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

1.1 Product identifier
Identification of the substance
Lipoxygenase
Article number
CN73
Registration number (REACH) This information is not available.
EC number
232-853-1
CAS number
9029-60-1

1.2 Relevant identified uses of the substance or mixture and uses advised against
Identified uses:
laboratory chemical

1.3 Details of the supplier of the safety data sheet
Carl Roth GmbH + Co KG
Schoemperlenstr. 3-5
D-76185 Karlsruhe
Germany

Telephone: +49 (0) 721 - 56 06 0
Telefax: +49 (0) 721 - 56 06 149
e-mail: sicherheit@carlroth.de
Website: www.carlroth.de

Competent person responsible for the safety data sheet: Department Health, Safety and Environment

1.4 Emergency telephone number
Emergency information service Poison Centre Munich: +49/(0)89 19240

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture
Classification according to Regulation (EC) No 1272/2008 (CLP)
This substance does not meet the criteria for classification in accordance with Regulation No 1272/2008/EC.

2.2 Label elements
Labelling according to Regulation (EC) No 1272/2008 (CLP)
not required

Signal word not required

2.3 Other hazards
There is no additional information.
Lipoxygenase  ≥100000 U/mg, for biochemistry
article number: CN73

SECTION 3: Composition/information on ingredients

3.1 Substances

<table>
<thead>
<tr>
<th>Name of substance</th>
<th>Lipoygenase</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC number</td>
<td>232-853-1</td>
</tr>
<tr>
<td>CAS number</td>
<td>9029-60-1</td>
</tr>
<tr>
<td>Molar mass</td>
<td>~108.000 g/mol</td>
</tr>
</tbody>
</table>

SECTION 4: First aid measures

4.1 Description of first aid measures

General notes
Take off contaminated clothing.

Following inhalation
Provide fresh air. In all cases of doubt, or when symptoms persist, seek medical advice.

Following skin contact
Rinse skin with water/shower. In all cases of doubt, or when symptoms persist, seek medical advice.

Following eye contact
Rinse cautiously with water for several minutes. In all cases of doubt, or when symptoms persist, seek medical advice.

Following ingestion
Rinse mouth. Call a doctor if you feel unwell.

4.2 Most important symptoms and effects, both acute and delayed
Symptoms and effects are not known to date

4.3 Indication of any immediate medical attention and special treatment needed
none

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Co-ordinate fire-fighting measures to the fire surroundings
water spray, foam, dry extinguishing powder, carbon dioxide (CO2)

Unsuitable extinguishing media
water jet

5.2 Special hazards arising from the substance or mixture
Combustible.
Lipoxygenase \( \geq 100000 \) U/mg, for biochemistry

article number: CN73

**Hazardous combustion products**
May produce toxic fumes of carbon monoxide if burning.

**5.3 Advice for firefighters**
Fight fire with normal precautions from a reasonable distance. Wear self-contained breathing apparatus.

## SECTION 6: Accidental release measures

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

For non-emergency personnel
Control of dust.

### 6.2 Environmental precautions

Keep away from drains, surface and ground water.

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

**Advices on how to contain a spill**
Covering of drains.

**Advices on how to clean up a spill**
Take up mechanically.

**Other information relating to spills and releases**
Place in appropriate containers for disposal.

**Reference to other sections**

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

No special measures are necessary.

**Advice on general occupational hygiene**
Keep away from food, drink and animal feedingstuffs.

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

Store in a dry place. Keep in a cool place.

**Incompatible substances or mixtures**
Observe hints for combined storage.

**Consideration of other advice**

- **Ventilation requirements**
  Use local and general ventilation.
- **Specific designs for storage rooms or vessels**
  Recommended storage temperature: -20 °C.

### 7.3 Specific end use(s)

No information available.
Use safety goggles with side protection.

Wear suitable gloves. Chemical protection gloves are suitable, which are tested according to EN 374.

NBR (Nitrile rubber)

\[>0.11 \text{ mm}\]

\[>480 \text{ minutes (permeation: level 6)}\]

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended.

Respiratory protection necessary at: Dust formation. Particulate filter device (EN 143). P1 (filters at least 80% of airborne particles, colour code: White).

---

### SECTION 8: Exposure controls/personal protection

#### 8.1 Control parameters

**National limit values**

**Occupational exposure limit values (Workplace Exposure Limits)**

<table>
<thead>
<tr>
<th>Country</th>
<th>Name of agent</th>
<th>CAS No</th>
<th>Notation</th>
<th>Identifier</th>
<th>TWA [mg/m³]</th>
<th>STEL [mg/m³]</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>IE</td>
<td>dusts non-specific</td>
<td></td>
<td>i</td>
<td>OELV</td>
<td>10</td>
<td></td>
<td>S.I. No. 619 of 2001</td>
</tr>
<tr>
<td>IE</td>
<td>dusts non-specific</td>
<td></td>
<td>r</td>
<td>OELV</td>
<td>4</td>
<td></td>
<td>S.I. No. 619 of 2001</td>
</tr>
</tbody>
</table>

**Notation**

- **i** Inhalable fraction
- **r** Respirable fraction
- **STEL** Short-term exposure limit: a limit value above which exposure should not occur and which is related to a 15-minute period unless otherwise specified
- **TWA** Time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours time-weighted average

#### 8.2 Exposure controls

**Individual protection measures (personal protective equipment)**

**Eye/face protection**
Use safety goggles with side protection.

**Skin protection**
- **hand protection**
  Wear suitable gloves. Chemical protection gloves are suitable, which are tested according to EN 374.
- **type of material**
  NBR (Nitrile rubber)
- **material thickness**
  \[>0.11 \text{ mm}\]
- **breakthrough times of the glove material**
  \[>480 \text{ minutes (permeation: level 6)}\]
- **other protection measures**
  Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended.

**Respiratory protection**
Respiratory protection necessary at: Dust formation. Particulate filter device (EN 143). P1 (filters at least 80% of airborne particles, colour code: White).
### SECTION 9: Physical and chemical properties

#### 9.1 Information on basic physical and chemical properties

**Appearance**
- **Physical state**: solid (powder, crystalline)
- **Colour**: white
- **Odour**: odourless
- **Odour threshold**: No data available

**Other physical and chemical parameters**
- **pH (value)**: This information is not available.
- **Melting point/freezing point**: not determined
- **Initial boiling point and boiling range**: This information is not available.
- **Flash point**: not applicable
- **Evaporation rate**: no data available
- **Flammability (solid, gas)**: Non-flammable

**Explosive limits**
- **lower explosion limit (LEL)**: this information is not available
- **upper explosion limit (UEL)**: this information is not available
- **Explosion limits of dust clouds**: these information are not available

**Vapour pressure**: This information is not available.

**Density**: Information on this property is not available.

**Vapour density**: Information on this property is not available.

**Relative density**: Information on this property is not available.

**Solubility(ies)**
- **Water solubility**: soluble

**Partition coefficient**
- **n-octanol/water (log KOW)**: This information is not available.
- **Auto-ignition temperature**: Information on this property is not available.
- **Decomposition temperature**: no data available
- **Viscosity**: not relevant (solid matter)
- **Explosive properties**: Shall not be classified as explosive
- **Oxidising properties**: none
9.2 Other information
There is no additional information.

SECTION 10: Stability and reactivity

10.1 Reactivity
The product in the delivered form is not dust explosion capable; the enrichment of fine dust however leads to the danger of dust explosion.

10.2 Chemical stability
The material is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

10.3 Possibility of hazardous reactions
Violent reaction with: Strong oxidiser

10.4 Conditions to avoid
There are no specific conditions known which have to be avoided.

10.5 Incompatible materials
There is no additional information.

10.6 Hazardous decomposition products
Hazardous combustion products: see section 5.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
Shall not be classified as acutely toxic.

Skin corrosion/irritation
Shall not be classified as corrosive/irritant to skin.

Serious eye damage/eye irritation
Shall not be classified as seriously damaging to the eye or eye irritant.

Respiratory or skin sensitisation
Shall not be classified as a respiratory or skin sensitiser.

Summary of evaluation of the CMR properties
Shall not be classified as germ cell mutagenic, carcinogenic nor as a reproductive toxicant

• Specific target organ toxicity - single exposure
Shall not be classified as a specific target organ toxicant (single exposure).

• Specific target organ toxicity - repeated exposure
Shall not be classified as a specific target organ toxicant (repeated exposure).

Aspiration hazard
Shall not be classified as presenting an aspiration hazard.

Symptoms related to the physical, chemical and toxicological characteristics

• If swallowed
data are not available
Lipoxygenase  ≥100000 U/mg, for biochemistry

article number: CN73

• If in eyes
  data are not available

• If inhaled
  data are not available

• If on skin
  data are not available

Other information
  None

SECTION 12: Ecological information

12.1 Toxicity
  acc. to 1272/2008/EC: Shall not be classified as hazardous to the aquatic environment.

12.2 Process of degradability
  Data are not available.

12.3 Bioaccumulative potential
  Data are not available.

12.4 Mobility in soil
  Data are not available.

12.5 Results of PBT and vPvB assessment
  Data are not available.

12.6 Other adverse effects
  Data are not available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods
  Consult the appropriate local waste disposal expert about waste disposal.

Sewage disposal-relevant information
  Do not empty into drains.

13.2 Relevant provisions relating to waste
  The allocation of waste identity numbers/waste descriptions must be carried out according to the EEC, specific to the industry and process.

13.3 Remarks
  Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities. Please consider the relevant national or regional provisions.
**Lipoxygenase ≥100000 U/mg, for biochemistry**

**article number: CN73**

### SECTION 14: Transport information

14.1 UN number (not subject to transport regulations)
14.2 UN proper shipping name not relevant
14.3 Transport hazard class(es) not relevant
   Class -
14.4 Packing group not relevant
14.5 Environmental hazards none (non-environmentally hazardous acc. to the dangerous goods regulations)

14.6 **Special precautions for user**
   There is no additional information.

14.7 **Transport in bulk according to Annex II of MARPOL and the IBC Code**
   The cargo is not intended to be carried in bulk.

14.8 **Information for each of the UN Model Regulations**
   - **Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN)**
     Not subject to ADR, RID and ADN.
   - **International Maritime Dangerous Goods Code (IMDG)**
     Not subject to IMDG.

### SECTION 15: Regulatory information

15.1 **Safety, health and environmental regulations/legislation specific for the substance or mixture**
   Relevant provisions of the European Union (EU)
   - **Regulation 649/2012/EU concerning the export and import of hazardous chemicals (PIC)**
     Not listed.
   - **Regulation 1005/2009/EC on substances that deplete the ozone layer (ODS)**
     Not listed.
     Not listed.
   - **Restrictions according to REACH, Annex XVII**
     not listed
   - **List of substances subject to authorisation (REACH, Annex XIV)**
     not listed
   - **Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS) - Annex II**
     not listed
   - **Regulation 166/2006/EC concerning the establishment of a European Pollutant Release and Transfer Register (PRTR)**
     not listed
Lipoxygenase ≥100000 U/mg, for biochemistry

article number: CN73

Directive 2000/60/EC establishing a framework for Community action in the field of water policy (WFD)
not listed

National inventories
Substance is listed in the following national inventories:
- EINECS/ELINCS/NLP (Europe)

15.2 Chemical Safety Assessment
No Chemical Safety Assessment has been carried out for this substance.

SECTION 16: Other information

Abbreviations and acronyms

<table>
<thead>
<tr>
<th>Abbr.</th>
<th>Descriptions of used abbreviations</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADN</td>
<td>Accord européen relatif au transport international des marchandises dangereuses par voies de navigation intérieures (European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways)</td>
</tr>
<tr>
<td>ADR</td>
<td>Accord européen relatif au transport international des marchandises dangereuses par route (European Agreement concerning the International Carriage of Dangerous Goods by Road)</td>
</tr>
<tr>
<td>CAS</td>
<td>Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)</td>
</tr>
<tr>
<td>CLP</td>
<td>Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures</td>
</tr>
<tr>
<td>CMR</td>
<td>Carcinogenic, Mutagenic or toxic for Reproduction</td>
</tr>
<tr>
<td>EINECS</td>
<td>European Inventory of Existing Commercial Chemical Substances</td>
</tr>
<tr>
<td>ELINCS</td>
<td>European List of Notified Chemical Substances</td>
</tr>
<tr>
<td>GHS</td>
<td>&quot;Globally Harmonized System of Classification and Labelling of Chemicals&quot; developed by the United Nations</td>
</tr>
<tr>
<td>IMDG</td>
<td>International Maritime Dangerous Goods Code</td>
</tr>
<tr>
<td>MARPOL</td>
<td>International Convention for the Prevention of Pollution from Ships (abbr. of &quot;Marine Pollutant&quot;)</td>
</tr>
<tr>
<td>NLP</td>
<td>No-Longer Polymer</td>
</tr>
<tr>
<td>PBT</td>
<td>Persistent, Bioaccumulative and Toxic</td>
</tr>
<tr>
<td>REACH</td>
<td>Registration, Evaluation, Authorisation and Restriction of Chemicals</td>
</tr>
<tr>
<td>RID</td>
<td>Règlement concernant le transport International ferroviaire des marchandises Dangereuses (Regulations concerning the International carriage of Dangerous goods by Rail)</td>
</tr>
<tr>
<td>STEL</td>
<td>short-term exposure limit</td>
</tr>
<tr>
<td>TWA</td>
<td>time-weighted average</td>
</tr>
<tr>
<td>vPvB</td>
<td>very Persistent and very Bioaccumulative</td>
</tr>
</tbody>
</table>

Key literature references and sources for data
- Regulation (EC) No. 1272/2008 (CLP, EU GHS)
The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.

Disclaimer

List of relevant phrases (code and full text as stated in chapter 2 and 3)

not relevant.