Safety Data Sheet

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 6600-7700 Series**
· **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

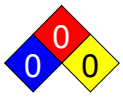
· **Emergency telephone number:** (847)-349-3000

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 = 0
Fire = 0
Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**

Health = 0
Fire = 0
Reactivity = 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.

· **Dangerous components:**

7440-02-0	nickel Carc. 2, H351; STOT RE 1, H372 Skin Sens. 1, H317	39-80%
7440-47-3	chromium	15-48%
7439-89-6	iron	1-40%
7440-48-4	cobalt Resp. Sens. 1, H334; Carc. 2, H351 Skin Sens. 1, H317	0-13%
7439-98-7	molybdenum	2-10%
7440-33-7	tungsten	<5%
7429-90-5	aluminum	<5%
7439-96-5	manganese, powdered Flam. Sol. 1, H228	<5%
7440-03-1	niobium	<5%
7440-32-6	titanium Self-heat. 1, H251; Water-react. 1, H260	<3%
7440-25-7	tantalum	<2%
7440-65-5	yttrium	<1%

· **Additional information:**
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.

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· **Information for doctor:**
· **Most important symptoms and effects, both acute and delayed**
No further relevant information available.
· **Danger** No further relevant information available.
· **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.

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

· **Components with limit values that require monitoring at the workplace:**	
7440-02-0 nickel	
PEL (USA)	Long-term value: 1 mg/m³
REL (USA)	Long-term value: 0.015 mg/m³ as Ni; See Pocket Guide App. A
TLV (USA)	Long-term value: 1.5* mg/m³ elemental, *inhalable fraction
EL (Canada)	Long-term value: 0.05 mg/m³ ACGIH A1, IARC 2B
EV (Canada)	Long-term value: 1 mg/m³ Inhalable fraction
LMPE (Mexico)	Long-term value: 1.5* mg/m³ *elemental:A5, fracción inhalable
7440-47-3 chromium	
PEL (USA)	Long-term value: 1* 0.5** mg/m³ *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/m³
EL (Canada)	Long-term value: 0.5 mg/m³ as metal
EV (Canada)	Long-term value: 0.05 mg/m³
LMPE (Mexico)	Long-term value: 0.5 mg/m³ A4

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7439-89-6 iron	
EV (Canada)	Long-term value: 1* 5** mg/m³ as iron;*salts, water-soluble;**welding fume
LMPE (Mexico)	Long-term value: 1 mg/m³
7439-98-7 molybdenum	
PEL (USA)	Long-term value: 15* mg/m³ *Total dust
TLV (USA)	Long-term value: 10* 3** mg/m³ as Mo; *inhalable fraction ** respirable fraction
EL (Canada)	Long-term value: 3* 10** mg/m³ 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
7440-48-4 cobalt	
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/m³
LMPE (Mexico)	Long-term value: 0.02 mg/m³ A3, IBE
7440-33-7 tungsten	
PEL (USA)	and insoluble compounds, as We
REL (USA)	Short-term value: 10 mg/m³ Long-term value: 5 mg/m³ as W
TLV (USA)	Short-term value: 10 mg/m³ Long-term value: 5 mg/m³ as W
EL (Canada)	Short-term value: 10 mg/m³ Long-term value: 5 mg/m³ as W
EV (Canada)	Short-term value: 10* 3** mg/m³ Long-term value: 5* 1** mg/m³ (as tungsten; compds.:*water-insol.;**water-sol.
LMPE (Mexico)	Short-term value: 10 mg/m³ Long-term value: 5 mg/m³ como W

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7429-90-5 aluminum	
PEL (USA)	Long-term value: 15*; 15** mg/m³ *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/m³ 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
7439-96-5 manganese, powdered	
PEL (USA)	Ceiling limit value: 5 mg/m³ as Mn
REL (USA)	Short-term value: 3 mg/m³ Long-term value: 1 mg/m³ fume, as Mn
TLV (USA)	Long-term value: 0.02* 0.1* mg/m³ as Mn; *respirable **inhalable fraction
EL (Canada)	Long-term value: 0.2 mg/m³ as Mn; R
EV (Canada)	Long-term value: 0.2 mg/m³ as manganese
LMPE (Mexico)	Long-term value: 0.2 mg/m³ como Mn
7440-25-7 tantalum	
PEL (USA)	Long-term value: 5 mg/m³ metal
REL (USA)	Short-term value: 10 mg/m³ Long-term value: 5 mg/m³ Metal
TLV (USA)	metal; TLV withdrawn due to insufficient data
EL (Canada)	Long-term value: 5 mg/m³ metal
EV (Canada)	Long-term value: 10 mg/m³ metal and oxide (total dust)
LMPE (Mexico)	Short-term value: 10 mg/m³ Long-term value: 5 mg/m³
7440-65-5 yttrium	
PEL (USA)	Long-term value: 1 mg/m³ as Y

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REL (USA)	Long-term value: 1 mg/m³ as Y
TLV (USA)	Long-term value: 1 mg/m³ as Y
EL (Canada)	Long-term value: 1 mg/m³ as Y
EV (Canada)	Long-term value: 1 mg/m³ metal and compounds
LMPE (Mexico)	Long-term value: 1 mg/m³ como Y

· **Ingredients with biological limit values:**

7440-48-4 cobalt

BEI (USA)	15 µg/L 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)

· **Additional information:** No further relevant information available.

· **Exposure controls**
· **Personal protective equipment:**
· **General protective and hygienic measures:**
The usual precautionary measures for handling chemicals should be followed.
Keep away from foodstuffs, beverages and feed.
Store protective clothing separately.
Wash hands before breaks and at the end of work.
Avoid close or long term contact with the skin.
Avoid contact with the eyes.
· **Engineering controls:** No further relevant information available.
· **Breathing equipment:**
Use respiratory protection when grinding or cutting material.
For spills, respiratory protection may be advisable.
Particulate mask should filter at least 99% of airborne particles.
· **Protection of hands:**
Wear gloves for the protection against mechanical hazards according to OSHA and NIOSH rules.
· **Eye protection:**

Safety glasses

· **Body protection:** Protective work clothing
· **Limitation and supervision of exposure into the environment** Avoid release to the environment.

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· **Risk management measures** See Section 7 for additional information.

9 Physical and chemical properties

· **Information on basic physical and chemical properties**
· **General Information**
· **Appearance:**
Form: Solid material
Color: Silver-colored
· **Odor:** Odorless
· **Odor threshold:** Not determined.

· **pH-value:** Not applicable.

· **Change in condition**
Melting point/Melting range: 982 °C (1800 °F)
Boiling point/Boiling range: 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: Not determined.
Upper: Not determined.

· **Vapor pressure:** Not applicable.

· **Density at 20 °C (68 °F):** 8 g/cm³ (66.76 lbs/gal)
· **Relative density** Not determined.
· **Vapour density** Not applicable.
· **Evaporation rate** Not applicable.

· **Solubility in / Miscibility with**
Water: Insoluble.

· **Partition coefficient (n-octanol/water):** Not determined.

· **Viscosity:**
Dynamic: Not applicable.
Kinematic: Not applicable.
· **Other information** No further relevant information available.

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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
· **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)
7439-96-5 manganese, powdered		
Oral	LD50	9000 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	R

· **OSHA-Ca (Occupational Safety & Health Administration)**
None of the ingredients is listed.

· **Probable Routes of Exposure**
Eye contact.
Skin contact.

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· **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.
· **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** Not Regulated
· **UN proper shipping name**
· **DOT, ADR, ADN, IMDG, IATA** Not Regulated
· **Transport hazard class(es)**

· **DOT, ADR, IMDG, IATA**
· **Class** Not Regulated

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· **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 II of MARPOL73/78 and the IBC Code**	Not applicable.
· **UN "Model Regulation":**	-

15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**
· **United States (USA)**
· **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
7429-90-5	aluminum
7439-96-5	manganese, powdered

· **TSCA (Toxic Substances Control Act):**
All ingredients are listed.

· **Proposition 65 (California)**

· **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	D
7439-96-5	manganese, powdered	D

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· **IARC (International Agency for Research on Cancer)**

7440-02-0	nickel	1
7440-47-3	chromium	3
7440-48-4	cobalt	2B

· **TLV (Threshold Limit Value established by ACGIH)**

7440-02-0	nickel	A5
7440-47-3	chromium	A4
7439-98-7	molybdenum	A3
7440-48-4	cobalt	A3
7429-90-5	aluminum	A4

· **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%)**

7439-98-7	molybdenum
7440-33-7	tungsten
7429-90-5	aluminum
7439-96-5	manganese, powdered
7440-25-7	tantalum

· **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

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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

· **Sources**

SDS Prepared by:
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