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

1.1 Product identifier
   Trade name
   Carbamin 5100

1.2 Relevant identified uses of the substance or mixture and uses advised against
   Relevant identified uses of the substance or mixture
   Additive for combustion systems
   Uses advised against
   No data available.

1.3 Details of the supplier of the safety data sheet
   Address
   ERC Additiv GmbH
   Bäckerstraße 11-13
   21244 Buchholz
   Germany
   Telephone no. +49 4181 216-500
   Advice on Safety Data Sheet
   sdb info@umoo.de

1.4 Emergency telephone number
   For medical advice (in German and English):
   +49 (0)551 192 40 (Gifinformationszentrum Nord)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture
   Classification in accordance with Regulation (EC) No 1272/2008 (CLP)
   Eye Dam. 1; H318
   Skin Corr. 1; H314
   Classification information
   Product is classified as "Corrosive" based on the extrem pH-value; see:
   - Regulation 1272/2008 (CLP), Annex I, number 3.2.2.2 / 3.2.3.1.2
   This product is assessed and classified using the methods and criteria below referred to in Article 9 of Regulation (EC) n° 1272/2008.
   Physical hazards: determined through assessment data based on the methods or standards referred to in part 2 of Annex I to CLP
   Health hazards and environmental hazards: determined through toxicological and ecotoxicological assessment data based on the methods or standards referred to in Part 3, 4 and 5 of Annex I to CLP.

2.2 Label elements
   Labelling according to Regulation (EC) No 1272/2008 (CLP Regulation)

   Hazard pictograms
   GHS05
   Signal word
   Danger
   Hazard statement(s)
   H314 Causes severe skin burns and eye damage.
EC safety data sheet

Trade name: Carbamin 5100
Product no.: 22-5100
Current version: 1.1.0, issued: 18.10.2018
Replaced version: 1.0.0, issued: 25.07.2018
Region: GB

Precautionary statement(s)
P280 Wear protective gloves/eye protection.
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.

2.3 Other hazards
PB assessment
No data available.
vPvB assessment
No data available.

SECTION 3: Composition/information on ingredients

3.1 Substances
Not applicable. The product is not a substance.

3.2 Mixtures
Hazardous ingredients

<table>
<thead>
<tr>
<th>No</th>
<th>Substance name</th>
<th>CAS / EC / Index / REACH no</th>
<th>Classification (EC) 1272/2008 (CLP)</th>
<th>Additional information</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>citric-acid</td>
<td>77-92-9</td>
<td>Eye Irrit. 2; H319</td>
<td></td>
<td>&gt;= 10.00 - &lt; 25.00 % b.w.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>201-069-1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Etdronic acid</td>
<td>2809-21-4</td>
<td>Eye Dam. 1; H318</td>
<td></td>
<td>&lt; 5.00 % b.w.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>220-552-8</td>
<td>Acute Tox. 4; H302</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>01-2119510391-53</td>
<td>Met. Comb. 1; H300</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Full Text for all H-phrases and EUH-phrases: pls. see section 16

SECTION 4: First aid measures

4.1 Description of first aid measures
General information
In case of persisting adverse effects, consult a physician. Remove contaminated clothing and shoes immediately, and launder thoroughly before reusing.

After inhalation
Ensure supply of fresh air.

After skin contact
When in contact with the skin, clean with soap and water.

After eye contact
Remove contact lenses. Rinse eye thoroughly under running water keeping eyelids wide open and protecting the unaffected eye (at least 10 to 15 minutes). Get immediate ophthalmic treatment.

After ingestion
Rinse mouth thoroughly with water. Call a doctor immediately. Never give anything by mouth to an unconscious person. If individual is drowsy or unconscious, place in recovery position (on left side, with head down).

4.2 Most important symptoms and effects, both acute and delayed
No data available.

4.3 Indication of any immediate medical attention and special treatment needed
No data available.
SECTION 5: Firefighting measures

5.1 Extinguishing media
   Suitable extinguishing media
      Water spray jet; Foam; Extinguishing powder; Carbon dioxide
   Unsuitable extinguishing media
      High power water jet

5.2 Special hazards arising from the substance or mixture
   In the event of fire, the following can be released: Carbon dioxide (CO2); Carbon monoxide (CO)

5.3 Advice for firefighters
   Wear protective clothing. Use self-contained breathing apparatus. Cool endangered containers with water spray jet.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
   For non-emergency personnel
      Refer to protective measures listed in sections 7 and 8. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing.
   For emergency responders
      No data available. Personal protective equipment (PPE) - see Section 8.

6.2 Environmental precautions
   Do not discharge into the drains/surface waters/groundwater. Do not discharge into the subsoil/soil.

6.3 Methods and material for containment and cleaning up
   Take up with absorbent material (e.g., sand, kieselguhr, universal binder). When picked up, treat material as prescribed under heading "Disposal considerations".

6.4 Reference to other sections
   No data available.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
   Advice on safe handling
      Provide good ventilation at the work area (local exhaust ventilation, if necessary). Product inherent handling risks must be minimised taking the appropriate measures for protection and preventive actions. The working process should be designed to rule out the release of hazardous substances or skin contact as far it is possible by the state of the art.
   General protective and hygiene measures
      Do not eat, drink or smoke during work time. Keep away from foodstuffs and beverages. Avoid contact with eyes and skin. Remove soiled or soaked clothing immediately. Wash hands before breaks and after work. Provide eye wash fountain in work area.
   Advice on protection against fire and explosion
      Keep away from sources of heat and ignition.

7.2 Conditions for safe storage, including any incompatibilities
   Technical measures and storage conditions
      Keep container tightly closed in a cool, well-ventilated place.
   Requirements for storage rooms and vessels
      Containers which are opened must be carefully closed and kept upright to prevent leakage. Always keep in containers of same material as the original one.
   Advice on storage assembly
      Do not store together with: Oxidizing agents

7.3 Specific end use(s)
   No data available.
SECTION 8: Exposure controls/personal protection

8.1 Control parameters

DNEL, DMEL and PNEC values

<table>
<thead>
<tr>
<th>No</th>
<th>Substance name</th>
<th>Route of exposure</th>
<th>Exposure time</th>
<th>Effect</th>
<th>CAS / EC no</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Eltrobotonic acid</td>
<td>oral</td>
<td>Long term (chronic)</td>
<td>systemic</td>
<td>2809-21-4</td>
<td>220-552-8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>oral</td>
<td>Short term (acute)</td>
<td>systemic</td>
<td>2809-21-4</td>
<td>220-552-8</td>
</tr>
</tbody>
</table>

PNEC values

<table>
<thead>
<tr>
<th>No</th>
<th>Substance name</th>
<th>ecological compartment</th>
<th>Type</th>
<th>CAS / EC no</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Eltrobotonic acid</td>
<td>water</td>
<td>fresh water</td>
<td>2809-21-4</td>
<td>220-552-8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>water</td>
<td>marine water</td>
<td>2809-21-4</td>
<td>220-552-8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>water</td>
<td>fresh water sediment</td>
<td>2809-21-4</td>
<td>220-552-8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>water</td>
<td>marine water sediment</td>
<td>2809-21-4</td>
<td>220-552-8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>soil</td>
<td>-</td>
<td>2809-21-4</td>
<td>220-552-8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>sewage treatment plant</td>
<td>-</td>
<td>2809-21-4</td>
<td>220-552-8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>water</td>
<td>secondary pot supply</td>
<td>2809-21-4</td>
<td>220-552-8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>water</td>
<td>with reference to food</td>
<td>2809-21-4</td>
<td>220-552-8</td>
</tr>
</tbody>
</table>

8.2 Exposure controls

Appropriate engineering controls
No data available.

Personal protective equipment

Respiratory protection
If workplace exposure limits are exceeded, a respiration protection approved for this particular job must be worn. In case of aerosol and mist formation, take appropriate measures for breathing protection. In the event workplace threshold values are not specified.

Eye / face protection
Tightly fitting safety glasses (EN 166).

Hand protection
Sufficient protection is given wearing suitable protective gloves checked according to i.e. EN 374, in the event of risk of skin contact with the product. Before use, the protective gloves should be tested in any case for its specific workstation suitability (i.e. mechanical resistance, product compatibility and antistatic properties). Adhere to the manufacturer's instructions and information relating to the use, storage, care and replacement of protective gloves. Protective gloves shall be replaced immediately when physically damaged or worn. Design operations thus to avoid permanent use of protective gloves.

Appropriate Material PVC
Material thickness min. 0.8 mm

Other
Normal chemical work clothing.

Environmental exposure controls
No data available.
## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form/Colour</td>
<td>liquid</td>
</tr>
<tr>
<td>Colour</td>
<td>blue</td>
</tr>
<tr>
<td>Odour</td>
<td>No data available</td>
</tr>
<tr>
<td>Odour threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH value</td>
<td>&lt; 2</td>
</tr>
<tr>
<td>Boiling point / boiling range</td>
<td>&gt; 100 °C</td>
</tr>
<tr>
<td>Melting point / melting range</td>
<td>No data available</td>
</tr>
<tr>
<td>Decomposition point / decomposition range</td>
<td>No data available</td>
</tr>
<tr>
<td>Flash point</td>
<td>No data available</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Oxidising properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No data available</td>
</tr>
<tr>
<td>Lower flammability or explosive limits</td>
<td>No data available</td>
</tr>
<tr>
<td>Upper flammability or explosive limits</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapour density</td>
<td>No data available</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative density</td>
<td>No data available</td>
</tr>
<tr>
<td>Density</td>
<td>&gt; 1.1 g/cm³</td>
</tr>
<tr>
<td>Reference temperature</td>
<td>20 °C</td>
</tr>
</tbody>
</table>
Solubility in water
No data available

Solubility(ies)
No data available

Partition coefficient: n-octanol/water
No data available

Viscosity
<table>
<thead>
<tr>
<th>Value</th>
<th>20.5 mm²/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reference temperature</td>
<td>40 °C</td>
</tr>
<tr>
<td>Type</td>
<td>kinematic</td>
</tr>
</tbody>
</table>

9.2 Other information
No data available.

SECTION 10: Stability and reactivity

10.1 Reactivity
No data available.

10.2 Chemical stability
Stable under recommended storage and handling conditions (See section 7).

10.3 Possibility of hazardous reactions
Dangerous reactions are not to be expected when handling product according to its intended use.

10.4 Conditions to avoid
None, if handled according to intended use.

10.5 Incompatible materials
Oxidizing agents

10.6 Hazardous decomposition products
No data available.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute oral toxicity (result of the ATE calculation for the mixture)

<table>
<thead>
<tr>
<th>No</th>
<th>Substance Name</th>
<th>CAS no</th>
<th>EC no</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Carbin 5100</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Remarks
The result of the applied calculation method according to the European Regulation (EC) 1272/2008 (CLP), Paragraph 3.1.3.6, Part 3 of Annex I is outside the values that imply a classification / labelling of this mixture according to table 3.1.1 defining the respective categories (ATE oral > 2000 mg/kg).

Acute oral toxicity

<table>
<thead>
<tr>
<th>No</th>
<th>Substance Name</th>
<th>CAS no</th>
<th>EC no</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Etritonic acid</td>
<td>2809-21-4</td>
<td>220-552-4</td>
</tr>
</tbody>
</table>

LD50
Species: rat
Source: ECHA

mg/kg bodyweight
<table>
<thead>
<tr>
<th>Category</th>
<th>Data Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute dermal toxicity</td>
<td>No data available</td>
</tr>
<tr>
<td>Acute inhalational toxicity</td>
<td>No data available</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>No data available</td>
</tr>
<tr>
<td>Serious eye damage/irritation</td>
<td>No data available</td>
</tr>
<tr>
<td>Respiratory or skin sensitisation</td>
<td>No data available</td>
</tr>
<tr>
<td>Germ cell mutagenicity</td>
<td>No data available</td>
</tr>
<tr>
<td>Reproduction toxicity</td>
<td>No data available</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>No data available</td>
</tr>
<tr>
<td>STOT - single exposure</td>
<td>No data available</td>
</tr>
<tr>
<td>STOT - repeated exposure</td>
<td>No data available</td>
</tr>
<tr>
<td>Aspiration hazard</td>
<td>No data available</td>
</tr>
</tbody>
</table>
SECTION 12: Ecological information

12.1 Toxicity

<table>
<thead>
<tr>
<th>Toxicity to fish (acute)</th>
<th>No data available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxicity to fish (chronic)</td>
<td>No data available</td>
</tr>
<tr>
<td>Toxicity to Daphnia (acute)</td>
<td>No data available</td>
</tr>
<tr>
<td>Toxicity to Daphnia (chronic)</td>
<td>No data available</td>
</tr>
<tr>
<td>Toxicity to algae (acute)</td>
<td>No data available</td>
</tr>
<tr>
<td>Toxicity to algae (chronic)</td>
<td>No data available</td>
</tr>
<tr>
<td>Bacteria toxicity</td>
<td>No data available</td>
</tr>
</tbody>
</table>

12.2 Persistence and degradability

No data available.

12.3 Bioaccumulative potential

No data available.

12.4 Mobility in soil

No data available.

12.5 Results of PBT and vPvB assessment

<table>
<thead>
<tr>
<th>Results of PBT and vPvB assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>PBT assessment</td>
</tr>
<tr>
<td>vPvB assessment</td>
</tr>
</tbody>
</table>

12.6 Other adverse effects

No data available.

12.7 Other information

Do not discharge product unmonitored into the environment.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Allocation of a waste code number, according to the European Waste Catalogue, should be carried out in agreement with the regional waste disposal company.

Packaging

Residuals must be removed from packaging and when emptied completely disposed of in accordance with the regulations for waste removal. Incompletely emptied packaging must be disposed of in the form of disposal specified by the regional disposer.
SECTION 14: Transport information

14.1 Transport ADR/RID/ADN

- Class: 8
- Classification code: C9
- Packing group: III
- Hazard identification no.: 80
- UN number: UN1700
- Proper shipping name: CORROSIVE LIQUID, N.O.S.
- Technical name: citric-acid
- Tunnel restriction code: E
- Label: 8

14.2 Transport IMDG

- Class: 8
- Packing group: III
- UN number: UN1700
- Proper shipping name: CORROSIVE LIQUID, N.O.S.
- Technical name: citric-acid
- EmS: F-A, S-B
- Label: 8

14.3 Transport ICAO-TI / IATA

- Class: 8
- Packing group: III
- UN number: UN1700
- Proper shipping name: Corrosive liquid, n.o.s.
- Technical name: citric-acid
- Label: 8

14.4 Other information

No data available.

14.5 Environmental hazards

Information on environmental hazards, if relevant, please see 14.1 - 14.3.

14.6 Special precautions for user

No data available.

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

Not relevant

SECTION 15: Regulatory information

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

EU regulations

Regulation (EC) No 1907/2006 (REACH) Annex XIV (List of substances subject to authorisation)

According to the data available and/or specifications supplied by upstream suppliers, this product does not contain any substances considered as substances requiring authorisation as listed on Annex XIV of the REACH regulation (EC) 1907/2006.

REACH candidate list of substances of very high concern (SVHC) for authorisation

According to available data and the information provided by preliminary suppliers, the product does not contain substances that are considered substances meeting the criteria for inclusion in annex XIV (List of Substances Subject to Authorisation) as laid down in article 57 and article 60 of REACH (EC) 1907/2006.


The product is considered being subject to REACH regulation (EC) 1907/2006 annex XVII, No 3
15.2 Chemical safety assessment
A chemical safety assessment has not been carried out for this mixture.

SECTION 16: Other information

Sources of key data used to compile the data sheet:
- National Threshold Limit Values of the corresponding countries as amended in each case.
- Transport regulations according to ADR, RID, IMDG, IATA as amended in each case.
- The data sources used to determine physical, toxic and ecotoxic data, are indicated directly in the corresponding chapter.

Full text of the H- and EUH- phrases drawn up in sections 2 and 3 (provided not already drawn up in these sections)
- H290 May be corrosive to metals.
- H302 Harmful if swallowed.
- H318 Causes serious eye damage.
- H319 Causes serious eye irritation.

Department issuing safety data sheet
UMCO GmbH
Georg-Wilhelm-Str. 187, D-21107 Hamburg
Tel.: +49 40 / 555 548 300 Fax: +49 40 / 555 548 357 e-mail: umco@umco.de

This information is based on our present knowledge and experience.
The safety data sheet describes products with a view to safety requirements.
It does however, constitute a guarantee for any specific product properties and shall not establish a legally valid contractual relationship.

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