

## Material Safety Data Sheet

# Zirconium Hydride Powder

Report No.: VIH250113018-1  
Version: 2.1  
Preparation Date: 13/01/2025  
Revision Date: 13/01/2025

## 1. Identification of the substance/mixture and of the company/undertaking

### 1.1 Product identifier

Product Name	Zirconium hydride
Product No.	400100PD
Formula	ZrH <sub>2</sub>
CAS No.	7704-99-6
Synonyms	Zirconium dihydride, Zirconium(II) hydride

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

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

### 1.3 Details of the supplier of the safety data sheet

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
Website	<a href="https://vimaterial.de/">https://vimaterial.de/</a>

### 1.4 Emergency telephone number

Emergency Phone #	0049 1626484175
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## 2. Hazards Identification

### 2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 (CLP)

Flammable solids	Category 1 (H228)
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For full text of abbreviations: see SECTION 16.

## 2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008 (CLP)

Signal Word	Danger
Pictograms	

### Hazard Statements

H228	Flammable solid
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### Precautionary Statements

<b>Prevention</b>	
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P240	Ground and bond container and receiving equipment
P241	Use explosion-proof electrical/ventilating/lighting equipment
P280	Wear protective gloves/protective clothing/eye protection/face protection
<b>Response</b>	
P370+P378	In case of fire: Use sand, CO <sub>2</sub> , or powdered extinguishing agent for extinction.

## 2.3 Other hazards

This substance/mixture contains no components considered to be persistent PBT or vPvB.

This product does not contain any known or suspected endocrine disruptors.

## 3. Composition/information on ingredients

### 3.1 Substances

Chemical Family	Hydride
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Component	CAS No.	EC No.	Concentration
Zirconium hydride (ZrH <sub>2</sub> )	7704-99-6	231-727-3	<=100%

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## 4. First aid measures

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### 4.1 Description of first aid measures

General Treatment	If symptoms persist, seek medical attention.
Inhalation	Remove to fresh air. Seek medical attention immediately if symptoms occur
Skin	Clean mouth with water and drink afterwards plenty of water. Seek medical attention if symptoms occur.
Eyes	Rinse with pure water for at least 15 minutes. Remove contact lenses. Seek medical attention.
Ingestion	Clean mouth with water and drink afterwards plenty of water. Seek medical attention if symptoms occur.

### 4.2 Most important symptoms and effects, both acute and delayed

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

### 4.3 Indication of any immediate medical attention and special treatment needed

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

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## 5. Firefighting Measures

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### 5.1 Extinguishing Media

Suitable extinguishing media	Water spray, carbon dioxide (CO <sub>2</sub> ), dry chemical, alcohol-resistant foam.
Unsuitable extinguishing media	N/A

### 5.2 Special hazards arising from the substance or mixture

1	Zirconium oxides
2	Flammable.
3	Deposited combustible dust has considerable explosion potential.

### 5.3 Advice for firefighters

1	As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.
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2	Fight fire from a safe distance and with adequate protection.
	Do not allow firefighting water to enter drains or water courses.
3	Collect contaminated firefighting water separately.

## 6. Accidental Release Measures

### 6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	Ensure adequate ventilation. Use personal protective equipment as required. Avoid dust formation. Remove all sources of ignition.
For emergency responders	Wear breathing apparatus if exposed to vapours/dust/spray/gases.

### 6.2 Environmental Precautions

1	Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it.
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### 6.3 Methods and material for containment and cleaning up

Advice on how to contain a spill	Covering of drains, Take up mechanically. Remove all sources of ignition.
Advice on how to clean up a spill	Use only non-sparking tools. Avoid dust formation.
Other information relating to spills and releases	Place in appropriate containers for disposal. Ventilate affected area.

### 6.4 Reference to other sections

Refer to protective measures listed in Sections 8 and 13.

## 7. Handling and Storage

### 7.1 Precautions for safe handling

Recommendations	Wear personal protective equipment/face protection. Ensure adequate ventilation. Avoid contact with skin, eyes or clothing. Avoid ingestion and inhalation. Avoid dust formation.
Hygiene Measures	Wash hands after use. Do not eat, drink and smoke in work areas. Remove contaminated clothing and protective equipment before entering eating areas. Never keep food or drink in the vicinity of chemicals. Never place chemicals in containers that are normally used for food or drink. Keep away from food, drink and animal feeding stuffs.

## 7.2 Conditions for safe storage, including any incompatibilities

Storage conditions	Keep container tightly closed in a dry and well-ventilated place.
Storage class (TRGS 510)	Class 4.1B
Incompatible materials	See section 10.5

## 7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

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## 8. Exposure Controls/Personal Protection

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### 8.1 Control parameters

#### Exposure limits

No data available.

#### Biological limit values

No data available.

#### Derived No Effect Level (DNEL) / Derived Minimum Effect Level (DMEL)

No data available.

#### Predicted No-Effect Concentration (PNEC)

No data available.

### 8.2 Exposure controls

#### Appropriate engineering controls

Ensure adequate ventilation, especially in confined areas. Use explosion-proof electrical/ventilating/lighting equipment. Ensure that eyewash stations and safety showers are close to the workstation location.

Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source.

#### Personal protective equipment

##### Eye/face protection

Wear safety glasses with side shields (or goggles) (European standard - EN166) and face protection.

##### Skin protection

-Hand Protection

Protective gloves (The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.)

-Other protection measures

Long sleeved clothing.

### Respiratory Protection

No protective equipment is needed under normal use conditions.

<b>Large scale/emergency use</b>	Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced Recommended Filter type: Particle filter
<b>Small scale/Laboratory use</b>	Maintain adequate ventilation

### Environmental exposure controls

No information available.

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## 9. Physical and Chemical Characteristics

### 9.1 Information on basic physical and chemical properties

Physical State	Powder
Colour	Grey
Odor	No data available
Melting Point/Range	No data available
Boiling Point/Range	No data available
Flammability (liquid)	Flammable solid in accordance with GHS criteria
Flammability (solid, gas)	No data available
Explosion limits	No data available
Flash Point	No data available
Autoignition Temperature	No data available
Decomposition Temperature	No data available
pH	Not applicable
Viscosity	Not relevant (solid matter)
Water Solubility	Insoluble
Solubility in other solvents	No data available
Partition Coefficient (n-octanol/water)	No data available
Vapor Pressure	Not determined
Density / Specific Gravity	5,47 g/cm <sup>3</sup>
Vapor Density	Not applicable
Particle characteristics	No data available

### 9.2 Other information

Molecular formula	ZrH <sub>2</sub>
Molecular weight	93,24 g/mol
Evaporation Rate	Not applicable

## 10. Stability and reactivity

### 10.1 Reactivity

None known, based on information available.

### 10.2 Chemical stability

Stable under recommended storage conditions.

### 10.3 Possibility of hazardous reactions

**Hazardous Polymerization:** No data available.

**Hazardous Reactions:** None under normal processing.

### 10.4 Conditions to avoid

Incompatible products. Excess heat.

### 10.5 Incompatible materials

Acids. Strong oxidizing agents.

### 10.6 Hazardous decomposition products

In the event of fire: see section 5

## 11. Toxicological information

### 11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity	Oral:	No data available.
	Dermal:	No data available.
	Inhalation:	No data available.
Skin corrosion/irritation	No data available.	
Serious eye damage/irritation	No data available.	
Respiratory or skin sensitization	Respiratory	No data available.
	Skin	No data available.
Germ cell mutagenicity	No data available.	
Carcinogenicity	No data available.	
	There are no known carcinogenic chemicals in this product.	
Reproductive toxicity	No data available.	
STOT - single exposure	No data available.	

STOT - repeated exposure	No data available.
Aspiration hazard	Not applicable. Solid

### 11.2 Information on other hazards

**Endocrine Disrupting Properties:** Assess endocrine disrupting properties for human health. This product does not contain any known or suspected endocrine disruptors.

## 12. Ecological Information

### 12.1 Toxicity

Ecotoxicity effects	No data available.
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### 12.2 Persistence and degradability

Persistence	No data available.
Degradability	No data available.

### 12.3 Bioaccumulative potential

Bioaccumulative potential	No data available.
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### 12.4 Mobility in soil

Mobility in soil	No data available.
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### 12.5 Results of PBT and vPvB assessment

Results of PBT and vPvB assessment	In accordance with Annex XIII of the REACH Regulation, inorganic substances do not require assessment.
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### 12.6 Endocrine disrupting properties

Endocrine Disruptor Information	This product does not contain any known or suspected endocrine disruptors.
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### 12.7 Other adverse effects

Persistent Organic Pollutant	This product does not contain any known or suspected substance
Ozone Depletion Potential	This product does not contain any known or suspected substance

## 13. Disposal Considerations

### 13.1 Waste treatment methods

Dispose of in accordance with all applicable local and national regulations. Use recovery/recycling where feasible, otherwise incineration is the recommended method of disposal. Empty containers may contain hazardous residues. Do not cut, puncture or weld on or near to the container. Labels should not be removed from containers until they have been cleaned. Contaminated containers must not be treated as household waste. Containers should be cleaned by appropriate methods and then re-used or disposed of by landfill or incineration as appropriate. Do not incinerate closed containers.

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## 14. Transport information

### IMDG

14.1. UN number	UN 1437
14.2. UN Proper shipping name	ZIRCONIUM HYDRIDE
14.3. Transport hazard class(es)	4.1
14.4. Packaging group	II

### ADR/RID/ADN

14.1. UN number	UN 1437
14.2. UN Proper shipping name	ZIRCONIUM HYDRIDE
14.3. Transport hazard class(es)	4.1
14.4. Packaging group	II

### ICAO-IATA/DGR

14.1. UN number	UN 1437
14.2. UN Proper shipping name	Zirconium hydride
14.3. Transport hazard class(es)	4.1
14.4. Packaging group	II

14.5. Environmental hazards	No hazards identified
14.6. Special precautions for user	No special precautions required
14.7. Maritime transport in bulk according to IMO instruments	Not applicable, packaged goods

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## 15. Regulatory information

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

This Safety Data Sheet is prepared in accordance with Commission Regulation (EC) 1907/2006, amended by Commission Regulation (EU) 2020/878.

### Authorisations/Restrictions

Regulation (EC) 1907/2006, REACH, Annex XIV list of substances subject to authorisation:	Not applicable
Regulation (EC) 1907/2006, REACH, Annex XVII restrictions on the manufacture, placing on the market and use of certain dangerous substances:	Use restricted. See item 75. (see link for restriction details)
Regulation (EC) 1005/2009 on substances that deplete the ozone layer:	Not applicable
Regulation (EC) 850/2004 on persistent organic pollutants, amended by (EU) No 2019/1021:	Not applicable

REACH links

<https://echa.europa.eu/substances-restricted-under-reach>

## 15.2 Chemical Safety Assessment

No Chemical Safety Assessment has been carried out for this substance.

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## 16. Other information

### Revision information

Preparation date	13/01/2025
Revision date	13/01/2025
Revision reason	Creation.

### 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
STOT	Specific target organ toxicity

PBT	Persistent, Bioaccumulative, Toxic
vPvB	Very Persistent, very Bioaccumulative
WEL	Workplace exposure limit

## 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](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>

## List of relevant phrases (code and full text as stated in chapter 2 and 3)

H228 Flammable solid

## 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](mailto:info@vimaterial.de).