

**Order  
Number**

**Customer  
Number**

**1. Identification of the substance/preparation and of the company/undertaking**

**Product name** : Doxorubicin, Hydrochloride **Catalog #** : 324380  
**Supplier** : Manufactured by EMD Biosciences, Inc.  
 10394 Pacific Center Court  
 San Diego, CA 92121  
 (858)450-5558/(800)854-3417  
 FAX: (858)453-3552

**Chemical formula** : C<sub>27</sub>H<sub>29</sub>NO<sub>11</sub> · HCl

**Synonym** : Not available.

**Emergency telephone number** : **Call Chemtrec®**  
**(800)424-9300 (within U.S.A.)**  
**(703)527-3887 (outside U.S.A.)**

**2. Composition / information on ingredients**

**Substance/Preparation** : Substance

Chemical name*	CAS No.	EC Number	Symbol	R-Phrases
1) Doxorubicin, Hydrochloride	25316-40-9	246-818-3	T	R45, R46

**3. Hazards identification**

**Physical/chemical hazards** : Not applicable.

**Human health hazards** : **WARNING!**  
 BIRTH DEFECT HAZARD  
 CONTAINS MATERIAL WHICH CAN CAUSE BIRTH DEFECT.  
 MAY BE HARMFUL IF SWALLOWED.  
 MAY CAUSE DAMAGE TO THE FOLLOWING ORGANS: BLOOD, HEART,  
 GASTROINTESTINAL TRACT, CARDIOVASCULAR SYSTEM, IMMUNE SYSTEM,  
 BONE MARROW, HEAD.

**4. First-aid measures**

**First-Aid measures**

**Inhalation** : If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

**Ingestion** : Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

**Skin Contact** : In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

**Eye Contact** : Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention.

**Aggravating conditions** : Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

**5. Fire-fighting measures**

**Flammability of the Product** : May be combustible at high temperature.

**Extinguishing Media**

**Suitable** : SMALL FIRE: Use DRY chemical powder.  
 LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

**Hazardous thermal (de)composition products** : These products are carbon oxides (CO, CO<sub>2</sub>), nitrogen oxides (NO, NO<sub>2</sub>...), halogenated compounds.

**Special fire-fighting procedures** : Fire fighters should wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear.

**Protection of fire-fighters** : Be sure to use an approved/certified respirator or equivalent.

## 6. Accidental release measures

- Personal precautions** : Splash goggles. Full suit. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.
- Small Spill and Leak** : Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.
- Large Spill and Leak** : Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system

## 7. Handling and storage

- Handling** : Keep locked up. Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe dust. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label.
- Storage** : Keep container tightly closed. Keep container in a cool, well-ventilated area. Do not store above 20°C (68°F).
- Packaging materials**
- Recommended use** : Use original container.

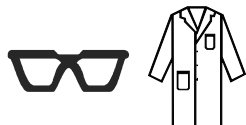
## 8. Exposure controls/personal protection

- Engineering measures** : Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.
- Hygiene measures** : Wash hands, forearms, and face thoroughly after handling compounds and before eating, smoking, using lavatory, and at the end of day.

<u>Ingredient Name</u>	<u>Occupational Exposure Limits</u>
1) Doxorubicin, Hydrochloride	Not available.

### Personal protective equipment

- Respiratory system** : Wear appropriate respirator when ventilation is inadequate.
- Skin and body** : Lab coat.
- Eyes** : Safety glasses.
- Protective Clothing (Pictograms)** :



## 9. Physical and chemical properties

- Physical state** : Solid. (Crystalline solid.)
- Color** : Yellow to red. (Light.)
- Molecular Weight** : 580 g/mole
- Melting Point** : Decomposition temperature: 216.06°C (420.9°F)
- Solubility** : Easily soluble in cold water.
- Flash point** : Not available.
- Explosive properties** : Risks of explosion of the product in presence of mechanical impact: Not available.  
Risks of explosion of the product in presence of static discharge: Not available.

## 10. Stability and reactivity

- Stability** : The product is stable.
- Conditions to avoid** : Sensitive to light.
- Hazardous Decomposition Products** : These products are carbon oxides (CO, CO<sub>2</sub>), nitrogen oxides (NO, NO<sub>2</sub>...), halogenated compounds.

## 11. Toxicological information

**RTECS #** : QI9295900

### Local effects

**Skin irritation** : Not available.

**Acute toxicity** : LD50: Not available.  
LC50: Not available.

**Chronic toxicity** : Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

**Other Toxic Effects on Humans** : Not available.  
No specific information is available in our database regarding the other toxic effects of this material for humans.  
May cause tumors. In vitro studies in mammal cells have shown mutagenic action.  
  
Not available.

### Specific effects

**Carcinogenic effects** : Classified None. by NIOSH.

**Mutagenic effects** : Classified POSSIBLE for human. Mutagenic for mammalian germ and somatic cells based on *in vitro* studies.

**Reproduction toxicity** : Classified Reproductive system/toxin/male [PROVEN].

**Teratogenic effects** : Not available.

## 12. Ecological information

**Ecotoxicity** : Not available.

**Toxicity of the Products of Biodegradation** : The products of degradation are less toxic than the product itself.

## 13. Disposal considerations

**Methods of disposal; Waste of residues; Contaminated packaging** : Waste must be disposed of in accordance with federal, state and local environmental control regulations.

## 14. Transport information

### International transport regulations

#### Land - Road/Railway

**ADR/RID Class** : Not controlled under ADR (Europe).

#### Sea

**IMDG Class** : Not controlled under IMDG.

#### Air

**IATA-DGR Class** : Not controlled under IATA.

**Special Provisions for Transport** : Not applicable.

## 15. Regulatory information

### EU Regulations

**Hazard symbol(s)** :



**Classification** : Toxic

**Risk Phrases** : R45- May cause cancer.  
R46- May cause heritable genetic damage.

**Safety Phrases** : S22- Do not breathe dust.  
S28.1- After contact with skin, wash immediately with plenty of water.  
S36/37- Wear suitable protective clothing and gloves.  
S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).  
S53- Avoid exposure - obtain special instructions before use.

**Contains** : - Doxorubicin, Hydrochloride

**U.S. Federal Regulations** : TSCA: No products were found.

SARA 302/304/311/312 extremely hazardous substances: No products were found.  
 SARA 302/304 emergency planning and notification: No products were found.  
 SARA 302/304/311/312 hazardous chemicals: Doxorubicin, Hydrochloride  
 SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Doxorubicin, Hydrochloride:  
 delayed health hazard  
 SARA 313 toxic chemical notification and release reporting: No products were found.  
 Clean Water Act (CWA) 307: No products were found.  
 Clean Water Act (CWA) 311: No products were found.  
 Clean air act (CAA) 112 accidental release prevention: No products were found.  
 Clean air act (CAA) 112 regulated flammable substances: No products were found.  
 Clean air act (CAA) 112 regulated toxic substances: No products were found.

**HCS Classification**

: CLASS: May cause cancer.  
 CLASS: Target organ effects.

**State Regulations**

: California prop. 65: This product contains the following ingredients for which the State of California has found to cause reproductive harm (male) which would require a warning under the statute: Doxorubicin, Hydrochloride  
 California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: Doxorubicin, Hydrochloride  
 Pennsylvania RTK: Doxorubicin, Hydrochloride: (special hazard, generic environmental hazard)

**WHMIS (Canada)**

: CLASS D-2A: Material causing other toxic effects (VERY TOXIC).  
 No products were found.

**16. Other information**

**Hazardous Material Information System (U.S.A.)**

Health	*	2
Fire Hazard		1
Reactivity		0
Personal Protection		a

**National Fire Protection Association (U.S.A.)**



**Notice to Reader**

*To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.*

**Date of issue**

Catalog # 324380

3/20/2003.

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