

NOVAMET

NOVAMET[®] Nickel-Coated Graphite

(25%, 60%, 75%)

Typical Analysis (Wt. %)

Ni	O	C
20-80	<0.06	balance

Hazardous Ingredients

Hazardous Ingredients	Calculated Composition	C.A.S. No	PEL ¹ –mg/m ³	TLV ² –mg/m ³
Nickel (Ni)*	20-80	7440-02-0	1	1.5*
Carbon (C) and/or Synthetic Graphite (C)	Balance	7440-44-0 7782-42-5	15 (total dust) 5 (respirable)	10 (inhalable) 2 (resp. dust)

* As inhalable fraction

Physical and Chemical Data

Grey-black, odorless powder, ranging in size from 20 to 200 microns in diameter.

Ingredient	Mol. Wt.	Specific Gravity	m.p. °C	b.p. °C	Sol. In H ₂ O g/100ml
Ni	58.71	8.9	1453	2732	0
C	12.01	1.92 – 2.2	n. av.	n. av.	0

Physical Hazards

Metal powders heat treated in reducing atmospheres may become spontaneously combustible.

Health Hazards

LD₅₀ ORAL RAT >9000 mg/kg

Inhalation:

The National Toxicology Program has listed nickel as reasonably anticipated to be a carcinogen based on the production of injection-site tumors. The International Agency for Research on Cancer (IARC) 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. 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.

The inhalation of nickel powder has not resulted in an increased incidence of malignant lung tumours in rodents.

NOVAMET

Material

Safety

Data

Sheet

Repeated intratracheal instillation of nickel powder produced an increased incidence of malignant lung tumors in rats. Repeated intratracheal instillation of nickel powder did not produce an increased incidence of malignant lung tumors in hamsters when administered at the maximum tolerated dose. Single intratracheal instillations of nickel powder in hamsters at doses near the LD₅₀ produced an increased incidence of fibrosarcomas, mesotheliomas and rhabdomyosarcomas.

Inhalation of nickel powder at concentrations 15 times the PEL irritated the respiratory tract in rodents.

In 1997, the ACGIH categorized elemental nickel as: A5 "Not Suspected as a Human Carcinogen."

Skin Contact: Prolonged and intimate contact with metallic nickel may cause irritation to the skin and nickel sensitivity, which may result in allergic skin rashes.

One case has been reported of asthma induced by external exposure to a nickel-containing skin clip and by skin contact with nickel.

Wounds: Nickel metal powder has caused tumors at the site of injection in rodents. However, studies do not suggest a significant risk for humans from nickel-containing prostheses.

Ingestion: The U.S. National Institute for Occupational Safety and Health (NIOSH) concluded there is no evidence that nickel and its inorganic compounds are carcinogenic when ingested. The U.S. Food and Drug Administration has affirmed that nickel is generally recognized as safe (GRAS) as a direct human food ingredient.

Preexisting Conditions: Prolonged and intimate skin contact can cause an allergic skin rash in previously sensitized individuals.

Graphite

There exists limited evidence that graphite is a causal agent in pneumoconiosis.

Precautions for safe storage, handling and use

Do not inhale. Keep container closed when not in use. Ventilation is normally required when handling or using this product to keep exposure to airborne contaminants below the exposure limits. If ventilation alone cannot so control exposure, use NIOSH-approved respirators selected according to OSHA 29 CFR 1910.134. Maintain airborne nickel levels as low as possible.

Avoid repeated skin contact. Wear suitable gloves. Wash skin thoroughly after handling. Launder clothing and gloves as needed.

Do not store near acids or reactive substances. Like other metals, nickel can react with acids to liberate hydrogen gas which can form explosive mixtures in air. Like other metal powders, nickel powder can react explosively or incandescently with substances such as ammonium nitrate, perchlorates, phosphorous, selenium, sulfur, etc.

Under special conditions nickel can react with carbon monoxide in reducing atmospheres to form nickel carbonyl, Ni(CO)₄, a toxic gas.

Graphite and carbon dusts are normally not explosive, but these may weakly contribute if the event is initiated by another explosive dust or gas. Graphite and carbon dusts are electrically conductive; dust accumulations may cause electrical short circuits or other electrical malfunctions. Combustion of graphite and carbon dusts result in the formation of carbon dioxide and carbon monoxide.

Spill, leak and disposal procedure

Collect spills by wet sweeping or by vacuuming with the vacuum exhaust passing through a high efficiency particulate arresting (HEPA) filter if the exhaust is discharged into the workplace. Wear appropriate NIOSH-approved respirators if collection and disposal of spills is likely to cause the concentration of airborne contaminants to exceed the exposure limits.

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Nickel-containing waste is normally collected to recover metal values. Should waste disposal be deemed necessary follow EPA and local regulations.

Emergency and first aid procedures

If exposure to nickel carbonyl is suspected, seek medical attention immediately. For skin rashes, seek medical attention. Cleanse wounds thoroughly to remove any particles. Extinguish fires with normal wet methods. Combustion can generate carbon monoxide.

SARA Section 313 Supplier Notification

This product contains the following chemical(s) 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:

Nickel

Refer to the Hazardous Ingredients section of this MSDS for the appropriate CAS numbers and percent by weight.

NOVAMET SPECIALTY PRODUCTS CORPORATION

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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 OSHA Permissible Exposure Limit
- 2 Threshold Limit Value of the American Conference of Governmental Industrial Hygienists.
- 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.