

**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 <sup>3</sup> )	Year
ACGIH TLV-TWA <sup>1</sup>	1.5 *	2008
UK WEL <sup>2</sup>	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 <sup>3</sup> 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)<sub>4</sub>, 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 <sup>3</sup>**

**11.1 Information on toxicological effects**

**Acute toxicity**

Oral:	Non Toxic – LD <sub>50</sub> 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.