

NOVAMET NICKEL COATED GRAPHITE

** THIS DATA SHEET IS PREPARED IN COMPLIANCE WITH EU DIRECTIVE 2001/58/EC**

NOVAMET

Material

Safety

Data

Sheet

1. Identification of the Substance/Preparation and of the Company/Undertaking

This MSDS covers the family of products identified as: NOVAMET Nickel Coated Graphite

This includes the following types:

NOVAMET Nickel Coated Graphite (25% Ni, 60% Ni, 75% Ni)

Company Identification:

NOVAMET Specialty Products Corporation
681 Lawlins Road, Wyckoff, New Jersey, 07481 USA
Tel. No.: 201-891-7976
Fax No.: 201-891-9467

24 hr Emergency Telephone Number:
In North America (Chemtrec) +1-800-424-9300

2. Hazards Identification

T - Toxic

- R40 Limited evidence of a carcinogenic effect.
R43 May cause sensitisation by skin contact.
R48/23 Toxic: Danger of serious health damage in case of prolonged exposition by inhalation
R52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
S22 Do not breathe dust.
S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S61 Avoid release to the environment. Refer to special instructions / Safety data sheets.

If user operations change the substance to other physical or chemical forms, whether as products, intermediates or fugitive emissions, the user must determine the health hazards of such forms.

3. Composition/Information on Ingredients

Ingredients	Typical Composition	EC (EINECS) Number	CAS Number
Nickel	25-75%	231-111-4	7440-02-0
Graphite (C)	25-75%	231-955-3	7782-42-5

Nickel classification:

UE: T – Toxic – R40, 43, 48/23, 52/53 Carcinogenic Cat. 3
CLP/GHS: STOT RE1; Carcinogenic Cat. 2; Skin sens. 1; Aquatic Chronic 3;
H317, H351, H372, H412

Graphite classification: Not classified.

NOVAMET

NOVAMET

Material

Safety

Data

Sheet

4. First Aid Measures

<i>Ingestion</i>	Seek medical attention.
<i>Inhalation</i>	Move Victim to fresh air. Administer oxygen if breathing is difficult. Give artificial respiration if victim is not breathing.
<i>Skin</i>	Wash thoroughly with water. For rashes seek medical advice. Show label or data sheet if possible.
<i>Eyes</i>	Irrigate eyeball thoroughly with water for at least 10 minutes. If discomfort persists seek medical attention.
<i>Wounds</i>	Cleanse thoroughly to remove any nickel particles.

5. Fire Fighting Measures

<i>Suitable extinguishing media:</i>	Package intact - Any, type to be selected according to materials stored in the immediate neighbourhood. Spilled Powder – Use water mist or fine spray -pressurized extinguishants may disperse the powder and spread the fire.
<i>Special Risks:</i>	Not classified as flammable for transport purposes. May oxidize to nickel oxide if exposed to high temperatures within a fire. Keep containers cool with water spray.
<i>Special protective equipment for fire fighting:</i>	None needed. Wear protective equipment if required for other materials within the immediate vicinity.

6. Accidental Release Measures

<i>Person related precautionary measures:</i>	Avoid generation of dusty atmospheres. Do not inhale dusts.
<i>Environmental protection measures:</i>	No specific measures needed
<i>Procedures for cleaning/absorption:</i>	Collect spills by wet sweeping or vacuuming with the vacuum exhaust passing through a high efficiency particulate arresting (HEPA) filter if exhaust is discharged into the work place. Wear appropriate nationally approved respirators if collection and disposal of spills is likely to cause the concentration limits of airborne nickel to exceed the locally prescribed exposure limits. Nickel containing material is normally collected to recover nickel values.

7. Handling and Storage

<i>Handling:</i>	Prevent the generation of inhalable dusts e.g. by the use of suitable ventilation. Do not inhale dusts. Wear appropriate nationally approved respirators if handling is likely to cause the concentration limits of airborne nickel to exceed the locally prescribed exposure limits. Wear suitable protective clothing and gloves. As packed nickel product may constitute a manual handling risk.
<i>Storage:</i>	Keep in the container supplied, in dry conditions and keep the container closed when not in use. Containers should be stored under cover in a clean and dry environment. Local regulations should be followed regarding the storage of this material.

NOVAMET

NOVAMET

Material

Safety

Data

Sheet

8. Exposure Controls/Personal Protection

Exposure limit values:

Occupational exposure limits expressed as Ni in inhalable particle size fraction:

TRK (mg/m ^{3*})	TLV (mg/m ^{3*})	WEL (mg/m ^{3*})
0.5	1.5	0.5

Maintain airborne nickel levels as low as possible.

Occupational exposure controls:

Ventilation is normally required when handling or using this product to keep airborne nickel below the nationally authorized limits. If ventilation alone cannot control exposure, respiratory protection must be used.

a) Respiratory protection:

Do not inhale dust. If ventilation alone cannot control exposure, respiratory protection (selected specifically for the working place, depending on concentration and quantity of the hazardous material) must be used.

b) Eye protection:

Avoid contact with eyes. Wear goggles or face shield or approved safety glasses.

c) Hand and skin protection:

Avoid skin contact. Wear suitable protective clothing and gloves, which should be selected specifically for the working place, dependant on the concentration and quantity of the hazardous material being handled. Wash skin thoroughly after handling and before eating, drinking or smoking. Launder clothing and gloves as needed. Use of skin protective barrier cream advised.

9. Physical and Chemical Properties

Grey, odourless, solid (powder).

Molecular weight	58.71 (Ni) 12.01 (Graphite)
pH	N/A
Boiling point/ boiling range (°C)	2732 (Ni)
Melting point/ melting range (°C)	1453 (Ni) 3500 (Graphite)
Flash point	N/A
Auto flammability	N/A
Explosive properties	not explosive
Dust explosivity classification group	B
St classification	0
KST (bar ms ⁻¹)	N/A
Pmax (bar g)	N/A
Dust cloud minimum explosion concentration (mg/m ³)	N/A
Dust cloud minimum ignition temperature (°C)	7800
Dust cloud minimum ignition energy (mJ)	>5,000,000
Oxidising properties	Not oxidizing
Vapour pressure	N/A
Solubility - cold water	Insoluble
Solubility - hot water	Insoluble
Partition coefficient	N/A
Viscosity	N/A
Specific gravity of nickel (g/m ³)	8.9 (Ni) 3.5 (Graphite)
Bulk density (g/m ³)	0.6 – 3.6g/cm ³
Particle size (microns)	40-150 microns (by laser)
Magnetic properties	Ferromagnetic

NOVAMET

NOVAMET

Material

Safety

Data

Sheet

10. Stability and Reactivity

Conditions to be avoided: Hazardous exothermic reaction improbable. Not classified as flammable.

Substances to be avoided: 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.

Hazardous decomposition products: None

11. Toxicological Information

NICKEL

Acute Toxicity:

- a) *Oral:* Non toxic - LD₅₀ ORAL RAT >9000 mg/kg The U.S. Food and Drug Administration (FDA) has affirmed that nickel is generally regarded as safe (GRAS) as a direct human food ingredient.
- b) *Inhalation:* One case has been reported of a fatality following extreme exposure at an estimated 382 mg Ni/m³. A plasma spraying operative died of pneumonia 13 days after exposure to nickel powder particles. The post mortem diagnosis was shock lung.
- c) *Dermal:* No information available.

Corrosivity / Irritation:

- a) *Respiratory Tract:* None
- b) *Skin:* Nickel metal is a well-known skin sensitizer. Direct and prolonged skin contact with metallic nickel may induce nickel allergy and elicit nickel allergic skin reactions in those people already sensitized to nickel, so called nickel allergic contact dermatitis.
- c) *Eyes:* Mechanical irritation may be expected.
- d) *Preexisting 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 small number of individuals, despite efforts to reduce or avoid nickel exposure.

Sensitization:

- a) *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.
- b) *Skin:* Nickel metal is a potent skin sensitiser. Repeated /prolonged contact with metallic nickel may cause nickel sensitivity resulting in skin allergy. Persons with a known history of eczema or nickel dermatitis should avoid such contact.

Repeated dose toxicity:

- a) *Oral:* No information available
- b) *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.
- c) *Dermal:* Direct and prolonged contact with nickel metal may cause nickel sensitivity resulting in skin allergy.

NOVAMET

NOVAMET

Material

Safety

Data

Sheet

*Mutagenicity /
Reproductive toxicity:* No data.

Carcinogenicity:

- a) *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.
- b) *Inhalation:* There is limited information available from inhalation and intratracheal studies in animals. 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.
- c) *Injection:* Implants and injections of nickel metal in animals have produced tumors at the local sites. IARC (1999) concluded that there is sufficient evidence in experimental animals for the carcinogenicity of metallic nickel implants and for nickel alloy powder containing ~66% Ni 13-16% chromium and 7% for nickel alloy powder iron.

CARBON

Acute Toxicity:

- a) *Acute Oral Toxicity*
- | | |
|---------|-------------|
| LD50 | >2000 mg/kg |
| Species | rat |
| Method | OECD 401 |

Corrosive/Irritation:

- a) *Irritant effect on skin*
- | | |
|----------------------|--------------|
| Species | rabbit |
| Duration of exposure | 4 h |
| Evaluation | non-irritant |
| Method | OECD 404 |
- b) *Irritant effect on eyes*
- | | |
|------------|-------------------|
| Species | rabbit |
| Evaluation | slightly irritant |
| Method | OECD 405 |

Experience in practice Contact with the skin and eyes may cause mechanical irritation. Inhalation of dusts may irritate the respiratory tract.

12. Ecological Information

Biologic degradation: Methods for the determination of biodegradability are not applicable to inorganic substances.

Ecotoxic effects: Non toxic

- Biological data:* Fish toxicity Br. rerio LC50>100mg/1/96h;
Daphnia Toxicity: Daphnia magna EC50:>100mg/1/48h;
Algeal Toxicity: Selenastrum capricornatum IC50: 100mg/1/72 (suspension);
Bacterial toxicity: Pseudomonas fluorescens EC50: 250mg/1/48h

Further Ecological Data: Due to poor solubility of the product, no harmful effects on aquatic organisms are to be expected when handled and used with due care and attention.

13. Disposal Considerations

Nickel containing material is normally collected to recover nickel values. Should disposal be deemed necessary dispose of as a hazardous waste.

NOVAMET

NOVAMET

Material

Safety

Data

Sheet

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	Apply 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

T; Toxic Category 3 Carcinogen

R40 Limited evidence of a carcinogenic effect.
R43 May cause sensitization by skin contact.
R48/23 Toxic: Danger of serious health damage in case of prolonged exposition by inhalation
S22 Do not breathe dust
S36/37/39 Use suitable protective clothing, gloves, eye/face protection
S45 In case of accident or discomfort consult a physician
S61 Avoid release to the environment. Refer to special instructions/safety data sheets

EEC Label – 231-111-4 Nickel

Graphite does not require a hazard warning label in accordance with E/U directives.

16. Other Information

R40 Limited evidence of a carcinogenic effect.
R43 May cause sensitization by skin contact.
R48/23 Toxic: Danger of serious health damage in case of prolonged exposition by inhalation
S22 Do not breathe dust
S36/37/39 Use suitable protective clothing, gloves, eye/face protection
S45 In case of accident or discomfort consult a physician
S61 Avoid release to the environment. Refer to special instructions/safety data sheets

Medical staff should note that this data sheet has been lodged with the following Poisons Information Centre:

National Poison Centre Phone line: +44-(0)870-600-6266

E-Mail: wnpu@compuserve.com

Fax: +44-(0)2920-704357

NOVAMET

Notes and Bibliography

Prepared by:

Novamet Specialty Products Corp.
681 Lawlins Road, Suite 10
Wyckoff, NJ 07481
201-891-7976

MSDS available online at www.novametcorp.com

Note:

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

Footnotes:

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. Exposure Limits for user operations will depend on the relevant governmental regulations.

NOVAMET

Material

Safety

Data

Sheet