

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 07/01/2015

Reviewed on 07/01/2015

1 Identification

- · Product identifier
- · Trade name: Nickel Based Alloy Steel, No 8800-9900
- Other Product Identifiers: Nickel 2XX, Monel Alloy 4XX, Inconel Alloy 6XX & 7XX, Inconel Alloy 8XX
- · Recommended use and restriction on use
- · Recommended use: Raw materials.
- · Restrictions on use: Contact manufacturer.

Details of the supplier of the Safety Data Sheet Manufacturer/Supplier: Castle Metals 1420 Kensington Road Suite 220 Oak Brook IL 60523 (847) 349-3000

• Emergency telephone number: (847)-349-3000

2 Hazard(s) identification

· Classification of the substance or mixture The product is not classified as hazardous according to the Globally Harmonized System (GHS). · Additional information: There are no other hazards not otherwise classified that have been identified. 0 percent of the mixture consists of ingredient(s) of unknown toxicity. Not hazardous as delivered. Long term inhalation of product dusts formed during use is harmful. · Label elements · GHS label elements The product is not classified as hazardous according to OSHA GHS regulations within the United States. · Hazard pictograms Not Regulated · Signal word Not Regulated · Hazard-determining components of labeling: None. · Hazard statements Not Regulated · Precautionary statements Not Regulated · Hazard description: · WHMIS-symbols: Not hazardous under WHMIS. · Classification system: NFPA ratings (scale 0 - 4) Health = 0Fire = 0

Reactivity = 0

HMIS-ratings (scale 0 - 4)

HEALTHImage: Constraint of the sectorFIREImage: Constraint of the sectorREACTIVITYReactivity = 0

- · Other hazards
- · Results of PBT and vPvB assessment
- **PBT:** Not applicable.

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· vPvB: Not applicable.

3 Composition/information on ingredients

· Chemical characterization: Mixtures

· Description: Mixture of the substances listed below with nonhazardous additions.

7439-89-6	iron	30-84
7440-02-0		0.1-42
	Carc. 2, H351; STOT RE 1, H372 Skin Sens. 1, H317	
7440-47-3	chromium	0.1-30
7440-48-4	cobalt	0-159
	 Resp. Sens. 1, H334; Carc. 2, H351 Skin Sens. 1, H317 	
7440-03-1	niobium	<5%
7439-98-7	molybdenum	<5%
7429-90-5	aluminum	<5%
7440-32-6	titanium	<3%
	Self-heat. 1, H251; Water-react. 1, H260	
7440-50-8	copper	<2%
7439-96-5	manganese, powdered	<1%
	🚸 Flam. Sol. 1, H228	
7440-65-5	yttrium	<1%

For the listed ingredients, the identity and exact percentages are being withheld as a trade secret.

4 First-aid measures

· Description of first aid measures · General information: No special measures required. · After inhalation: Supply fresh air; consult doctor in case of complaints. • After skin contact: Brush off loose particles from skin. Immediately wash with water and soap and rinse thoroughly. • After eye contact: Remove contact lenses if worn, if possible. Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor. • After swallowing: Rinse out mouth and then drink plenty of water. Do not induce vomiting; immediately call for medical help. Information for doctor: · Most important symptoms and effects, both acute and delayed No further relevant information available. · Danger No further relevant information available.

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 Indication of any immediate medical attention and special treatment needed No further relevant information available.

5 Fire-fighting measures

 Extinguishing media Suitable extinguishing agents: Special powder for metal fires. Do not use water. Dry sand Graphite powder. Dry sodium chloride · For safety reasons unsuitable extinguishing agents: Water · Special hazards arising from the substance or mixture Formation of toxic gases is possible during heating or in case of fire. • Advice for firefighters · Protective equipment:

Wear self-contained respiratory protective device.

Wear fully protective suit.

• Additional information No further relevant information available.

6 Accidental release measures

· Personal precautions, protective equipment and emergency procedures Ensure adequate ventilation. Do not breathe dust. Avoid formation of dust. Use personal protective equipment as required. For large spills, use respiratory protective device against the effects of fumes/dust/aerosol. · Environmental precautions: Do not allow to enter sewers/ surface or ground water. · Methods and material for containment and cleaning up: Pick up mechanically. Dispose of the collected material according to regulations. Send for recovery or disposal in suitable receptacles. **Reference to other sections** See Section 7 for information on safe handling. See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

7 Handling and storage

Handling:

· Precautions for safe handling

Prevent formation of dust.

Any deposit of dust which cannot be avoided must be regularly removed. Use proper precautions around molten material.

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• **Information about protection against explosions and fires:** Keep respiratory protective device available.

· Conditions for safe storage, including any incompatibilities

Storage:

· Requirements to be met by storerooms and receptacles: No special requirements.

Information about storage in one common storage facility:

Store away from foodstuffs.

Do not store together with acids.

Do not store together with alkalis (caustic solutions).

Store away from oxidizing agents.

• Further information about storage conditions: None.

• Specific end use(s) No further relevant information available.

8 Exposure controls/personal protection

• Additional information about design of technical systems: No further data; see item 7.

· Control parameters

-	vith limit values that require monitoring at the workplace:	
7439-89-6 iron		
EV (Canada)	Long-term value: 1* 5** mg/m ³	
	as iron;*salts, water-soluble;**welding fume	
LMPE (Mexico)	Long-term value: 1 mg/m ³	
7440-02-0 nicke	el	
PEL (USA)	Long-term value: 1 mg/m ³	
REL (USA)	Long-term value: 0.015 mg/m³ as Ni; See Pocket Guide App. A	
TLV (USA)	Long-term value: 1.5* mg/m ³ elemental, *inhalable fraction	
EL (Canada)	Long-term value: 0.05 mg/m ³ ACGIH A1, IARC 2B	
EV (Canada)	Long-term value: 1 mg/m ³ Inhalable fraction	
LMPE (Mexico)	Long-term value: 1.5* mg/m³ *elemental:A5, fracción inhalable	
7440-47-3 chro	mium	
PEL (USA)	Long-term value: 1* 0.5** mg/m ³ *metal;**inorganic compds., as Cr	
REL (USA)	Long-term value: 0.5* mg/m³ *metal+inorg.compds.as Cr;See Pocket Guide App. C	
TLV (USA)	Long-term value: 0.5 mg/m ³	
EL (Canada)	Long-term value: 0.5 mg/m ³ as metal	
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EV (Canada)	Long-term value: 0.05 mg/m ³	
LMPE (Mexico)	Long-term value: 0.5 mg/m³ A4	
7440-48-4 coba	lt	
PEL (USA)	Long-term value: 0.1* mg/m³ as Co; *for metal dust and fume	
REL (USA)	Long-term value: 0.05 mg/m³ as Co; metal dust & fume	
TLV (USA)	Long-term value: 0.02; NIC - 0.02* mg/m³ BEI; *hard metals:thoracic ;NIC-A2,RSEN;as W	
EL (Canada)	Long-term value: 0.02 mg/m³ as Co; IARC 2B	
EV (Canada)	Long-term value: 0.1 mg/m ³	
. ,	Long-term value: 0.02 mg/m³ A3, IBE	
7429-90-5 alum	inum	
PEL (USA)	Long-term value: 15*; 15** mg/m ³ *Total dust; ** Respirable fraction	
REL (USA)	Long-term value: 10* 5** mg/m³ as Al*Total dust**Respirable/pyro powd./welding f.	
TLV (USA)	Long-term value: 1* mg/m ³ as Al; *as respirable fraction	
EL (Canada)	Long-term value: 1.0 mg/m³ respirable, as Al	
EV (Canada)	Long-term value: 5 mg/m³ aluminium-containing (as aluminium)	
LMPE (Mexico)	Long-term value: 1* mg/m³ A4, *fracciòn respirable	
7439-98-7 moly	bdenum	
PEL (USA)	Long-term value: 15* mg/m³ *Total dust	
TLV (USA)	Long-term value: 10* 3** mg/m ³ as Mo; *inhalable fraction ** respirable fraction	
EL (Canada)	Long-term value: 3* 10** mg/m ³ as Mo; *respirable **inhalable	
EV (Canada)	Long-term value: 10* 3** 0.5*** mg/m³ metal,insol.compd.:*inh;**resp;sol.compd.:***resp	
LMPE (Mexico)	Long-term value: 10* 3** mg/m³ *fracción inhalable **respirable; como Mo	
7440-50-8 copp		
PEL (USA)	Long-term value: 1* 0.1** mg/m ³ as Cu *dusts and mists **fume	
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REL (USA)	Long-term value: 1* 0.1** mg/m ³	
	as Cu *dusts and mists **fume	
TLV (USA)	Long-term value: 1* 0.2** mg/m ³	
	*dusts and mists; **fume; as Cu	
EL (Canada)	Long-term value: 1* 0.2** mg/m ³	
	*dusts and mists; **fume, as Cu	
EV (Canada)	Long-term value: 0.2* 1** mg/m ³	
	as copper, *fume;**dust and mists	
LMPE (Mexico)	Long-term value: 0.2* 1** mg/m ³	
	*humo (como Cu);**polvo y niebla (como Cu)	
7439-96-5 man	ganese, powdered	
PEL (USA)	Ceiling limit value: 5 mg/m ³	
	as Mn	
REL (USA)	Short-term value: 3 mg/m ³	
	Long-term value: 1 mg/m ³	
	fume, as Mn	
TLV (USA)	Long-term value: 0.02* 0.1* mg/m ³	
	as Mn; *respirable **inhalable fraction	
EL (Canada)	Long-term value: 0.2 mg/m ³	
	as Mn; R	
EV (Canada)	Long-term value: 0.2 mg/m ³	
. ,	as manganese	
LMPE (Mexico)	Long-term value: 0.2 mg/m ³	
· · · · ·	como Mn	
7440-65-5 yttriu	IM	
PEL (USA)	Long-term value: 1 mg/m ³	
	as Y	
REL (USA)	Long-term value: 1 mg/m ³	
	as Y	
TLV (USA)	Long-term value: 1 mg/m ³	
	as Y	
EL (Canada)	Long-term value: 1 mg/m ³	
(<i>'</i>	as Y	
EV (Canada)	Long-term value: 1 mg/m ³	
	metal and compounds	
LMPE (Mexico)	Long-term value: 1 mg/m³	
=(como Y	
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-	s with biological limit values:
7440-48-4	
BEI (USA)	
	Medium: urine
	Time: end of shift at end of workweek
	Parameter: Cobalt (background)
	 1 μg/L
	Medium: blood
	Time: end of shift at end of workweek
	Parameter: Cobalt (background, semi-quantitative)
Additiona	I information: No further relevant information available.
Exposure	controls
	protective equipment:
General p	rotective and hygienic measures:
	precautionary measures for handling chemicals should be followed.
Keep away	v from foodstuffs, beverages and feed.
	ective clothing separately.
Wash hand	ds before breaks and at the end of work.
	e or long term contact with the skin.
	act with the eyes.
	ng controls: No further relevant information available.
	equipment:
Use respira	atory protection when grinding or cutting material.
	respiratory protection may be advisable.
	mask should filter at least 99% of airborne particles.
	n of hands:
	es for the protection against mechanical hazards according to OSHA and NIOSH rules.
Eye prote	ction:
Sa Sa	afety glasses
	ection: Protective work clothing
	and supervision of exposure into the environment Avoid release to the environment.
RISK mana	agement measures See Section 7 for additional information.
Physical	and chemical properties
Informatio	on on basic physical and chemical properties
	formation
Annearan	ço;

- Appearance:
 - Form:
- Color: · Odor:
- · Odor threshold:

Solid material Silver-colored Odorless Not determined.

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pH-value:	Not applicable.	
Change in condition Melting point/Melting range: Boiling point/Boiling range:	982 °C (1800 °F) Undetermined.	
Flash point:	Not applicable.	
Flammability (solid, gaseous):	Not determined.	
Auto-ignition temperature:	Not determined.	
Decomposition temperature:	Not determined.	
Auto igniting:	Product is not self-igniting.	
Danger of explosion:	Product does not present an explosion hazard.	
Explosion limits: Lower: Upper:	Not determined. Not determined.	
Vapor pressure:	Not applicable.	
Density at 20 °C (68 °F): Relative density Vapour density Evaporation rate	8 g/cm ³ (66.76 lbs/gal) Not determined. Not applicable. Not applicable.	
Solubility in / Miscibility with Water:	Insoluble.	
Partition coefficient (n-octanol/water):	Not determined.	
Viscosity: Dynamic: Kinematic: Other information	Not applicable. Not applicable. No further relevant information available.	

10 Stability and reactivity

- · Reactivity
- · Chemical stability
- Thermal decomposition / conditions to be avoided: Heating may cause release of toxic fumes.
- Possibility of hazardous reactions
- Reacts with strong acids and alkali.
- Reacts with strong oxidizing agents.
- Reacts with halogenated compounds.
- Reacts with oxidizing agents.
- As the product is supplied it is not capable of dust explosion; however enrichment with fine dust causes risk of dust explosion.
- · Conditions to avoid Avoid acids.
- · Incompatible materials: Oxidizers, strong bases, strong acids

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• **Hazardous decomposition products:** Possible in traces: Toxic metal oxide smoke

Leadoxide vapor

11 Toxicological information

- · Information on toxicological effects
- · Acute toxicity:

· LD/LC50 values that are relevant for classification:

7440-48-4 cobalt

Oral LD50 6170 mg/kg (rat)

Primary irritant effect:

• on the skin: No irritant effect.

· on the eye: No irritating effect.

· Sensitization: No sensitizing effects known.

• Additional toxicological information:

The product is not subject to classification according to internally approved calculation methods for preparations:

When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

· Carcinogenic categories

NTP (National Toxicology Program)

7440-02-0 nickel

OSHA-Ca (Occupational Safety & Health Administration)

None of the ingredients is listed.

· Probable Routes of Exposure

Eye contact.

Skin contact.

· Repeated Dose Toxicity:

May cause metal fume disease.

Repeated or long-term inhalation of product dusts may cause pulmonary disease.

CMR effects (carcinogenity, mutagenicity and toxicity for reproduction):

• Germ cell mutagenicity Based on available data, the classification criteria are not met.

• Carcinogenicity Based on available data, the classification criteria are not met.

• Reproductive toxicity Based on available data, the classification criteria are not met.

• STOT-single exposure Based on available data, the classification criteria are not met.

• STOT-repeated exposure Based on available data, the classification criteria are not met.

• Aspiration hazard Based on available data, the classification criteria are not met.

12 Ecological information

· Toxicity

· Aquatic toxicity: No further relevant information available.

• Persistence and degradability No further relevant information available.

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astle Metals

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· Behavior in environmental systems:

· Bioaccumulative potential May be accumulated in organism

• Mobility in soil No further relevant information available.

Additional ecological information:

· General notes:

The product contains heavy metals. Avoid transfer into the environment. Specific preliminary treatments are necessary.

· Other adverse effects No further relevant information available.

13 Disposal considerations

· Waste treatment methods

· Recommendation:

Contact manufacturer for recycling information.

The user of this material has the responsibility to dispose of unused material, residues and containers in compliance with all relevant local, state and federal laws and regulations regarding treatment, storage and disposal for hazardous and nonhazardous wastes.

· Uncleaned packagings:

· Recommendation: Disposal must be made according to official regulations.

14 Transport information		
· UN-Number		
 DOT, ADR, ADN, IMDG, IATA UN proper shipping name 	Not Regulated	
DOT, ADR, ADN, IMDG, IATA Transport hazard class(es)	Not Regulated	
DOT, ADR, IMDG, IATA		
Class	Not Regulated	
· Label	-	
· ADN/R Class:	Not Regulated	
· Packing group		
· DOT, ADR, IMDG, IATA	Not Regulated	
 Environmental hazards: 		
 Marine pollutant: 	No	
• Special precautions for user	Not applicable.	
Transport in bulk according to Annex		
MARPOL73/78 and the IBC Code • UN "Model Regulation":	Not applicable. -	

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SARA Section 355 (extremely hazardous substances): None of the ingredients is listed. Section 313 (Specific toxic chemical listings): 7440-02-0 nickel 7440-47-3 chromium 7440-48-4 cobalt 7440-48-4 cobalt 7440-48-4 cobalt 7440-48-4 cobalt 7440-48-4 cobalt Chemicals known to cause reproductive toxicity for females: None of the ingredients is listed. Chemicals known to cause reproductive toxicity for males: None of the ingredients is listed. Chemicals known to cause developmental toxicity: None of the ingredients is listed. Chemicals known to cause developmental toxicity: None of the ingredients is listed. Chemicals known to cause developmental toxicity: None of the ingredients is listed. Chemicals known to cause developmental toxicity: None of the ingredients is listed. Chemicals known to cause developmental toxicity: None of the ingredients is listed. Chemicals known to cause developmental toxicity: None of the ingredients is listed. Chemicals known to cause developmental toxicity: None of the ingredients is listed. Chemicals known to cause developmental toxicity: None of the ingredients is listed. Carcinogenic categories EPA (Environmental Protection Agency) 7440-47-3 chromium 7440-48-4 cobalt TLV (Threshold Limit Value established by ACGIH) 7440-47-3 chromium 7440-48-4 cobalt TLV (Threshold Limit Value established by ACGIH) 7440-47-3 chromium 7440-48-4 cobalt	Safety, heal United State SARA	th and environmental regulations/legislation specific for the substance or mixture es (USA)	e
None of the ingredients is listed. Section 313 (Specific toxic chemical listings): 7440-02-0 nickel 7440-47-3 chromium 7440-48-4 cobalt 7440-48-4 7440-50-8 copper TSCA (Toxic Substances Control Act): All ingredients are listed. Proposition 65 (California) Chemicals known to cause cancer: 7440-20-0 nickel 7440-20-0 Toked 7440-20-0 Chemicals known to cause reproductive toxicity for females: None of the ingredients are listed. Chemicals known to cause reproductive toxicity for males: None of the ingredients is listed. Chemicals known to cause developmental toxicity: None of the ingredients is listed. Carcinogenic categories EPA (Environmental Protection Agency) 7440-47-3 chromium 7440-47-3 chromium 7440-47-3 chromium 7440-47-3 chromium 7440-47-3 chro		(extremely hazardous substances):	
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Chemicals known to cause cancer: 7440-02-0 nickel 7440-48-4 cobalt Chemicals known to cause reproductive toxicity for females: None of the ingredients are listed. Chemicals known to cause reproductive toxicity for males: None of the ingredients is listed. Chemicals known to cause developmental toxicity: None of the ingredients is listed. Carcinogenic categories EPA (Environmental Protection Agency) 7440-47-3 chromium 7440-05-8 copper 7440-02-0 nickel 7440-48-4 cobalt TLV (Thres-hold Limit Value established by ACGIH) 7440-48-4 cobalt	All ingredien	ts are listed.	
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7440-48-4 cobalt Chemicals known to cause reproductive toxicity for females: None of the ingredients are listed. Chemicals known to cause reproductive toxicity for males: None of the ingredients is listed. Chemicals known to cause developmental toxicity: None of the ingredients is listed. Chemicals known to cause developmental toxicity: None of the ingredients is listed. Carcinogenic categories EPA (Environmental Protection Agency) 7440-47-3 chromium 7440-50-8 copper 7440-47-3 chromium 7440-20-0 nickel 7440-47-3 chomium 7440-47-3 cobalt TLV (Threstold Limit Value established by ACGIH) 7440-02-0 nickel 7440-47-3			
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7440-47-3 chromium 7440-48-4 cobalt TLV (Threshold Limit Value established by ACGIH) 7440-02-0 nickel 7440-47-3 chromium 7440-48-4 cobalt	•		
7440-48-4 cobalt TLV (Threshold Limit Value established by ACGIH) 7440-02-0 nickel 7440-47-3 chromium 7440-48-4 cobalt			
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7440-02-0 nickel 7440-47-3 chromium 7440-48-4 cobalt	7440-48-4 c	obalt	
7440-47-3 chromium 7440-48-4 cobalt	•	- ·	_
7440-48-4 cobalt			
7429-90-5 laluminum			
7439-98-7 molybdenum			





acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 07/01/2015

Reviewed on 07/01/2015

Trade name: Nickel Based Alloy Steel, No 8800-9900

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• NIOSH-Ca (National Institute for Occupational Safety and Health)

7440-02-0 nickel

State Right to Know Listings

None of the ingredients is listed.

· Canadian substance listings:

· Canadian Domestic Substances List (DSL)

All ingredients are listed.

· Canadian Ingredient Disclosure list (limit 0.1%)

7440-02-0 nickel

7440-47-3 chromium

7440-48-4 cobalt

· Canadian Ingredient Disclosure list (limit 1%)

7429-90-5 aluminum

7439-98-7 molybdenum

7440-50-8 copper

· Other regulations, limitations and prohibitive regulations

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations.

Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· Date of preparation / last revision 07/01/2015 / -

Abbreviations and acronyms:

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road) IMDG: International Maritime Code for Dangerous Goods DOT: US Department of Transportation IATA: International Air Transport Association ACGIH: American Conference of Governmental Industrial Hygienists EINECS: European Inventory of Existing Commercial Chemical Substances ELINCS: European List of Notified Chemical Substances CAS: Chemical Abstracts Service (division of the American Chemical Society) NFPA: National Fire Protection Association (USA) HMIS: Hazardous Materials Identification System (USA) WHMIS: Workplace Hazardous Materials Information System (Canada) LC50: Lethal concentration, 50 percent LD50: Lethal dose, 50 percent Flam. Sol. 1: Flammable solids, Hazard Category 1 Self-heat. 1: Self-Heating Substances and Mixtures, Hazard Category 1 Water-react. 1: Substances and Mixtures which, in contact with water, emit flammable gases, Hazard Category 1 Resp. Sens. 1: Sensitisation - Respirat., Hazard Category 1 Skin Sens. 1: Sensitisation - Skin, Hazard Category 1 Carc. 2: Carcinogenicity, Hazard Category 2 STOT RE 1: Specific target organ toxicity - Repeated exposure, Hazard Category 1 (Contd. on page 13)



acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 07/01/2015

Reviewed on 07/01/2015

Trade name: Nickel Based Alloy Steel, No 8800-9900

(Contd. of page 12)

Sources
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