SAFETY DATA SHEETS

According to Globally Harmonized System of Classification and Labelling of Chemicals (GHS) - Sixth revised edition

Version: 1.0

Creation Date: Aug 11, 2017

Revision Date: Aug 11, 2017

1. Identification

1.1 GHS Product identifier

Product name	isotretinoin

1.2 Other means of identification

Product number	-
Other names	cis-retinoic acid

1.3 Recommended use of the chemical and restrictions on use

Identified uses	For industry use only.
Uses advised against	no data available

2. Hazard identification

2.1 Classification of the substance or mixture

Reproductive toxicity, Category 1B

Hazardous to the aquatic environment, short-term (Acute) - Category Acute 1

Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 1

2.2 GHS label elements, including precautionary statements

Pictogram(s)

Signal word	Danger
Hazard statement(s)	H360 May damage fertility or the unborn child
	H400 Very toxic to aquatic life
	H410 Very toxic to aquatic life with long lasting effects
Precautionary statement(s)	
Prevention	P201 Obtain special instructions before use.
	P202 Do not handle until all safety precautions have been read and understood.
	P280 Wear protective gloves/protective clothing/eye protection/face protection.
	P273 Avoid release to the environment.
Response	P308+P313 IF exposed or concerned: Get medical advice/ attention.
	P391 Collect spillage.
Storage	P405 Store locked up.
Disposal	P501 Dispose of contents/container to ...

2.3 Other hazards which do not result in classification

none

3. Composition/information on ingredients

3.1 Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
isotretinoin	isotretinoin	4759-48-2	none	100%

4. First-aid measures

4.1 Description of necessary first-aid measures

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms/effects, acute and delayed

SYMPTOMS: Symptoms of exposure to this compound may include dryness and itching of the skin and conjunctivitis. It can also cause pruritus, epistaxis, dry nose and mouth, rash, temporary thinning of the hair, cheilitis, fatigue, skin fragility, skeletal hyperstosis, musculoskeletal symptoms and chest pain. Other symptoms, rarely seen, include peeling of the palms and soles, skin infections, nonspecific urogenital findings, nonspecific gastrointestinal symptoms and increased susceptibility to sunburn. This compound has been associated with a number of cases of pseudotumor cerebri (benign intracranial hypertension) characterized by the following symptoms: headache, papilledema, nausea, vomiting and visual disturbances. It can also cause fetal abnormalities if ingested while pregnant. Other symptoms include ocular irritation, blurred vision, arthralgias, facial dermatitis, xerosis, minor nosebleed inflamed urethral meatus and urethritis. ACUTE/CHRONIC HAZARDS: This compound may cause eye irritation.

4.3 Indication of immediate medical attention and special treatment needed, if necessary

Emergency and supportive measures; Maintain an open airway and assist ventilation if necessary. Treat coma, seizures, hypotension, and arrhythmias if they occur. Treat nausea and vomiting with metoclopramide and fluid loss

caused by gastroenteritis with intravenous crystalloid fluids. Bone marrow depression should be treated with the assistance of an experienced hematologist or oncologist. 5. Extravasation. Immediately stop the infusion and withdraw as much fluid as possible by negative pressure on the syringe. Then give the following specific treatment. Dactinomycin, daunorubicin, doxorubicin, idarubicin, mitomycin-C, mitoxantrone, and plicamycin. Apply ice compresses to the extravasation site for 15 minutes 4 times daily for 4 days. Topical application of dimethyl sulfoxide (DMSO) may be beneficial. Mechlorethamine (and concentrated dacarbazine and cisplatin); apply ice compresses for 6-12 hours. Etoposide, paclitaxel, vincristine, or vinblastine. Place a heating pad over the area and apply heat intermittently for 24 hours; elevate the limb. /Antineoplastic Agents, Retnoic acid/.

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media

Fires involving this material can be controlled with a carbon dioxide, dry chemical or Halon extinguisher.

5.2 Specific hazards arising from the chemical

Flash point data for this material are not available; however, it is probably combustible.

5.3 Special protective actions for fire-fighters

Wear self-contained breathing apparatus for firefighting if necessary.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up

/PRECAUTIONS FOR CYTOTOXIC AND HAZARDOUS DRUGS:/ Spills. Emergency procedures to cover spills or inadvertent release of hazardous drugs should be included in the facility's overall heath and safety program. Incidental spills and breakages should be cleaned up immediately by a properly protected person trained in the appropriate procedures.

---

7. Handling and storage

7.1 Precautions for safe handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Avoid exposure - obtain special instructions before use.Provide appropriate exhaust ventilation at places where dust is formed. For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

/PRECAUTIONS FOR CYTOTOXIC AND HAZARDOUS DRUGS:/ Facilities (eg, shelves, carts, counters, and trays) for storing hazardous drugs are designed to prevent breakage and to limit contamination in the event of leakage. Bins, shelves with barriers at the front, or other design features that reduce the chance of drug containers falling to the floor should be used. Hazardous drugs requiring refrigeration should be stored separately from nonhazardous drugs in individual bins designed to prevent breakage and to contain leakage.

---

8. Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure limit values

no data available

Biological limit values

no data available

8.2 Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

8.3 Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Safety glasses with side-shields conforming to EN166. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Wear impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique(without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Respiratory protection

Wear dust mask when handling large quantities.

Thermal hazards

no data available

9. Physical and chemical properties

Physical state	yellowish crystalline powder
Colour	Reddish-orange plates from isopropyl alcohol
Odour	no data available
Melting point/ freezing point	175°C(lit.)
Boiling point or initial boiling point and boiling range	106°C/3.5mmHg(lit.)
Flammability	no data available
Lower and upper explosion limit / flammability limit	no data available
Flash point	117°C(lit.)
Auto-ignition temperature	no data available
Decomposition temperature	no data available

pH	no data available
Kinematic viscosity	no data available
Solubility	In water:insoluble
Partition coefficient n-octanol/water (log value)	no data available
Vapour pressure	1.0X10-7 mm Hg @ 25°C /Estimated/
Density and/or relative density	1.011 g/cm3
Relative vapour density	no data available
Particle characteristics	no data available

10. Stability and reactivity

10.1 Reactivity

no data available

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

An organic acid and unsaturated aliphatic hydrocarbon. Carboxylic acids donate hydrogen ions if a base is present to accept them. They react in this way with all bases, both organic (for example, the amines) and inorganic. Their reactions with bases, called "neutralizations", are accompanied by the evolution of substantial amounts of heat. Neutralization between an acid and a base produces water plus a salt. Insoluble carboxylic acids react with solutions of cyanides to cause the release of gaseous hydrogen cyanide. Flammable and/or toxic gases and heat are generated by the reaction of carboxylic acids with diazo compounds, dithiocarbamates, isocyanates, mercaptans, nitrides, and sulfides. Carboxylic acids, especially in aqueous solution, also react with sulfites, nitrites, thiosulfates (to give H2S and SO3), dithionites (SO2), to generate flammable and/or toxic gases and heat. Their reaction with carbonates and bicarbonates generates a harmless gas (carbon dioxide) but still heat. Like other organic compounds, carboxylic acids can be oxidized by strong oxidizing agents and reduced by strong reducing agents. These reactions generate heat. A wide variety of products is possible. Like other acids, carboxylic acids may initiate polymerization reactions; like other acids, they often catalyze (increase the rate of) chemical reactions.

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

no data available

10.6 Hazardous decomposition products

no data available

---

11. Toxicological information

Acute toxicity

- Oral: LD50 Rat oral greater than 4 g/kg
- Inhalation: no data available
- Dermal: no data available

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

no data available

Reproductive toxicity

no data available

STOT-single exposure

no data available

STOT-repeated exposure

no data available

Aspiration hazard

no data available

12. Ecological information

12.1 Toxicity

- Toxicity to fish: no data available
- Toxicity to daphnia and other aquatic invertebrates: no data available
- Toxicity to algae: no data available
- Toxicity to microorganisms: no data available

12.2 Persistence and degradability

no data available

12.3 Bioaccumulative potential

no data available

12.4 Mobility in soil

no data available

12.5 Other adverse effects

no data available

13. Disposal considerations

13.1 Disposal methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible

packaging materials.

14. Transport information

14.1 UN Number

ADR/RID: UN1759 IMDG: UN1759 IATA: UN1759

14.2 UN Proper Shipping Name

ADR/RID: CORROSIVE SOLID, N.O.S.
IMDG: CORROSIVE SOLID, N.O.S.
IATA: CORROSIVE SOLID, N.O.S.

14.3 Transport hazard class(es)

ADR/RID: 8 IMDG: 8 IATA: 8

14.4 Packing group, if applicable

ADR/RID: III IMDG: III IATA: III

14.5 Environmental hazards

ADR/RID: yes IMDG: yes IATA: yes

14.6 Special precautions for user

no data available

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

no data available

15. Regulatory information

15.1 Safety, health and environmental regulations specific for the product in question

Chemical name	Common names and synonyms	CAS number	EC number
isotretinoin	isotretinoin	4759-48-2	none
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
EC Inventory			Listed.

United States Toxic Substances Control Act (TSCA) Inventory	Listed.
China Catalog of Hazardous chemicals 2015	Not Listed.
New Zealand Inventory of Chemicals (NZIoC)	Listed.
Philippines Inventory of Chemicals and Chemical Substances (PICCS)	Not Listed.
Vietnam National Chemical Inventory	Not Listed.
Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)	Not Listed.

16. Other information

Information on revision

Creation Date	Aug 11, 2017
Revision Date	Aug 11, 2017

Abbreviations and acronyms

- CAS: Chemical Abstracts Service
- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
- RID: Regulation concerning the International Carriage of Dangerous Goods by Rail
- IMDG: International Maritime Dangerous Goods
- IATA: International Air Transportation Association
- TWA: Time Weighted Average
- STEL: Short term exposure limit
- LC50: Lethal Concentration 50%
- LD50: Lethal Dose 50%
- EC50: Effective Concentration 50%

References

- IPCS - The International Chemical Safety Cards (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home
- HSDB - Hazardous Substances Data Bank, website: https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm
- IARC - International Agency for Research on Cancer, website: http://www.iarc.fr/

- eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en
- CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple
- ChemIDplus, website: http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp
- ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: http://www.phmsa.dot.gov/hazmat/library/erg
- Germany GESTIS-database on hazard substance, website: http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp
- ECHA - European Chemicals Agency, website: https://echa.europa.eu/
