

Jan 2025

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Material Type: Nickel Flake
Product Names: **Nickel Leafing Grade Flakes**
(Nickel Fine Leafing, Nickel Fine Leafing, Nickel Standard Leafing)
Nickel Water Grade Flakes
(Nickel Fine Water, Nickel Standard Water)
Conductive Nickel Flake Type Other Nickel Flakes

CAS-No.:

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

Identified uses: Manufacture of substances, Pigments and Fillers, Alloying and Powder Metal Applications

1.3 Details of the supplier of the safety data sheet

Company: Metlab Corporation
4011 Hyde Park Blvd
Niagara Falls, NY 14305
USA
Telephone: 716-282-6950
Fax: 716-282-6971

1.4 Emergency telephone number

Emergency Contact: Chemtrec
Telephone: 1-800-255-3924
Contract No.: MIS7523877

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Skin sensitization (Category 1), H317
Carcinogenicity (Category 2), H351
Specific target organ toxicity - repeated exposure, Inhalation (Category 1), H372
Chronic aquatic toxicity (Category 3), H412

2.2 GHS Label elements, including precautionary statements



Pictogram

GHS07

GHS08

Signal word

Danger

Hazard statement(s)

| | |
|------|--|
| H317 | May cause an allergic skin reaction. |
| H351 | Suspected of causing cancer. |
| H372 | Causes damage to organs through prolonged or repeated exposure if inhaled. |
| H412 | May cause long lasting harmful effects to aquatic life. |

Precautionary statement(s)

| | |
|-------------|---|
| P201 | Obtain special instructions before use. |
| P202 | Do not handle until all safety precautions have been read and understood. |
| P260 | Do not breathe dust/ fume/ gas/ mist/ vapors/ spray. |
| P261 | Avoid breathing dust/fumes/gas/mist/vapors/spray. |
| P264 | Wash 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/ eye protection/ face protection. |
| P302 + P352 | IF ON SKIN: Wash with plenty of soap and water. |
| P308 + P313 | IF exposed or concerned: Get medical advice/ attention. |
| P314 | Get Medical advice/attention if you feel unwell. |
| P321 | Specific treatment (see supplemental first aid instructions on this label). |
| P333 + P313 | If skin irritation or rash occurs: Get medical advice/ attention. |
| P363 | Wash contaminated clothing before reuse. |
| P405 | Store locked up. |
| P501 | Dispose of contents/ container to an approved waste disposal plant. |

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

| | |
|-------------------|-------------|
| Formula: | Ni |
| Molecular Weight: | 58.69 g/mol |
| CAS-No.: | 7440-02-0 |
| EC-No.: | 231-111-4 |

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. If skin irritation or rash occurs: Get medical advice/attention. Show label if possible.

In case of eye contact

Flush eyes with water as a precaution.

If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

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

No data available

5. FIREFIGHTING MEASURES

5.1 Suitable Extinguishing Media

Any, type to be selected according to materials in the immediate neighborhood.

5.2 Special Risks

Non-Flammable. May oxidize to Nickel Oxide if exposed to high temperatures within a fire. Keep containers cool with water spray

5.3 Special Protective equipment for fire fighting

None needed. Wear protective equipment if required for other materials within immediate vicinity.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up

Sweep up and shovel. Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13). Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. Keep away from sources of ignition – No smoking. Take measures to prevent the buildup of electrostatic charge. For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

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

7.3 Specific end use(s)

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

8.0 EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Exposure Limits

| Nickel Metal (Ni) – CAS 7440-02-0 | | |
|-----------------------------------|-------------------------------------|------|
| | Exposure Limit (mg/m ³) | Year |
| ACGIH TLV-TWA ¹ | 1.5 * | 2008 |
| UK WEL ² | 0.5 | 2006 |
| Japan | 1 | 1968 |
| Korea | 1 | 2006 |
| China | 1 | 2007 |

* - as Ni in a inhalable fraction

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

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact

| | |
|--------------------------|--|
| Material: | Nitrile rubber |
| Minimum layer thickness: | 0.11 mm |
| Break through time: | 480 min |
| Material tested: | Dermatril® (KCL 740 / Aldrich Z677272, Size M) |

Splash contact

| | |
|--------------------------|----------------|
| Material: | Nitrile rubber |
| Minimum layer thickness: | 0.11 mm |
| Break through time: | 480 min |

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection

Complete suit protecting against chemicals. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

9. **PHYSICAL AND CHEMICAL PROPERTIES**

Silver-gray odorless metal powder

| | |
|---|---|
| Physical state at 20°C and 101.3 kPa | Solid |
| Melting / freezing point | 1455°C |
| Boiling point | 2730°C |
| Relative Density | 8.9 g/cm ³ at 25°C |
| Vapor Pressure | 1 mm Hg at 1810°C |
| Surface Tension | Not applicable |
| Water Solubility | Not applicable |
| Partition Coefficient n-octanol/water (log value) | Not applicable |
| Flash Point | Not applicable |
| Flammability | Non-flammable |
| Explosive Properties | Non-explosive |
| Self-ignition temperature | Very finely divided metal in the fully reduced state can smolder in the presence of oxygen or air |
| Oxidizing Properties | Non-oxidizing |
| Granulometry | Particle Size: >1 micron |
| Stability in organic solvents and identity of relevant degradation products | Not applicable |
| Dissociation Constant | Not applicable |
| Viscosity | Not applicable |
| Magnetic Properties | Ferromagnetic |

Other safety information: no data available

10. **STABILITY AND REACTIVITY**

10.1 **Reactivity**

No data available

10.2 **Chemical stability**

Stable under recommended storage conditions.

10.3 **Possibility of hazardous reactions**

No data available

10.4 **Conditions to avoid**

This product can react vigorously with acids to liberate hydrogen, which can form explosive mixtures with air. Under special conditions nickel can react with carbon monoxide in reducing atmospheres to form nickel carbonyl, Ni(CO)₄, a toxic gas. Metal powders when heated in reducing atmospheres may become pyrophoric.

10.5 **Incompatible materials**

Acids, Oxidizing agents, Sulphur compounds, Hydrogen gas, Oxygen, Methanol, organic solvents, Aluminum, Fluorine, Ammonia

10.6 Hazardous decomposition products

Nickel carbonyl gas

11. TOXICOLOGICAL INFORMATION ³

11.1 Information on toxicological effects

Acute toxicity

Oral: Non Toxic – LD₅₀ ORAL RAT >9000 mg/kg
 Inhalation: no data available
 Dermal: no data available

Corrosivity/Irritation

Respiratory Tract None
 Skin See Sensitization Section
 Eyes Mechanical irritation may be expected

Sensitization

Respiratory Tract Nickel metal induced asthma is very rare. 3 case reports are available; the data is not sufficient to conclude that nickel metal is classified as a respiratory sensitizer.

Skin Nickel metal is a well-known skin sensitizer. Direct and prolonged skin contact with metallic nickel may induce and elicit allergic skin reactions in those people already sensitized to nickel, so called nickel allergic contact dermatitis.

Pre-existing conditions Individuals known to be allergic to nickel should avoid contact with nickel whenever possible to reduce the likelihood of nickel allergic contact dermatitis reactions (skin rashes). Repeated contact may result in persistent chronic palmar/hand dermatitis in a smaller number of individuals, despite efforts to reduce or avoid nickel exposure.

Chronic toxicity

Oral: No information available

Inhalation: Animal studies (rats) show that repeated dose inhalation of nickel damages the lung. Chronic inflammation, lung fibrosis and accumulation of nickel particles were observed.

Dermal: Direct and prolonged skin contact with nickel metal may cause nickel sensitization resulting in nickel allergic contact dermatitis /skin rash.

**Mutagenicity /
Reproductive toxicity**

No data.

Carcinogenicity

Ingestion:

The U.S. National Institute for Occupational Safety and Health (NIOSH) concluded that there is no evidence that nickel metal is carcinogenic when ingested.

Inhalation:

To date, there is no evidence that nickel metal causes cancer in humans based on epidemiology data from workers in the nickel producing and nickel consuming industries. A recent animal (rat) inhalation study showed no increased respiratory cancer risk for nickel metal powder indicating that no carcinogen classification is warranted for nickel metal. The U.S. National Toxicology Program has listed metallic nickel as reasonably anticipated to be a human carcinogen.

The International Agency for Research on Cancer (IARC)(Vol 49) found there was inadequate evidence that metallic nickel is carcinogenic to humans but since there was sufficient evidence that it is carcinogenic to animals, IARC concluded that metallic nickel is possibly carcinogenic to humans (Group 2B). In 1997, the ACGIH categorized elemental nickel as: AS "Not Suspected as a Human Carcinogen". Epidemiological studies of workers exposed to nickel powder and to dust and fume generated in the production of nickel alloys and of stainless steel have not indicated the presence of a significant respiratory cancer hazard.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to fish LC50 - Cyprinus carpio (Carp) - 1.3 mg/l - 96 h

Toxicity to daphnia and other aquatic invertebrates EC50 - Daphnia magna (Water flea) - 1 mg/l - 48 h

12.2 Persistence and degradability

No data available

12.3 Bio accumulative potential

No data available

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Very toxic to aquatic life.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Recover or recycle if possible. Dispose of contents in accordance with local, state or national legislation.

13.2 Additional Information

No information available

14. TRANSPORT INFORMATION

| | |
|---|---|
| International Maritime Dangerous Goods Code | Not Regulated |
| International Civil Aviation Organization Technical Instructions for the Carriage of Dangerous Goods by Air | Not Regulated |
| U.S. Dept. of Transportation Regulations | UN3077 Environmentally Hazardous Substance, Solid, nos (Nickel Powder), 9 pg III RQ Applies to nickel powders if they are less than 100 micron in particle size and if they are packaged in quantities greater than 100 pounds |
| Canadian Transportation of Dangerous Goods Act | Not Regulated |
| European Agreement Concerning the International Carriage of Dangerous Goods by Road | Not Regulated |

15. REGULATORY INFORMATION

Skin Sensitization - Category 1

Carcinogenicity - Category 2

Specific Target Organ Toxicity, Repeated exposure - Category 1

Aquatic Chronic - Category 3

HMIS Rating

Health hazard: 2

Chronic Health Hazard: *

Flammability: 0

Physical Hazard 0

NFPA Rating

Health hazard: 2

Fire Hazard: 0

Reactivity Hazard: 0

Symbols: GHS07 - Exclamation mark, GHS08 - Health Hazard**Signal Word:** Danger**Hazard Statements**

H317 - May cause an allergic skin reaction.

H372 - Causes damage to lungs through prolonged or repeated inhalation exposure

H351 - Suspected of causing cancer

H412 - May cause long lasting harmful effects to aquatic life

Precautionary Statements**Prevention:**

P201 - Obtain special instructions before use

P202 - Do not handle until all safety precautions have been read and understood

P260 - Do not breathe dust or fume

P261 - Avoid breathing dust or fume. Wear respiratory protective equipment if fine dusts are generated.

P272 - Contaminated work clothing should not be allowed out of the workplace.

P273 - Avoid release to the environment

P280 - Wear protective gloves and protective clothing

P264 - Wash hands, and face thoroughly after handling.

P270 - Do not eat, drink or smoke when using this product.

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 rash occurs: Get medical advice/attention.

P314 - Get medical advice/attention if you feel unwell.

P321 - See Safety Data Sheet for specific treatment

P363 - Wash contaminated clothes before reuse

Storage:

P405 - store locked up

Disposal:

P501 - Dispose of contents/container in accordance to local, regional, national, and international regulations

- Canada:** WHMIS Classification: D2A
All components are listed on the Canadian Domestic Substances List (DSL)
- United States of America:** Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200)
This product contains NICKEL which is subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 and of 40 CFR 372. Refer to the Hazardous Ingredients section of this MSDS for the appropriate CAS numbers and percent by weight.
All components are listed on the US Toxic Substances Control Act (TSCA) inventory
- California Proposition 65:** This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

16. **OTHER INFORMATION**

Metlab Corporation believes that the information in this Material Safety Data Sheet is accurate. However, Metlab Corporation makes no express or implied warranty as to the accuracy of such information and expressly disclaims any liability resulting from reliance on such information.

Notes:

- 1 Threshold Limit Values of the American Conference of Governmental Industrial Hygienists. 2008.
- 2 Maximum Exposure Limit of the Health and Safety Executive in the U.K. in EH40/00.
- 3 Describes possible health hazards of the product supplied. If user operations change it to other chemical forms, whether as end products, intermediates or fugitive emissions, the possible health hazards of such forms must be determined by the user.