Section 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 PRODUCT IDENTIFIER
1,4-Dithiothreitol

ARTICLE NUMBERS
-

1.2 RELEVANT IDENTIFIED USES OF THE SUBSTANCE OR MIXTURE AND USES ADVISED AGAINST
Laboratory reagent, for research use only.

1.3 DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET
Supplier: Gyros Protein Technologies AB
Address: Uppsala Science Park, 751 83 Uppsala
Telephone: +46 18-566 300
Fax: +46 18-566 350
E-mail: information@gyrosproteintech.com
Webpage: www.gyrosproteintechnologies.com

1.4 EMERGENCY TELEPHONE NUMBER
Local emergency number (acute)
Swedish Poisons Information Centre +46 (0)10-456-67-00 (working hours)

Section 2. HAZARDS IDENTIFICATION

2.1 CLASSIFICATION OF THE SUBSTANCE OR MIXTURE ACCORDING TO CLP (REGULATION 1272/2008/EC):
GHS07; Acute Tox. 4: H302, Eye Irrit. 2: H319, Skin Irrit. 2: H315, STOT SE 3: H335, Aquatic Chronic 3: H412.

2.2 LABEL ELEMENTS

LABELLING ACCORDING TO CLP (REGULATION 1272/2008/EC)

Hazard pictogram(s)
GHS07

Signal word(s)
Warning

Hazard statement(s)
H302 – Harmful if swallowed.
H319 – Causes serious eye irritation.

H315 – Causes skin irritation.
H335 – May cause respiratory irritation
H412 – Harmful to aquatic life with long lasting effect.

Precautionary statement(s)
P264 – Wash the hands thoroughly after handling.
P280 - Wear protective gloves/ protective clothing/ eye protection/ face protection.
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313 – If eye irritation persists: Get medical advice/attention.

Other information
-

2.3 OTHER HAZARDS
The product does not fulfill the criteria for PBT or vPvB substances.

Section 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 SUBSTANCES

Composition according to CLP (REGULATION 1272/2008/EC)

Substance	EC nr	Reg. nr	CAS nr	%	Pictogram	H-phrases*	Category
DL-Dithiothreitol	222-468-7	-	3483-12-3	100 %	GHS07 Warning	H302 H319 H315 H335 H412	Acut Tox. 4 Eye Irrit. 2 Skin Irrit. 2 STOT SE 3 Aquatic Chronic 3

Section 4. FIRST AID MEASURES

4.1 DESCRIPTION OF FIRST AID MEASURES
GENERAL RECOMMENDATION
Keep the victim warm and calm. Never give anything to eat or drink to an unconscious person. If uncertain or if symptoms remain, consult a doctor. Show this SDS to medical personnel.
AFTER INHALATION
Supply fresh air and rest. Consult a doctor if symptoms remain.
AFTER SKIN CONTACT
Rinse with soap and water.
AFTER EYE CONTACT
Rinse opened eye for at least five minutes under running water. Keep eyelids apart. Remove contacts if present. Consult a doctor if symptoms remain.
AFTER INGESTION
Rinse mouth immediately and drink 1 glass of water. Medical treatment necessary. Rinse mouth thoroughly with water. Never give anything by mouth to an unconscious person or a person with cramps. In all cases of doubt, or when symptoms persist, seek medical advice.
4.2 MOST IMPORTANT SYMPTOMS AND EFFECT, BOTH ACUTE AND DELAYED

Irritating to eyes and skin. Causes irritation in the respiratory tract. Risk of CNS depression. Harmful if swallowed. May cause nausea and vomiting.

4.3 INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED

Treat symptomatically.

Section 5. FIREFIGHTING MEASURES

5.1 EXTINGUISHING MEDIA

Choose suitable extinguishing media for the surrounding fire. Water mist, alcohol-resistant foam, powder, sand.

5.2 SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE

Non-flammable. Thermal decomposition can lead to the escape of irritating gases and vapours. In case of fire may be liberated: Carbon dioxide (CO2). Carbon monoxide (CO). Sulphur oxides.

5.3 ADVICE FOR FIREFIGHTERS

Wear a self-contained breathing apparatus and chemical protective clothing. Full protection suit. Co-ordinate fire-fighting measures to the fire surroundings.

Section 6. ACCIDENTAL RELEASE MEASURES

6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

Provide adequate ventilation. Avoid dust formation. Do not breathe dust. Avoid contact with skin and eyes. Use personal protection equipment. Provide adequate ventilation. Wear personal protection equipment, see Section 8.

6.2 ENVIRONMENTAL PRECAUTIONS

Do not allow entering sewers/ surface or ground water. Inform the emergency services in case of a big spill.

6.3 METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP

Take up mechanically, placing in appropriate containers for disposal. Avoid dust formation. Clear contaminated areas thoroughly.

6.4 REFERENCE TO OTHER SECTIONS

Refer to section 8 and 13 of this SDS for information on protective equipment and waste handling.

Section 7. HANDLING AND STORAGE

7.1 PRECAUTIONS FOR SAFE HANDLING

Use protective equipment according to section 8 of this SDS. Wash of hands after working with the product. No eating or drinking when working with the product. Avoid formation of dust. Avoid contact with eyes and skin. Provide adequate ventilation.

7.2 CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

Store tightly closed in a well-ventilated place between +2 and +8°C. Avoid moisture. Handle and store contents under inert gas.

7.3 SPECIFIC END USE(S)

See EWC code in section 13 of this SDS.

Section 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 CONTROL PARAMETERS

OCCUPATIONAL EXPOSURE LIMIT VALUES (ACCORDING TO DIRECTIVES 91/322/EEG, 2000/39/EG AND 2006/15/EG)

No values apply to the product.

PNEC

No data available.

DNEL

No data available.

EXPOSURE CONTROLS

RESPIRATORY PROTECTION

Ensure good ventilation. Use respiratory protection when working with the product.

HAND PROTECTION

Use protective gloves when working with the product. Gloves must be examined before use. The gloves must meet the requirements of standard EN 374.

EYE/FACE PROTECTION

Splash proof safety glasses or goggles should be used when working with all laboratory chemicals.

SKIN PROTECTION

Laboratory coat or overalls.

HYGIENE MEASURES

No food, drinks or smoking at the workplace. Remove all contaminated clothes. Wash hands and/or face before breaks and at the end of the workday.

Section 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 INFORMATION ON FUNDAMENTAL PHYSICAL AND CHEMICAL PROPERTIES

(a) Appearance	White/whitish solid
(b) Odour	Characteristic/ rotten
(c) Odour threshold	No information available
(d) pH	4-6 at 25℃
(e) Melting point/ freezing point	125-130℃
(f) Initial boiling point and boiling range	No information available
(g) Flash point	113℃
(h) Evaporation rate	No information available
(i)Flammability (gas, solid)	Not determined
(j) Upper/lower flammability or explosive limits	Not determined
(k) Vapour pressure	Not determined
(l) Vapour density	Not determined
(m) Relative density	1,0 (water)
(n) Solubility(ies)	1500 g/L (water) at 20℃
(o) Partition coefficient: n-octanol/water	Log Pow: 0,12 at 25℃

(p) Auto-ignition temperature	Not determined
(q) Decomposition temperature	Not determined
(r) Viscosity	No information available
(s) Explosive properties	None
(t) Oxidizing properties	None
Solvent content	No data available

9.2 OTHER INFORMATION
Physical hazard class: -

9.2.2 Other safety characteristics

a) mechanical sensitivity	Not determined
b) self-accelerating polymerisation temperature	Not determined
c) formation of explosible dust/air mixture	Not determined
d) acid/alkaline reserve	Not determined
e) evaporation rate	Not determined
f) miscibility	Not determined
g) conductivity	Not determined
h) corrosiveness	Not determined
i) gas group	Not determined
j) redox potential	Not determined
k) radical formation potential	Not determined
l) photocatalytic properties	Not determined

Section 10. STABILITY AND REACTIVITY

10.1 REACTIVITY
Stable under normal conditions of handling and storage.
10.2 CHEMICAL STABILTY
Decomposes in contact with water.
10.3 POSSIBILITY OF HAZARDOUS REACTIONS
Stable under normal conditions of handling and storage.
10.4 CONDITIONS TO AVOID
Protect from moisture. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Protect against direct sunlight.
10.5 INCOMPATIBLE MATERIALS
Oxidizing agents, strong. Bases, strong. Strong acids, alkali metals.
10.6 HAZARDOUS DECOMPOSITION PRODUCTS
Thermal decomposition can lead to the escape of irritating gases and vapours.
In case of fire may be liberated: Carbon dioxide (CO2). Carbon monoxide (CO). Sulphur oxides.

Section 11. TOXICOLOGICAL INFORMATION

11.1 INFORMATION ON TOXICOLOGICAL EFFECTS

	ACUTE EFFECTS	CHRONIC EFFECTS
SKIN CONTACT	Irritating to the skin. Causes headaches.	-
EYE CONTACT	Irritating to eyes.	-
INHALATION	May cause respiratory irritation. CNS depression.	-
INGESTION	Harmful if swallowed. May cause nausea and vomiting.	-

ACUTE TOXICITY
TOXICOLOGICAL DATA FOR THE PRODUCT AS IS
No data available.
TOXICOLOGICAL DATA FOR INCLUDED COMPONENTS
(a) acute toxicity
DL-Dithiothreitol:
LD50 Oral rat: 400 mg/kg Bodyweight (not acute-toxic)
(b) skin corrosion/irritation
Irritating to skin.
(c) serious eye damage/irritation
Irritating to eyes.
(d) respiratory or skin sensitisation
No sensitizing effects known.
(e) germ cell mutagenicity
No mutagenicity known.
(f) carcinogenicity
No carcinogenicity known.
(g) reproductive toxicity
No reproductive toxicity known
(h) STOT-single exposure
May cause respiratory irritation.
(i) STOT-repeated exposure
No effects known.
(j) aspiration hazard
No effects known.
INTERACTIVE EFFECTS
No interactive effects known.
MISSING DATA
-
Other information:
No endocrine disruptors are present in notifiable concentrations.

Section 12. ECOLOGICAL INFORMATION

12.1 TOXICITY
Harmful to aquatic life with long lasting effect.
ECOLOGICAL DATA FOR THE PRODUCT AS IS
No data available.
ECOLOGICAL DATA FOR INCLUDED COMPONENTS

DL-Dithiothreitol:
Toxicity
Daphnia 48h : 27 mg/l (Art:Daphnia Magna) (harmful)
Bioaccumulation
Log Pow: 0,12 (no bioaccumulation expected)

12.2 PERSISTENCE AND DEGRADABILITY
No data available.

12.3 BIOACCUMULATIVE POTENTIAL
Not expected to bioaccumulate to a significant degree.

12.4 MOBILITY IN SOIL AND WATER
No data available.

12.5 RESULTS OF PBT AND vPvB ASSESSMENT
No data available.

12.6 ENDOCRINE DISRUPTORS
No endocrine disruptors are present in notifiable concentrations

12.7 OTHER ADVERSE EFFECTS
No other adverse effects known.

SUMMARY
The product is classified as harmful to aquatic life with long lasting effect. Therefore, do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

Section 13. DISPOSAL CONSIDERATIONS

13.1 DISPOSAL FROM EXCESS/UNUSED PRODUCT
Unused product is hazardous waste according to directive 2000/532/EC.
Suggestion of EWC codes:
07 07 wastes from the MFSU of fine chemicals and chemical products not otherwise specified
07 07 04* other organic solvents, washing liquids and mother liquors.

WASTE
Waste is classified as hazardous waste and should be taken care of in conformity with national and local regulations.

WASTE TREATMENT METHODS
Hazardous waste and should be taken care of in conformity with national and local regulations.

CONTAMINATED PACKAGING
Contaminated packaging is considered hazardous waste but should be taken care of in conformity with national and local regulations.

Section 14. TRANSPORT INFORMATION

Not classified as dangerous goods according to ADR/RID/IMO/DGR.

14.1 UN number
-

14.2 UN proper shipping name
-

14.3 Transport hazard class(es)
-

14.4 Packing group

-

14.5 Environmental hazards

-

14.6 Special precautions for user

-

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code

-

Section 15. REGULATORY INFORMATION

15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS/LEGISLATION SPECIFIC FOR THE SUBSTANCE OR MIXTURE

Safety data sheet and classification in accordance with CLP (Regulation 1272/2008/EC) and Commission Regulation (EU) 878/2020 (REACH, Annex II).

CHEMICAL SAFETY ASSESSMENT

A Chemical safety assessment (CSA) according to REACH has not been conducted for the product. See section 16 for further information.

Section 16. OTHER INFORMATION

H PHRASES GIVEN UNDER SECTION 3 IN PLAIN TEXT

H319 - Causes serious eye irritation.
H302 – Harmful if swallowed.
H315 – Causes skin irritation.
H335 – May cause respiratory irritation
H412 – Harmful to aquatic life with long lasting effect.

LEGEND TO ABBREVIATIONS

-

LITERATURE REFERENCES AND SOURCES FOR DATA

Refer to chemical safety assessment (CSA) for sources.

CHANGES MADE IN CASE OF REVISIONS

Version A: First edition.

OTHER

The current Material Safety Data Sheet was defined by Gyros AB on the basis of knowledge of the product at the date of issue.
It is the duty of the operator

- to develop under his own responsibility, the safety dispositions regarding the operation of the product taking into account the data from this form
- to pass to all users and operators the appropriate safety data and warning regarding the risks mentioned in the documentation relative to the utilisation of the product
- to be cautious of possible risks faced when the product is used for other utilisation than those for which it has been designed

This SDS has been compiled with assistance from Amasis Konsult AB, Solna, Sweden.