

## SAFETY DATA SHEET

Date of Original Issue: November 21, 2005  
Revision Number: 5  
Revision Date: January 12, 2015

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

#### 1.1 PRODUCT IDENTIFIER

Product name: Polymyxin B Sulfate  
CAS# : 1405-20-5  
EINECS# : 215-774-7  
INDEX# : None.  
REACH reg.# : Deadlines according to REACH art. 23, has not expired.

#### 1.2 RELEVANT IDENTIFIED USES OF THE SUBSTANCE OR MIXTURE AND USES ADVISED AGAINST

Product Code: Anti-infective/antibiotic; ophthalmic, topical  
A141, A142, A143, A147  
Product Formulation Name: Polymyxin B Sulfate  
Chemical Family: Sulfate salt of basic polypeptide derived from *B. polymyxa*  
Synonyms: Aerosporin

#### 1.3 DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET

Xellia Pharmaceuticals ApS  
Dalslandsgade 11  
2300 Copenhagen S  
Denmark

Responsible person for the safety data sheet (e-mail): sales@xellia.com

#### 1.4 EMERGENCY TELEPHONE NUMBER

Xellia: 32 64 5500 in Denmark  
Xellia: + 45 32 64 5500 outside of Denmark  
Poison Control Center (USA): 877 800 5553  
CANUTEC (Canadian Transportation): 613 996 6666  
CHEMTREC (USA Transportation): 800 424 9300  
UN #: No applicable information found

COMMENTS: To the best of our knowledge, this MSDS conforms to the requirements of USA OSHA 29 CFR 1910.1200, 1907/2006/EC, 453/2010/EC and Canadian Hazardous Products Act. You are urged to consider laws and regulations applicable to your state and country.

### SECTION 2: HAZARDS IDENTIFICATION

#### 2.1 CLASSIFICATION OF THE SUBSTANCE OR MIXTURE

EC: Xn (harmful); R20/22 (Harmful by inhalation and if swallowed)  
CLP: Acute Tox. 4;H332 (Harmful if inhaled) Acute Tox. 4;H302 (Harmful if swallowed.)

#### 2.2 LABEL ELEMENTS:

Contents: Polymyxin B Sulfate



WARNING

H302: Harmful if swallowed.  
H332: Harmful if inhaled.  
P261: Avoid breathing dust/fume/gas/mist/vapors/spray.

#### 2.3 OTHER HAZARDS:

None known.

PBT/vPvB: The substance is not considered PBT/vPvB according to criteria in Annex XIII.

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## SECTION 3: Composition/information on ingredients

### 3.1 SUBSTANCES:

| Chemical Name       | Weight % | CAS#      | EINECS#   | INDEX# | REACH reg.# |
|---------------------|----------|-----------|-----------|--------|-------------|
| Polymyxin B Sulfate | 100      | 1405-20-5 | 215-774-7 | None   | None        |

Comments: Product composition ranges shown are typical values for health, safety and environmental use and are not intended as specifications.

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## SECTION 4: First aid measures

### 4.1 DESCRIPTION OF FIRST AID MEASURES:

**Eye contact:** Flush eyes for 15 minutes with plenty of water. Get medical attention immediately.

**Skin contact:** Remove contaminated clothing and clean before reuse. Wash all exposed areas of skin with plenty of soap and water. Get medical attention if irritation or rash develops.

**Ingestion:** Do not induce vomiting. Call a physician or poison control center. Do not give anything by mouth to an unconscious person. Immediately transport to a medical care facility and see a physician.

**Inhalation:** Move individual to fresh air. Get medical attention if breathing difficulty occurs. If not breathing, provide artificial respiration assistance (mouth-to-mouth) and call a physician immediately.

### 4.2 MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED:

ACUTE TOXICITY:

**Eyes, Skin, Ingestion and Inhalation Exposure:** None expected.

CHRONIC TOXICITY:

**Target Organ Statement:** Kidney and nervous system, based on clinical use as described in the Physicians Desk Reference.

**Carcinogenicity:** Testing not conducted.

**Mutagenicity:** Testing not conducted.

REPRODUCTIVE TOXICITY:

**Reproductive Effects:** Testing not conducted.

**Teratogenic Effects:** Not teratogenic in rats or rabbits. FDA Pregnancy Category B.

SENSITIZATION:

Allergic rashes have been rarely reported.

MEDICAL CONDITIONS AGGRAVATED:

None known.

### 4.3 INDICATIONS OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED:

In case of discomfort or unconsciousness: Show this safety data sheet to a physician or emergency ward.

ANTIDOTE INFORMATION: No specific antidote available.

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## SECTION 5: Firefighting measures

### 5.1 EXTINGUISHING MEDIA:

Water, carbon dioxide, dry chemical, foam, or other alternatives.

### 5.2 SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE:

|                                       |                                                       |
|---------------------------------------|-------------------------------------------------------|
| <b>General hazards:</b>               | May be combustible at high temperature.               |
| <b>Hazardous combustion products:</b> | Carbon monoxide, carbon dioxide, and nitrogen oxides. |
| <b>Flash point and method:</b>        | No applicable information identified.                 |
| <b>Flammable limits:</b>              | No applicable information identified.                 |
| <b>Autoignition temperature:</b>      | No applicable information identified.                 |
| <b>Flammable class:</b>               | No applicable information identified.                 |
| <b>Sensitivity to static charge:</b>  | No applicable information identified.                 |

### 5.3 ADVICE FOR FIREFIGHTERS:

No applicable information identified. Use water spray to cool fire-exposed containers and structures.

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## SECTION 6: Accidental release measures

### 6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY RESPONSE:

Wear personal protective equipment to avoid exposure – see section 8. Avoid generation of dust.

### 6.2 ENVIRONMENTAL PRECAUTIONS:

**Water spill:** Do not empty into drains.

**Land spill:** Vacuum material with appropriate dust collection in place. Be aware of potential for dust explosion when using electrical equipment. If a vacuum is not available, lightly mist material and remove by sweeping or wet wiping. Wear appropriate equipment including eye protection, to avoid exposure.

**Release notes:** If the spill could potentially enter any waterway, including intermittent dry creeks, contact the local authorities. In the USA, contact the USA Coast Guard National Response Center toll free 800 424 8802.

### 6.3 METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING UP:

Contain dry material by lightly misting with water, followed by sweeping carefully so as not to generate dust, or vacuuming. Ensure the vacuum is fitted with an appropriate dust filter so dust is not re-introduced into the air. Be aware of the potential for dust explosion when using electrical equipment.

### 6.4 REFERENCES TO OTHER SECTIONS:

See section 1 for emergency contact information, section 8 for personal protective equipment details, and section 13 for disposal information.

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## SECTION 7: Handling and storage

### 7.1 PRECAUTIONS FOR SAFE HANDLING:

Engineering controls are recommended to ensure adequate ventilation such that exposures do not exceed  $1\text{mg}/\text{m}^3$  for an eight-hour time weighted average exposure. With adequate ventilation, respiratory protection may not be needed.

In the absence of adequate ventilation, suitable respiratory protection is required. The need for additional personal protective equipment including respirators, eye, and skin protection should be based on a job-specific risk assessment. Additional personal protective equipment may include chemical-resistant gloves and body covering, goggles, and face shield. Adequate eye protection is always required.

**Work hygienic practices:** Facilities storing or using this material should be equipped with an emergency eyewash and safety shower. Good personal hygiene practices should always be followed.

### 7.2 CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES:

Keep dry and away from sources of ignition. Below  $25^\circ\text{C}$  ( $77^\circ\text{F}$ ) for up to five years in original unopened sales container.

For Denmark: Store securely, inaccessible for unauthorised persons, separate from food, feedstuff etc.

### 7.3 SPECIFIC END USES:

See section 1.

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## SECTION 8: Exposure controls/personal protection

### 8.1 CONTROL PARAMETERS:

OSHA'S hazardous components (29 CFR 1910.1020)

#### EXPOSURE LIMITS AND GUIDELINES

|                                       | OSHA PEL |                        | ACGIH TLV |                        | OTHER OEL (TWA) |                        |
|---------------------------------------|----------|------------------------|-----------|------------------------|-----------------|------------------------|
|                                       | ppm      | $\text{mg}/\text{m}^3$ | ppm       | $\text{mg}/\text{m}^3$ | ppm             | $\text{mg}/\text{m}^3$ |
| Polymyxin B Sulfate (CAS# :1405-20-5) | NL       | NL                     | NL        | NL                     | NL              | 1.0                    |

**Other country exposure limits:** Not listed.

### 8.2 EXPOSURE CONTROLS:

**Appropriate engineering controls:** If dust is generated, provide local exhaust ventilation to control airborne levels below the OEL listed above.

#### PERSONAL PROTECTIVE EQUIPMENT:

**Eyes and face:** Wear safety glasses with side shields or goggles as appropriate when handling this material.

**Skin:** Chemical resistant gloves (nitrile or latex) and body covering.

**Respiratory:** Use an approved respirator suitable to provide level of protection required.

**Comments:** This product is not specifically listed by OSHA as hazardous. This product may cause kidney and nervous system damage from overexposure to polymyxin B sulfate, based on clinical use as described in the Physicians Desk Reference. Under conditions of overexposure, this product may be hazardous.

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## SECTION 9: Physical and chemical properties

### 9.1 INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES:

|                                                       |                                          |
|-------------------------------------------------------|------------------------------------------|
| Physical state:                                       | Solid.                                   |
| Appearance:                                           | Crystalline powder.                      |
| Color:                                                | White to buff.                           |
| Odor:                                                 | Odorless.                                |
| Odor threshold:                                       | Not relevant.                            |
| pH:                                                   | No applicable information found.         |
| Vapour pressure:                                      | No applicable information found.         |
| Vapour density:                                       | 0.6                                      |
| Evaporation rate:                                     | No applicable information found.         |
| Freezing point:                                       | Not applicable.                          |
| Melting point:                                        | No applicable information found.         |
| Boiling point:                                        | No applicable information found.         |
| Flash point:                                          | No applicable information found.         |
| Decomposition temperature:                            | No applicable information found.         |
| Flammability:                                         | No applicable information found.         |
| Upper/lower flammability or explosive limits (vol-%): | No applicable information found.         |
| Auto-ignition temperature:                            | No applicable information found.         |
| Soluble in water:                                     | Soluble.                                 |
| Density:                                              | No applicable information found.         |
| Specific gravity:                                     | app. 1.                                  |
| Viscosity:                                            | No applicable information found.         |
| Explosive properties:                                 | No applicable information found.         |
| Oxidising properties:                                 | No applicable information found.         |
| Molecular formula:                                    | Variable – sulfate salts of polypeptides |
| Molecular weight:                                     | No applicable information found.         |
| Coefficient of oil and water:                         | No applicable information found.         |

### 9.2 OTHER INFORMATION:

None relevant.

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## SECTION 10: Stability and reactivity

**10.1 REACTIVITY:** No applicable information found.

**10.2 CHEMICAL STABILITY:** Stable at normal temperatures and pressures.

**10.3 POSSIBILITY OF HAZARDOUS REACTIONS:** No applicable information found.

**10.4 CONDITIONS TO AVOID:** Fires, hot surfaces, and ignition sources.

**10.5 INCOMPATIBLE MATERIALS:** Nitrogen oxides, carbon monoxide, carbon dioxide.

**10.6 HAZARDOUS DECOMPOSITION PRODUCTS:** Nitrogen oxides, carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.

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## SECTION 11: Toxicological information

### 11.1 INFORMATION ON TOXICOLOGICAL EFFECTS:

|                                     |                                                                                                |
|-------------------------------------|------------------------------------------------------------------------------------------------|
| Acute dermal LD <sub>50</sub> :     | Not determined.                                                                                |
| Acute oral LD <sub>50</sub> :       | 790 mg/kg (mouse).                                                                             |
| Acute inhalation LC <sub>50</sub> : | Not determined.                                                                                |
| Eye effects:                        | Not determined.                                                                                |
| Skin effects:                       | Not determined.                                                                                |
| Sensitization:                      | Allergic skin rash possible.                                                                   |
| Target organs:                      | Kidney and nervous system based on clinical use as described in the Physicians Desk Reference. |
| Carcinogenicity:                    | Testing not conducted.                                                                         |
| Listed by IARC:                     | No                                                                                             |
| Listed by NTP:                      | No                                                                                             |
| Listed by OSHA:                     | No                                                                                             |
| Mutagenicity:                       | Testing not conducted.                                                                         |
| Reproductive effects:               | Testing not conducted.                                                                         |
| Teratogenic effects:                | Not teratogenic in rats or rabbits. FDA Pregnancy Category B.                                  |

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## SECTION 12: Ecological information

**12.1 TOXICITY:** No applicable information found.

**12.2 PERSISTENCE AND DEGRADABILITY:** No applicable information found.

**12.3 BIOACCUMULATIVE POTENTIAL:** No applicable information found.

**12.4 MOBILITY IN SOIL:** No applicable information found.

**12.5 RESULTS OF PBT AND vPvB ASSESSMENT:** The substance is not considered PBT/vPvB according to criteria in Annex XIII.

**12.6 OTHER ADVERSE EFFECTS:** The substance is possibly harmful for the aquatic environment, due to its antibiotic properties.

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## SECTION 13: Disposal considerations

### 13.1 WASTE TREATMENT METHODS:

**Disposal (includes Spills, Empty Containers):** Dispose of any cleanup materials and waste residue according to applicable laws and regulations.

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## SECTION 14: Transport information

**14.1 UN NUMBER:** Not regulated.

**14.2 UN PROPER SHIPPING NAME:** Not relevant.

**14.3 TRANSPORT HAZARD CLASS(ES):** Not relevant.

**14.4 PACKING GROUP:** Not relevant.

**14.5 ENVIRONMENTAL HAZARDS:** None.

**14.6 SPECIAL PRECAUTIONS FOR USER:** None.

**14.7 TRANSPORT IN BULK ACCORDING TO ANNEX II MARPOL 73/78 AND THE IBC CODE:** Not relevant.

USA DOT (DEPARTMENT OF TRANSPORTATION)

**Proper Shipping Name:** Not regulated

CANADA TRANSPORT OF DANGEROUS GOODS

**Proper Shipping Name:** Not regulated.

AIR (ICAO/IATA)

**Proper Shipping Name:** Not regulated.

VESSEL (IMO/IMDG)

**Proper Shipping Name:** Not regulated.

EUROPEAN TRANSPORTATION:

**ADR/RID HAZARD CLASSIFICATION:** Not regulated.

U.S. CUSTOMS HARMONIZATION NUMBER: Not regulated.

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## SECTION 15: Regulatory information

### 15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATION/LEGISLATION SPECIFIC FOR THE SUBSTANCE OR MIXTURE:

This section contains selected regulatory information for possible use by Xellia Pharmaceuticals. This section is not intended to be a complete listing of all applicable regulations. You are urged to consider laws and regulations applicable to your state and country.

#### EUROPEAN COMMUNITY

**Regulation (EC) No 1907/2006** of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH),

**Council Directive 94/33/EC of 22 June 1994 on the protection of young people at work:**

Not regulated. However, it is recommended that the product is not used by persons under 18 years of age.

**Council Directive 92/85/EEC of 19 October 1992 on the introduction of measures to encourage improvements in the safety and health at work of pregnant workers and workers who have recently given birth or are breastfeeding:**

Not regulated. However, it is recommended, that the employer assess the working conditions and, if there is any risk to the safety or health and any effects on the pregnancy or breastfeeding of workers, take the necessary measures to adjust the working conditions.

**Implementation of directive 2001/82/EC of the European Parliament and of the council of 6 November 2001 in the Community code relating to veterinary medical products:**

Denmark: The Danish Medicines Agency (Lægemiddelstyrelsen) must be notified that this substance is produced, imported, exported, stored, sold, delivered, packed, possessed or in other ways handled in Denmark (Bekendtgørelse nr. 1226 af 7. December 2005 om omgang med visse stoffer og produkter hvis indhold kan anvendes som lægemidler til dyr.).  
For other countries: Please contact national authorities regarding notification of the substance.

**UNITED STATES FEDERAL REGULATIONS**

**Superfund Amendments and Reauthorization Act (SARA) Title III 311/312 hazard categories:**

**Fire:** No      **Pressure generating:** No      **Reactivity:** No      **Acute:** No      **Chronic:** No

**313 Reportable Ingredients:** Not listed.

**Title III notes:**

**Comprehensive Response, Compensation, and Liability Act (CERCLA)**

**CERCLA RQ:** Not listed

**Toxic Substances Control Act (TSCA)**

**TSCA Regulatory:** Not listed.

**National Response Center:** US Coast Guard National Center Response Telephone number is 800 424 8802.

**UNITED STATES STATE REGULATIONS**

**California Proposition 65:** Not listed.

**CANADA**

**Workplace Hazardous Material Information System (WHMIS) hazard symbol and classification**

**WHMIS Controlled:** Not regulated.

**Canadian Environmental Protection Act:** Not listed.

**15.2 CHEMICAL SAFETY ASSESSMENT:**

No CSR.

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**SECTION 16: Other information'**

**Reason for issue:** EC regulation, REACH and CLP

**Contact Information:** See Section 1

**Revision summary:** 1-16. This document has undergone significant changes and should be reviewed in its entirety.

|                            | <b>HMIS RATING</b> | <b>NFPA RATING</b> |
|----------------------------|--------------------|--------------------|
| <b>Health</b>              | ND                 | ND                 |
| <b>Flammability</b>        | ND                 | ND                 |
| <b>Physical hazard</b>     | ND                 | ND                 |
| <b>Personal protection</b> | ND                 | ND                 |
| <b>Incompatibilities</b>   | ND                 | ND                 |

**Data sources:** Micromedex DrugDex; Mosby's Drug Consult; Physicians Desk Reference; RTECS

**Disclaimer:** Information given herein is offered in good faith as accurate, but without guarantee. Conditions of use and suitability of the product for particular uses are beyond our control; all risks of use of the product are therefore assumed by the user. Nothing is intended as a recommendation for uses that infringe valid patents or as extending license under valid patents. Appropriate warnings and safe handling procedures should be provided to handlers and users.

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**Glossary:**

ACGIH – American Conference of Governmental Hygienists  
AIHA – American Industrial Hygiene Association  
BEI – Biological Exposure Index  
CAS – Chemical Abstract Service Registry Number  
CSR – Chemical Safety Report  
CERCLA – Comprehensive Environmental Response Compensation and Liability Act of 1989  
CHEMTREC – Chemical Transportation Emergency Center  
DOT – Department of Transportation (USA)  
EC – European Community  
EINECS – European Inventory of Existing Chemical Substances  
ELINCS – European List of New Chemical Substances  
EPA – Environmental Protection Agency

FDA – United States Food and Drug Administration  
HEPA- High Efficiency Particulate Air (Filter)  
HMIS – Hazardous Material Information System  
IARC- International Agency on Research for Cancer  
ICAO/IATA – International Civil Aviation Organization/International Air Transport Association  
IMO – International Maritime Organization  
LEL – Lower Explosive Limit  
MSDS – Material Safety Data Sheet  
MSHA – Mine Safety and Health Administration  
NA – Not Applicable  
NADA – New Animal Drug Application  
NAIF – No Applicable Information Found  
NCI – National Cancer Institute  
ND – Not Determined  
NFPA – National Fire Protection Association  
NIOSH – National Institute for Occupational Health and Safety  
NL – Not Listed  
NOS – Not Otherwise Specified  
NTP – National Toxicology Program  
OEL – Occupational Exposure Limit  
OSHA – Occupational Safety and Health Administration  
PEL – Permissible Exposure Limit (USA)  
RCRA – Resource Conservation and Recovery Act  
RQ – Reportable Quantity  
RTECS – Registry of Toxic Effects of Chemical Substances  
SARA – Superfund Amendments and Reauthorization Act  
STEL – Short Term Exposure Limit  
TLV – Threshold Limit Value  
TPQ – Threshold Planning Quantity  
TSCA – Toxic Substances Control Act  
TWA – Time Weighted Average  
UEL – Upper Explosive Limit  
UN – United Nations  
WEEL – Workplace Environmental Exposure Level (USA - AIHA)