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

1.1 Product identifier

Identification of the substance

Ethidium bromide

Article number

7870

Registration number (REACH)

It is not required to list the identified uses because the substance is not subject to registration according to REACH (< 1 t/a)

Index No

612-278-00-6

EC number

214-984-6

CAS number

1239-45-8

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

Identified uses:

laboratory chemical
laboratory and analytical use

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

e-mail (competent person): sicherheit@carlroth.de

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)

<table>
<thead>
<tr>
<th>Classification acc. to GHS</th>
<th>Hazard class</th>
<th>Hazard class and category</th>
<th>Hazard statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1O</td>
<td>acute toxicity (oral)</td>
<td>(Acute Tox. 4)</td>
<td>H302</td>
</tr>
<tr>
<td>3.1I</td>
<td>acute toxicity (inhal.)</td>
<td>(Acute Tox. 2)</td>
<td>H330</td>
</tr>
<tr>
<td>3.5</td>
<td>germ cell mutagenicity</td>
<td>(Muta. 2)</td>
<td>H341</td>
</tr>
</tbody>
</table>
2.2 Label elements

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

Signal word  Danger

Pictograms

GHS06, GHS08

Hazard statements

H302  Harmful if swallowed
H330  Fatal if inhaled
H341  Suspected of causing genetic defects

Precautionary statements

Precautionary statements - prevention

P201  Obtain special instructions before use.
P260  Do not breathe dusts or mists.
P280  Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary statements - response

P304+P340  IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P308+P311  IF exposed or concerned: Call a POISON CENTER/doctor.

For professional users only

Labelling of packages where the contents do not exceed 125 ml

Signal word: Danger

Symbol(s)

H302  Fatal if inhaled.
H341  Suspected of causing genetic defects.
P201  Obtain special instructions before use.
P260  Do not breathe dusts or mists.
P280  Wear protective gloves/protective clothing/eye protection/face protection.
P304+P340  IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P308+P311  IF exposed or concerned: Call a POISON CENTER/doctor.

2.3 Other hazards

There is no additional information.
SECTION 3: Composition/information on ingredients

3.1 Substances

<table>
<thead>
<tr>
<th>Name of substance</th>
<th>Ethidium bromide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index No</td>
<td>612-278-00-6</td>
</tr>
<tr>
<td>EC number</td>
<td>214-984-6</td>
</tr>
<tr>
<td>CAS number</td>
<td>1239-45-8</td>
</tr>
<tr>
<td>Molecular formula</td>
<td>C_{21}H_{20}BrN_{3}</td>
</tr>
<tr>
<td>Molar mass</td>
<td>394.3 g/mol</td>
</tr>
</tbody>
</table>

SECTION 4: First aid measures

4.1 Description of first aid measures

General notes
Self-protection of the first aider.

Following inhalation
Call a physician immediately. If breathing is irregular or stopped, administer artificial respiration.

Following skin contact
Rinse skin with water/shower.

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 with water (only if the person is conscious). In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible). Call a doctor.

4.2 Most important symptoms and effects, both acute and delayed
Methaemoglobinemia, Cardiac arrhythmias, Headache, Spasms, Dyspnoea, Blood pressure drop, Cyanosis (blue coloured blood)

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.**

**Hazardous combustion products**
In case of fire may be liberated: nitrogen oxides (NOx), carbon monoxide (CO), carbon dioxide (CO2), hydrogen bromide (HBr)

### 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**
Use personal protective equipment as required. Avoid contact with skin, eyes and clothes. Do not breathe dust.

#### 6.2 Environmental precautions
Keep away from drains, surface and ground water.

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

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

**Advises on how to clean up a spill**
Take up mechanically. Control of dust.

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

#### 6.4 Reference to other sections


---

### SECTION 7: Handling and storage

#### 7.1 Precautions for safe handling


- **Measures to prevent fire as well as aerosol and dust generation**
  Removal of dust deposits.

**Advice on general occupational hygiene**
Wash hands before breaks and after work.
7.2 Conditions for safe storage, including any incompatibilities
Store in a dry place. Keep container tightly closed. Protect from sunlight. Store in a place accessible by authorized persons only.

Incompatible substances or mixtures
Observe hints for combined storage.

Consideration of other advice
Store locked up.

• Ventilation requirements
Use local and general ventilation.

• Specific designs for storage rooms or vessels
Recommended storage temperature: 15 – 25 °C.

7.3 Specific end use(s)
No information available.

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>GB</td>
<td>dust</td>
<td></td>
<td>i</td>
<td>WEL</td>
<td>10</td>
<td></td>
<td>EH40/2005</td>
</tr>
<tr>
<td>GB</td>
<td>dust</td>
<td></td>
<td>r</td>
<td>WEL</td>
<td>4</td>
<td></td>
<td>EH40/2005</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 (unless otherwise specified)

8.2 Exposure controls

Individual protection measures (personal protective equipment)

Eye/face protection

Use safety goggle with side protection.

Skin protection

• hand protection

Wear suitable gloves. Chemical protection gloves are suitable, which are tested according to EN 374. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.
• type of material
NBR (Nitrile rubber)
• material thickness
>0,11 mm
• breakthrough times of the glove material
>480 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). P3 (filters at least 99,95 % of airborne particles, colour code: White).

Environmental exposure controls
Keep away from drains, surface and ground water.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance
Physical state solid (powder, crystalline)
Colour red brown
Odour odourless
Odour threshold No data available

Other physical and chemical parameters
pH (value) 4 – 7 (water: 20 g/l, 20 °C)
Melting point/freezing point 261 – 264 °C
Initial boiling point and boiling range This information is not available.
Flash point >100 °C
Evaporation rate no data available
Flammability (solid, gas) These information are not available

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 1,01 g/cm³ at 20 ºC
Vapour density This information is not available.
Safety data sheet
according to Regulation (EC) No. 1907/2006 (REACH), amended by 2015/830/EU

Ethidium bromide ≥98%

article number: 7870

<table>
<thead>
<tr>
<th>Property</th>
<th>Value/Detail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk density</td>
<td>~ 340 kg/m³</td>
</tr>
<tr>
<td>Relative density</td>
<td>Information on this property is not available.</td>
</tr>
<tr>
<td>Solubility(ies)</td>
<td>Water solubility: 40 g/l at 25 °C</td>
</tr>
<tr>
<td>Partition coefficient</td>
<td>n-octanol/water (log KOW): -0.38 (calculated value)</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>Information on this property is not available.</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>no data available</td>
</tr>
<tr>
<td>Viscosity</td>
<td>not relevant (solid matter)</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>Shall not be classified as explosive</td>
</tr>
<tr>
<td>Oxidising properties</td>
<td>none</td>
</tr>
</tbody>
</table>

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
Direct light irradiation. Keep away from heat.

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

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

Germ cell mutagenicity:
Suspected of causing genetic defects

• 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

• If in eyes
data are not available

• If inhaled
data are not available

• If on skin
data are not available

Other information
Other adverse effects: Methaemoglobinaemia, Headache, Spasms, Dyspnoea, Blood pressure drop, Cardiac arrhythmias, Cyanosis (blue coloured blood)

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
Theoretical Oxygen Demand with nitrification: 2,144 mg/mg
Theoretical Oxygen Demand: 1,907 mg/mg
Theoretical Carbon Dioxide: 2,344 mg/mg

12.3 Bioaccumulative potential
Does not significantly accumulate in organisms.

n-octanol/water (log KOW) -0,38

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

This material and its container must be disposed of as hazardous waste. Dispose of contents/container in accordance with local/regional/national/international regulations.

Sewage disposal-relevant information
Do not empty into drains.

Waste treatment of containers/packagings
It is a dangerous waste; only packagings which are approved (e.g. acc. to ADR) may be used.

Sewage disposal-relevant information
Do not empty into drains.

Waste treatment of containers/packagings
It is a dangerous waste; only packagings which are approved (e.g. acc. to ADR) may be used.

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.

SECTION 14: Transport information

14.1 UN number
2811

14.2 UN proper shipping name
TOXIC SOLID, ORGANIC, N.O.S.

Hazardous ingredients
Ethidium bromide

14.3 Transport hazard class(es)

Class
6.1 (toxic substances)

Packing group
I (substance presenting high danger)

Environmental hazards
none (non-environmentally hazardous acc. to the dangerous goods regulations)

14.6 Special precautions for user
Provisions for dangerous goods (ADR) should be complied within the premises.

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)

UN number
2811
### Safety data sheet

according to Regulation (EC) No. 1907/2006 (REACH), amended by 2015/830/EU

**Ethidium bromide ≥98 %**

<table>
<thead>
<tr>
<th>article number: 7870</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proper shipping name</td>
</tr>
<tr>
<td>Particulars in the transport document</td>
</tr>
<tr>
<td>Class</td>
</tr>
<tr>
<td>Classification code</td>
</tr>
<tr>
<td>Packing group</td>
</tr>
<tr>
<td>Danger label(s)</td>
</tr>
</tbody>
</table>

**Special provisions (SP)** | 274, 614, 802(ADN) |
**Excepted quantities (EQ)** | E5 |
**Limited quantities (LQ)** | 0 |
**Transport category (TC)** | 1 |
**Tunnel restriction code (TRC)** | C/E |
**Hazard identification No** | 66 |

**Emergency Action Code**

Emergency Action Code 2X

**International Maritime Dangerous Goods Code (IMDG)**

| UN number | 2811 |
|----------------------|
| Proper shipping name | TOXIC SOLID, ORGANIC, N.O.S. |
| Particulars in the shipper’s declaration | UN2811, TOXIC SOLID, ORGANIC, N.O.S., (Ethidium bromide), 6.1, I |
| Class | 6.1 |
| Marine pollutant | - |
| Packing group | I |
| Danger label(s) | 6.1 |

**Special provisions (SP)** | 274 |
**Excepted quantities (EQ)** | E5 |
**Limited quantities (LQ)** | 0 |
**EmS** | F-A, S-A |
**Stowage category** | B |

**International Civil Aviation Organization (ICAO-IATA/DGR)**

| UN number | 2811 |
|----------------------|
| Proper shipping name | Toxic solid, organic, n.o.s. |
Ethidium bromide  ≥98 %
article number: 7870

<table>
<thead>
<tr>
<th>Particulars in the shipper’s declaration</th>
<th>UN2811, Toxic solid, organic, n.o.s., (Ethidium bromide), 6.1, I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>6.1</td>
</tr>
<tr>
<td>Packing group</td>
<td>I</td>
</tr>
<tr>
<td>Danger label(s)</td>
<td>6.1</td>
</tr>
<tr>
<td>Special provisions (SP)</td>
<td>A3, A5</td>
</tr>
<tr>
<td>Excepted quantities (EQ)</td>
<td>E5</td>
</tr>
</tbody>
</table>

**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
- **Restrictions according to REACH, Title VIII**
  None.
- **List of substances subject to authorisation (REACH, Annex XIV)/SVHC - candidate list**
  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
- **Directive 2000/60/EC establishing a framework for Community action in the field of water policy (WFD)**
  Not listed
- **Regulation 98/2013/EU on the marketing and use of explosives precursors**
  Not listed
- **Regulation 111/2005/EC laying down rules for the monitoring of trade between the Community and third countries in drug precursors**
  Not listed
Ethidium bromide ≥98 %

National inventories
Substance is listed in the following national inventories:

<table>
<thead>
<tr>
<th>Country</th>
<th>National inventories</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>AU</td>
<td>AICS</td>
<td>substance is listed</td>
</tr>
<tr>
<td>CN</td>
<td>IECSC</td>
<td>substance is listed</td>
</tr>
<tr>
<td>EU</td>
<td>ECSI</td>
<td>substance is listed</td>
</tr>
<tr>
<td>KR</td>
<td>KECI</td>
<td>substance is listed</td>
</tr>
<tr>
<td>NZ</td>
<td>NZIoC</td>
<td>substance is listed</td>
</tr>
<tr>
<td>PH</td>
<td>PICCS</td>
<td>substance is listed</td>
</tr>
<tr>
<td>TW</td>
<td>TCSI</td>
<td>substance is listed</td>
</tr>
</tbody>
</table>

Legend
AICS   Australian Inventory of Chemical Substances
ECSI   EC Substance Inventory (EINECS, ELINCS, NLP)
IECSC   Inventory of Existing Chemical Substances Produced or Imported in China
KECI   Korea Existing Chemicals Inventory
NZIoC  New Zealand Inventory of Chemicals
PICCS  Philippine Inventory of Chemicals and Chemical Substances
TCSI   Taiwan Chemical Substance Inventory

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>DGR</td>
<td>Dangerous Goods Regulations (see IATA/DGR)</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>EmS</td>
<td>Emergency Schedule</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>IATA</td>
<td>International Air Transport Association</td>
</tr>
<tr>
<td>IATA/DGR</td>
<td>Dangerous Goods Regulations (DGR) for the air transport (IATA)</td>
</tr>
<tr>
<td>ICAO</td>
<td>International Civil Aviation Organization</td>
</tr>
<tr>
<td>IMDG</td>
<td>International Maritime Dangerous Goods Code</td>
</tr>
</tbody>
</table>
Abbr. | Descriptions of used abbreviations
--- | ---
Index No | the Index number is the identification code given to the substance in Part 3 of Annex VI to Regulation (EC) No 1272/2008
MARPOL | International Convention for the Prevention of Pollution from Ships (abbr. of “Marine Pollutant”)
NLP | No-Longer Polymer
PBT | Persistent, Bioaccumulative and Toxic
REACH | Registration, Evaluation, Authorisation and Restriction of Chemicals
RID | Règlement concernant le transport International ferroviaire des marchandises Dangereuses (Regulations concerning the International carriage of Dangerous goods by Rail)
STEL | short-term exposure limit
SVHC | Substance of Very High Concern
TWA | time-weighted average
vPvB | very Persistent and very Bioaccumulative
WEL | workplace exposure limit

Key literature references and sources for data
- Regulation (EC) No. 1272/2008 (CLP, EU GHS)
- Dangerous Goods Regulations (DGR) for the air transport (IATA)
- International Maritime Dangerous Goods Code (IMDG)

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

<table>
<thead>
<tr>
<th>Code</th>
<th>Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>H302</td>
<td>harmful if swallowed</td>
</tr>
<tr>
<td>H330</td>
<td>fatal if inhaled</td>
</tr>
<tr>
<td>H341</td>
<td>suspected of causing genetic defects</td>
</tr>
</tbody>
</table>

Disclaimer

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.