

GALLIUM

Revised on: 18.10.2021

1) Identification of Substance/ Mixture and of the Company/ Undertaking

1.1 Product Identifiers

Product Name: Gallium
 Shape: Solid in PE bottles
 CAS-Nr.: 7440-55-3
 REACH Registration No.: 01-2120762811-54-xxxx

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

Identified Uses: Scientific Research and Development

1.3 Details of the supplier of the safety data sheet

Producer/ Supplier: Haines & Maassen Metallhandelsgesellschaft mbH
 Pützchens Chaussee 60
 D- 53227 Bonn
 Germany
 Telephone No.: +49(0)228 946510
 Fax No.: +49(0)228 470933

Competent Person: Thiemo Maassen Tel.-No. +49(0)228 9465117
 E-Mail: thiemo@haines-maassen.com

1.4 Emergency telephone number

Poison Center Bonn: +49(0)228 19240

2) Hazards Identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008:

Met Corr. 1 – H290
 Acute Tox. 4 – H302
 Aquatic Chronic 3 – H412

2.2 Label elements according to Regulation (EC) No. 1272/2008:

The substance is classified and labelled according to the CLP regulation.

Hazard pictograms:



GHS05

GSH02

Signal word: **Warning**

Hazard statements:

H290 May be corrosive to metals
 H302 Harmful if swallowed
 H412 Harmful to aquatic life with long lasting effects

Precautionary statements:

P234 Keep only in original packaging.
 P264 Wash hands thoroughly after handling.
 P270 Do not eat, drink or smoke when using this product.
 P273 Avoid release to the environment.
 P301+P312 IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell.
 P390 Absorb spillage to prevent material damage.

2.3 Other hazards

None

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3) Composition/ Information on Ingredients

3.1 Substance

Description : Gallium
CAS-No.: 7440-55-3
EC-No.: 231-163-8

4) First Aid Measures

4.1. Description of first aid measures

General advice:

First aiders must protect themselves! Instantly remove any contaminated clothing.

Inhalation: Move person to fresh air. Give artificial respiration if necessary.
Seek immediate medical attention.

Skin contact: Wash affected area with soap and water. Obtain medical attention.

Eye contact: Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. Seek medical attention.

Ingestion: Do not induce vomiting. Never give anything by mouth to an unconscious person. Seek medical attention.

4.2 Most important symptoms and effects, both acute and delayed

Slight irritation of the skin after longer contact, irritation of the eyes, respiratory tracts, cough, shortness of breath, nausea, vomiting

Delayed: Metallic taste, dermatitis, bone marrow depression, kidney damage

4.3 Indication of any immediate medical attention and special treatment needed

No data available

5) Firefighting Measures

5.1 Extinguishing media

Suitable extinguishing media:

Alcohol-resistant foam, dry chemical extinguisher or dry sand.

Unsuitable extinguishing media:

Water, carbon dioxide (CO₂). Do not use halon-based extinguishers.

5.2 Special hazards arising from the substance or mixture

Toxic metal oxide fumes evolve in fires.

5.3 Advice for firefighters

Protective equipment: Wear self contained breathing apparatus and protective clothing.

Rules of action: Remove container from the danger zone if possible. Remove sources of ignition.
Do not allow extinguishing water to enter the surface water

6) Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid creating vapours. Avoid breathing vapours, mist or gas. Avoid contact with eyes and skin. Provide adequate ventilation. Remove sources of ignition. Evacuate personnel to safe areas. Warn affected surroundings.

6.2 Environmental precautions

Do not allow product to be released to the environment without regulatory permission.
Dispose of waste and containers in a safe way.

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6.3 Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating vapours. Do not use tools made of aluminium. Keep in suitable containers for disposal. Ventilate area and clean spill site afterwards.

6.4 Reference to other sections

Safe handling see paragraph 7)

Personal protection equipment see paragraph 8)

Disposal see paragraph 13)

7) Handling and Storage**7.1 Precautions for safe handling**

The working place must be dry and well ventilated. Avoid spilling and handling which leads to formation of vapours. Due to the higher corrosion risk electrical installations must be checked on a regular basis.

Information on fire protection and explosion control

No special measures required. Gallium is not combustible.

Explosion risk in contact with hydrogen peroxides/ hydrochloric acids.

7.2 Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place.

Unsuitable material: aluminium containers

Store only with products of the same storage class (8B Non-combustible corrosive substances)

Store away from aluminium, aluminium alloys, halogens, oxidizing or acidic substances.

7.3 Specific end uses:

No information available.

8) Exposure Control/ Personal Protection

Technical equipment: Provide adequate ventilation. Observe occupational exposure limits and minimize the risk of inhalation of vapours. Unsuitable materials: metals, especially aluminium. Metal constructions must be protected as gallium corrodes and dissolves most of them.

8.1 Control parameters

Not applicable

8.2 Personal protective measures

General Information: Handle in accordance with good industrial hygiene and safety practice. Keep workplace clean and dry. Do not eat, drink or smoke when handling this product. Avoid contact with eyes and skin. Contaminated clothing must be taken off and cleaned thoroughly.

Respiratory equipment: Use self-contained respiratory protective device in emergency situations.

Hand protection: Use suitable protective gloves

Eye protection: Use approved safety goggles or face shield

Skin protection: Wear protective clothing

9) Physical and Chemical Properties**9.1 Information on basic physical and chemical properties**

Appearance: solid in PE bottles

Colour: bright silver

Odour: odourless

Melting point: 29,76 °C @ 101 325 Pa

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Initial boiling point:	2204 °C @ 101 325 Pa
Sublimation temperature/ -start:	Not determined
Flash point:	Not applicable
Inflammability (solid, gaseous):	The substance is not flammable
Ignition temperature:	Not applicable
Decomposition temperature:	Not applicable
Explosion risk:	With certain substances – see paragraph 10.3
Critical values for explosion:	Not determined
Steam pressure at 20°C:	Not applicable
Relative density:	5,9 @ 20 °C
Evaporation rate:	Not applicable
Solubility in water:	insoluble (46 µg/L @ 20 °C)
Partition coefficient (n-octanol/water):	Not applicable
Viscosity:	Not applicable

9.2 Other information

No further relevant information available

10) Stability and Reactivity

10.1 Reactivity

Gallium is a base metal which dissolves in diluted acids or slowly also in hot water generating hydrogen. In cold water and in contact with concentrated nitric acid there is no reaction due to the passivation. It is resistant in the air. It burns only in pure oxygen under high pressure. With halogens it reacts already at room temperature forming the corresponding halides. Gallium compounds are very similar to aluminium compounds. Together with aluminium alloys with very low melting points are produced, which react violently with water if the aluminium content is very low.

10.2 Chemical Stability

Stable under normal temperature and storing conditions.

10.3 Possibility of hazardous reactions

Explosion risk in contact with hydrogen peroxide/ nitric acid.

Hazardous reactions possible in contact with aluminium alloys, hydrochloric acid, halogens or lyes.

10.4 Conditions to avoid

Moisture – gallium is stable in dry air but it tarnishes in moist air.

10.5 Incompatible materials

Acids, bases, oxidizing agents, halogens, metals

10.6 Hazardous decomposition products

metal oxides in a fire

11) Toxicological Information

The acute toxicity of gallium and its compounds is relatively low. Gallium is used in dental alloys where it might cause allergic reactions.

11.1 Information on toxicological effects

Acute toxicity: no data available

LD/LC50 values relevant for classification: No data available

Skin/ Eyes: slight irritation to the skin after longer contact, irritating effects to eyes and mucous membranes

Sensitization: no effects known

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Inhalation/ Ingestion: irritation of the respiratory tracts, cough, shortness of breath, headache, nausea, vomiting.

Chronic: Metallic taste, dermatitis, bone marrow depression, kidney damage

Germ cell mutagenicity: The Registry of Toxic Effects of Chemical Substances (RTECS) contains mutation data for this substance.

Carcinogenicity: No classification data on carcinogenic properties is available from EPA, IARC, NTP, OSHA or ACGIH.

Reproductive toxicity: No effects known.

Specific target organ system toxicity – single exposure: No effects known.

Specific target organ system toxicity – repeated exposure: No effects known.

Aspiration hazard: No effects known

Subacute to chronic toxicity: No effects known.

Additional toxicological information: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

12) Ecological Information

12.1 Toxicity

Harmful to aquatic life with long lasting effects.

Short-term toxicity to fish (*Pimephales promelas*):

No data available.

Short-term toxicity to aquatic invertebrates (*Daphnia magna*):

EC50 (48 h) 14,96 mg Ga(III)/L

Toxicity to aquatic algae and cyanobacteria (*Desmodesmus subspicatus*):

EC50 (72 h) 14,65 mg Ga(III)/L

NOEC (72 h) 0,46 mg Ga(III)/L

12.2 Persistence and degradability

Inorganic metal. Biodegradation not applicable.

12.3 Bioaccumulative potential

No data available

12.4 Mobility in soil

Immobile in soil. Gallium is insoluble in water.

12.5 Results of the PBT and vPvB-assessment

Not applicable

12.6 Other adverse effects

No data available

Do not allow material to reach ground water, water bodies or sewage system or its release to the environment without proper governmental permission.

13) Disposal Consideration

13.1 Waste treatment methods

Hazardous waste according to Waste Catalogue Ordinance (AVV).

If recycling is not possible waste must be disposed of in compliance with the local regulations.

Recommendation: Hand over to disposers of hazardous waste. Must be specially treated under adherence to official regulations. Consult state, local or national regulations for proper disposal.

Uncleaned packaging: Disposal in accordance with official regulation.

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14) Transport Information

14.1 UN number

ADR, RID, IMDG, IATA: UN2803

14.2 Proper UN shipping name

ADR, RID: 2803 GALLIUM

IMDG, IATA: GALLIUM

14.3 Transport hazard classes

ADR, RID



Class: 8 (C10) Corrosive Substances

Hazard label: 8

IMDG, IATA



Class: 8 Corrosive substances

Label: 8

14.4 Packing group

III (medium/ low hazard)

14.5 Environmental hazards

not applicable

14.6 Special precautions for user

Warning: Corrosive substances

Hazard No. (ADR): 80

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

Not applicable

Further transport information ADR:

Limited Quantity (LQ): 5 kg

Transport Category: 3

Tunnel Restriction Code: E

UN "Model Regulation": UN2803, GALLIUM, 8, III

15) Regulatory Information

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

National Regulations:

For use only by technically qualified individuals.

Water hazard class: class 3 (self-assessment) seriously hazardous to water

Substances of very high concern (SVHC) according to REACH, article 57:

Substance is not listed

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15.2 Chemical safety assessment

A chemical safety assessment has not been effected.

16) Other Information

The above information is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of this product. Haines & Maassen Metallhandels-gesellschaft mbH shall not be held liable for any damage resulting from handling or from contact with the above product.