



SAFETY DATA SHEET

In compliance with Regulation (EC) n. 1907/2006 and (EU)n. 453/2010 (Annex I)

Issuing Date 25-Aug-2009

Revision Date 14-Mar-2013

Revision Number 3

SECTION 1. Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product Name	EPIRUBICIN HYDROCHLORIDE
Chemical Name:	5,12-naphthacenedione, 8-(hydroxyacetyl)-10-[(3-amino-2,3,6-trideoxy-a-L-arabino-hexopyranosyl)oxy]-7,8,9,10-tetrahydro-6,8,11-trihydroxy-1-methoxy-, hydrochloride, (8S, 10S)- 4'-epidoxorubicin hydrochloride; Farmorubicin; Pharmorubicin
Synonyms	
Formula	$C_{27}H_{30}ClNO_{11}$
CAS	56390-09-1
EINECS	260-145-2
Index Number	Not available
Reach Registration Number	Not available

1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified Use	Active Pharmaceutical Ingredient
Uses advised against	No information available

1.3. Details of the supplier of the safety data sheet

Manufacturer, Supplier	Sicor S.r.l. via Terrazzano, n.77, 20017 Rho (MI), Italy Telephone (+39) 02 931971 Sicor S.r.l. Localita' S.Alessandro, 13048 Santhia' (VC), Italy Telephone (+39) 0161 936611
------------------------	---

For further information, please contact

E-mail Address msds.sicor@sicor.it

1.4. Emergency telephone number

Emergency Telephone Number (+39) 02 931971

SECTION 2. Hazards identification

2.1. - Classification of the substance or mixture

REGULATION (EC) No 1272/2008

Chemical Name	CLP/GHS classification
5,12-naphthacenedione, 8-(hydroxyacetyl)-10-[(3-amino-2,3,6-trideoxy-a-L-arabino-hexopyranosyl oxy)-7,8,9,10-tetrahydro-6,8,11-trihydroxy-1-methoxy-, hydrochloride, (8S-cis)-	Carc. 1B H350; Muta. 1B H340; Repr. 1B H360D; Acute tox 4 H302, H312, H332

Classification according to EU Directives 67/548/EEC or 1999/45/EC

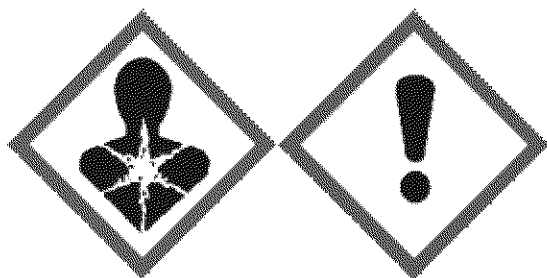
Chemical Name	EU Classification
5,12-naphthacenedione, 8-(hydroxyacetyl)-10-[(3-amino-2,3,6-trideoxy-a-L-arabino-hexopyranosyl oxy)-7,8,9,10-tetrahydro-6,8,11-trihydroxy-1-methoxy-, hydrochloride, (8S-cis)-	T - R45, R46, R61; Xn - R20/21/22

Full text of phrases reported in section 16

2.2. Label Elements

Signal Word

Danger



Hazard Statements

H350 - May cause cancer
H340 - May cause genetic defects
H360D - May damage the unborn child
H302 - Harmful if swallowed
H312 - Harmful in contact with skin
H332 - Harmful if inhaled

Precautionary Statements

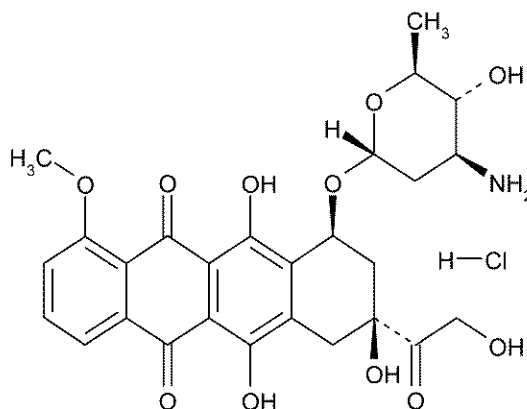
P260 - Do not breathe dust
P262 - Do not get in eyes, on skin, or on clothing
P280 - Wear protective gloves/protective clothing/eye protection/face protection
P312 - Call a POISON CENTER or doctor/physician if you feel unwell

2.3. Other hazards

Not available

SECTION 3. Composition/information on ingredients

3.1. Substances



Structure

Chemical Name	EC No.	REACH Reg. No.	CAS-No	Weight %
5,12-naphthacenedione, 8-(hydroxyacetyl)-10-[(3-amino-2,3,6-trideoxy-α-L-arabinohexopyranosyl)oxy]-7,8,9,10-tetrahydro-6,8,11-trihydroxy-1-methoxy-, hydrochloride, (8S-cis)-	EEC No. 260-145-2	Not available	56390-09-1	100

3.2. Mixtures

N.A.

SECTION 4. First aid measures

4.1. Description of first-aid measures

Eye Contact	Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
Skin Contact	Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes
Ingestion	Clean mouth with water, only if the person is in conscious. Get medical attention.
Inhalation	If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Remove from exposure, lie down.

4.2. Most important symptoms and effects, both acute and delayed

Most Important Symptoms/Effects

Irritation:	Moderately irritating to eyes, skin and respiratory system.
Corrosivity:	No information available
Sensitization	No information available
Eyes:	May cause: Irritation
Skin:	May cause, Skin necrosis, Psoriasis, Exfoliative dermatitis, Herpes zoster, Skin ulcer, Maculopapular rash, Urticaria, Eruption, Discoloration of skin, Erythema, Alopecia, Skin rash
Inhalation:	May cause. Asthma. Bronchitis. Cough. Hyperventilation. Pharyngitis. Rhinitis. Sinusitis.
Ingestion:	May cause, Anorexia, Diarrhea, Nausea, Mucositis

4.3. Indication of immediate medical attention and special treatment needed

Notes to Physician	Treat symptomatically.
---------------------------	------------------------

SECTION 5. Fire-fighting measures

5.1. Extinguishing media

Suitable Extinguishing Media

Water spray. Carbon dioxide (CO₂). Foam. Dry powder.

Unsuitable extinguishing media

No information available.

5.2. Special hazards arising from the substance or mixture

Thermal decomposition can lead to release of irritating gases and vapors. Combustible material.

5.3. Advice for firefighters

Special protective equipment for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

SECTION 6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid contact with dusts/fumes/mists/vapors.

6.2. Environmental precautions

Prevent entry into waterways, sewers, basements or confined areas. Prevent further leakage or spillage if safe to do so.

6.3. Methods and materials for containment and cleaning up

Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Clean up with sodium hypochlorite 5% solution. If emergency, enforce internal emergency plan.

6.4. Reference to other sections

See sections 8 and 13 for additional information.

SECTION 7. Handling and storage

7.1. Precautions for Safe Handling

Handling

Avoid contact with skin, eyes and clothing. Handle in accordance with good industrial hygiene and safety practice. Do not breathe vapors/dust. Provide appropriate exhaust ventilation at places where dust is formed.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Keep at temperatures between 2 °C and 8°C. Keep container tightly closed. Protect from light. Keep away from heat. Store in accordance with local regulations.

7.3. Specific end use(s)

Exposure Scenario

No information available.

Other Guidelines

No information available

SECTION 8. Exposure controls/personal protection

8.1. Control parameters

Exposure Limits OEL (Occupational Exposure Level)= 0.02 ug/m³

Biological occupational exposure limits Not Available

Derived No Effect Level (DNEL) No information available.

Predicted No Effect Concentration (PNEC) No information available.

8.2. Exposure controls

Engineering Measures Closed system to avoid exposure. Provide engineering control, according to Teva Guidelines.

Personal protective equipment

Eye Protection Approved safety goggles/glasses.

Skin and Body Protection Long sleeved clothing.

Hand Protection Rubber/latex/neoprene or other suitable chemical resistant gloves.

Respiratory Protection Approved full face respirator P3 or airline respirator.

Environmental exposure controls Contaminated protective equipments must be considered as dangerous waste.

SECTION 9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance Red Orange Powder.
Odour Odourless
Odour Threshold No information available

pH No information available.

Boiling Point/Range No information available.

Evaporation Rate No information available

Flammability Limits in Air

Upper No information available.

Lower No information available.

Vapor Density No information available.

Solubility Soluble in Methanol Slightly
soluble in Ethanol Practically
Insoluble in Acetone

Autoignition Temperature No information available

Viscosity No information available

Oxidizing Properties No information available

Melting Point/Range 174 °C

Flash Point No information available.

Flammability (solid, gas) No information available.

Vapor Pressure No information available.

Relative Density No information available.

Water Solubility Soluble in water

Decomposition Temperature No information available

Explosive Properties No information available

9.2 Other information

Molecular Weight 579.99

SECTION 10. Stability and reactivity

10.1. Reactivity

No data available.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Hazardous polymerization does not occur.

10.4. Conditions to avoid

Temperatures above 81°C.

10.5. Incompatible materials.

Strong oxidizing agents.

10.6. Hazardous decomposition products

Toxic fumes of. Carbon monoxide (CO). Carbon dioxide (CO₂). Nitrogen oxides (NO_x). Hydrogen chloride gas.

SECTION 11. Toxicological information

11.1. Information on toxicological effects

Acute Toxicity

Product Information

LD50 Oral rat	1350 mg/kg
LD50 Subcutaneous rat	17.6 mg/kg
LD50 Oral mouse	> 2000 mg/kg
LD50 Subcutaneous mouse	37.5 mg/kg
LD50 Intravenous rat	17 mg/kg
LD50 Intravenous mouse	31.5 mg/kg
LD50 Intraperitoneal rat	10.8 mg/kg

Irritation:	Moderately irritating to eyes, skin and respiratory system.
Corrosivity:	No information available
Sensitization	No information available
Eyes:	May cause: Irritation
Skin:	May cause, Skin necrosis, Psoriasis, Exfoliative dermatitis, Herpes zoster, Skin ulcer, Maculopapular rash, Urticaria, Eruption, Discoloration of skin, Erythema, Alopecia, Skin rash
Inhalation:	May cause. Asthma. Bronchitis. Cough. Hyperventilation. Pharyngitis. Rhinitis. Sinusitis.
Ingestion:	May cause, Anorexia, Diarrhea, Nausea, Mucositis

Chronic toxicity

Carcinogenicity

Reproductive Toxicity

Mutagenic Effects

STOT - repeated exposures

STOT - single exposure

Other information

Central nervous system:

Cardiovascular system:

Not listed by IARC, NTP and OSHA. Treatment-related acute myelogenous leukemia has been reported in women treated with epirubicin-based adjuvant chemotherapy regimens. In fertility studies in rats, males were given the product daily for 9 weeks and mated with females that were given the product daily for 2 weeks prior to mating and through day 7 of gestation. When 0.3 mg/kg/day was administered to both sexes, no pregnancies resulted. No effects on mating behaviour or fertility were observed at 0.1 mg/kg/day, but male rats had atrophy of the testes and epididymis, and reduced spermatogenesis. The 0.1 mg/kg/day dose also caused embryoletality. An increased incidence of fetal growth retardation was observed in these studies at 0.03 mg/kg/day. Multiple daily doses of product to rabbits and dogs also caused atrophy of male reproductive organs. Animal mutation data reported (category 2). The product was mutagenic in vitro to bacteria (Ames test) either in the presence or absence of metabolic activation and to mammalian cells (HGPRT assay in V79 Chinese hamster lung fibroblasts) in the absence but not in the presence of metabolic activation. The product was clastogenic in vitro (chromosome aberrations in human lymphocytes) both in the presence and absence of metabolic activation and was also clastogenic in vivo (chromosome aberration in mouse bone marrow).

No information available

No information available

May cause headache, May cause dizziness, May cause lethargy

May cause, Arrhythmia, ECG changes

SECTION 12. Ecological information

12.1. Toxicity

Ecotoxicity effects

No information available

12.2. Persistence and degradability

Hazard of persistence may be possible

12.3. Bioaccumulative potential

Bioaccumulation may be possible

12.4. Mobility in soil

No information available

12.5. Results of PBT and vPvB assessment

No information available.

12.6. Other adverse effects

Endocrine Disruptor Information

Not available for data lacking

SECTION 13. Disposal considerations

13.1. Waste treatment methods

Waste from Residues/Unused Products

Dispose of in accordance with local regulations.

Contaminated Packaging

Empty containers should be taken for local recycling, recovery or waste disposal.

SECTION 14. Transport information

14.1.

UN-No

2811

14.2.

Proper Shipping Name

Toxic solid, organic, n.o.s (Epirubicin HCl)

14.3 Transport hazard class(es)

ADR / RID / ADN

6.1

IMDG

6.1

IATA / ICAO

6.1

14.4.

Packing Group

III

14.5. Environmental hazards

Marine Pollutant

No

14.6. Special precautions for users

Subsidiary Class

-

Emergency No.

F-A, S-A

ADR/RID-Labels

6.1

ADR / RID Classification Code

T2

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Technical name

Not available

Ship type

Not Available

Annex II

Not available

SECTION 15. Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

- Dir. 67/548/EC and 1999/45/EC and successive modifications
- Regulation 1907/2006/EC (REACH) and successive modifications
- Regulation 1272/2008 (CLP) and successive modifications
- Regulation 453/2010/EC Annex I
- D.Lgs. 81/2008 and successive modifications and Dir. 2009/161/EU

International Inventories

All of the components in the product are on the following Inventory lists:

TSCA	Listed
EINECS/ELINCS	-
DSL/NDSL	-
PICCS	-
ENCS	-
IECSC	-
AICS	-
KECL	-

Legend

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

PICCS - Philippines Inventory of Chemicals and Chemical Substances

ENCS - Japan Existing and New Chemical Substances

IECSC - China Inventory of Existing Chemical Substances

AICS - Australian Inventory of Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

15.2. Chemical Safety Assessment

No information available

SECTION 16. Other information

EU Directive 2001/58/EC

R-phrases

R45 - May cause cancer

R46 - May cause heritable genetic damage

R61 - May cause harm to the unborn child

R20/21/22 - Harmful by inhalation, in contact with skin and if swallowed

S-phrases

S22 - Do not breathe dust

S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible)

S24/25 - Avoid contact with skin and eyes

CLP/GHS - Regulation

Hazards Statements

H350 - May cause cancer

H340 - May cause genetic defects

H360D - May damage the unborn child

H302 - Harmful if swallowed

H312 - Harmful in contact with skin

H332 - Harmful if inhaled

Precautionary Statements

P260 - Do not breathe dust

P262 - Do not get in eyes, on skin, or on clothing

P280 - Wear protective gloves/protective clothing/eye protection/face protection

P312 - Call a POISON CENTER or doctor/physician if you feel unwell

Training appropriate for workers is required to ensure protection of human health and environment.

Source of data

SAX'S - DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS
VERSCHUEREN - HANDBOOK OF ENVIRONMENTAL DATA ON ORGANICS CHEMICALS
THE MERCK INDEX
KLEEMANN - PHARMACEUTICAL SUBSTANCES
R.T.E.C.S. - REGISTRY OF TOXIC EFFECTS OF CHEMICAL SUBSTANCES
STN DATA BANK
BRETHERRICK'S - HANDBOOK OF REACTIVE CHEMICAL HAZARDS
A.C.G.I.H. - AMERICAN CONFERENCE OF INDUSTRIAL HYGIENISTS
N.L.M. - NATIONAL LIBRARY OF MEDICINE
H.S.D.B. - HAZARDOUS SUBSTANCES DATA BANK
N.I.O.S.H. - NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
N.T.P. - NATIONAL TOXICOLOGY PROGRAM
I.A.R.C. - INTERNATIONAL AGENCY FOR RESEARCH ON CANCER
ChemAdvisor
Chemspider database

Issuing Date 25-Aug-2009

Revision Date 14-Mar-2013

Revision Note

Not applicable

Disclaimer

The information provided on this SDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, and disposal of the designated material and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of Safety Data Sheet