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

- **Product identifier**
  - **Trade name:** Tubocurarine dichloride
  - **Article number:** ALX-550-182
  - **CAS Number:** 57-94-3
  - **EINECS Number:** 200-356-9
- **Relevant identified uses of the substance or mixture and uses advised against**
  - **Application of the substance / the preparation:** Laboratory chemicals
- **Details of the supplier of the safety data sheet**
  - **Manufacturer/Supplier:** Enzo Life Sciences International, Inc.
    10 Executive Boulevard
    Farmingdale, NY 11735
    U.S.A.
    msds@enzolifesciences.com
  - **Further information obtainable from:** Customer service
  - **Emergency telephone number:** During normal opening times: +1 610-941-0430

2 Hazards identification

- **Classification of the substance or mixture**
- **Classification according to Regulation (EC) No 1272/2008**
  - GHS06 skull and crossbones
  - Acute Tox. 2 H300 Fatal if swallowed.
- **Classification according to Directive 67/548/EEC or Directive 1999/45/EC:**
  - T: Toxic
  - R25: Toxic if swallowed.
- **Information concerning particular hazards for human and environment:** Not applicable.
- **Label elements**
- **Labelling according to Regulation (EC) No 1272/2008:**
  The substance is classified and labelled according to the CLP regulation.
- **Hazard pictograms:**
  - GHS06
- **Signal word:** Danger
- **Hazard statements:**
  - H300 Fatal if swallowed.
- **Precautionary statements**
  - **P264** Wash thoroughly after handling.
  - **P270** Do not eat, drink or smoke when using this product.
  - **P301+P310** IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
  - **P321** Specific treatment (see on this label).
  - **P405** Store locked up.
  - **P501** Dispose of contents/container in accordance with local/regional/national/international regulations.

(Contd. on page 2)
Trade name: Tubocurarine dichloride

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

3 Composition/information on ingredients
- Chemical characterization: Substances
  - CAS No. Description:
    57-94-3 Tubocurarine dichloride
  - Identification number(s): Not applicable
  - EINECS Number: 200-356-9

4 First aid measures
- Description of first aid measures
  - General information:
    Immediately remove any clothing soiled by the product.
    In case of irregular breathing or respiratory arrest provide artificial respiration.
  - After inhalation:
    In case of unconsciousness place patient stably in side position for transportation.
  - After skin contact:
    Immediately wash with water and soap and rinse thoroughly.
    Remove contaminated clothing.
  - After eye contact:
    Rinse opened eye for several minutes under running water. Then consult a doctor.
  - After ingestion:
    Do not induce vomiting; call for medical help immediately.
  - Information for doctor:
    - Most important symptoms and effects, both acute and delayed
      No further relevant information available.
    - Indication of any immediate medical attention and special treatment needed
      No further relevant information available.

5 Firefighting measures
- Extinguishing media
  - Suitable extinguishing agents:
    CO2, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
  - Special hazards arising from the substance or mixture
    No further relevant information available.
  - Advice for firefighters
  - Protective equipment:
    Wear self-contained respiratory protective device.
    Do not inhale explosion gases or combustion gases.
    Wear fully protective suit.

6 Accidental release measures
- Personal precautions, protective equipment and emergency procedures:
  - Avoid formation of dust.
  - Wear protective clothing.
  - Environmental precautions: No special measures required.
- Methods and material for containment and cleaning up:
  - Dispose contaminated material as waste according to item 13.
  - Reference to other sections
    See Section 7 for information on safe handling.
    See Section 8 for information on personal protection equipment.
7 Handling and storage

- **Handling:**
  - **Precautions for safe handling:** No special precautions are necessary if used correctly.
  - **Information about fire - and explosion protection:** No special measures required.

- **Conditions for safe storage, including any incompatibilities**

- **Storage:**
  - **Requirements to be met by storerooms and receptacles:**
    Store tightly sealed in a cool, dry and well ventilated location (see label for storage temperature and additional specific information).
  - **Information about storage in one common storage facility:**
    Keep away from heat, sources of ignition and incompatibles such as oxidizing agents.
  - **Further information about storage conditions:**
    Store under lock and key and with access restricted to technical experts or their assistants only.

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

8 Exposure controls/personal protection

- **Additional information about design of technical facilities:** No further data; see item 7.

- **Control parameters**
  - **Ingredients with limit values that require monitoring at the workplace:** Not required.
  - **Additional information:** The lists valid during the making were used as basis.

- **Exposure controls**
  - **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.
    - **Respiratory protection:** Not required.
    - **Protection of hands:**
      The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
      Due to missing tests no recommendation to the glove material can be given for the product/the preparation/the chemical mixture.
      Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
    - **Material of gloves**
      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 protection:** Not required.

9 Physical and chemical properties

- **Information on basic physical and chemical properties**
  - **General Information**
  - **Appearance:**
    - **Form:** Solid
    - **Colour:** White
Trade name: Tubocurarine dichloride

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odour</td>
<td>Characteristic</td>
</tr>
<tr>
<td>Odour threshold</td>
<td>Not determined.</td>
</tr>
<tr>
<td>pH-value</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Change in condition</td>
<td></td>
</tr>
<tr>
<td>Melting point/Melting range</td>
<td>275-280 (Z) °C</td>
</tr>
<tr>
<td>Boiling point/Boiling range</td>
<td>Undetermined.</td>
</tr>
<tr>
<td>Flash point</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Flammability (solid, gaseous)</td>
<td>Product is not flammable.</td>
</tr>
<tr>
<td>Ignition temperature</td>
<td></td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Self-igniting</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Danger of explosion</td>
<td>Product does not present an explosion hazard.</td>
</tr>
<tr>
<td>Explosion limits</td>
<td></td>
</tr>
<tr>
<td>Lower</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Upper</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Density</td>
<td></td>
</tr>
<tr>
<td>Relative density</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Vapour density</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Solubility in / Miscibility with water</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Segregation coefficient (n-octanol/water)</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Viscosity</td>
<td></td>
</tr>
<tr>
<td>Dynamic</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Kinematic</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Other information</td>
<td>No further relevant information available.</td>
</tr>
</tbody>
</table>

10 Stability and reactivity

- Reactivity
  - Chemical stability: Stable. Avoid strong oxidizing agents.
  - Thermal decomposition / conditions to be avoided:
    - No decomposition if used according to specifications.
  - Possibility of hazardous reactions: No dangerous reactions known.
  - Conditions to avoid: No further relevant information available.
  - Incompatible materials: No further relevant information available.
  - Hazardous decomposition products: No dangerous decomposition products known.

11 Toxicological information

- Information on toxicological effects
  - Acute toxicity:

<table>
<thead>
<tr>
<th>Route</th>
<th>LD50/LC50 values relevant for classification:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>LD50</td>
</tr>
<tr>
<td></td>
<td>LD50</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Trade name: Tubocurarine dichloride

0.64 mg/kg (mouse) (subcutaneous)

- Primary irritant effect:
  - on the skin: Not determined
  - on the eye: Not determined
  - Sensitization: No sensitizing effects known.

12 Ecological information

- Toxicity
  - Aquatic toxicity: No further relevant information available.
  - Persistence and degradability: No further relevant information available.
  - Behaviour in environmental systems:
  - Bioaccumulative potential: No further relevant information available.
  - Mobility in soil: No further relevant information available.

- Results of PBT and vPvB assessment
  - PBT: Not applicable.
  - vPvB: Not applicable.
  - Other adverse effects: No further relevant information available.

13 Disposal considerations

- 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.

14 Transport information

- Land transport ADR/RID (cross-border)

  - ADR/RID class: 6.1 Toxic substances.
  - Danger code (Kemler): 60
  - UN-Number: 1544
  - Hazard label: 6.1
  - UN proper shipping name: 1544 ALKALOIDS, SOLID, N.O.S. (Tubocurarine dichloride)

- Maritime transport IMDG:

  - IMDG Class: 6.1
  - UN Number: 1544
  - Label: 6.1
  - Packaging group: II
  - EMS Number: F-A,S-A
  - Marine pollutant: No
### Trade name
Tubocurarine dichloride

(Contd. of page 5)

<table>
<thead>
<tr>
<th>Proper shipping name:</th>
<th>ALKALOIDS, SOLID, N.O.S. (Tubocurarine dichloride)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air transport ICAO-TI and IATA-DGR:</td>
<td></td>
</tr>
<tr>
<td>ICAO/IATA Class:</td>
<td>6.1</td>
</tr>
<tr>
<td>UN/ID Number:</td>
<td>1544</td>
</tr>
<tr>
<td>Label</td>
<td>6.1</td>
</tr>
<tr>
<td>Packaging group:</td>
<td>II</td>
</tr>
<tr>
<td>Proper shipping name:</td>
<td>ALKALOIDS, SOLID, N.O.S. (Tubocurarine dichloride)</td>
</tr>
</tbody>
</table>

| UN "Model Regulation": | UN1544, ALKALOIDS, SOLID, N.O.S., 6.1 |
| Special precautions for user: | Warning: Toxic substances. |
| Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: | Not applicable. |

### 15 Regulatory information

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

### 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. For research use only. Not for drug, household or other uses.

- **Department issuing MSDS:** Customer service
- **Contact:** tel. +1 610-941-0430
- **Abbreviations and acronyms:**
  - ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
  - RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
  - IMDG: International Maritime Code for Dangerous Goods
  - IATA: International Air Transport Association
  - IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)
  - ICAO: International Civil Aviation Organization
  - ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)
  - GHS: Globally Harmonized 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)
  - LC50: Lethal concentration, 50 percent
  - LD50: Lethal dose, 50 percent