SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006
Aminoguanidine hydrochloride
Version 1.1 / REG EU
Revision Date: 01.03.2016
Date of first issue: 28.02.2012
Material no.: 165908
Print Date: 02.03.2016

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

1.1 Product identifier

Trade name: Aminoguanidine hydrochloride
Registration number: if available listed in Chapter. 3
CAS-No.: 1937-19-5
EC-No.: 217-707-7

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

Use of the Substance/Mixture: Chemical intermediate, Pharmacological substance

1.3 Details of the supplier of the safety data sheet

Company: NIGU Chemie GmbH
Beuthener Str. 2
84478 Waldkraiburg, Germany
Telephone: +49 8638 962-0
E-mail address of person responsible for the SDS: alz-pst@alzchem.com

1.4 Emergency telephone number

Emergency telephone number: +49 8621 86-2776
Fire Brigade, Site Trostberg, AlzChem AG

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)
Skin irritation, Category 2  H315: Causes skin irritation.
Eye irritation, Category 2  H319: Causes serious eye irritation.
Specific target organ toxicity - single exposure, Category 3  H335: May cause respiratory irritation.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)
Hazard pictograms:

Signal word: Warning

Hazard statements:
H315: Causes skin irritation.
H319: Causes serious eye irritation.
H335: May cause respiratory irritation.
Precautionary statements:

Prevention:
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

Response:
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P312 Call a POISON CENTER or doctor/physician if you feel unwell.

2.3 Other hazards
A PBT/vPvB evaluation is not available, since a chemical safety evaluation is not required / has not been carried out.
If dust occurs:
Mechanical irritation of skin and mucous linings of eyes and respiratory tract may occur.

SECTION 3: Composition/information on ingredients

3.1 Substances
Substance name: Carbazamidine monohydrochloride

Hazardous components:

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS-No.</th>
<th>EC-No.</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbazamidine monohydrochloride</td>
<td>1937-19-5</td>
<td>217-707-7</td>
<td>&gt;= 98</td>
</tr>
</tbody>
</table>

SECTION 4: First aid measures

4.1 Description of first aid measures
General advice: Seek medical advice in case of symptoms caused by eye or skin contact, inhalation or swallowing.

If inhaled: Move to fresh air.

In case of skin contact: Remove contaminated or saturated clothing. Wash off with plenty of water.

In case of eye contact: Open the eyes and rinse thoroughly with plenty of water.

If swallowed: Have the mouth rinsed with water. Drink plenty of water.
4.2 Most important symptoms and effects, both acute and delayed
   None known.

4.3 Indication of any immediate medical attention and special treatment needed
   Treatment:
   Treatment:
   No specific antidote known.
   Symptomatic treatment.
   If necessary, administer activated charcoal (10-20g) and sodium sulfate (Glauber salt, 20g).

SECTION 5: Firefighting measures

5.1 Extinguishing media
   Suitable extinguishing media: Water spray, foam, CO2, dry powder.

5.2 Special hazards arising from the substance or mixture
   Specific hazards during firefighting:
   Hazard-determining flue gases might develop in case of fire:
   Ammonia
   Carbon oxides
   Nitrous gases
   Hydrogen chloride (HCl)

5.3 Advice for firefighters
   Special protective equipment for firefighters:
   In the case of fire, wear respiratory protective equipment independent of surrounding air and chemical protective suit.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
   Personal precautions:
   Wear personal protective equipment; see section 8.
   Ensure sufficient ventilation. Avoid production of dust.

6.2 Environmental precautions
   Environmental precautions:
   Dike or contain spill.
   Prevent penetration into soil, stretches of water and drainage systems.

6.3 Methods and material for containment and cleaning up
   Methods for cleaning up:
   Use mechanical handling equipment.
   Avoid dust formation.
   Flush with plenty of water.
   Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

SECTION 7: Handling and storage
7.1 Precautions for safe handling

Advice on safe handling: Handle in accordance with good industrial hygiene and safety practice. Provide appropriate exhaust ventilation at machinery. Avoid dust formation.

Advice on protection against fire and explosion: Keep away from heat and sources of ignition.

Hygiene measures: Do not breathe vapours/dust. Avoid contact with skin, eyes and clothing. Take off clothing and shoes contaminated with product. Clean before reuse. Do not eat, drink or smoke while working. Wash hands, and/or face before breaks and when workday is finished. Keep away from food, drink and animal feedingstuffs.

7.2 Conditions for safe storage, including any incompatibilities

Further information on storage conditions: Keep containers tightly closed in a dry, cool and well-ventilated place.

Advice on common storage: Incompatible with oxidizing agents.

Other data: Stable under normal conditions. Keep in a dry place.

7.3 Specific end use(s)

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

8.2 Exposure controls

Personal protective equipment

Eye protection: Safety glasses

Hand protection

Material: Chloroprene, Recommendation: Camapren 722
Break through time: > 480 min
Glove thickness: 0.6 mm
Directive: DIN EN 374

Skin and body protection: Protective suit

Respiratory protection: Do not inhale gases, vapours, aerosols or dust - use respiratory protection equipment. Dust protection mask in accordance with EN 149 FFP2

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance: solid
Aminoguanidine hydrochloride

Colour : white to slight yellowish
Odour : odourless
pH : ca. 4.5 - 7.0, Concentration: 100 g/l (as aqueous solution)
Melting point/range : ca. 162 - 166 °C

Solubility(ies)
Water solubility : 815 g/l (20 °C)

9.2 Other information
Molecular weight : 110.55 g/mol

SECTION 10: Stability and reactivity

10.1 Reactivity

10.2 Chemical stability
Stable under normal conditions.

10.3 Possibility of hazardous reactions
Hazardous reactions : No hazardous reactions are known if properly handled and stored.

10.4 Conditions to avoid
Conditions to avoid : Keep away from heat.
                      Keep away from humidity.

10.5 Incompatible materials
Materials to avoid : Oxidizing agents

10.6 Hazardous decomposition products

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
Components:
Carbazamidine monohydrochloride:
Acute oral toxicity : Assessment: based on available data, the classification criteria are not met.
Remarks: The data are derived from the evaluations or test results achieved with similar products (conclusion by analogy).
Skin corrosion/irritation

Components:
Carbazamidine monohydrochloride:
Assessment: Irritating to skin.
Remarks: no data available

Serious eye damage/eye irritation

Components:
Carbazamidine monohydrochloride:
Assessment: Causes serious eye irritation.
Remarks: no data available

Respiratory or skin sensitisation

Components:
Carbazamidine monohydrochloride:
Remarks: no data available

Germ cell mutagenicity

Components:
Carbazamidine monohydrochloride:
Germ cell mutagenicity- Assessment: no data available

Carcinogenicity

Components:
Carbazamidine monohydrochloride:
Carcinogenicity - Assessment: no data available

Reproductive toxicity

Components:
Carbazamidine monohydrochloride:
Reproductive toxicity - Assessment: no data available

Further information

Components:
Carbazamidine monohydrochloride:
Remarks: The toxicological data given was inferred through conclusion by analogy.

SECTION 12: Ecological information

12.1 Toxicity
no data available
12.2 Persistence and degradability
no data available

12.3 Bioaccumulative potential
no data available

12.4 Mobility in soil
no data available

12.5 Results of PBT and vPvB assessment

Product:
Assessment: A PBT/vPvB evaluation is not available, since a chemical safety evaluation is not required / has not been carried out.

12.6 Other adverse effects

Product:
Additional ecological information: Do not allow to enter waste water drains, watercourse or soil.

Components:
Carbazamidine monohydrochloride:
Additional ecological information: No ecotoxicological studies with the product available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods
Product: Can be disposed of as a solid waste or burned in a suitable installation subject to local regulations.

Contaminated packaging: Contaminated packaging should ideally be emptied; it can then be recycled after having been decontaminated. Packaging which cannot be decontaminated should be disposed of like the material. Packaging, that can not be reused after cleaning must be disposed or recycled in accordance with all federal, national and local regulations.

SECTION 14: Transport information

14.1 UN number
Not regulated as a dangerous good

14.2 UN proper shipping name
Not regulated as a dangerous good

14.3 Transport hazard class(es)
Not regulated as a dangerous good
14.4 Packing group
Not regulated as a dangerous good

14.5 Environmental hazards
Not regulated as a dangerous good

14.6 Special precautions for user
Remarks: Not classified as dangerous in the meaning of transport regulations.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable for product as supplied.

SECTION 15: Regulatory information

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

The components of this product are reported in the following inventories:

EINECS: Listed
TSCA: Listed
NDSL: Listed
IECSC: Listed
TCSI: Listed

15.2 Chemical Safety Assessment
Registration of the substance (as per the REACH Ordinance) is not required until after 2018.

SECTION 16: Other information

Full text of other abbreviations:

(Q)SAR - (Quantitative) Structure Activity Relationship; ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; DIN - Standard of the German Institute for Standardisation; ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISO - International Organisation for Standardization; LC50 - Lethal Concentration to 50% of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; OECD - Organization for Economic Co-operation and Development; OPPTS - Of-
Aminoguanidine hydrochloride

Revision Date: 01.03.2016  Material no.:  Print Date: 02.03.2016

Further information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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