

## NICKEL (METAL) POWDER

GHS Safety Data Sheet

Version No:5

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### Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

#### PRODUCT NAME

NICKEL (METAL) POWDER

#### OTHER NAMES

"Ni 270", "nickel 270", "nickel (dust)", "nickel particles", "nickel sponge", "Raney alloy", "Raney nickel", "nickel powder"

#### PROPER SHIPPING NAME

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.  
(contains nickel)

#### PRODUCT USE

Used in the manufacture of Monel metal, stainless steels, and nickel-chrome resistance wire; nickel-plating; various alloys such as new silver, Chinese silver, German silver; for coins, electrotypes, storage batteries. Used for magnets, lightning-rod tips, electrical contacts and electrodes, spark plugs, machinery parts; catalyst for hydrogenation of oils and other organic substances; in alloys for electronic and space applications.

#### SUPPLIER

Company: S D FINE- CHEM LIMITED

Address:

315- 317, T.V. INDUSTRIAL ESTATE,

248, WORLI,

MUMBAI- 400030.INDIA.

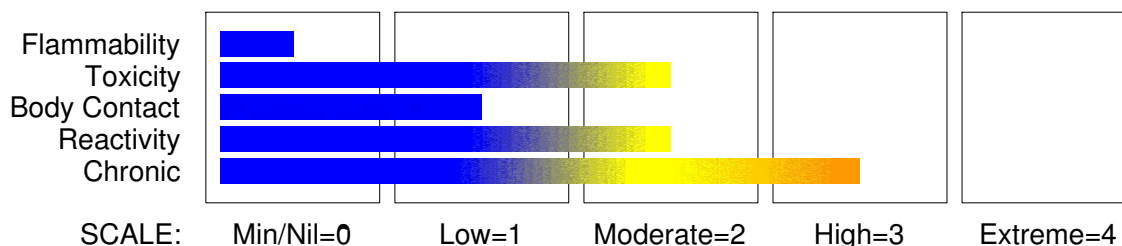
technical@sdfine.com

Telephone: 91- 22- 24959898

Telephone: 91- 22- 24959899

Fax: 91- 22- 24937232

#### HAZARD RATINGS



### Section 2 - HAZARDS IDENTIFICATION

#### GHS Classification

Carcinogen Category 2

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## Section 2 - HAZARDS IDENTIFICATION

Chronic Aquatic Hazard Category 1  
Skin Sensitizer Category 1



## EMERGENCY OVERVIEW

### HAZARD

WARNING

Determined by using GHS criteria:

H317 H351 H410

May cause allergic skin reaction

Suspected of causing cancer

Very toxic to aquatic life with long lasting effects

### PRECAUTIONARY STATEMENTS

#### Prevention

Obtain special instructions before use.

Avoid breathing dust/fume/gas/mist/vapours/spray.

Contaminated clothing should not be allowed out of the workplace.

Use personal protective equipment as required.

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

#### Response

If exposed or concerned: Get medical attention advice.

If skin irritation or rash occurs, seek medical advice/attention.

Specific treatment: refer to Label or MSDS.

IF ON SKIN: Gently wash with plenty of soap and water.

Wash contaminated clothing before reuse.

#### Storage

Store locked up.

#### Disposal

Dispose of contents and container in accordance with relevant legislation.

## Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

| NAME   | CAS RN    | %    |
|--------|-----------|------|
| nickel | 7440-02-0 | > 99 |

## Section 4 - FIRST AID MEASURES

### SWALLOWED

- Immediately give a glass of water.
- First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

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## Section 4 - FIRST AID MEASURES

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### EYE

If this product comes in contact with the eyes:

- Wash out immediately with fresh running water.
- Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
- If pain persists or recurs seek medical attention.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

### SKIN

If skin contact occurs:

- Immediately remove all contaminated clothing, including footwear.
- Flush skin and hair with running water (and soap if available).
- Seek medical attention in event of irritation.

### INHALED

- If dust is inhaled, remove from contaminated area.
- Encourage patient to blow nose to ensure clear breathing passages.
- Ask patient to rinse mouth with water but to not drink water.
- Seek immediate medical attention.

### NOTES TO PHYSICIAN

Treat symptomatically.

\* Preplacement and periodic medical examinations of workers exposed to nickel are recommended. Preplacement examination should evaluate any history of skin allergies or asthma, other exposures to nickel, smoking history, condition of nasal cavity and lungs. Periodic examinations should include chest X-rays. [Source: Occupational Diseases.]

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## Section 5 - FIRE FIGHTING MEASURES

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### EXTINGUISHING MEDIA

Metal dust fires need to be smothered with sand, inert dry powders.

DO NOT USE WATER, CO<sub>2</sub> or FOAM.

· Use DRY sand, graphite powder, dry sodium chloride based extinguishers, G-1 or Met L-X to smother fire.

· Confining or smothering material is preferable to applying water as chemical reaction may produce flammable and explosive hydrogen gas.

· Chemical reaction with CO<sub>2</sub> may produce flammable and explosive methane.

· If impossible to extinguish, withdraw, protect surroundings and allow fire to burn itself out.

DO NOT use halogenated fire extinguishing agents.

### FIRE FIGHTING

- Alert Fire Brigade and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves for fire only.
- Prevent, by any means available, spillage from entering drains or water courses.
- Use fire fighting procedures suitable for surrounding area.
- DO NOT approach containers suspected to be hot.
- Cool fire exposed containers with water spray from a protected location.
- If safe to do so, remove containers from path of fire.
- Equipment should be thoroughly decontaminated after use.

### FIRE/EXPLOSION HAZARD

- Metal powders, while generally regarded as non-combustible, may burn when metal is

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## Section 5 - FIRE FIGHTING MEASURES

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finely divided and energy input is high.

- May react explosively with water.
  - May be ignited by friction, heat, sparks or flame.
  - Metal dust fires are slow moving but intense and difficult to extinguish.
  - Will burn with intense heat.
  - DO NOT disturb burning dust. Explosion may result if dust is stirred into a cloud, by providing oxygen to a large surface of hot metal.
  - Containers may explode on heating.
  - Dusts or fumes may form explosive mixtures with air.
  - May REIGNITE after fire is extinguished.
  - Gases generated in fire may be poisonous, corrosive or irritating.
  - DO NOT use water or foam as generation of explosive hydrogen may result.
- Decomposition may produce toxic fumes of: metal oxides.

### FIRE INCOMPATIBILITY

None known.

### Personal Protective Equipment

- Breathing apparatus.
- Gas tight chemical resistant suit.
- Limit exposure duration to 1 BA set 30 mins.

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## Section 6 - ACCIDENTAL RELEASE MEASURES

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### EMERGENCY PROCEDURES

#### MINOR SPILLS

Environmental hazard - contain spillage.

- Clean up all spills immediately.
- Avoid contact with skin and eyes.
- Wear protective clothing, gloves, safety glasses and dust respirator.
- Use dry clean up procedures and avoid generating dust.
- Sweep up or
- Vacuum up (consider explosion-proof machines designed to be grounded during storage and use).
- Place in clean drum then flush area with water.

#### MAJOR SPILLS

Environmental hazard - contain spillage.

Moderate hazard.

- CAUTION: Advise personnel in area.
- Alert Emergency Services and tell them location and nature of hazard.
- Control personal contact by wearing protective clothing.
- Prevent, by any means available, spillage from entering drains or water courses.
- Recover product wherever possible.
- IF DRY: Use dry clean up procedures and avoid generating dust. Collect residues and place in sealed plastic bags or other containers for disposal. IF WET: Vacuum/shovel up and place in labelled containers for disposal.
- ALWAYS: Wash area down with large amounts of water and prevent runoff into drains.
- If contamination of drains or waterways occurs, advise Emergency Services.

### EMERGENCY RESPONSE PLANNING GUIDELINES (ERPG)

The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour WITHOUT experiencing or developing

life-threatening health effects is:

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## Section 6 - ACCIDENTAL RELEASE MEASURES

nickel 10 mg/m<sup>3</sup>

irreversible or other serious effects or symptoms which could impair an individual's ability to take protective action is:

nickel 10 mg/m<sup>3</sup>

other than mild, transient adverse effects without perceiving a clearly defined odour is:

nickel 4.5 mg/m<sup>3</sup>

The threshold concentration below which most people will experience no appreciable risk of health effects:

nickel 1 mg/m<sup>3</sup>

American Industrial Hygiene Association (AIHA)

Ingredients considered according to the following cutoffs

|                 |               |               |              |
|-----------------|---------------|---------------|--------------|
| Very Toxic (T+) | $\geq 0.1\%$  | Toxic (T)     | $\geq 3.0\%$ |
| R50             | $\geq 0.25\%$ | Corrosive (C) | $\geq 5.0\%$ |
| R51             | $\geq 2.5\%$  |               |              |
| else            | $\geq 10\%$   |               |              |

where percentage is percentage of ingredient found in the mixture

## SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS



+: May be stored together

O: May be stored together with specific precautions

X: Must not be stored together

**Personal Protective Equipment advice is contained in Section 8 of the MSDS.**

## Section 7 - HANDLING AND STORAGE

### PROCEDURE FOR HANDLING

- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- Prevent concentration in hollows and sumps.
- DO NOT enter confined spaces until atmosphere has been checked.
- DO NOT allow material to contact humans, exposed food or food utensils.
- Avoid contact with incompatible materials.
- When handling, DO NOT eat, drink or smoke.
- Keep containers securely sealed when not in use.
- Avoid physical damage to containers.
- Always wash hands with soap and water after handling.
- Work clothes should be laundered separately. Launder contaminated clothing before re-use.
- Use good occupational work practice.
- Observe manufacturer's storing and handling recommendations.
- Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

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## Section 7 - HANDLING AND STORAGE

### SUITABLE CONTAINER

CARE: Packing of high density product in light weight metal or plastic packages may result in container collapse with product release.

Heavy gauge metal packages / Heavy gauge metal drums.

- Polyethylene or polypropylene container.
- Check all containers are clearly labelled and free from leaks.

### STORAGE INCOMPATIBILITY

- Some metals can react exothermically with oxidising acids to form noxious gases.
- Very reactive metals have been known to react with halogenated hydrocarbons, sometimes forming explosive compounds (for example, copper dissolves when heated in carbon tetrachloride).

· Many metals in elemental form react exothermically with compounds have active hydrogen atoms such as acids and water to form flammable hydrogen gas and caustic products.

· Elemental metals may react with azo/diazo compounds to form explosive products.

· Some elemental metals form explosive products with halogenated hydrocarbons.

Reacts with acids producing flammable / explosive hydrogen (H<sub>2</sub>) gas.

Many metals may incandesce, react violently, ignite or react explosively upon addition of concentrated nitric acid.

Metals and their oxides or salts may react violently with chlorine trifluoride. Chlorine trifluoride is a hypergolic oxidiser. It ignites on contact (without external source of heat or ignition) with recognised fuels - contact with these materials, following an ambient or slightly elevated temperature, is often violent and may produce ignition. The state of subdivision may affect the results.

Nickel in reducing atmosphere furnace can react with carbon monoxide forming highly toxic nickel carbonyl gas.

Avoid reaction with nitric acid and other strong acids, oxidizing agents and sulfur compounds.

Nickel dust reacts violently with titanium, ammonium nitrate, potassium perchlorate and hydrazoic acid.

### STORAGE REQUIREMENTS

Observe manufacturer's storing and handling recommendations.

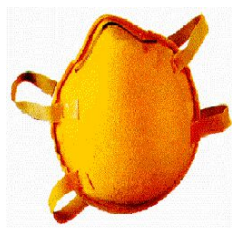
## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

### EXPOSURE CONTROLS

#### EMERGENCY EXPOSURE LIMITS

| Material | Revised IDLH Value (mg/m <sup>3</sup> ) | Revised IDLH Value (ppm) |
|----------|-----------------------------------------|--------------------------|
| nickel   | 10                                      |                          |

### PERSONAL PROTECTION



#### EYE

- Safety glasses with side shields.
- Chemical goggles.

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## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

· Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59].

### HANDS/FEET

Suitability and durability of glove type is dependent on usage. Factors such as:

- frequency and duration of contact,
- chemical resistance of glove material,
- glove thickness and
- dexterity,

are important in the selection of gloves.

Wear chemical protective gloves, eg. PVC.

Wear safety footwear or safety gumboots, eg. Rubber.

NOTE: The material may produce skin sensitisation in predisposed individuals. Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact.

### OTHER

- Overalls.
- P.V.C. apron.
- Barrier cream.
- Skin cleansing cream.
- Eye wash unit.

### RESPIRATOR

| Protection Factor | Half- Face Respirator | Full- Face Respirator | Powered Air Respirator |
|-------------------|-----------------------|-----------------------|------------------------|
| 10 x ES           | P1 Air- line*         | - -                   | PAPR- P1 -             |
| 50 x ES           | Air- line**           | P2                    | PAPR- P2               |
| 100 x ES          | -                     | P3                    | -                      |
|                   |                       | Air- line*            | -                      |
| 100+ x ES         | -                     | Air- line**           | PAPR- P3               |

\* - Negative pressure demand \*\* - Continuous flow.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required.

For further information consult your Occupational Health and Safety Advisor.

### ENGINEERING CONTROLS

General exhaust is adequate under normal operating conditions. Local exhaust ventilation may be required in special circumstances. If risk of overexposure exists, wear approved respirator. Supplied-air type respirator may be required in special circumstances.

Correct fit is essential to ensure adequate protection. Provide adequate ventilation in warehouses and enclosed storage areas. Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to effectively remove the contaminant.

Type of Contaminant:  
solvent, vapours, degreasing etc., evaporating  
from tank (in still air).

Air Speed:  
0.25- 0.5 m/s (50- 100 f/min)

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## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

|                                                                                                                                                                                                                     |                                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer transfers, welding, spray drift, plating acid fumes, pickling (released at low velocity into zone of active generation) | 0.5- 1 m/s (100- 200 f/min.)   |
| direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)                                                      | 1- 2.5 m/s (200- 500 f/min.)   |
| grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion)                                                                 | 2.5- 10 m/s (500- 2000 f/min.) |

Within each range the appropriate value depends on:

|                                                            |                                   |
|------------------------------------------------------------|-----------------------------------|
| Lower end of the range                                     | Upper end of the range            |
| 1: Room air currents minimal or favourable to capture      | 1: Disturbing room air currents   |
| 2: Contaminants of low toxicity or of nuisance value only. | 2: Contaminants of high toxicity  |
| 3: Intermittent, low production.                           | 3: High production, heavy use     |
| 4: Large hood or large air mass in motion                  | 4: Small hood- local control only |

Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 1-2 m/s (200-400 f/min) for extraction of solvents generated in a tank 2 meters distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.

## Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

### APPEARANCE

Lustrous silver-white, hard, ferromagnetic metal. Insoluble in water. Soluble in dilute nitric acid; slightly soluble in hydrochloric acid and sulfuric acid. Insoluble in ammonia. Mohs' hardness:3.8  
Welding flux grades typical sieve analysis (cumulative retention %):-  
200 um 0, 150 um 2, 100 um 12, 75 um 60, 63 um 80, 43 um 98.

### PHYSICAL PROPERTIES

Solid.

|                                                 |                                           |
|-------------------------------------------------|-------------------------------------------|
| Molecular Weight: 58.71                         | Boiling Range (°C): 2732                  |
| Melting Range (°C): 1453                        | Specific Gravity (water=1): 8.9           |
| Solubility in water (g/L): Reacts               | pH (as supplied): Not applicable          |
| pH (1% solution): Not applicable                | Vapour Pressure (kPa): 0.13 @ 1810 C      |
| Volatile Component (%vol): Nil @ 38 C.          | Evaporation Rate: Non Volatile            |
| Relative Vapour Density (air=1): Not available. | Flash Point (°C): Non Flammable           |
| Lower Explosive Limit (%): Not applicable       | Upper Explosive Limit (%): Not applicable |
| Autoignition Temp (°C): Not available.          | Decomposition Temp (°C): Not available.   |
| State: Solid                                    | Viscosity: Not Applicable                 |

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# NICKEL (METAL) POWDER

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## Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

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### CONDITIONS CONTRIBUTING TO INSTABILITY

- Presence of incompatible materials.
- Product is considered stable.
- Hazardous polymerisation will not occur.

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## Section 11 - TOXICOLOGICAL INFORMATION

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### POTENTIAL HEALTH EFFECTS

#### ACUTE HEALTH EFFECTS

##### SWALLOWED

Although ingestion is not thought to produce harmful effects (as classified under EC Directives), the material may still be damaging to the health of the individual, following ingestion, especially where pre-existing organ (e.g liver, kidney) damage is evident. Present definitions of harmful or toxic substances are generally based on doses producing mortality rather than those producing morbidity (disease, ill-health). Gastrointestinal tract discomfort may produce nausea and vomiting. In an occupational setting however, ingestion of insignificant quantities is not thought to be cause for concern.

Nickel salts cause vomiting, following ingestion, as a result of astringent and irritant effects. In common with other irritant-emetics the lethal dose varies widely. Absorption is generally poor and systemic poisoning is rare. Systemic effects include increased blood sugar levels (hyperglycaemia), capillary damage (especially in the brain and adrenals), kidney damage, heart damage (myocardial weakness) and central nervous system depression.

##### EYE

Although the material is not thought to be an irritant (as classified by EC Directives), direct contact with the eye may cause transient discomfort characterised by tearing or conjunctival redness (as with windburn). Slight abrasive damage may also result. The material may produce foreign body irritation in certain individuals.

##### SKIN

Skin contact with the material may damage the health of the individual; systemic effects may result following absorption.

Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

The material is not thought to be a skin irritant (as classified by EC Directives using animal models). Abrasive damage however, may result from prolonged exposures. Good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.

##### INHALED

Inhalation may produce health damage\*.

Not normally a hazard due to non-volatile nature of product.

The material is not thought to produce either adverse health effects or irritation of the respiratory tract following inhalation (as classified by EC Directives using animal models). Nevertheless, adverse systemic effects have been produced following exposure of animals by at least one other route and good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.

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## Section 11 - TOXICOLOGICAL INFORMATION

Regular exposure to nickel fume, as the oxide, may result in "metal fume fever" a sometimes debilitating upper respiratory tract condition resembling influenza.

Symptoms include malaise, fever, weakness, nausea and may appear quickly if operations occur in closed or poorly ventilated areas. Pulmonary oedema, pulmonary fibrosis and asthma has been reported in welders using nickel alloys; level of exposure are generally not available and case reports are often confounded by mixed exposures to other agents.

Inhalation of freshly formed metal oxide particles sized below 1.5 microns and generally between 0.02 to 0.05 microns may result in "metal fume fever". Symptoms may be delayed for up to 12 hours and begin with the sudden onset of thirst, and a sweet, metallic or foul taste in the mouth. Other symptoms include upper respiratory tract irritation accompanied by coughing and a dryness of the mucous membranes, lassitude and a generalised feeling of malaise. Mild to severe headache, nausea, occasional vomiting, fever or chills, exaggerated mental activity, profuse sweating, diarrhoea, excessive urination and prostration may also occur. Tolerance to the fumes develops rapidly, but is quickly lost. All symptoms usually subside within 24-36 hours following removal from exposure.

### CHRONIC HEALTH EFFECTS

On the basis, primarily, of animal experiments, concern has been expressed that the material may produce carcinogenic or mutagenic effects; in respect of the available information, however, there presently exists inadequate data for making a satisfactory assessment.

Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems.

Limited evidence shows that inhalation of the material is capable of inducing a sensitisation reaction in a significant number of individuals at a greater frequency than would be expected from the response of a normal population.

Pulmonary sensitisation, resulting in hyperactive airway dysfunction and pulmonary allergy may be accompanied by fatigue, malaise and aching. Significant symptoms of exposure may persist for extended periods, even after exposure ceases. Symptoms can be activated by a variety of nonspecific environmental stimuli such as automobile exhaust, perfumes and passive smoking.

Practical experience shows that skin contact with the material is capable either of inducing a sensitisation reaction in a substantial number of individuals, and/or of producing a positive response in experimental animals.

On the basis, primarily, of animal experiments, the material may be regarded as carcinogenic to humans. There is sufficient evidence to provide a strong presumption that human exposure to the material may result in cancer on the basis of:

- appropriate long-term animal studies
- other relevant information.

Metallic dusts generated by the industrial process give rise to a number of potential health problems. The larger particles, above 5 micron, are nose and throat irritants. Smaller particles however, may cause lung deterioration. Particles of less than 1.5 micron can be trapped in the lungs and, dependent on the nature of the particle, may give rise to further serious health consequences.

The most common toxic reaction to nickel is skin sensitisation which may produce a chronic eczema called "nickel itch". The first symptom is itching which occurs up to 7 days prior to the appearance of skin eruption. The primary skin eruption is erythematous or follicular and may be followed by superficial discrete ulcers (which discharge and become crusted), or eczema. In the chronic stages, pigmented or depigmented plaques may be formed. Recovery from the dermatitis usually occurs within 7 days but may take several weeks.

Nickel dusts and several specific compounds are carcinogenic in animals following inhalation or parenteral administration (but not by ingestion or skin contact). Increases in lung and nasal cavity cancers have been observed amongst nickel workers in smelters and refineries. Respiratory cancer risks primarily relate to chronic exposure to soluble

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## Section 11 - TOXICOLOGICAL INFORMATION

nickels at concentrations in excess of 1 mg Ni/m<sup>3</sup> and exposure to the less soluble forms at concentrations greater than 10 mg Ni/m<sup>3</sup>. Metallic nickel does not appear to pose such a threat.

Nickel dusts, fumes and salts are potent contact allergens and sensitisers producing a dermatitis known as "nickel" rash.

In the absence of properly designed ventilation systems or where respiratory protective devices are inadequate, up to 10% of exposed workers are expected to be symptomatic.

### TOXICITY AND IRRITATION

#### TOXICITY

Oral (rat) LDLo: 5000 mg/kg

Oral (rat) TDLo: 500 mg/kg/5D- I

Inhalation (rat) TCLo: 0.1 mg/m<sup>3</sup>/24H/17W- C

Intravenous (dog) LD50: 40 mg/kg

#### IRRITATION

Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's oedema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibody-mediated immune reactions. The significance of the contact allergen is not simply determined by its sensitisation potential: the distribution of the substance and the opportunities for contact with it are equally important. A weakly sensitising substance which is widely distributed can be a more important allergen than one with stronger sensitising potential with which few individuals come into contact. From a clinical point of view, substances are noteworthy if they produce an allergic test reaction in more than 1% of the persons tested.

WARNING: This substance has been classified by the IARC as Group 2B: Possibly Carcinogenic to Humans.

Tenth Annual Report on Carcinogens: Substance anticipated to be Carcinogen [National Toxicology Program: U.S. Dep. of Health & Human Services 2002].

## Section 12 - ECOLOGICAL INFORMATION

Marine Pollutant: Not Determined

Hazardous Air Pollutant: Yes

Do NOT allow product to come in contact with surface waters or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash-waters.

Wastes resulting from use of the product must be disposed of on site or at approved waste sites.

DO NOT discharge into sewer or waterways.

The material is classified as an ecotoxin\* because the Fish LC50 (96 hours) is less than or equal to 0.1 mg/l

\* Classification of Substances as Ecotoxic (Dangerous to the Environment)

Appendix 8, Table 1

Compiler's Guide for the Preparation of International Chemical Safety Cards: 1993  
Commission of the European Communities.

## Section 13 - DISPOSAL CONSIDERATIONS

- Recycle wherever possible or consult manufacturer for recycling options.
- Consult State Land Waste Management Authority for disposal.
- Bury residue in an authorised landfill.
- Recycle containers if possible, or dispose of in an authorised landfill.
- Containers may still present a chemical hazard/ danger when empty.

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## Section 13 - DISPOSAL CONSIDERATIONS

- Return to supplier for reuse/ recycling if possible.
- Otherwise:
- If container can not be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorised landfill.
  - Where possible retain label warnings and MSDS and observe all notices pertaining to the product.

### WASTE DISPOSAL PROCEDURES

- Wear nitrile rubber gloves, protective clothing and eye protection to control personal contact from nickel. Work in a well ventilated area. Wash the recoverable quantities of nickel in water and place in 200mL of water. Add 800mL of 1M hydrochloric acid with stirring. Continue to stir once all of the nickel has dissolved. Add 5% sodium hydroxide solution and allow the nickel hydroxide to precipitate. Collect and package the precipitate for disposal in an approved landfill site. Empty the aqueous solution into the drain with copious amounts of water. To dispose of metal quantities of nickel, sort , classify and package for recycling [Armour 1996].

### SPILLAGE DISPOSAL

- Follow the procedure for waste disposal for further information.

## Section 14 - TRANSPORTATION INFORMATION



Labels Required: MISCELLANEOUS  
HAZCHEM: 2X

### UNDG:

|                                                                                        |      |                |      |
|----------------------------------------------------------------------------------------|------|----------------|------|
| Dangerous Goods Class:                                                                 | 9    | Subrisk:       | None |
| UN Number:                                                                             | 3077 | Packing Group: | III  |
| Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.<br>(contains nickel) |      |                |      |

### Air Transport IATA:

|                                                                                           |      |                    |      |
|-------------------------------------------------------------------------------------------|------|--------------------|------|
| ICAO/IATA Class:                                                                          | 9    | ICAO/IATA Subrisk: | None |
| UN/ID Number:                                                                             | 3077 | Packing Group:     | III  |
| ERG Code:                                                                                 | 9L   |                    |      |
| Shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID,<br>N.O.S.<br>(contains nickel) |      |                    |      |

### Maritime Transport IMDG:

|                                                                      |            |                   |                |
|----------------------------------------------------------------------|------------|-------------------|----------------|
| IMDG Class:                                                          | 9          | IMDG Subrisk:     | None           |
| UN Number:                                                           | 3077       | Packing Group:    | III            |
| EMS Number:                                                          | F- A, S- F | Marine Pollutant: | Not Determined |
| Shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID,<br>N.O.S. |            |                   |                |

continued...

# NICKEL (METAL) POWDER

GHS Safety Data Sheet

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## Section 14 - TRANSPORTATION INFORMATION

(contains nickel)

## Section 15 - REGULATORY INFORMATION

### REGULATIONS

nickel (CAS: 7440-02-0) is found on the following regulatory lists;  
International Agency for Research on Cancer (IARC) Carcinogens  
OECD Representative List of High Production Volume (HPV) Chemicals  
WHO Guidelines for Drinking-water Quality - Guideline values for chemicals that are of health significance in drinking-water

## Section 16 - OTHER INFORMATION

### REPRODUCTIVE HEALTH GUIDELINES

Established occupational exposure limits frequently do not take into consideration reproductive end points that are clearly below the thresholds for other toxic effects. Occupational reproductive guidelines (ORGs) have been suggested as an additional standard. These have been established after a literature search for the reproductive no-observed-adverse effect-level (NOAEL) and the lowest-observed-adverse-effect-level (LOAEL). In addition the US EPA's procedures for risk assessment for hazard identification and dose-response assessment as applied by NIOSH were used in the creation of such limits. Uncertainty factors (UFs) have also been incorporated.

| Ingredient | ORG        | UF  | Endpoint | CR | Adeq TLV |
|------------|------------|-----|----------|----|----------|
| nickel     | 0.01 mg/m3 | 100 | R        | 8  | —        |

These exposure guidelines have been derived from a screening level of risk assessment and should not be construed as unequivocally safe limits. ORGS represent an 8-hour time-weighted average unless specified otherwise.

CR = Cancer Risk/10000; UF = Uncertainty factor:

TLV believed to be adequate to protect reproductive health:

LOD: Limit of detection

Toxic endpoints have also been identified as:

D = Developmental; R = Reproductive; TC = Transplacental carcinogen

Jankovic J., Drake F.: A Screening Method for Occupational Reproductive  
American Industrial Hygiene Association Journal 57: 641-649 (1996).

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