◊ <b>14.2 UN proper shipping name</b>                                 |  |
| ◊ ADR   | CAMPHER, synthetisch   |
| ◊ IMDG, IATA  | CAMPHOR, synthetic   |
| ◊ <b>14.3 Transport hazard class(es)</b>                              |  |
| ◊ ADR, IMDG, IATA   |  |
| ◊ Class   | 4.1 Flammable solids, self-reactive substances, polymerizing substances and solid desensitized explosives      |
| ◊ Label   | 4.1  |
| ◊ <b>14.4 Packing group</b>   |  |
| ◊ ADR, IMDG, IATA   | III  |
| ◊ <b>14.5 Environmental hazards:</b>                                  |  |
| ◊ Marine pollutant:   | No   |
| ◊ <b>14.6 Special precautions for user</b>                            | Warning: Flammable solids, self-reactive substances, polymerizing substances and solid desensitized explosives |
| ◊ Hazard identification number (Kemler code):                         | 40   |
| ◊ EMS Number:   | F-A,S-I  |
| ◊ Stowage Category  | A  |
| ◊ <b>14.7 Maritime transport in bulk according to IMO instruments</b> | Not applicable.  |
| ◊ Transport/Additional information:                                   |  |
| ◊ ADR   |  |
| ◊ Limited quantities (LQ)   | 5 kg   |
| ◊ Excepted quantities (EQ)  | Code: E1<br>Maximum net quantity per inner packaging: 30 g<br>Maximum net quantity per outer packaging: 1000 g |
| ◊ Transport category  | 3  |
| ◊ Tunnel restriction code   | E  |
| ◊ IMDG  |  |
| ◊ Limited quantities (LQ)   | 5 kg   |
| ◊ Excepted quantities (EQ)  | Code: E1<br>Maximum net quantity per inner packaging: 30 g<br>Maximum net quantity per outer packaging: 1000 g |

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◊ UN "Model Regulation":

UN 2717 CAMPHER, SYNTHETISCH, 4.1, III

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**. SECTION 15: Regulatory information**

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

822.115, Jugendarbeitsschutzverordnung - ArGV 5 und 822.115.2, Verordnung des WBF über gefährliche Arbeiten für Jugendliche sind zu beachten.

ArGV 1 und 822.111.52, Verordnung des WBF über gefährliche und beschwerliche Arbeiten bei Schwangerschaft und Mutterschaft sind zu beachten.

◊ Labelling according to Regulation (EC) No 1272/2008 The substance is classified and labelled according to the CLP regulation.

◊ Hazard pictograms



◊ Signal word Danger

◊ Hazard-determining components of labelling:

Bornan-2-one

◊ Hazard statements

H228 Flammable solid.

H302+H332 Harmful if swallowed or if inhaled.

H315 Causes skin irritation.

H318 Causes serious eye damage.

H371 May cause damage to the lung. Route of exposure: Inhalation.

◊ Precautionary statements

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310 Immediately call a POISON CENTER/doctor.

P330 Rinse mouth.

P362+P364 Take off contaminated clothing and wash it before reuse.

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

◊ Directive 2012/18/EU

◊ Named dangerous substances - ANNEX I Substance is not listed.

◊ DIRECTIVE 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment – Annex II

Substance is not listed.

◊ REGULATION (EU) 2019/1148

◊ Annex I - RESTRICTED EXPLOSIVES PRECURSORS (Upper limit value for the purpose of licensing under Article 5(3)) Substance is not listed.

◊ Annex II - REPORTABLE EXPLOSIVES PRECURSORS Substance is not listed.

◊ Regulation (EC) No 273/2004 on drug precursors Substance is not listed.

◊ Regulation (EC) No 111/2005 laying down rules for the monitoring of trade between the Community and third countries in drug precursors Substance is not listed.

◊ National regulations:

◊ Waterhazard class: Klasse B (Assessment by list)

◊ **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

**. SECTION 16: Other information**

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.

◊ Department issuing SDS: Regulatory Affairs

◊ Contact: Dr. Maja Zippel

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- ◊ *Date of previous version: 15.10.2025*
- ◊ *Version number of previous version: 94*
- ◊ *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 relatif au transport international 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)*
  - LC50: Lethal concentration, 50 percent*
  - LD50: Lethal dose, 50 percent*
  - PBT: Persistent, Bioaccumulative and Toxic*
  - vPvB: very Persistent and very Bioaccumulative*
  - ATE: Acute toxicity estimate values*
  - Flam. Sol. 1: Flammable solids – Category 1*
  - Acute Tox. 4: Acute toxicity – Category 4*
  - Skin Irrit. 2: Skin corrosion/irritation – Category 2*
  - Eye Dam. 1: Serious eye damage/eye irritation – Category 1*
  - STOT SE 2: Specific target organ toxicity (single exposure) – Category 2*
- ◊ *\* Data compared to the previous version altered.*

CH