

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

Product name : Tetrahydro-L-biopterin, Dihydrochloride **Catalog #** : 584110
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 : C₉H₁₅N₅O₃ · 2HCl

Synonym : THB, HCl

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) THB, HCl	69056-38-8	Not available.	Xn	R20/21/22, R36/37/38, R40

3. Hazards identification

Physical/chemical hazards : Not applicable.

Human health hazards : CAUTION!
 MAY BE HARMFUL IF INHALED, ABSORBED THROUGH SKIN OR SWALLOWED.
 MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION.
 MAY CAUSE DAMAGE TO THE FOLLOWING ORGANS: KIDNEYS, NERVOUS SYSTEM, LIVER, BRAIN, DIGESTIVE SYSTEM, HEAD, PANCREAS.
 MAY CAUSE HERITABLE GENETIC EFFECTS BASED ON IN VITRO DATA.

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. Cover the irritated skin with an emollient. 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.

Effects and symptoms

Inhalation : Hazardous in case of inhalation (lung irritant).

Ingestion : Hazardous in case of ingestion.

Skin Contact : Hazardous in case of skin contact (irritant, permeator). Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Eye Contact : Hazardous in case of eye contact (irritant).

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** : Non-flammable.
- Extinguishing Media**
- Suitable** : Not applicable.
- Special fire-fighting procedures** : Fire fighters should wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear.

6. Accidental release measures

- Personal precautions** : Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. 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. Do not ingest. Do not breathe dust. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents.
- Storage** : Keep container tightly closed. Keep container in a cool, well-ventilated area. Do not store above -20°C (-4°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) Tetrahydro-L-biopterin, Dihydrochloride	Not available.

Personal protective equipment

- Respiratory system** : Dust respirator. Be sure to use an approved/certified respirator or equivalent.
- Skin and body** : Lab coat.
- Hands** : Gloves.
- Eyes** : Splash goggles.
- Protective Clothing (Pictograms)** :



9. Physical and chemical properties

- Physical state** : Solid.
- Color** : White.
- Molecular Weight** : 314.2 g/mole
- Melting Point** : 225 to 230°C (437 to 446°F)
- Solubility** : Soluble in cold water.
- Flash point** : Not applicable.
- 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	: Not available.
Materials to avoid	: Reactive with oxidizing agents.

11. Toxicological information

RTECS # : **UO3516500**

Local effects

Skin irritation : Hazardous in case of skin contact (irritant).

Acute toxicity : Acute oral toxicity (LD50): 1000 mg/kg [Rat].

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.
Hazardous in case of skin contact (irritant, permeator), of ingestion, of inhalation (lung irritant).

In vitro studies in mammal cells have shown mutagenic action.

Can cause damage to the heart. Repeated or prolonged exposure to the substance can produce liver damage. Repeated or prolonged exposure to the substance can produce kidney damage. Exposure can cause nausea, headache and vomiting. Material is irritating to mucous membranes and upper respiratory tract.

Carcinogenic effects : Not available.

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

Reproduction toxicity : Not available.

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 : Harmful

Risk Phrases : R20/21/22- Harmful by inhalation, in contact with skin and if swallowed.
R36/37/38- Irritating to eyes, respiratory system and skin.
R68- Possible risks of irreversible effects.

Safety Phrases

- : S22- Do not breathe dust.
- S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- S36- Wear suitable protective clothing.

Contains

- : - Tetrahydro-L-biopterin, Dihydrochloride

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: No products were found.
- SARA 311/312 MSDS distribution - chemical inventory - hazard identification: No products were found.
- 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: Irritating substance.
- CLASS: Target organ effects.

State Regulations

- :

WHMIS (Canada)

- : Not controlled under WHMIS (Canada).
- No products were found.

16. Other information

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

Health	*	2
Fire Hazard		0
Reactivity		0
Personal Protection		E

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 # 584110

3/26/2003.

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