

### 1. PRODUCT IDENTIFICATION

**Article description:** Nickel based alloys in form of drawn wire and rods.

Nickel based alloys in form of drawn wire and rods are considered as articles under Regulation (EC) 1907/2006 concerning Registration, Evaluation, Authorisation, and Restriction of Chemicals (REACH).

In accordance with REACH and Regulation (EC) 1272/2008 on Classification, Labelling, and Packaging of substances and mixtures (CLP) only substances and preparations require a Safety Data Sheet (SDS). Articles under REACH do not require a classic SDS, so this **Safety Information Sheet (SIS) is provided for information purposes only**. It summarizes information on the safe use of the material and its potential impacts on both human health and the environment.

**Article name:** These articles are marketed with either Novametal SA or its Customer's trade names, and designations according to the relevant international standard: e.g. ASME / AWS A5-14 a/o EN ISO 18274.

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### 2. HAZARDS IDENTIFICATION

**Classification:** In accordance with (EC) Regulations 1272/2008 (CLP) and EC Directive 67/548/EEC, nickel metal is classified as a suspect carcinogen and as a skin sensitizer. The classification rules of EC Directive 99/45/EC dictate that any preparations with equal to or more than 1% content of nickel must automatically be classified as suspect carcinogens.

**Table 1 – Corresponding classifications according to EC Regulation EC 1272/2008 and EC Directive 67/548/EEC**

EC 1272/2008		Directive 67/548/EEC
Hazard class and category code	Hazard statement code	Hazard class and category code
Carc. Cat 2	H351	Carc. Cat 3, R40
STOT RE 1	H372	T; R48/23
Skin Sens.1	H317	R43

**Label elements:** In recognition of their essentially non-hazardous nature, nickel alloys in the massive form are not required to be labelled as hazardous labeling.

**Other hazards:** Does not pose any health hazard under normal conditions of use and as delivered. However, if an individual is already sensitised to nickel, prolonged skin contact with nickel alloys may result in an allergic dermatological reaction. Dust and fume may be generated during processing (e.g. in welding, cutting and grinding): if airborne concentrations of dust and fume are excessive, inhalation over long periods may affect workers' health.

None hazard of concern for the environment under normal conditions of use and as delivered.

### 3. COMPOSITION / INFORMATION ON INGREDIENTS

Hereby are considered main elements of the articles. Traces of other elements may be present in negligible quantities: these are not classified as hazardous, or are below the concentration levels for classification of these alloys as hazardous, and are not subject to recognized occupational exposure limits.

**Table 2 – Information on ingredients**

Ingredients	Weight % <sup>(1)</sup>	CAS#	EINECS#	Hazard classification <sup>(2)</sup>
Nickel	9 - 99.5	7440-02-0	231-111-4	Carc - H351; STOT RE 1 - H372; Skin Sens.1 - H317
Cobalt	< 14	7440-48-4	231-158-0	Skin Sens.1 - H317; Resp. Sens.1 - H334; Aquatic Chronic 4 - H413
Copper	< 34	7440-50-8	231-159-6	No
Chromium	< 32	7440-47-3	231-157-5	No
Molybdenum	< 17	7439-98-7	231-107-2	No
Manganese	< 4	7439-96-5	231-105-1	No
Iron	< 50	7439-89-6	231-096-4	No

(1) For reference only typical ranges of concentration for each element: the actual concentration varies by grade. For more information on the actual chemical composition of each nickel based alloy, see the relevant international standards.

(2) EC Regulation 1272/2008 (CLP)

#### 4. FIRST AID MEASURES

There are no specific first aid measures developed for nickel alloys.

**After inhalation:** Inhalation of dust and/or fume from grinding, cutting and welding operations is unlikely to generate the need for specific first aid. However, medical attention should be sought in case of an excessive inhalation of dust.

**After skin contact:** Medical attention should be sought in case of physical injury to the skin.

**After eye contact:** Medical attention should be sought in case of physical injury to the eyes.

**After swallowing:** Not applicable.

#### 5. FIRE FIGHTING MEASURES

Not combustible. However, care should be taken to avoid exposing fine process dust (e.g. from grinding and blasting operations) to high temperatures as it may present a potential fire hazard

#### 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions:** Not applicable.

**Environmental precautions:** No particular environmental hazards.

**Measures for cleaning:** Not specifically concerned.

#### 7. HANDLING AND STORAGE

**Precautions for safe handling:** No special technical measures involved for handling nickel alloys. Normal precautions should be taken to avoid physical injury from sharp edges (if any), or by release of tension when breaking the straps or bands used to secure some

bundled products (if any). Suitable protective clothing and equipment, such as hand and eye protection, should be worn.

**Precautions for safe storage,**

**including any incompatibilities:** The product is stable in storage. Products may display sharp edges. Pallets must be stored on stable and horizontal supports.

### 8. EXPOSURE CONTROL / PERSONAL PROTECTION

**Occupational exposure limits:** There are no occupational exposure limits for nickel alloys. Occupational exposure limits apply to some constituent elements (Ni, Cr, Mn, Mo) and certain of their compounds.

**Table 3 – Exposure limit values (mg/m<sup>3</sup>) for substances:**

Substance	United Kingdom - EL		United States – ACGIH - TLV	
	W – TWA	W - ST	TWA	ST or C
Dust	10(l) – 4(R)	-	-	10(l) – 3(R)
Fe <sub>2</sub> O <sub>3</sub>	5 (fume) as Fe	10 (fume) as Fe	5(R)	-
Managenese as Mn	0.5	-	0.2	-
Aluminum as Al	10(l) – 4(R)	-	1(R)	-
Chromium as Cr	0.5	-	0.5	-
Chromium VI as Cr	0.05	-	0.05 (soluble) 0.01 (insoluble)	-
Silicon	10(l) – 4(R)	-	10 (withdrawn in 2006)	-
Amorphous silica (SiO <sub>2</sub> )	6(l) – 2.4(R)	-	2(R) (withdrawn in 2006)	-
Copper	0.2 (fume) 1 (dusts and mists)	2 (dusts and mists)	0.2 (fume) 1 (dusts and mists)	-
Titanium	-	-	-	-
Titanium dioxide	10(l) – 4(R)	-	-	-
Molybdenum as Mo	5 (soluble) 10 (insoluble)	10 (soluble) 20 (insoluble)	0.5(R) (soluble) 10(l) – 3(R) (metal and insoluble)	-
Nickel as Ni	0.5	-	1.5(l) 0.1(l) (soluble) 0.2(l) (insoluble)	-
Cobalt as Co	0.1	-	0.02	-

**Abbreviations:**

ACGIH: American Conference of Governmental Industrial Hygienists

C: Ceiling

EL: Exposure Limit

ST: Short-Term

TLV: Threshold Limit Value

W: Workplace

TWA: Time-Weighted Average

**Exposure controls:**

Dust and fume may be generated in use, e.g. by cutting, grinding and welding processes, which may contain materials subject to exposure limits. To ensure these limits are not exceeded, adequate general or local ventilation or fume extraction should be provided.

**Personal protective equipment:**

In accordance with European and national health and safety regulations, it is necessary to assess the need for personal protective equipment. Suitable hand and eye protection should be worn where there is a risk of laceration, flying particles, welding heat radiation or contact with oils during processing. The process of welding should only be performed by trained workers with the

personal protective equipment in accordance with the laws of each member state relating to safety.

**Environmental exposure control:** No special exposure controls necessary.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance:</b>	Solid; metallic grey, ranging from dull to bright polished.
<b>Odour:</b>	Odourless.
<b>Water solubility:</b>	Insoluble.
<b>Melting point/Melting range:</b>	1330°C -1520°C
<b>Density at 20°C:</b>	7.9 - 8.8 g/cm <sup>3</sup>
<b>Thermal expansion (mean value 20-100°C):</b>	12 -15 x 10 <sup>-6</sup> °C <sup>-1</sup>
<b>Thermal conductivity (RT):</b>	10 -22 W/m°C
<b>Magnetic:</b>	Nickel alloys are ferro-magnetic depending on the chemical composition of specific grades.

### 10. STABILITY AND REACTIVITY

Nickel based alloys are stable and non-reactive under normal ambient atmospheric conditions.

They may react in contact with strong acids to release gaseous acid decomposition products (e.g. hydrogen, oxides of nitrogen). When heated to very high temperatures, fumes may be produced (e.g. by cutting, welding or melting operations).

### 11. TOXICOLOGICAL INFORMATION

<b>Acute toxicity:</b>	Nickel based alloys are not acute toxic.
<b>Chronic toxicity:</b>	The exposure route of concern is inhalation of dust. These articles are in massive form, not capable of being inhaled. During mechanical working, flame cutting or welding, dust or fumes containing complex or mixed oxides of its constituents, may be formed. Over long periods, inhalation of excessive airborne levels may have long-term health effects, primarily affecting the lungs.
<b>Corrosivity:</b>	Nickel based alloys are not corrosive to skin.
<b>Sensitization:</b>	Nickel is classified as a skin sensitizer. It causes skin sensitisation in susceptible individuals through prolonged intimate contact with the skin (e.g. wearing of jewellery). The requirements of EC regulation EC 1272/2008 Annex VI Table 3.1 are such that alloys with 1% or more of nickel must, by default, also be classified as skin sensitizers. The uses of products that contain Ni and which come into direct and prolonged contact with the skin are limited by 2004/96/EC.
<b>Carcinogenicity:</b>	Nickel metal has been classified, see section 2, Hazards identification. The exposure route of concern is inhalation. These nickel alloy products are in massive form, not capable of being inhaled.  The requirements of EC regulation EC 1272/2008 Annex VI Table 3.1 are such that all alloys with more than 1% nickel must be classified in the same way as nickel itself, by default. There is no direct evidence of carcinogenic effects of nickel alloys in man, nor indirect evidence from animals tested by relevant routes, i.e. inhalation or ingestion. Studies of workers exposed to nickel powder and dust and fumes generated in the production of nickel alloys and stainless steels have not indicated a respiratory cancer hazard. Welding and flame cutting fumes may contain hexavalent chromium compounds. Studies have shown that some hexavalent chromium compounds can cause cancer. However, epidemiological studies amongst welders indicate no extra increased risk of cancer when

welding stainless steels, compared with the slightly increased risk when welding steels that do not contain chromium.

**Mutagenicity:** Nickel based alloys are not classified as mutagenic.

### 12. ECOLOGICAL INFORMATION

**Toxicity:** Not ecotoxic.

**Persistence and degradability:** Not relevant.

**Bioaccumulative potential:** None.

**Mobility in soil:** Not soluble in water. Immobile.

**Other adverse effects:** No known harmful effects. No special precautions are required.

### 13. DISPOSAL CONSIDERATIONS

**Waste treatment:** Surplus and scrap (waste) nickel alloys is valuable commodity and in demand for the production of prime nickel alloys and stainless steel. Recycling routes are well-established, and recycling is therefore the preferred disposal route. Disposal to landfill is not harmful to the environment, but is a waste of resources and therefore less desirable than recycling.

**Used packaging treatment:** Any disposal according to national regulation.

### 14. TRANSPORT INFORMATION

No international regulations or restrictions are applicable. The product is not classified as hazardous for transport.

### 15. REGULATORY INFORMATION

**E.U. compulsory labeling:** No labelling required. Nickel alloys are classified in the same way as nickel metal, see section 2. Hazards classification, in this document. However, in recognition of their essentially non-hazardous nature, nickel alloys in the massive form are not required to be labelled as hazardous.

### 16. OTHER INFORMATION

In dealing with chemicals the national laws and regulation must be observed and applied.

The information herein is given in good faith and based on technical data that Novametal S.A. believes to be reliable. Since the conditions of use, handling, storage, and disposal of the products are outside our control, we assume no liability in connection with any use of this information and no warranty, expressed or implied is given. Therefore, we do not assume any responsibility and expressly reject any liability for loss, damage or expense that might result from handling, storage, use or disposal of the product or that are connected to them in any way.

This safety information sheet has been prepared for this product and should only be used in relation to it. If the product is used as a component in another product, the information contained in the safety information sheet may not apply.

**DISCLAIMER: Due to the fact that the product concerned in this document has a status of article in the meaning of the Reach regulation, this document doesn't constitute a Safety Data Sheet in the meaning of the article 31 of the REACH Regulation n° 1907/2006. In consequence, its supply is purely facultative: this safety informative sheet (SIS) is only intended to provide for reference only information. It cannot in any way be regarded as a safety data sheet (SDS), nor in any way be used for this purpose.**