Ticarcillin disodium / Clavulanate potassium
Mixed in ratio 15:1
Safety Data Sheet
according to Regulation (EU) 2015/830
Date of issue: 14/09/2011        Revision date 05/07/2018
T0190
Version: 2.0

SECTION 1: Identification of the substance/mixture and of the company/undertaking
1.1. Product identifier
   Product form: Mixture
   Trade name: Ticarcillin disodium / Clavulanate potassium
               Mixed in ratio 15:1
   Product code: T0190
   Formula: C15H14N2Na2O6S2 (Ticarcillin disodium) / C8H8KNO5 (Clavulanate potassium)

1.2. Relevant identified uses of the substance or mixture and uses advised against
1.2.1. Relevant identified uses
   Main use category: Professional use
   Industrial/Professional use spec: For professional use only. Duchefa Biochemie B.V. products are intended only for "in vitro laboratory" research purposes.

1.2.2. Uses advised against
   No additional information available

1.3. Details of the supplier of the safety data sheet
   Supplier
   Duchefa Biochemie B.V.
   A. Hofmanweg 71
   2031 BH Haarlem - The Netherlands
   T +31(0)23-5319093 - F +31(0)23-5318027
   info@duchefa.nl

1.4. Emergency telephone number
   Emergency number: Supplier contact information:
   +31(0)23-5319093 (M-F 09:00-17:00)
   +31(0)6-30109355 (outside office hours)

<table>
<thead>
<tr>
<th>Organisation/Company</th>
<th>Address</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>World Health Organization world directory of poison centres</td>
<td><a href="http://apps.who.int/poisoncentres/">http://apps.who.int/poisoncentres/</a></td>
<td>Consult website for a local poison centre</td>
</tr>
</tbody>
</table>

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture
Classification according to Regulation (EC) No. 1272/2008 [CLP]
   Skin corrosion/irritation, Category 2 H315
   Serious eye damage/eye irritation, Category 2 H319
   Respiratory sensitisation, Category 1 H334
   Skin sensitisation, Category 1 H317
   Full text of H statements : see section 16
Adverse physicochemical, human health and environmental effects
No additional information available

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

Hazard pictograms (CLP): GHS08

Signal word (CLP): Danger
Hazard statements (CLP):
- H315 - Causes skin irritation.
- H317 - May cause an allergic skin reaction.
- H319 - Causes serious eye irritation.
- H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Precautionary statements (CLP):
- P261 - Avoid breathing dust.
- P280 - Wear protective gloves/protective clothing/eye protection/face protection.
- P302+P352 - IF ON SKIN: Wash with plenty of water.
- P342+P311 - If experiencing respiratory symptoms: Call a POISON CENTER/doctor
- P305+P351 - IF IN EYES: Rinse cautiously with water for several minutes.

2.3. Other hazards
No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances
Not applicable

3.2. Mixtures

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>Classification according to Regulation (EC) No. 1272/2008 [CLP]</th>
</tr>
</thead>
</table>
| Ticarcillin disodium      | (CAS-No.) 4697-14-7| ~93,75 | Skin Irr. 2, H315  
|                           |                    |    | Eye Irrit. 2, H319  
|                           |                    |    | Resp. Sens. 1, H334  
|                           |                    |    | Skin Sens. 1, H317  
|                           |                    |    | STOT SE 3, H335  |
| Potassium clavulanate    | (CAS-No.) 61177-45-5| ~6,25 | Flam. Sol. 1, H228 |
|                           | (EC-No.) 262-640-9 |    |                                                               |

Full text of H-statements: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general: If you feel unwell, seek medical advice.
First-aid measures after inhalation : Move to fresh air.
First-aid measures after skin contact : Wash off with soap and plenty of water
Seek medical attention if irritation develops.
First-aid measures after eye contact : Rinse immediately with plenty of water
Get medical advice/attention.
First-aid measures after ingestion : Rinse mouth thoroughly with water.

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

4.3. Indication of any immediate medical attention and special treatment needed
No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media
Suitable extinguishing media : Dry chemical powder.
                              Alcohol resistant foam.
                              Carbon dioxide (CO2).
                              Water spray.

5.2. Special hazards arising from the substance or mixture
Hazardous decomposition products in case of fire : Under fire conditions, hazardous fumes will be present
                                             - COx
                                             - NOx
                                             - SOx.

5.3. Advice for firefighters
Firefighting instructions : Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel
Measures in case of dust release : Avoid dust formation. Do not breathe dust.

6.1.2. For emergency responders
No additional information available

6.2. Environmental precautions
Do not allow product to spread into the environment.

6.3. Methods and material for containment and cleaning up
Methods for cleaning up : Sweep up dry powder and dispose properly. Clean contaminated surfaces with an excess of water.

6.4. Reference to other sections
No additional information available
SECTION 7: Handling and storage

7.1. Precautions for safe handling
Precautions for safe handling: Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities
Storage conditions: Store in dry, cool, well-ventilated area
Keep container tightly closed.
Moisture sensitive.

Storage temperature: 2 - 8 °C

7.3. Specific end use(s)
For professional use only. Duchefa Biochemie B.V. products are intended only for "in vitro laboratory" research purposes.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters
No additional information available

8.2. Exposure controls
Hand protection:

<table>
<thead>
<tr>
<th>Type</th>
<th>Material</th>
<th>Permeation</th>
<th>Thickness (mm)</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gloves</td>
<td>Nitrile rubber (NBR)</td>
<td>6 (&gt; 480 minutes)</td>
<td>0,11</td>
<td>EN 374</td>
</tr>
</tbody>
</table>

Eye protection:
Safety glasses (to European standard EN 166 or equivalent)

Skin and body protection:
Wear suitable protective clothing

Respiratory protection:
Wear approved mask. Filter type P2 (EN 143)

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties
Physical state: Solid
Appearance: Powder.
Colour: White.

Odour: No data available
Odour threshold: No data available
pH: No data available
Relative evaporation rate (butylacetate=1): No data available
Melting point: 252,6 °C
Freezing point: No data available
Boiling point: No data available
Flash point: No data available
Auto-ignition temperature: No data available
Decomposition temperature: No data available
Flammability (solid, gas): No data available
Vapour pressure: No data available
Relative vapour density at 20 °C: No data available
Relative density: No data available
Solubility: Readily soluble in water.
Log Pow: No data available
Viscosity, kinematic: No data available
Viscosity, dynamic: No data available
Explosive properties: No data available
Oxidising properties: No data available
Explosive limits: No data available

9.2. Other information
No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity
Stable under normal conditions of storage, handling and use.

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

10.3. Possibility of hazardous reactions
No additional information available

10.4. Conditions to avoid
Moisture.

10.5. Incompatible materials
Strong oxidizers.

10.6. Hazardous decomposition products
In the event of fire, may decompose:
- COx
- NOx
- SOx.

SECTION 11: Toxicological information

11.1. Information on toxicological effects
Acute toxicity: Not classified
Skin corrosion/irritation: Causes skin irritation.
Serious eye damage/irritation: Causes serious eye irritation.
Respiratory or skin sensitisation: May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction.
Germ cell mutagenicity: Not classified
Carcinogenicity: Not classified
Reproductive toxicity : Not classified  
STOT-single exposure : Not classified  
STOT-repeated exposure : Not classified  
Aspiration hazard : Not classified  

SECTION 12: Ecological information

12.1. Toxicity  
No additional information available  

12.2. Persistence and degradability  
No additional information available  

12.3. Bioaccumulative potential  
No additional information available  

12.4. Mobility in soil  
No additional information available  

12.5. Results of PBT and vPvB assessment  
No additional information available  

12.6. Other adverse effects  
Additional information : Avoid release to the environment. Prevent entry to sewers and public waters  

SECTION 13: Disposal considerations

13.1. Waste treatment methods  
Waste treatment methods : Dispose in a safe manner in accordance with local/national regulations.  

SECTION 14: Transport information

In accordance with ADR / IATA / IMDG

<table>
<thead>
<tr>
<th>ADR</th>
<th>IMDG</th>
<th>IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.1. UN number</td>
<td>Not regulated</td>
<td>Not regulated</td>
</tr>
<tr>
<td>14.2. UN proper shipping name</td>
<td>Not regulated</td>
<td>Not regulated</td>
</tr>
<tr>
<td></td>
<td>Not regulated</td>
<td>Not regulated</td>
</tr>
<tr>
<td></td>
<td>Not regulated</td>
<td>Not regulated</td>
</tr>
<tr>
<td>14.3. Transport hazard class(es)</td>
<td>Not regulated</td>
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</tr>
<tr>
<td></td>
<td>Not regulated</td>
<td>Not regulated</td>
</tr>
<tr>
<td></td>
<td>Not regulated</td>
<td>Not regulated</td>
</tr>
<tr>
<td>14.4. Packing group</td>
<td>Not regulated</td>
<td>Not regulated</td>
</tr>
<tr>
<td></td>
<td>Not regulated</td>
<td>Not regulated</td>
</tr>
<tr>
<td></td>
<td>Not regulated</td>
<td>Not regulated</td>
</tr>
<tr>
<td>14.5. Environmental hazards</td>
<td>Not regulated</td>
<td>Not regulated</td>
</tr>
<tr>
<td></td>
<td>Not regulated</td>
<td>Not regulated</td>
</tr>
<tr>
<td></td>
<td>No supplementary information available</td>
<td></td>
</tr>
</tbody>
</table>
14.6. Special precautions for user

- Overland transport
  Not regulated

- Transport by sea
  Not regulated

- Air transport
  Not regulated

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code
  Not applicable

SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

Contains no REACH substances with Annex XVII restrictions
Contains no substance on the REACH candidate list
Contains no REACH Annex XIV substances

15.1.2. National regulations

Ensure all national/local regulations are observed.

Germany
Reference to AwSV: Water hazard class (WGK) 3, severe hazard to waters (Classification according to AwSV, Annex 1)
12th Ordinance Implementing the Federal Immission Control Act - 12.BImSchV: Is not subject of the 12. BImSchV (Hazardous Incident Ordinance)

Netherlands
SZW-lijst van kankerverwekkende stoffen: None of the components are listed
SZW-lijst van mutagene stoffen: None of the components are listed
NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Borstvoeding: None of the components are listed
NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Vruchtbaarheid: None of the components are listed
NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Ontwikkeling: None of the components are listed

Denmark
Recommendations Danish Regulation: Young people below the age of 18 years are not allowed to use the product

15.2. Chemical safety assessment

No additional information available

SECTION 16: Other information

Indication of changes:

<table>
<thead>
<tr>
<th>1.4</th>
<th>Emergency number</th>
<th>Modified</th>
</tr>
</thead>
</table>
8.2 Hand protection
Modified
Specified material, thickness, etc. of gloves

Abbreviations and acronyms:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATE</td>
<td>Acute Toxicity Estimate</td>
</tr>
<tr>
<td>ADR</td>
<td>European Agreement concerning the International Carriage of Dangerous Goods by Road</td>
</tr>
<tr>
<td>BCF</td>
<td>Bioconcentration factor</td>
</tr>
<tr>
<td>CLP</td>
<td>Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008</td>
</tr>
<tr>
<td>DPD</td>
<td>Dangerous Preparations Directive 1999/45/EC</td>
</tr>
<tr>
<td>DSD</td>
<td>Dangerous Substances Directive 67/548/EEC</td>
</tr>
<tr>
<td>IATA</td>
<td>International Air Transport Association</td>
</tr>
<tr>
<td>IMDG</td>
<td>International Maritime Dangerous Goods</td>
</tr>
<tr>
<td>LC50</td>
<td>Median lethal concentration</td>
</tr>
<tr>
<td>LD50</td>
<td>Median lethal dose</td>
</tr>
<tr>
<td>LOAEL</td>
<td>Lowest Observed Adverse Effect Level</td>
</tr>
<tr>
<td>NOAEC</td>
<td>No-Observed Adverse Effect Concentration</td>
</tr>
<tr>
<td>PBT</td>
<td>Persistent Bioaccumulative Toxic</td>
</tr>
<tr>
<td>SDS</td>
<td>Safety Data Sheet</td>
</tr>
</tbody>
</table>

Data sources: Supplier. Manufacturer.

Full text of H- and EUH-statements:

<table>
<thead>
<tr>
<th>H- and EUH-statement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye Irrit. 2</td>
<td>Serious eye damage/eye irritation, Category 2</td>
</tr>
<tr>
<td>Flam. Sol. 1</td>
<td>Flammable solids, Category 1</td>
</tr>
<tr>
<td>Resp. Sens. 1</td>
<td>Respiratory sensitisation, Category 1</td>
</tr>
<tr>
<td>Skin Irrit. 2</td>
<td>Skin corrosion/irritation, Category 2</td>
</tr>
<tr>
<td>Skin Sens. 1</td>
<td>Skin sensitisation, Category 1</td>
</tr>
<tr>
<td>STOT SE 3</td>
<td>Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation</td>
</tr>
<tr>
<td>H228</td>
<td>Flammable solid</td>
</tr>
<tr>
<td>H315</td>
<td>Causes skin irritation</td>
</tr>
<tr>
<td>H317</td>
<td>May cause an allergic skin reaction</td>
</tr>
<tr>
<td>H319</td>
<td>Causes serious eye irritation</td>
</tr>
<tr>
<td>H334</td>
<td>May cause allergy or asthma symptoms or breathing difficulties if inhaled</td>
</tr>
<tr>
<td>H335</td>
<td>May cause respiratory irritation</td>
</tr>
</tbody>
</table>

SDS Biochemicals version 2018

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.