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

1.1 Product identifier

Trade Name: ATTO 647N cadaverine
Article No.: AD 647N-23
Registration No.: n.a.p.

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

Identified uses: Fluorescent label, labeling of bio-molecules

1.3 Details of the supplier of the safety data sheet

1.3.1 Address of the Company / Supplier

ATTO-TEC GmbH, Am Eichenhang 50, D-57076 Siegen
Telephone: +49-271-23853-0, Telefax: +49-271-23853-11, e-mail: info@atto-tec.com

1.3.2 Responsible for the data sheet:

CoSiChem AG, Ernst-Lemmer-Straße 23, D-35041 Marburg, info@cosichem.de

1.4 Emergency telephone number

Emergency - Telephone of Company / Undertaking: +49-271-23853-0 (8:30 - 16:30)
Information Centre Specialising in Symptoms of Poisoning: +44 870 600 6266

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

n.a.p.

2.2 Label elements

Classification according to 1272/2008/EC: No.

Signal word(s): n.a.p. Hazard pictogram(s): None.
Component(s): n.a.p.

H - Phrases: none

P - Phrases:
P102: Keep out of reach of children.
P301+P312: IF SWALLOWED: Call a POISON CENTER/doctor/... if you feel unwell.
Additional Markings:
Although this product does not require a hazard warning label, we recommend that the safety advice should be observed.

2.3 Other hazards

This mixture contains no substances which are assessed to be PBT or vPvB.

SECTION 3: Composition/information on ingredients

3.1 Substances

This product does not contain any substances which are classified as dangerous or the concentration lies below the limit laid down by the law.

SECTION 4: First aid measures

4.1 Description of first aid measures

4.1.1 Inhalation:
Move to fresh air in case of accidental inhalation of fumes from overheating or combustion. Consult a physician if necessary.

4.1.2 Skin Contact:
In case of skin contact Wash off immediately with soap and plenty of water. Consult a physician if necessary.

4.1.3 Eye Contact:
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Consult a physician if necessary.

4.1.4 Ingestion:
Clean mouth with water and afterwards drink plenty of water. Consult a physician if necessary.

4.2 Most important symptoms and effects, both acute and delayed

n.a.p.

4.3 Indication of any immediate medical attention and special treatment needed

n.a.p.

SECTION 5: Firefighting measures

5.1 Extinguishing media

5.1.1 Suitable Extinguishing Media:
Use dry chemical, CO2, water spray or "alcohol" foam.

5.1.2 Extinguishing Media to Avoid: None.
5.2 Special hazards arising from the substance or mixture
Fire may cause evolution of: Carbon oxides, nitrogen oxides (NOx), dust

5.3 Advice for firefighters
5.3.1 Special Protective Equipment:
Wear positive pressure self-contained breathing apparatus. Wear full protective clothing.

SECTION 6: Accidental release measures
6.1 Personal precautions, protective equipment and emergency procedures
See chapter 8.2.2

6.2 Environmental precautions
Do not empty into drains. Local authorities should be advised if significant spillages cannot be contained.

6.3 Methods and material for containment and cleaning up
Use mechanical handling equipment. Keep in suitable, closed containers for disposal. Avoid dust formation.

6.4 Reference to other sections
None.

SECTION 7: Handling and storage
7.1 Precautions for safe handling
7.1.1 Precautions for Safe Handling:
Do not breathe dust. Avoid contact with the skin and the eyes. Take off all contaminated clothing immediately.
When using, do not eat, drink or smoke.

7.1.2 Precautions in Case of Fire and Explosion:
No special precautions required.

7.2 Conditions for safe storage, including any incompatibilities
7.2.1 Storage instructions:
No special precautions required.

7.2.2 Store away from:
Incompatible with oxidizing agents.

7.2.3 Further Information on Storage Conditions:
Recommended storage temperature: -20°C.

7.3 Specific end use(s)
n.av.

SECTION 8: Exposure controls/personal protection
8.1 Control parameters

<table>
<thead>
<tr>
<th>Material</th>
<th>Limit Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

8.2 Exposure controls
8.2.1 Appropriate engineering controls
Keep container tightly closed.

8.2.2 Individual protection measures
8.2.2a Respiratory Protection: Not applicable.
8.2.2b Hand Protection: Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.

8.2.2c Eye Protection: tightly fitting safety goggles
8.2.2d Skin Protection: Not applicable.
8.2.2e Further Information: Observe wearing time limits: n.av.
8.2.3 Environmental exposure controls:

n.av.

SECTION 9: Physical and chemical properties
9.1 Information on basic physical and chemical properties
9.1.1 Form: solid

<table>
<thead>
<tr>
<th>Odour:</th>
<th>Colour:</th>
<th>Odour threshold:</th>
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</thead>
<tbody>
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<td>odourless</td>
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<td>n.av.</td>
</tr>
</tbody>
</table>

9.1.2 pH-value, undiluted: n.av.
9.1.3 pH-value, 1% aqueous solution: n.av.
9.1.4 Boiling point / Boiling - range (°C): n.av., Melting point / Melting range (°C): n.av.
9.1.5 Flash point (°C): n.av. closed cup
9.1.6 Ignition temperature (°C): n.av.
9.1.7 Flammability (EEC A10/A13): n.av.
9.1.8 Auto-flammability (EEC A16): n.av.
9.1.9 Oxidising properties: n.av.
9.1.10 Explosion hazard: n.ap.
9.1.11 Vapour pressure: n.av.
9.1.12 Vapour density (Air = 1): n.av.
9.1.13 Density (g/ml): n.av.
9.1.14 Solubility (in Water): moderate Soluble in: DMSO, DMF, acetonitrile
9.1.15 Partition coefficient, n-Octanol / Water: n.av.
9.1.16 Viscosity: n.ap.
9.1.16 Solvent content (m %): n.ap.
9.1.17 Thermal decomposition (°C): n.av.
9.1.18 Evaporation rate: n.av.
9.2 Other information
n.av.

SECTION 10: Stability and reactivity
10.1 Reactivity
None.
10.2 Chemical stability
Stable under normal conditions.
10.3 Possibility of hazardous reactions
No dangerous reaction known under conditions of normal use.
10.4 Conditions to avoid
Handle in accordance with good industrial hygiene and safety practice.
10.5 Incompatible materials
Incompatible with oxidizing agents.
10.6 Hazardous decomposition products
No decomposition if stored and applied as directed.

SECTION 11: Toxicological information
11.1 Information on toxicological effects
Acute Health Effects:
Inhalation: n.av.
Ingestion: n.av.
Skin Contact: n.av.
Skin corrosion / irritation: May cause skin irritation in susceptible persons.
Serious eye damage / irritation: May cause eye irritation with susceptible persons.
Respiratory or skin sensitisation: n.av.
Germ cell mutagenicity: n.av.
Carcinogenicity: n.av.
Reproductive toxicity: n.av.
STOT-single exposure: n.av.
STOT-repeated exposure: n.av.
Aspiration hazard: n.av.

11.1.1 Practical Experience
- n.av.
11.1.11
11.1.12 Practical Experience
Observations relevant for classification:
None.
Further Observations:
None.
Classification of the preparation has been done by calculation in accordance with EEC directives.

SECTION 12: Ecological information
12.1 Toxicity
This product has no known eco-toxicological effects.
12.2 Persistence and degradability
Readily biodegradable.
12.3 Bioaccumulative potential
n.av.
12.4 Mobility in soil
n.av.
12.5 Results of PBT and vPvB assessment
This mixture contains no substances which are assessed to be PBT or vPvB.
12.6 Other adverse effects
12.6.1 COD-Value, mg/l: n.av.
12.6.2 BOD₅-Value, mg/l: n.av.
12.6.3 AOX-Remarks: n.ap.
12.6.4 Significant Components: None.
12.6.5 Other adverse effects: None.

SECTION 13: Disposal considerations
13.1 Waste treatment methods
13.1.1 Recommendation: D 10 / R 1
Waste - Code - No.:
The Waste code should be assigned in discussion between the user, the producer and the waste disposal company.
In addition comply with the regional authorities.

13.1.2 Contaminated Packaging
Recommendation: Wash with suitable cleaner. Otherwise as described under Residues. Offer rinsed packaging material to local recycling facilities.
Safe Handling: As described under Residues. Handle in accordance with good industrial hygiene and safety practice.

SECTION 14: Transport information

<table>
<thead>
<tr>
<th>ADR</th>
<th>IMDG</th>
<th>IATA</th>
</tr>
</thead>
<tbody>
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<td>Not classified as dangerous in the meaning of transport regulations.</td>
<td>Not classified as dangerous in the meaning of transport regulations.</td>
</tr>
</tbody>
</table>

SECTION 15: Regulatory information

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

15.2 Chemical safety assessment:
n.ap.

SECTION 16: Other information

Text of H phases mentioned in Section 3

This datasheet has been compiled in accordance with EU regulation 2015/830. The statements in this Material Safety Data Sheet were made to the best of our knowledge and are as accurate as possible. They are given for information only. They do not constitute a contractual guarantee of a product’s properties. They must neither be altered nor transferred to other products.

Prepared by: CoSiChem AG, Ernst-Lemmer-Strasse 23, D - 35041 Marburg, info@cosichem.de, +49-6421-886563

Receipt of Data: 16.01.2018, att_0001