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|---------------|-------------------|----------|------------|
| Product Name: | DL-Serine | Version: | 1 |
| Product Code: | 845 | Date: | 2012-11-12 |
| Manufacturer: | AMINO GmbH | | |

1. Substance/ Preparation of the substance and name of the company

1.1 Substance name

DL-Serine

1.2 Name and address of the manufacturer and supplier

Amino GmbH
An der Zucker-Raffinerie 9
38373 Frellstedt
Germany

Phone: +49 5355/ 91 00 0
Fax: +49 5355/ 91 00 713
Emergency Information:
Emergency Telephone: +49 53 55/ 91 00 0 (from Monday to Friday between 8 am and 5 pm)
Contact for information: msds@amino.de

1.3 Use of substance/preparation

infusion and injection, pharmaceutical actives, intermediates, specialized nutritional products, cell culture media, excipients

2. Hazards identification

The present results for assessment are not applicable for classification by hazard characteristics according to the guideline 67/ 548/ EWG and CLP-regulation no. 1272/2008 and the appropriate national legislation.

3. Composition/ Information on ingredients

CAS No.: 302-84-1
EC-No. 206-130-6
Molecular weight: 105.09
Formula: $C_3H_7NO_3$
Chemical name: (\pm)-2-Amino-3-hydroxy-propanoic acid

4. First aid measures

4.1 General: --

4.2 Inhalation: Remove patient to fresh air and seek medical advice in case of irritation.

4.3 Skin contact: Rinse thoroughly with water.

4.4 Eye contact: Rinse thoroughly with water whilst lifting eyelids.

4.5 Ingestion (bigger amounts): In case of indisposition seek medical advice .

4.6 Notes to physicians: --

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Fire fighting measures

- 5.1 Fire extinguishing media: Water, powder, foam.
- 5.2 Particular hazards: Flammable. In case of fire hazardous fumes might emerge.
- 5.3 In case of fire might emerge: Nitrogen gases.

5. Accidental release measures

- 6.1 Precautionary measures: Avoid raising dust.
- 6.2 Clean up activities: Sweep up dry, dispose as waste and clean subsequently.

6. Handling and storage

- 7.1 Handling: No particular requirements.
- 7.2 Storage: Dry and in tightly closed containers at room temperature.
No particular requirements.
- 7.3 Storage class: 10 - 13

7. Exposure controls and personal protection

- 8.1 Additional points for the development of technical equipment: --
- 8.2 Personal protection: Breathing protection: dustmask P1
Eye protection: protective glasses
Hand protection: protective glove
Body protection: wearing of suitable protective clothes
- Informations on working hygiene: wash hands thoroughly after contact with the material

9. Physical and chemical properties

- 9.1 Appearance:
- Form: crystals
- Colour: white
- Odour: not available

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9.2 Security relevant data:

pH value: 5.5 – 6.0 (10 g/L water)

Melting temperature: 231-233°C

Boiling temperature: not available

Ignition temperature: not available

Combustion point: not available

Explosion limits: lower not available

upper not available

Density: 0.76 g/cm³

Bulk density: not available

Solubility in water (25°C) 42 g/L

Thermal decomposition: not available

10. Stability and reactivity

10.1 Incompatible materials and conditions to avoid:

Strong oxidizing agents

10.2 Hazardous combustion and decomposition products:

Toxic fumes of carbonmonoxide, carbondioxide, nitrogenoxides

11. Toxicological information

11.1 Acute toxicity:

Classification relevant LD/LC 50 values: not known

Primary irritation:

Ingestion of bigger amounts may *possibly* damage health. *May* cause eye irritation.

11.2 Chronic effects: --

11.3 Experiences on humans: --

11.4 More toxic informations:

Essential amino acid. No toxic health effects known when properly stored.

11.5 Other informations:

This material is to handle with the necessary care as for chemicals.

12. Ecological information

At proper handling and use no ecological harms are known.

Other informations: none

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13. Disposal information

Product:
Disposal according to legal regulations.

Packaging:
Disposal according to legal regulations.

14. Transportation information

No hazardous material according to the transportation regulations.

15. Regulatory information

15.1 Labelling according to the EU regulations

The present results for assessment are not applicable for classification by hazard characteristics according to the guideline 67/ 548/ EWG and CLP-regulation no. 1272/2008 and the appropriate national legislation, therefore no hazardous symbol, labelling and R-phrases / H-phrases and S-phrases / P-phrases are necessary.

15.2 German regulations:

Water hazardous classification: 1
Others: --

16. Other information

The data given herein are based on current knowledge and experience. There is no demand of completeness and the user should consider this Safety Data Sheet only as a guide.

Revision index

| reason of revision | valid from |
|-------------------------|------------|
| Version 1: new document | 2012-11-12 |