

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

- **1.1 Product identifier**
- **Trade name:** Spermine
- **Article number:** A0672
- **CAS Number:**  
71-44-3
- **EC number:**  
200-754-2
- **Registration number**  
A registration number is not available for this substance as the substance or its use are exempted from registration according to Article 2 REACH Regulation (EC) No 1907/2006, the annual tonnage does not require a registration, the registration is envisaged for a later registration deadline or it is a mixture.
- **1.2 Relevant identified uses of the substance or mixture and uses advised against**  
No further relevant information available.
- **Application of the substance / the mixture**  
Biochemistry  
Laboratory chemical
- **1.3 Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**  
AppliChem GmbH  
Ottoweg 4  
D-64291 Darmstadt
- Tel.: +49 (0)6151 93570  
Fax.: +49 (0)6151 935711  
msds@applichem.com
- **Further information obtainable from:** Dept. Compliance
- **1.4 Emergency telephone number:** +49(0)6151 93570 (Inside normal business hours)

## SECTION 2: Hazards identification

- **2.1 Classification of the substance or mixture**
- **Classification according to Regulation (EC) No 1272/2008**  
Skin Corr. 1B H314 Causes severe skin burns and eye damage.
- **2.2 Label elements**
- **Labelling according to Regulation (EC) No 1272/2008**  
The substance is classified and labelled according to the CLP regulation.
- **Hazard pictograms**



GHS05

- **Signal word** Danger
- **Hazard statements**  
H314 Causes severe skin burns and eye damage.
- **Precautionary statements**  
P280 Wear protective gloves/protective clothing/eye protection/face protection.  
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P313 Get medical advice/attention.

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

### SECTION 3: Composition/information on ingredients

- **3.1 Chemical characterisation: Substances**
- **CAS No. Description**  
71-44-3 Spermine
- **Identification number(s)**
- **EC number:** 200-754-2

### SECTION 4: First aid measures

- **4.1 Description of first aid measures**
- **General information:** Involve doctor immediately.
- **After inhalation:**  
Supply fresh air or oxygen; call for doctor.  
In case of unconsciousness place patient stably in side position for transportation.
- **After skin contact:**  
Wash with water and acidic soap.  
Immediately remove any clothing soiled by the product.  
Seek medical treatment.
- **After eye contact:**  
Rinse opened eye for several minutes under running water.  
Call a doctor immediately.
- **After swallowing:**  
Rinse out mouth.  
Do not induce vomiting; call for medical help immediately.
- **4.2 Most important symptoms and effects, both acute and delayed**  
No further relevant information available.
- **4.3 Indication of any immediate medical attention and special treatment needed**  
No further relevant information available.

### SECTION 5: Firefighting measures

- **5.1 Extinguishing media**
- **Suitable extinguishing agents:**  
CO<sub>2</sub>, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **5.2 Special hazards arising from the substance or mixture**  
Formation of toxic gases is possible during heating or in case of fire.  
Nitrogen oxides (NO<sub>x</sub>)  
carbon oxides (CO, CO<sub>2</sub>).  
Non-combustible.
- **5.3 Advice for firefighters**
- **Protective equipment:** Wear self-contained respiratory protective device.
- **Additional information**  
Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.

### SECTION 6: Accidental release measures

- **6.1 Personal precautions, protective equipment and emergency procedures**  
Avoid formation of dust.  
Do not inhale dust.  
Wear protective equipment. Keep unprotected persons away.

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- Avoid substance contact.
- Ensure adequate ventilation
- **6.2 Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
- **6.3 Methods and material for containment and cleaning up:**
  - Pick up mechanically.
  - Avoid generation of dusts.
  - Use neutralising agent.
  - Dispose contaminated material as waste according to item 13.
  - Ensure adequate ventilation.
  - Clean up affected area.
- **6.4 Reference to other sections**
  - See Section 7 for information on safe handling.
  - See Section 8 for information on personal protection equipment.
  - See Section 13 for disposal information.

## SECTION 7: Handling and storage

- **7.1 Precautions for safe handling**
  - Thorough dedusting.
  - Any unavoidable deposit of dust must be regularly removed.
- **Information about fire - and explosion protection:** The product is not flammable.
- **7.2 Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** No special requirements.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:**
  - Keep container tightly sealed.
  - Open receptacle only under localised extractor facilities.
  - Store under lock and key and with access restricted to technical experts or their assistants only.
- **Recommended storage temperature:** +2 - +8 °C
- **Storage class:** 8 B
- **7.3 Specific end use(s)** No further relevant information available.

## SECTION 8: Exposure controls/personal protection

- **Additional information about design of technical facilities:** No further data; see item 7.
- **8.1 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.
- **8.2 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.
  - Vacuum clean contaminated clothing. Do not blow or brush off contamination.
  - Avoid contact with the eyes and skin.
- **Respiratory protection:**
  - Required when dusts are generated.
  - Filter P3
- **Protection of hands:**



Protective gloves

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The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

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.

• **For the permanent contact gloves made of the following materials are suitable:**

Nitrile rubber, NBR

Recommended thickness of the material:  $\geq 0.11$  mm

Value for the permeation: Level  $\geq 480$  min

• **As protection from splashes gloves made of the following materials are suitable:**

Nitrile rubber, NBR

Recommended thickness of the material:  $\geq 0.11$  mm

Value for the permeation: Level  $\geq 480$  min

• **Eye protection:** Gauze goggles

• **Body protection:**

Use protective suit.

Protective clothing should be selected specifically for the working place, depending on concentration and quantity of the hazardous substances handled.

## SECTION 9: Physical and chemical properties

• **9.1 Information on basic physical and chemical properties**

• **General Information**

• **Appearance:**

Form: Solidified mass

Colour: Whitish

• **Odour:** No data available

• **Odour threshold:** Not determined.

• **pH-value:** 11-13

• **Change in condition**

Melting point/freezing point: 28 °C

Initial boiling point and boiling range: 150 °C

• **Flash point:**  $>110$  °C

• **Flammability (solid, gas):** Product is not flammable.

• **Ignition temperature:**

Decomposition temperature: Not determined.

• **Auto-ignition temperature:** Not determined.

• **Explosive properties:** Product does not present an explosion hazard.

• **Explosion limits:**

Lower: Not determined.

Upper: Not determined.

• **Vapour pressure:** Not applicable.

• **Density at 20 °C:** 0.937 g/cm<sup>3</sup>

• **Relative density** Not determined.

• **Vapour density** Not applicable.

• **Evaporation rate** Not applicable.

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- |                                                  |                                            |
|--------------------------------------------------|--------------------------------------------|
| · <b>Solubility in / Miscibility with water:</b> | Soluble.                                   |
| · <b>Partition coefficient: n-octanol/water:</b> | Not determined.                            |
| · <b>Viscosity:</b><br>Dynamic:<br>Kinematic:    | Not applicable.<br>Not applicable.         |
| · <b>9.2 Other information</b>                   | No further relevant information available. |

## SECTION 10: Stability and reactivity

- **10.1 Reactivity** No dangerous reactions known.
- **10.2 Chemical stability**
- **Thermal decomposition / conditions to be avoided:**  
No decomposition if used according to specifications.
- **10.3 Possibility of hazardous reactions** No dangerous reactions known.
- **10.4 Conditions to avoid** No further relevant information available.
- **10.5 Incompatible materials:**  
acids  
acid anhydrides  
acid chlorides  
oxidizing agent
- **10.6 Hazardous decomposition products:** In the event of fire: See chapter 5

## SECTION 11: Toxicological information

- **11.1 Information on toxicological effects**
- **Acute toxicity** Based on available data, the classification criteria are not met.
- **LD/LC50 values relevant for classification:**  
Quantitative data on the toxicological effect of this product are not available.
- **Primary irritant effect:**
- **Skin corrosion/irritation**  
Causes severe skin burns and eye damage.
- **Serious eye damage/irritation**  
Causes severe skin burns and eye damage.
- **After inhalation:** Caustic effect on skin and mucous membranes.
- **Respiratory or skin sensitisation** Based on available data, the classification criteria are not met.
- **CMR effects (carcinogenity, mutagenicity and toxicity for reproduction)**
- **Germ cell mutagenicity** Based on available data, the classification criteria are not met.
- **Carcinogenicity** Based on available data, the classification criteria are not met.
- **Reproductive toxicity** Based on available data, the classification criteria are not met.
- **STOT-single exposure** Based on available data, the classification criteria are not met.
- **STOT-repeated exposure** Based on available data, the classification criteria are not met.
- **Aspiration hazard** Based on available data, the classification criteria are not met.

## SECTION 12: Ecological information

- **12.1 Toxicity**
- **Aquatic toxicity:** No further relevant information available.
- **12.2 Persistence and degradability** No further relevant information available.
- **12.3 Bioaccumulative potential** No further relevant information available.
- **12.4 Mobility in soil** No further relevant information available.
- **Additional ecological information:**
- **General notes:**  
Must not reach sewage water or drainage ditch undiluted or unneutralised.

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Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water  
Do not allow to enter waters, waste water, or soil.

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

## SECTION 13: Disposal considerations

- **13.1 Waste treatment methods**
- **Recommendation**  
Chemicals must be disposed of in compliance with the respective national regulations.  
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.  
Packagings that may not be cleansed are to be disposed of in the same manner as the product.

## SECTION 14: Transport information

- |                                                                                                                                                                                               |                                                                                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| • <b>14.1 UN-Number</b><br>• <b>ADR, IMDG, IATA</b>                                                                                                                                           | UN3259                                                                                               |
| • <b>14.2 UN proper shipping name</b><br>• <b>ADR, IMDG, IATA</b>                                                                                                                             | AMINES, SOLID, CORROSIVE, N.O.S. (Spermine)                                                          |
| • <b>14.3 Transport hazard class(es)</b><br>• <b>ADR</b><br>                                               | 8 (E2) Corrosive substances.<br>8                                                                    |
| • <b>IMDG, IATA</b><br>                                                                                    | 8 Corrosive substances.<br>8                                                                         |
| • <b>14.4 Packing group</b><br>• <b>ADR, IMDG, IATA</b>                                                                                                                                       | II                                                                                                   |
| • <b>14.5 Environmental hazards:</b><br>• <b>Marine pollutant:</b>                                                                                                                            | No                                                                                                   |
| • <b>14.6 Special precautions for user</b><br>• <b>Danger code (Kemler):</b><br>• <b>EMS Number:</b><br>• <b>Segregation groups</b><br>• <b>Stowage Category</b><br>• <b>Segregation Code</b> | Warning: Corrosive substances.<br>80<br>F-A,S-B<br>Alkalis<br>A<br>SG35 Stow "separated from" acids. |

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|----------------------------------------------------------------------------------|-------------------------------------------------|------------------------------------------------------------|
| · <b>14.7 Transport in bulk according to Annex II of Marpol and the IBC Code</b> |                                                 | Not applicable.                                            |
| · <b>Transport/Additional information:</b>                                       |                                                 |                                                            |
| · <b>ADR</b>                                                                     |                                                 |                                                            |
| · <b>Limited quantities (LQ)</b>                                                 | 1 kg                                            |                                                            |
| · <b>Excepted quantities (EQ)</b>                                                | Code: E2                                        |                                                            |
|                                                                                  | Maximum net quantity per inner packaging: 30 g  |                                                            |
|                                                                                  | Maximum net quantity per outer packaging: 500 g |                                                            |
| · <b>Transport category</b>                                                      |                                                 |                                                            |
|                                                                                  | 2                                               |                                                            |
| · <b>Tunnel restriction code</b>                                                 |                                                 |                                                            |
|                                                                                  | E                                               |                                                            |
| · <b>IMDG</b>                                                                    |                                                 |                                                            |
| · <b>Limited quantities (LQ)</b>                                                 | 1 kg                                            |                                                            |
| · <b>Excepted quantities (EQ)</b>                                                | Code: E2                                        |                                                            |
|                                                                                  | Maximum net quantity per inner packaging: 30 g  |                                                            |
|                                                                                  | Maximum net quantity per outer packaging: 500 g |                                                            |
| · <b>UN "Model Regulation":</b>                                                  |                                                 | UN 3259 AMINES, SOLID, CORROSIVE, N.O.S. (SPERMINE), 8, II |

## SECTION 15: Regulatory information

- **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **Directive 2012/18/EU**
- **Named dangerous substances - ANNEX I** Substance is not listed.
- **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

## SECTION 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.

- **Department issuing SDS:** Dept. Compliance
- **Contact:** Mr. Th. Stöckle
- **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)
  - IMDG: International Maritime Code for Dangerous Goods
  - IATA: International Air Transport Association
  - GHS: Globally Harmonised 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
  - PBT: Persistent, Bioaccumulative and Toxic
  - vPvB: very Persistent and very Bioaccumulative
  - Skin Corr. 1B: Skin corrosion/irritation – Category 1B
- **\* Data compared to the previous version altered.**

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