NOVAMET

Material

Safety

Data

Sheet

NOVAMET Stainless Steel Flake Type SSC

Hazardous Ingredients

Hazardous Ingredients	Calculated Composition	C.A.S. No	PEL[1] –mg/m^3	TLV2 –mg/m^3
Flake				
Nickel (Ni)	12	7440-02-0	1	1.5*
Chromium (Cr)	17	7440-47-3	1	0.5
Solvent				
Mineral Spirits	10	64742-47-8	525[3]	525[3]

Physical and Chemical Data

Bright, odourless, metallic paste containing 10% mineral spirits. The mineral spirit has a kerosene-like odor and is 100% volatile with vapours heavier than air.

Ingredient	Mol. Wt.	Specific Gravity	m.p.°C	b.p.°C	Sol. In H_20 g/100ml
Ni	58.71	8.9	1453	2732	0
Cr	52.00	7.2	1890	2482	0

Mineral Spirits	Vapor Pressure	Flash Point	Initial b.p.
	2.9mm Hg at 20°C	40°C min.	149°C min.

Physical Hazards

Mineral spirits is a combustible liquid. Metal flake heat treated in reducing atmospheres may become spontaneously combustible.

Health Hazards

Nickel
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. In 1997, the ACGIH categorized elemental nickel as: A5 "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.

Evidence for the association of nickel compound exposures and cancer risk comes mainly from workers in now obsolete nickel

refining operations where very high concentrations of airborne nickel, mostly present as oxidic or sub-sulphidic species at up to 100mg/m3 or more, were associated with excess nasal and lung cancers.

The inhalation of nickel powder has not resulted in an increased incidence of malignant lung tumors in rodents. 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 TLV irritated the respiratory tract in rodents.

Inhalation of nickel may induce asthma. This effect is rare, it has been reported in welders where exposures to nickel are often mixed with other chemical substances. Persons with a known history of nickel sensitive asthma should avoid such contact.

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.

Reproductive Toxicity:

Animal experiments indicate that soluble nickel ingestion causes adverse effects on fetal development at a threshold oral exposure of 2.2 mg/ Ni/kg/day by pregnant rats. Data are insufficient to determine if this effect occurs in humans and no regulatory agency has classified soluble forms of nickel as reproductive risks for humans.

Chromium

Inhalation: The National Toxicology Program (NTP) concluded there is inadequate evidence for the carcinogenicity of chromium metal in humans. NTP states there is sufficient evidence for increased incidence of lung cancer among workers in the chromate-producing industry and possibly also among chromium platers and chromium alloy workers. The International Agency for Research on Cancer (IARC) has concluded that chromium metal is not classifiable as to its carcinogenicity to humans.

Mineral Spirits

Inhalation: Inhalation of mineral spirits vapors at concentrations above the PEL may cause lightheadedness, dizziness, breathing difficulties and unconsciousness.

Skin Contact: Repeated or prolonged contact with mineral spirits may cause skin irritation.

Eye Contact: Mineral spirits may be an eye irritant.

Precautions for safe storage, handling and use

Keep work areas free of hot surfaces and other sources of ignition.

Do not inhale flake. 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.

Store with adequate ventilation. Do not store near acids, bases, strong oxidizing agents or selected amines. Keep product containers cool, dry and away from sources of ignition. Like other metals, this product can react with acids to liberate hydrogen gas which can form explosive mixtures in air. Metal flake can react explosively or incandescently with substances such as ammonium nitrate, perchlorates, phosphorus, 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. Mineral spirits can thermally decompose in the presence of air to form carbon monoxide and/or carbon dioxide.

Since emptied containers retain product residue, follow label warnings even after container is emptied. Do not cut, drill, grind or weld on or near the container.

Spill, leak and disposal procedure

Use absorbent to collect free mineral spirits, if any. Scoop or shovel up the bulk of the spilled flake paste. Collect the remainder by using sweeping compound. Do not vacuum paste containing mineral spirits. If the flake is allowed to dry thoroughly, vacuum 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.

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 mineral spirits vapors are inhaled, remove to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. Seek medical attention immediately.

Do not induce vomiting if this product is ingested. This may cause the aspiration of mineral spirits into the lung. The resulting widespread lung irritation can cause edema and possible death. Seek medical attention.

In case of eye contact, immediately flush eyeballs with plenty of water for at least 15 minutes. Seek medical attention.

If exposure to nickel carbonyl is suspected, seek medical attention immediately.

In case of fire, use foam, CO_2 or dry chemical.

For skin rashes, seek medical attention.

Cleanse wounds thoroughly to remove any particles.

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
Chromium

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

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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 Values for Stoddard solvent.
4 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.