HALBLEITER MATERIAL

Material Safety Data Sheet

Nickel Sulfide Powder (Granules)

Report No.: VIH241002017-1
Version: 2.1
Preparation Date: 02/10/2024
Revision Date: 02/10/2024

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

1.1 Product identifier

Product Name	Nickel Sulfide
Product No.	281601
Formula	Ni_3S_2
CAS No.	12035-72-2
Synonyms	Nickel Subsulfide, Trinickel Disulfide

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	https://vimaterial.de/

1.4 Emergency telephone number

Emergency Phone #	0049 1626484175

2. Hazards Identification

2.1 Classification of the substance or mixture

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

Physical hazards

Not Classified

Health hazards

Skin Sensitization	Category 1 (H317)
Germ cell mutagenicity	Category 2 (H341)
Carcinogenicity	Category 1A (H350)
STOT - repeated exposure	Category 1 (H372)

Environmental hazards

Acute aquatic toxicity	Category 1 (H400)
Chronic aquatic toxicity	Category 1 (H410)

Full text of Hazard Statements: see section 16

2.2 Label elements

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

Signal Word	Danger
Pictograms	

Hazard Statements

H317	May cause an allergic skin reaction
H341	Suspected of causing genetic defects.
H350	May cause cancer by inhalation.
H372	Causes damage to organs through prolonged or repeated exposure
H410	Very toxic to aquatic life with long lasting effects.

Precautionary Statements

Prevention	
P202	Do not handle until all safety precautions have been read and understood
P260	Do not breathe dust/fume/gas/mist/vapors/spray
P264	Wash contaminated skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product
P272	Contaminated work clothing should not be allowed out of the workplace
P273	Avoid release to the environment

P280	Wear protective gloves/protective clothing.
P281	Use personal protective equipment as required
Response	
P302 + P352	IF ON SKIN: Wash with plenty of soap and water
P308 + P313	IF exposed or concerned: Get medical advice/attention
P333+P313	If skin irritation or a rash occurs: Get medical advice/attention
P363	Wash contaminated clothing before reuse
P391	Collect spillage
Storage	
P405	Store locked up
Disposal	
P501	Dispose of contents/container in accordance with local/regional/national/international regulations

2.3 Other hazards

This product does not contain any substances classified as PBT or vPvB

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

3. Composition/information on ingredients

3.1 Substances

Chemical Family	Inorganic compound

Component	CAS No.	EC No.	Concentration
Trinickel disulphide (Ni_3S_2)	12035-72-2	234-829-6	<=100%

4. First aid measures

4.1 Description of first aid measures

General Treatment	If symptoms persist, call a physician. Show this Safety Data Sheet to the medical personnel.
Inhalation	Remove victim to fresh air. If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions.
Skin	Take off immediately all contaminated clothing. Rinse skin with water/ shower. Seek medical attention.
Eyes	Rinse with pure water for at least 15 minutes. Remove contact lenses, if present and easy to do. Seek medical attention.
Ingestion	Rinse mouth with water(only if the person is conscious). 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

May cause allergic skin reaction.

4.3 Indication of any immediate medical attention and special treatment needed

1	Based on the symptoms that appear, provide targeted treatment.
2	May cause sensitization or allergic reactions in sensitive individuals.
3	Be aware that symptoms may be delayed.

5. Firefighting Measures

5.1 Extinguishing Media

Suitable extinguishing media	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Unsuitable extinguishing media	N/A

5.2 Special hazards arising from the substance or mixture

1	Sulphur oxides
	Nickel/nickel oxides
2	Non-flammable.
3	Thermal decomposition can lead to release of irritating gases and vapors.

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.
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	Remove persons to safety. 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.

6.3 Methods and material for containment and cleaning up

Advice on how to contain a spill	Covering of drains, Take up mechanically.
Advice on how to clean up a spill	Take up mechanically. Take care not to raise dust.
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 ingestion and inhalation. Avoid dust formation. Do not get in eyes, on skin, or on clothing.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash hands before breaks and after work.

7.2 Conditions for safe storage, including any incompatibilities

Ventilation requirements	Keep containers tightly closed in a dry, cool and well-ventilated place.
Storage class	6.1D, Non-combustible, acute toxic Cat.3 / toxic hazardous materials or hazardous materials causing chronic effects
Incompatible materials	See section 10.5.

7.3 Specific end use(s)

Use in laboratories.

8. Exposure Controls/Personal Protection

8.1 Control parameters

Substance	CAS No.	Source	TWA (8 h)/ mg/m³	Remarks
Nickel sulfide (Ni_3S_2)	12035-72-2	TRGS 900 (DE)	0,01 (inhalable fraction, as Ni)	AGW; Carcinogenic (K3); sensitizer
Nickel sulfide (Ni_3S_2)	12035-72-2	EU SCOEL	0,01 (inhalable fraction, as Ni)	Indicative OELV; Carc. 2, Resp. Sens. 1
Nickel sulfide (Ni_3S_2)	12035-72-2	ACGIH TLV (USA)	0,015 (respirable fraction, as Ni)	TLV-TWA; Carcinogen and respiratory sensitizer
Nickel sulfide (Ni_3S_2)	12035-72-2	NIOSH REL (USA)	0,015 (respirable fraction, as Ni)	Recommended exposure limit; carcinogen
Nickel sulfide (Ni_3S_2)	12035-72-2	OSHA PEL (USA)	0,05 (total dust, as Ni)	PEL-TWA; carcinogen

Notes:

- ✧ *The substance nickel is classified as potentially carcinogenic (Carc. 2) and a respiratory sensitiser (Resp. Sens. 1) under CLP Regulation (EC) No 1272/2008.*
- ✧ *Always consult national occupational exposure limit databases as values may vary between member states.*

TWA: Time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours time-weighted average (unless otherwise specified)

8.2 Exposure controls

Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

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

Wear appropriate protective gloves and clothing to prevent skin exposure. Wash hands thoroughly after handling.

Respiratory Protection

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly.

Large scale/emergency use	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: Particulates filter conforming to EN 143
Small scale/Laboratory use	Use a NIOSH/MSHA or European Standard EN 149:2001 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced. Recommended half mask:- Particle filtering: EN149:2001 When RPE is used a face piece Fit Test should be conducted

Environmental exposure controls

Use appropriate container to avoid environmental contamination. Keep away from drains, surface and ground water.

9. Physical and Chemical Characteristics

9.1 Information on basic physical and chemical properties

Physical State	Solid. Powder
Colour	Grey black
Odor	No data available
Melting Point/Range	797 °C
Boiling Point/Range	No data available
Flammability (liquid)	Not applicable
Flammability (solid, gas)	No data available
Explosion limits	No data available
Flash Point	No data available
Autoignition Temperature	> 400 °C
Decomposition Temperature	No data available
pH	N/A
Viscosity	Not applicable
Water Solubility	0,00735 g/l at 20 °C - OECD Test Guideline 105 - slightly soluble
Solubility in other solvents	No data available
Partition Coefficient (n-octanol/water)	No data available
Vapor Pressure	No data available
Density / Specific Gravity	5,87 g/cm^3

Vapor Density	Not applicable
Particle characteristics	No data available

9.2 Other information

Molecular formula	Ni_3S_2
Molecular weight	240,21 g/mol
Evaporation Rate	Not applicable - Solid

10. Stability and reactivity

10.1 Reactivity

None known, based on information available

10.2 Chemical stability

Stable under normal conditions

10.3 Possibility of hazardous reactions

Hazardous Polymerization: No information available

Hazardous Reactions: Violent reactions possible with: Strong acids, Acid anhydrides

10.4 Conditions to avoid

No data available.

10.5 Incompatible materials

No data available.

10.6 Hazardous decomposition products

Sulphur oxides, Nickel/Nickel oxides

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

Product Information: No acute toxicity information is available for this product

Acute toxicity	Oral:	LD50 - Rat - female - > 11.000 mg/kg
	Dermal:	No data available
	Inhalation:	LC50 - Rat - female - 4 h - 0,924 mg/l - dust/mist
Skin corrosion/irritation	No data available.	
Serious eye damage/irritation	No data available.	
Respiratory or skin	Respiratory	No data available.

sensitization	Skin	May cause an allergic skin reaction.
Germ cell mutagenicity	Suspected of causing genetic defects. Species: Mouse Application Route: Intraperitoneal Result: positive	
Carcinogenicity	IARC: 1 - Group 1: Carcinogenic to humans NTP-K: Known to be carcinogenic: reasonably anticipated to be a human carcinogen. OSHA: No component of this product present at levels greater than or equal to 0,1% is on OSHA's list of regulated carcinogens.	
Reproductive toxicity	No data available.	
STOT - single exposure	No data available.	
STOT - repeated exposure	Inhalation - Causes damage to organs through prolonged or repeated exposure. - Lungs	
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	Very toxic to aquatic life with long lasting effects

12.2 Persistence and degradability

Persistence	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	In accordance with Annex XIII of the REACH Regulation, inorganic substances do not require assessment.

12.6 Endocrine disrupting properties

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

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.

14. Transport information

IMDG

14.1. UN number	UN3077
14.2. UN Proper shipping name	Environmentally hazardous substance, solid, n.o.s. (Nickel Sulfide)
14.3. Transport hazard class(es)	9
14.4. Packaging group	III

ADR/RID/ADN

14.1. UN number	UN3077
14.2. UN Proper shipping name	Environmentally hazardous substance, solid, n.o.s. (Nickel Sulfide)
14.3. Transport hazard class(es)	9
14.4. Packaging group	III

ICAO-IATA/DGR

14.1. UN number	UN3077
14.2. UN Proper shipping name	Environmentally hazardous substance, solid, n.o.s. (Nickel

	Sulfide)
14.3. Transport hazard class(es)	9
14.4. Packaging group	III

14.5. Environmental hazards	Dangerous for the environment Product is a marine pollutant according to the criteria set by IMDG/IMO
14.6. Special precautions for user	No special precautions required
14.7. Maritime transport in bulk according to IMO instruments	Not applicable, packaged goods

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.

16. Other information

Revision information

Preparation date	02/10/2024

Revision date	02/10/2024
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

[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)

H317	May cause an allergic skin reaction
H341	Suspected of causing genetic defects.
H350	May cause cancer by inhalation.
H372	Causes damage to organs through prolonged or repeated exposure
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

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.