HALBLEITER MATERIAL

Material Safety Data Sheet

Cerium nitrate hexahydrate Powder

Report No.: VIH240827004-1
Version: 2.1
Preparation Date: 08/27/2024
Revision Date: 08/27/2024

1. Product and Company information

1.1 Product identifiers

Product Name	Cerium nitrate hexahydrate
Product No.	58070800PD
Formula	$Ce(NO_3)_3 \cdot 6H_2O$
CAS No.	10294-41-4
EC No.	233-297-2

1.2 Relevant identified uses

Identified uses	Laboratory chemicals, Scientific research
Uses advised against	Consulting manufacturers

1.3 Details of the supplier

Company Name	VI HALBLEITERMATERIAL GmbH
Street	Bergener Straße 14.,
City	Hannover
State	Niedersachsen
Zip Code	30625
Country	Germany
Tel	0049 1626484175
Email	info@vimaterial.de

1.4 Emergency telephone

Emergency Phone #	0049 1626484175

2. Hazards Identification

2.1 GHS Classification

Oxidizing solids	Category 2

Acute toxicity, Oral	Category 5
Serious eye damage/eye irritation	Category 1
Short-term (acute) aquatic hazard	Category 1
Long-term (chronic) aquatic hazard	Category 1

2.2 GHS Label elements

Signal Word	Danger
Label	

2.3 Hazard Statements

H272	May intensify fire; oxidizer.
H303	May be harmful if swallowed.
H318	Causes serious eye damage.
H410	Very toxic to aquatic life with long lasting effects.

2.4 Precautionary Statements

Prevention	
P210	Keep away from heat.
P220	Keep/Store away from clothing/ combustible materials.
P221	Take any precaution to avoid mixing with combustibles.
P273	Avoid release to the environment.
P280	Wear protective gloves/ eye protection/ face protection.
Response	
P305 + P351 + P338 + P310	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.
P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
Storage	
P403	Store in a well-ventilated place.
Disposal	
P501	Dispose of contents/ container to an approved waste disposal plant.

3. Composition

Chemical Family	Salts
Additional Names	Cerium(III) nitrate hexahydrate

Component	Molecular weight	CAS No.	Concentration
$Ce(NO_3)_3 \cdot 6H_2O$	434.22 g/mol	10294-41-4	<=100%

4. First Aid Procedures

4.1 Description of first aid procedures

General Treatment	Seek medical attention if symptoms persist.
Inhalation	Remove victim to fresh air.
Ingestion	Make victim drink water (two glasses at most). Consult a doctor.
Skin	Take off immediately all contaminated clothing. Rinse skin with water/ shower.
Eyes	Immediately rinse with plenty of waters, including under the eyelids. Remove contact lenses. Seek medical attention.

4.2 Most Important acute and delayed symptoms/effects

The most important known symptoms and effects are described in the labeling (see section 2.2) and/or in section 11.

4.3 Emergency medical treatment and special instructions

1	Based on the symptoms that appear, provide targeted treatment.
2	Be aware that symptoms may be delayed.

5. Firefighting Measures

5.1 Extinguishing Media

Suitable extinguishing media	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media	N/A

5.2 Special hazards arising from the substance or mixture

1	Nitrogen oxides (NOx)
2	Cerium oxides

3	Non-flammable
4	Ambient fires may release harmful vapors.

5.3 Special protective equipment and precautions for firefighters

1	Wear self-contained breathing apparatus when extinguishing fire.
2	Fight fire from a safe distance and with adequate protection.
3	Prevent firefighting water from contaminating surface and groundwater systems.

6. Accidental Release Measures

6.1 Personal protection, protective equipment and emergency procedures

1	Wear appropriate respiratory and protective equipment specified in special protection information.
2	Isolate spill area and provide ventilation.
3	Evacuate personnel to safe areas. Avoid breathing dust.

6.2 Environmental Precautions

1	Isolate runoff to prevent environmental pollution.

6.3 Containment and cleanup methods for chemical spills and disposal materials used

1	Collect and arrange disposal.
2	Place in a closed container for disposal.
3	Remove all sources of ignition.
4	Use spark-proof tools and explosion-proof equipment.
5	Take care not to raise dust.
6	Adhered or collected material should be promptly disposed of, in accordance with appropriate laws and regulations.

7. Handling and Storage

7.1 Handing conditions

1	Handle in a well-ventilated area.
2	Wear appropriate personal protective equipment.
3	Use non-sparking tools.
4	Wash thoroughly after handling.

7.2 Storage conditions

1	Keep the container tightly closed.
2	Store in a dry, cool, and well-ventilated area.
3	Keep away from moisture. Air sensitive. Hygroscopic.
4	Store apart from materials and conditions listed in section 10.

8. Exposure Controls and Personal Protection

8.1 Control parameters

Component	Exposure limit
$Ce(NO_3)_3 \cdot 6H_2O$	N/A

8.2 Engineering controls

1	Maintain adequate ventilation.
2	Wash hands after working with substance.
3	Set up emergency evacuation passages and necessary risk relief areas.

8.3 Personal protective equipment

Special Equipment	None
Respiratory Protection	Dust Respirator (EN143/EN149)
Protective Gloves	Rubber gloves (EN 374)
Eye Protection	Safety glasses or goggles (EN166)
Body Protection	Protective work clothing. Wear close-toed shoes and long sleeves/pants.

9. Physical and Chemical Characteristics

Color	White
Molecular weight	434.22 g/mol
Form	Crystals
Odor	No data available
pH	No data available
Boiling Point	No data available
Melting Point	57 °C.
Flash Point	No data available

Evaporation rate	No data available
Flammability	No data available
Vapor pressure	No data available
Density	No data available
Water Solubility	600 g/l - OECD Test Guideline 105- soluble
Viscosity	No data available

10. Stability and reactivity

Reactivity	No data available.
Chemical stability	Stable under recommended storage conditions.
Possibility of hazardous reactions	Violent reactions possible with: Strong acids Strong reducing agents Cyanides
Conditions to avoid	Hygroscopic Air sensitive.
Incompatible Conditions	Strong reducing agents, Strong acids
Hazardous Decomposition Products	Hazardous decomposition products formed under fire conditions. - Nitrogen oxides (NOx), cerium oxides

11. Toxicological Information

11.1 Acute toxicity

Oral	LD50 - rat (female) - 4 200 mg/kg.
Inhalation	No data available.
Dermal	LD50 - rat (male/female) - > 2 000 mg/kg.

11.2 Carcinogenicity

IARC	No data available.
NTP	No data available.
OSHA	No data available.

11.3 Other information

Skin corrosion/irritation	No data available.
Serious eye damage/eye irritation	No data available.
Skin sensitization	No data available.
Respiratory sensitization	No data available.
Reproductive toxicity	No data available.

Specific target organ toxicity - single exposure	No data available.
Specific target organ toxicity - repeated exposure	No data available.
Aspiration hazard	No data available.
Germ cell mutagenicity	No data available.
Reproductive toxicity additional hazard	No data available.

12. Ecological Information

12.1 Toxicity

Toxicity to fish	LC50 - Oncorhynchus mykiss (rainbow trout) - 0.3 mg/l - 96 h
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 6.9 mg/l - 48 h
Toxicity to algae	NOEC - Pseudokirchneriella subcapitata (green algae) - 0.46 mg/l - 72 h
Toxicity to microorganisms	EC50 - activated sludge of a predominantly domestic sewage - 436 mg/L - 3 h

12.2 Persistence and degradability

Persistent retention	No data available.
Degradability	No data available.

12.3 Bioaccumulative potential

Bioaccumulative potential	No data available.

12.4 Mobility in soil

Mobility in soil	No data available.

12.5 Results of PBT and vPvB assessment

Results of PBT and vPvB assessment	PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

13. Disposal Considerations

Waste material	Please refer to national and local regulations before disposal.
Contaminated packaging	Empty the remainder. Keep away from heat and fire sources.
Disposal precautions	Please refer to waste chemicals and contaminated packaging.

14. Transportation Data

14.1 Shipping Labels

Hazardous	Hazardous for transportation.
Labels	

14.2 ADR/RID

UN number	UN 1477
UN Proper shipping name	NITRATES, INORGANIC, N.O.S. (Cerium(III) nitrate hexahydrate)
Transport subsidiary hazard class	N/A
Transport hazard class(es)	Class 5.1
Packaging group	PG III

14.3 IMDG

UN number	UN 1477
UN Proper shipping name	NITRATES, INORGANIC, N.O.S. (Cerium(III) nitrate hexahydrate)
Transport subsidiary hazard class	N/A
Transport hazard class(es)	Class 5.1
Packaging group	PG III
Marine Pollutant (Yes/No)	Yes

14.4 IATA-DGR

UN number	UN 1477
UN Proper shipping name	Nitrates, inorganic, n.o.s
Transport subsidiary hazard class	N/A
Transport hazard class(es)	Class 5.1
Packaging group	PG III

15. Regulatory information

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

Component	EINECS	EC Inventory	TSCA	IECSC	NZIoC	PICCS	KECL	NCI
$Ce(NO_3)_3 \cdot 6H_2O$	×	×	×	√	√	×	×	√

[EINECS] European Inventory of Existing Commercial Chemical Substances
[EC Inventory] EC Inventory
[TSCA] United States Toxic Substances Control Act Inventory
[IECSC] Chinese Chemical Inventory of Existing Chemical Substances
[NZIoC] New Zealand Inventory of Chemicals
[PICCS] Philippines Inventory of Chemicals and Chemical Substances
[KECL] Korea Existing Chemicals List
[NCI] Vietnam National Chemical Inventory

Note: "√" Listed
"×" No data / Not listed

16. Other information

16.1 Revision information

Preparation date	08/27/2024
Revision date	08/27/2024
Revision reason	Creation

16.2 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
IATA International Air Transportation Association
IMDG International Maritime Dangerous Goods
LC50 Lethal Concentration 50%
LD50 Lethal Dose 50%
TWA Time Weighted Average

16.3 References

[1] CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple
[2] ECHA - European Chemicals Agency, website: https://echa.europa.eu/

[3] eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en

[4] Germany GESTIS-database on hazard substance, website: http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp

[5] HSDB - Hazardous Substances Data Bank, website: https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm

[6] IARC - International Agency for Research on Cancer, website: http://www.iarc.fr/

[7] IPCS - The International Chemical Safety Cards (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home

[8] ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: http://www.phmsa.dot.gov/hazmat/library/erg

16.4 Disclaimer

The information of this safety data sheet is based on our knowledge of this product, at the time of publication. It is given in good faith. The attention of the user is drawn to the possible risks incurred by using the product for any other purpose other than that for which it was intended. This does not in any way excuse the user from knowing and applying all the regulations governing his activity. It is the sole responsibility of the user to take all precautions required in handling the product. The aim of the mandatory regulations mentioned is to help the user to fulfill his obligations regarding the use of hazardous products. For further information please contact info@vimaterial.de.