1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

Pfizer Inc
Pfizer Pharmaceuticals Group
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New York, New York 10017
1-212-573-2222

Pfizer Ltd
Ramsgate Road
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CT13 9NJ
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+00 44 (0)1304 616161

Emergency telephone number:
CHEMTREC (24 hours): 1-800-424-9300
Contact E-Mail: pfizer-MSDS@pfizer.com

Material Name: Daunorubicin Hydrochloride Freeze-dried for Solution for Injection

<table>
<thead>
<tr>
<th>Trade Name:</th>
<th>Daunoblastin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synonyms:</td>
<td>Daunoblastina, Daunoblastine, Daunorubicin HCl, Daunomycin</td>
</tr>
<tr>
<td>Chemical Family:</td>
<td>Mixture</td>
</tr>
<tr>
<td>Intended Use:</td>
<td>Pharmaceutical product used as Antineoplastic</td>
</tr>
</tbody>
</table>

2. HAZARDS IDENTIFICATION

Appearance: 2 vials : Dry filled vial  with a  Clear aqueous solution

Signal Word: WARNING

Statement of Hazard:
Harmful if swallowed.
May damage fertility or the unborn child.
Suspected of causing cancer.
Suspected of causing genetic defects.

Additional Hazard Information:

Short Term: Harmful if swallowed (based on animal data). Drugs of this class have been associated with rare, but potentially serious cardiac events. These events have not been observed from occupational exposures, however, those with preexisting cardiovascular illnesses may be at increased risk from exposure.

Long Term: Repeat-dose studies in animals have shown a potential to cause adverse effects on testes, the developing fetus.

Known Clinical Effects:
Effects on blood and blood-forming organs have also occurred. Drugs of this class have been associated with rare, but potentially serious cardiac events. These events have not been observed from occupational exposures, however, those with preexisting cardiovascular illnesses may be at increased risk from exposure.

EU Indication of danger: Harmful
Toxic to reproduction, Category 2
Carcinogenic: Category 3
Mutagenic: Category 3

EU Hazard Symbols:

EU00229
2. HAZARDS IDENTIFICATION

EU Risk Phrases:
- R22 - Harmful if swallowed.
- R40 - Limited evidence of a carcinogenic effect
- R60 - May impair fertility.
- R61 - May cause harm to the unborn child.
- R68 - Possible risk of irreversible effects.

Australian Hazard Classification (NOHSC):

Note:
This document has been prepared in accordance with standards for workplace safety, which require the inclusion of all known hazards of the active substance or its intermediates regardless of the potential risk. The precautionary statements and warnings included may not apply in all cases. Your needs may vary depending upon the potential for exposure in your workplace.

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS Number</th>
<th>EU EINECS/ELINCS List</th>
<th>EU Classification</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daunorubicin Hydrochloride</td>
<td>23541-50-6</td>
<td>245-723-4</td>
<td>Xn;R22</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Repr. Cat. 2: R60-61</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Carc. Cat. 3:R40</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Muta. Cat. 3:R68</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS Number</th>
<th>EU EINECS/ELINCS List</th>
<th>EU Classification</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium chloride</td>
<td>7647-14-5</td>
<td>231-598-3</td>
<td>Not Listed</td>
<td>*</td>
</tr>
<tr>
<td>Mannitol</td>
<td>69-65-8</td>
<td>200-711-8</td>
<td>Not Listed</td>
<td>*</td>
</tr>
<tr>
<td>Water for injection</td>
<td>7732-18-5</td>
<td>231-791-2</td>
<td>Not Listed</td>
<td>*</td>
</tr>
</tbody>
</table>

Additional Information:
* Proprietary
Ingredient(s) indicated as hazardous have been assessed under standards for workplace safety.

For the full text of the R phrases mentioned in this Section, see Section 16

4. FIRST AID MEASURES

Eye Contact:  Flush with water while holding eyelids open for at least 15 minutes. Seek medical attention immediately.

Skin Contact: Remove contaminated clothing. Flush area with large amounts of water. Use soap. Seek medical attention.

Ingestion: Never give anything by mouth to an unconscious person. Wash out mouth with water. Do not induce vomiting unless directed by medical personnel. Seek medical attention immediately.

Inhalation: Remove to fresh air and keep patient at rest. Seek medical attention immediately.

Symptoms and Effects of Exposure:  For information on potential signs and symptoms of exposure, See Section 2 - Hazards Identification and/or Section 11 - Toxicological Information.
### 5. FIRE FIGHTING MEASURES

<table>
<thead>
<tr>
<th>Extinguishing Media:</th>
<th>Use carbon dioxide, dry chemical, or water spray.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazardous Combustion Products:</td>
<td>Formation of toxic gases is possible during heating or fire.</td>
</tr>
<tr>
<td>Fire Fighting Procedures:</td>
<td>During all fire fighting activities, wear appropriate protective equipment, including self-contained breathing apparatus.</td>
</tr>
<tr>
<td>Fire / Explosion Hazards:</td>
<td>Fine particles (such as dust and mists) may fuel fires/explosions.</td>
</tr>
</tbody>
</table>

### 6. ACCIDENTAL RELEASE MEASURES

| Health and Safety Precautions: | Personnel involved in clean-up should wear appropriate personal protective equipment (see Section 8). Minimize exposure. |
| Measures for Cleaning / Collecting: | Contain the source of spill if it is safe to do so. Collect spilled material by a method that controls dust generation. A damp cloth or a filtered vacuum should be used to clean spills of dry solids. Clean spill area thoroughly. |
| Measures for Environmental Protections: | Place waste in an appropriately labeled, sealed container for disposal. Care should be taken to avoid environmental release. |
| Additional Consideration for Large Spills: | Non-essential personnel should be evacuated from affected area. Report emergency situations immediately. Clean up operations should only be undertaken by trained personnel. |

### 7. HANDLING AND STORAGE

| General Handling: | Restrict access to work area. Minimize dust generation and accumulation. If tablets or capsules are crushed and/or broken, avoid breathing dust and avoid contact with eyes, skin, and clothing. When handling, use appropriate personal protective equipment (see Section 8). Wash thoroughly after handling. Releases to the environment should be avoided. Review and implement appropriate technical and procedural waste water and waste disposal measures to prevent occupational exposure or environmental releases. Potential points of process emissions of this material to the atmosphere should be controlled with dust collectors, HEPA filtration systems or other equivalent controls. |
| Storage Conditions: | Store as directed by product packaging. |

### 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Refer to available public information for specific member state Occupational Exposure Limits.

<table>
<thead>
<tr>
<th>Daunorubicin Hydrochloride</th>
<th>Pfizer OEL TWA-8 Hr: 0.1 µg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium chloride</td>
<td>Latvia OEL - TWA: 5 mg/m³</td>
</tr>
<tr>
<td></td>
<td>Lithuania OEL - TWA: 5 mg/m³</td>
</tr>
</tbody>
</table>

| Engineering Controls: | Engineering controls should be used as the primary means to control exposures. General room ventilation is adequate unless the process generates dust, mist or fumes. Keep airborne contamination levels below the exposure limits listed above in this section. |
8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Environmental Exposure Controls: Refer to specific Member State legislation for requirements under Community environmental legislation.

Personal Protective Equipment: Refer to applicable national standards and regulations in the selection and use of personal protective equipment (PPE).

- **Hands:** Impervious, disposable gloves (double suggested) are recommended if skin contact with drug product is possible and for bulk processing operations.
- **Eyes:** Wear safety glasses or goggles if eye contact is possible.
- **Skin:** Impervious disposable protective clothing is recommended if skin contact with drug product is possible and for bulk processing operations.
- **Respiratory protection:** If the applicable Occupational Exposure Limit (OEL) is exceeded, wear an appropriate respirator with a protection factor sufficient to control exposures to below the OEL.

9. PHYSICAL AND CHEMICAL PROPERTIES

- **Physical State:** Dry-filled vial / Aqueous solution in vial
- **Molecular Formula:** Mixture
- **Color:** White / Colorless
- **Molecular Weight:** Mixture

10. STABILITY AND REACTIVITY

- **Chemical Stability:** Stable under normal conditions of use.
- **Conditions to Avoid:** Fine particles (such as dust and mists) may fuel fires/explosions.
- **Incompatible Materials:** As a precautionary measure, keep away from strong oxidizers

11. TOXICOLOGICAL INFORMATION

**General Information:** The information included in this section describes the potential hazards of the individual ingredients.

**Acute Toxicity: (Species, Route, End Point, Dose)**

- **Daunorubicin Hydrochloride**
  - Rat Oral LD50 336 mg/kg
  - Rat Para-periosteal LD50 13 mg/kg
  - Rat Intraperitoneal LD50 20 mg/kg
  - Mouse Oral LD50 205 mg/kg
  - Mouse Intravenous LD50 8.6 mg/kg

- **Mannitol**
  - Rat Oral LD50 13500 mg/kg
  - Mouse Oral LD 50 22 g/kg

- **Sodium chloride**
  - Rat Oral LD50 3000 mg/kg
  - Mouse Oral LD50 4000 mg/kg

**Irritation / Sensitization: (Study Type, Species, Severity)**
11. TOXICOLOGICAL INFORMATION

Sodium chloride
Eye Irritation  Rabbit  Moderate
Skin Irritation  Rabbit  Mild

Repeated Dose Toxicity: (Duration, Species, Route, Dose, End Point, Target Organ)

Reproduction & Developmental Toxicity: (Study Type, Species, Route, Dose, End Point, Effect(s))

**Daunorubicin Hydrochloride**
- Embryo / Fetal Development  Rabbit  Oral  0.05 mg/kg/day  LOAEL  Teratogenic, Fetotoxicity
- Embryo / Fetal Development  Rat  Oral  4 mg/kg/day  LOAEL  Teratogenic
- Embryo / Fetal Development  Rabbit  Intravenous  1.5 mg/kg  LOAEL  Fetotoxicity, Fertility

Genetic Toxicity: (Study Type, Cell Type/Organism, Result)

**Daunorubicin Hydrochloride**
- *In Vitro* Bacterial Mutagenicity (Ames)  *Salmonella*, *E. coli*  Positive
- *In Vitro* Cytogenetics  Human Lymphocytes  Positive
- *In Vivo* Sister Chromatid Exchange  Mouse Bone marrow  Positive
- *In Vitro* Micronucleus  Human Lymphocytes  Positive

Carcinogen Status:  
- See below

**Daunorubicin Hydrochloride**
- IARC:  2B - Possibly Carcinogenic to Humans

12. ECOLOGICAL INFORMATION

Environmental Overview:  
Environmental properties have not been investigated. Releases to the environment should be avoided.

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods:  
Dispose of waste in accordance with all applicable laws and regulations. Member State specific and Community specific provisions must be considered. Considering the relevant known environmental and human health hazards of the material, review and implement appropriate technical and procedural waste water and waste disposal measures to prevent occupational exposure and environmental release. It is recommended that waste minimization be practiced. The best available technology should be utilized to prevent environmental releases. This may include destructive techniques for waste and wastewater.

14. TRANSPORT INFORMATION

The following refers to all modes of transportation unless specified below.

Not regulated for transport under USDOT, EUADR, IATA, or IMDG regulations.
15. REGULATORY INFORMATION

EU Symbol: T
EU Indication of danger: Harmful
Toxic to reproduction, Category 2
Carcinogenic: Category 3
Mutagenic: Category 3

EU Risk Phrases:
R22 - Harmful if swallowed.
R40 - Limited evidence of a carcinogenic effect
R60 - May impair fertility.
R61 - May cause harm to the unborn child.
R68 - Possible risk of irreversible effects.

EU Safety Phrases:
S22 - Do not breathe dust.
S53 - Avoid exposure - obtain special instructions before use.
S36/37 - Wear suitable protective clothing and gloves.

OSHA Label:
WARNING
Harmful if swallowed.
May damage fertility or the unborn child.
Suspected of causing cancer.
Suspected of causing genetic defects.

Canada - WHMIS: Classifications
WHMIS hazard class:
Class D, Division 1, Subdivision B
Class D, Division 2, Subdivision A

Daunorubicin Hydrochloride
California Proposition 65 development toxicity initial date 7/1/90
Australia (AICS): Present
EU EINECS/ELINCS List 245-723-4

Sodium chloride
Inventory - United States TSCA - Sect. 8(b) Present
Australia (AICS): Present
EU EINECS/ELINCS List 231-598-3

Mannitol

PZ00229
15. REGULATORY INFORMATION

| Inventory - United States TSCA - Sect. 8(b) | Present |
| REACH - Annex IV - Exemptions from the obligations of Register: | Present |
| EU EINECS/ELINCS List | 200-711-8 |

Water for injection

| Inventory - United States TSCA - Sect. 8(b) | Present |
| REACH - Annex IV - Exemptions from the obligations of Register: | Present |
| EU EINECS/ELINCS List | 231-791-2 |

16. OTHER INFORMATION

Text of R phrases mentioned in Section 3

R22 - Harmful if swallowed.
R40 - Limited evidence of a carcinogenic effect
R60 - May impair fertility.
R61 - May cause harm to the unborn child.
R68 - Possible risks of irreversible effects.

Data Sources:
Pfizer proprietary drug development information. Publicly available toxicity information.

Reasons for Revision:
Updated Section 2 - Hazard Identification. Updated Section 3 - Composition / Information on Ingredients. Updated Section 4 - First Aid Measures. Updated Section 7 - Handling and Storage. Updated Section 8 - Exposure Controls / Personal Protection. Updated Section 15 - Regulatory Information.

Prepared by:
Product Stewardship Hazard Communication
Pfizer Global Environment, Health, and Safety Operations

Pfizer Inc believes that the information contained in this Material Safety Data Sheet is accurate, and while it is provided in good faith, it is without warranty of any kind, expressed or implied. If data for a hazard are not included in this document there is no known information at this time.

End of Safety Data Sheet