



**Safety Data Sheet**  
According to Hazard Communication Standard 29 CFR 1910.1200 (USA)  
**LaserForm® Maraging Steel (A)**  
Revision Date: March 03<sup>rd</sup>, 2018

**SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING**

**1.1 Product identifier**

**Product name:** LaserForm® Maraging steel  
**Product type:** Solid. [Metallic powder.]

**1.2 Relevant identified uses of the substance or mixture and uses advised against**  
**Identified uses**

For use with 3D Systems DMP (Direct Metal Printing) equipment.

**Uses advised against**

Any other uses.

**1.3 Details of the supplier of the data sheet**

3D Systems, Inc.  
333 Three D Systems Circle  
Rock Hill, South Carolina  
U.S.A.  
Phone: 803.326.3900 or  
Toll-free Phone: 800.793.3669  
e-mail:  
moreinfo@3dsystems.com

3D Systems Europe Ltd.  
Mark House, Mark Road  
Hemel Hempstead  
Herts HP2 7  
United Kingdom  
Phone: +44 144-2282600  
e-mail:  
moreinfo@3dsystems.com

3D Systems / Australia  
5 Lynch Street  
Hawthorn, VIC 3122  
+1 03 9819-4422  
e-mail:  
moreinfo@3dsystems.com

3D Systems Japan K.K.  
Ebisu Garden Place Tower 27F  
4-20-3, Ebisu, Shibuya-ku,  
Tokyo 50-6027 Japan  
Telephone No. +81-3-5798-  
2500  
e-mail:  
moreinfo@3dsystems.com

**1.4 Emergency telephone number:**

USA  
Chemical Emergency:  
800.424.9300 – Chemtrec

Europe  
Chemical Emergency:  
+1 703.527.3887 - Chemtrec

Australia  
Chemical Emergency:  
+(61) 29037.2994 – Aus  
Chemtrec

Japan  
Chemical Emergency  
+(81)-345209637 – Chemtrec

**SECTION 2: HAZARDS IDENTIFICATION**

**2.1 Classification of substance or mixture**

**OSHA/HCS status**

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

**2.1.1 Classification**

Hazard Class	Category	Statement
EYE IRRITATION	2A	H319
RESPIRATORY SENSITIZATION	1	H334
SKIN SENSITIZATION	1	H317
CARCINOGENICITY	2	H351
TOXIC TO REPRODUCTION (Fertility)	2	H361f
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE)	1	H372
AQUATIC HAZARD (ACUTE)	1	H401
AQUATIC HAZARD (LONG-TERM)	2	H411

**2.2 Label Elements**

**Hazard pictograms:**



**Signal word:**

Danger

**Hazard statements:**

- H317 : May cause an allergic skin reaction.
- H319 : Causes serious eye irritation.
- H334 : May cause allergy or asthma symptoms or breathing difficulties if inhaled.
- H351 : Suspected of causing cancer.
- H372 : Causes damage to organs through prolonged or repeated exposure.
- H361f : Suspected of damaging fertility.
- H400 : Very toxic to aquatic life
- H411 : Toxic to aquatic life with long lasting effects.



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**Precautionary statements:**

- P201 : Obtain special instructions before use.
- P202 : Do not handle until all safety precautions have been read and understood.
- P260 : Do not breathe dust.
- P264 : Wash hands thoroughly after handling.
- P270 : Do not eat, drink or smoke when using this product.
- P272 : Contaminated work clothing should not be allowed out of the workplace.
- P273 : Avoid release to the environment.
- P280 : Wear protective gloves, protective clothing and eye protection or face protection.
- P284 : Wear respiratory protection.
- P302+P352 : IF ON SKIN: Wash with plenty of soap and water.
- P304+P340 : IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- P305+P351+P338 : IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P308+P313 : IF exposed or concerned: Get medical advice/attention.
- P314 : Get medical attention if you feel unwell.
- P333+P313 : If skin irritation or rash occurs: Get medical advice/attention.
- P337+P313 : If eye irritation persists: Get medical advice/attention.
- P342+P311 : If experiencing respiratory symptoms: Call a POISON CENTER or physician.
- P362+P364 : Take off contaminated clothing. And wash it before reuse.
- P391 : Collect spillage.
- P405 : Store locked up.
- P501 : Dispose of contents and container in accordance with all local, regional, national and international regulations.

**2.3 Other Hazards which do not result in classification:**

None known.

**SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS**

**Substance/mixture:** Mixture

Chemical name	Reach No	CAS-No	EC-No	%	Classification according to Reg. (EC) No. 1272/2008
Iron	01-2119462838-24	7439-89-6	231-096-4	48.5-79.5	Not classified
Nickel	01-2119438727-29	7440-02-0	231-111-4	10-30	Skin send. 1, H317 Car. 2, H351 STOT RE 1, H372 Aquatic Chronic 3, H412
Cobalt		7440-48-4		7-13	Acute Tox. 4, H332 Ey Irrit. 2, H319 Resp. Sens. 1, H334 Skin Sens. 1, H317 Carc. 1, H350i Repr. 2 H361f Aquatic Acute 1, H400 (M=10) Aquatic Chronic 1, H410 (M=1)
Molybdenum	01-2119472304-43	7439-98-7	231-107-2	3-7	Not classified
Titanium		7440-32-6	231-142-3	0.5-1.5	Flam. Sol. 2, H228

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

See section 16 for the full text of the H statements declared above.

**There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.**

**Occupational exposure limits, if available, are listed in Section 8.**



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## SECTION 4: FIRST AID MEASURES

### 4.1 Description of first aid measures

- **Following eye contact:** Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
- **Following inhalation:** Remove victim to fresh air and keep at rest in a position comfortable for breathing. If suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In the event of any complaints or symptoms, avoid further exposure.
- **Following skin contact:** Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water. Continue to rinse for at least 10 minutes. Get medical attention. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- **Following ingestion:** Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- **Protection of the first aider:** No action shall be taken involving any personal risk or without suitable training. If it suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water.

### 4.2 Most important symptoms and effects, both acute and delayed

#### Potential acute health effects

- **Eye contact:** Causes serious eye irritation.
- **Inhalation:** Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs. May cause allergy or asthma symptoms or breathing difficulties if inhaled.
- **Skin Contact:** May cause an allergic skin reaction.
- **Ingestion:** No known significant effects or critical hazards.

#### Over-exposure signs/symptoms

- **Eye contact:** Adverse symptoms may include the following: pain or irritation, watering and redness.
- **Inhalation:** Adverse symptoms may include the following: respiratory tract irritation, coughing, wheezing and breathing difficulties, asthma, reduced fetal weight, an increase in fetal deaths, skeletal malformations.
- **Skin contact:** Adverse symptoms may include the following: Irritation, redness, reduced fetal weight, increase in foetal deaths, skeletal malformations
- **Ingestion:** Adverse symptoms may include the following: reduced fetal weight, increase in fetal deaths, skeletal malformations

#### Long term exposure

- Potential immediate effects : Not available.
- Potential delayed effects : Not available.

### 4.3 Indications of any immediate medical attention and special treatment needed

- **Notes to physician:** Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
- **Specific treatment:** No specific treatment.



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## SECTION 5: FIRE-FIGHTING MEASURES

### 5.1 Extinguishing media:

- **Suitable extinguishing media:** Use approved type D extinguisher or smother with dry sand, dry clay or dry ground limestone.
- **Unsuitable extinguishing media:** Do not use water nor high volume water jets. Do not use dry chemical, Carbon dioxide (CO<sub>2</sub>) or Halon.

### 5.2 Special hazards arising from the substance or mixture

- **Hazards from the substance or mixture:** This material is very toxic to aquatic life. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
- **Hazardous thermal decomposition products:** Decomposition products may include the following materials: metal oxide/oxides

### 5.3 Advise for firefighters:

- **Special protective actions for firefighters:** Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
- **Special protective equipment for firefighters:** Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

### 6.1 Personal precautions, protective equipment and emergency procedures

- **For non-emergency personnel:** No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing dust. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- **For emergency responders:** if specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

### 6.2 Environmental precautions

Avoid dispersal of spill material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, or soil). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

### 6.3 Methods and material for containment and cleaning up

Wear appropriate protective equipment and antistatic clothing.

- **For containment:** Use non-sparking antistatic tools and containers. Do not use compressed air and avoid dust generation.
- **For cleaning up small spillage:** Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Place spilled material in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.
- **For cleaning up large spillage:** Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Avoid creating dusty conditions and prevent wind dispersal. Dispose of via a licensed waste disposal contractor.

### 6.4 Reference to other sections

- See Section 1 for emergency contact information.
- See section 8 for information on appropriate personal protective equipment.
- See section 13 for additional waste treatment information



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**SECTION 7: HANDLING AND STORAGE**

**7.1 Precautions for safe handling**

- **Protective measures:** Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitisation problems or asthma, allergies or chronic or recurrent respiratory disease should not be employed in any process in which this product is used. Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe dust. Do not ingest. Avoid release to the environment. Avoid the creation of dust when handling and avoid all possible sources of ignition (spark or flame). Prevent dust accumulation. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Electrical equipment and lighting should be protected to appropriate standards to prevent dust coming into contact with hot surfaces, sparks or other ignition sources. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by earthing and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.
- **Advice on general occupational hygiene:** Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Remove contaminated clothing and protective equipment before entering eating areas. Avoid contact with skin and eyes. Do not breathe dust. Wash hands and face thoroughly after working with material. Contaminated clothing should be removed and washed before re-use. See also Section 8 for additional information on hygiene measures.

**7.2 Conditions for safe storage including any incompatibilities**

Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate container to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

**7.3 Specific end use(s)**

- **Recommendations:** Not available.
- **Industrial sector specific Solutions** Not available.

**SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION**

**8.1 Control parameters**

**Occupational exposure limits**

Product/ingredient name	Exposure limits
nickel	<b>ACGIH TLV (United States, 4/2014). Notes: Refers to Appendix A -- Carcinogens. Inhalable fraction. See Appendix C, paragraph A. Inhalable Particulate Mass TLVs (IPM-TLVs) for those materials that are hazardous when deposited anywhere in the respiratory tract. 1998 Adoption.</b> TWA: 1.5 mg/m <sup>3</sup> 8 hours. Form: Inhalable fraction <b>OSHA PEL (United States, 2/2013). Notes: as Ni</b> TWA: 1 mg/m <sup>3</sup> , (as Ni) 8 hours. <b>NIOSH REL (United States, 10/2013).</b> TWA: 0.015 mg/m <sup>3</sup> , (as Ni) 10 hours.
Cobalt	<b>ACGIH TLV (United States, 3/2016).</b> TWA: 0.02 mg/m <sup>3</sup> , (as Co) 8 hours. TWA: 0.005 mg/m <sup>3</sup> 8 hours. Form: Thoracic fraction <b>NIOSH REL (United States, 10/2013).</b> TWA: 0.05 mg/m <sup>3</sup> , (as Co) 10 hours. Form: Dust and fumes <b>OSHA PEL (United States, 6/2016).</b> TWA: 0.1 mg/m <sup>3</sup> , (as Co) 8 hours.



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## 8.2 Exposure controls

### 8.2.1 Appropriate engineering controls

#### Technical measures to prevent exposure

Ensure adequate ventilation to maintain exposures below occupational limits. Whenever possible the use of local exhaust explosion proof ventilation or other engineering controls is the preferred method of controlling exposure to airborne dust and fume to meet established occupational exposure limits. Do not blow dust off clothing or skin with compressed air.

### 8.2.2 Personal Protection equipment

#### 8.2.2.1 Hygiene measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

#### 8.2.2.2 Eye and face protection

Safety glasses or goggles are recommended when handling this material.

#### 8.2.2.3 Skin protection

##### Hand Protection

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated. Rubber or other appropriate gloves should be worn to minimize contact. For hygienic reasons rubber gloves should not be worn for more than 2 hours.

##### Body protection

Use long sleeved antistatic garments and closed, antistatic safety shoes. Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

#### 8.2.2.4 Respiratory protection

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.



### 8.2.2 Environmental exposure control

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on basic physical and chemical properties

#### Appearance

**Physical state** : Solid. [Metallic Powder.]  
**Colour** : Grey.  
**Odour** : Odourless.  
**Odour threshold** : Not available  
**pH** : Not available  
**Meltingpoint/freezing point** : 1370 - 1455°C



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**Initial boiling point and boiling range** : Not available  
**Flash point** : [Product does not sustain combustion.]  
**Flammability (solid, gas)** : Non-flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and shocks and mechanical impacts.  
**Explosive properties** : Not applicable  
20 Liter Screening Test [ASTM E 1226] : Not explosive.  
Minimum Ignition Temperature of a Dust Cloud (MAIT) [ASTM E1491] : >1000°C  
Percent Combustible Material (PCM) [OSHA NEP Test #3] : The sample oxidized. No values could be determined.  
Flammability - Burning rate test [UN - Transport of dangerous goods Test - N.1] : No ignition  
**Upper/lower flammability or explosive limits** : Not available.  
**Auto-ignition temperature**: Not available.  
**Oxidising properties** : Not expected based on chemical composition.  
**Decomposition temperature**: Not available.  
**Viscosity** : Not available.  
**Evaporation rate** : Not available.  
**Vapour pressure** : Not available.  
**Vapour density** : Not available.  
**Relative density** : Not available.  
**Solubility(ies)** : Not available.  
**Solubility in water (g/l)** : Not available.  
**Partition coefficient: n-octanol/water** : Not available.

**9.2 Other information**

No additional information.

**SECTION 10. STABILITY AND REACTIVITY**

**10.1 Chemical Stability**

Stable under normal conditions and under recommended storage conditions.

**10.2 Reactivity**

No specific test data related to reactivity available for this product or its ingredients.

**10.3 Possibility of hazardous reactions**

Under normal conditions of storage and use, hazardous reactions will not occur.

**10.4 Conditions to avoid**

Store and use away from heat, sparks, open flame or any other ignition source.

**10.5 Incompatible materials**

Avoid contact with combustible materials, acids, oxidising agents, halogenated hydrocarbons.

**SECTION 11. TOXICOLOGICAL INFORMATION**

**11.1 Information on toxicological effects**

**Acute toxicity**

Conclusion/Summary : Not available

**Irritation/Corrosion**

Conclusion/Summary : Not available

**Sensitisation**

Conclusion/Summary : Not available

**Mutagenicity**

Conclusion/Summary : Not available

**Carcinogenicity**

Product/ingredient name	OSHA	IARC	NTP
nickel	-	2B	Reasonably anticipated to be a human carcinogen.
cobalt	-	2B	-

**Reproductive toxicity**

Conclusion/Summary : Not available





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**Teratogenicity**

Conclusion/Summary : Not available

**Specific target organ toxicity (single exposure)**

Conclusion/Summary : Not available

**Specific target organ toxicity (repeated exposure)**

Product/ingredient name	Category	Route of exposure	Target Organs
Nickel	Category 1	Not determined	Not determined

**Aspiration hazard**

Conclusion/Summary : Not available

**11.2 Information on the likely routes of exposure**

Routes of entry anticipated: oral, dermal, inhalation

**11.3 Symptoms related to the physical, chemical and toxicological characteristics**

Adverse symptoms may include the following

- Eye contact** : pain or irritation  
watering  
redness
- Inhalation** : respiratory tract irritation  
coughing  
wheezing and breathing difficulties  
asthma  
reduced foetal weight  
increase in foetal deaths  
skeletal malformations
- Skin contact** : irritation  
redness  
reduced foetal weight  
increase in foetal deaths  
skeletal malformations
- Ingestion** : reduced foetal weight  
increase in foetal deaths  
skeletal malformations

**11.4 Delayed and immediate after short- and long-term exposure**

**11.4.1 Short term exposure**

**Potential immediate effects** : Not available

**Potential delayed effects** : Not available

**11.4.2 Long term exposure**

**Potential immediate effects** : Not available

**Potential delayed effects** : Not available

**11.5 Potential acute and chronic health effects**

**11.5.1 Potential acute health effects**

- Eye contact** : Causes serious eye irritation.
- Inhalation** : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs. May cause allergy or asthma symptoms or breathing difficulties if inhaled.
- Skin contact** : May cause an allergic skin reaction
- Ingestion** : No known significant effects or critical hazards.

**11.5.2 Potential chronic health effects**

**Conclusion/Summary** : Not available

**General** : Causes damage to organs through prolonged or repeated exposure. Repeated or prolonged inhalation of dust may lead to chronic respiratory irritation. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

**Carcinogenicity** : Contains material which can cause cancer. Risk of cancer depends on duration and level of exposure.





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**Mutagenicity** : No known significant effects or critical hazards  
**Teratogenicity** : No known significant effects or critical hazards  
**Developmental effects** : No known significant effects or critical hazards  
**Fertility effects** : No known significant effects or critical hazards

**SECTION 12. Ecological information**

**12.1 Toxicity**

Product/ingredient name	Result	Species	Exposure
cobalt	Acute LC50 4400 µg/l	Daphnia – Daphnia magna	48 hours
	Acute LC50 3.4 mg/l Fresh water	Fish – Pimephales promelas	96 hours

**12.2 Persistence and degradability**

**Conclusion/Summary** : Not available

**12.3 Bioaccumulative potential**

Product/ingredient name	LogP <sub>ow</sub>	BCF	Potential
Cobalt	-	15600	high

**12.4 Mobility in soil**

**Soil/water partition coefficient (Koc)** : Not available  
**Mobility** : Not available

**12.5 Results of PBT and vPvB assessment**

**PBT** : Not applicable  
**vPvB** : Not applicable

**12.6 Other adverse effects**

No known significant effects or critical hazards

**SECTION 13. DISPOSAL CONSIDERATIONS**

**13.1 Waste treatment methods**

**13.1.1 Product**

**Methods of disposal**

The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction.

**Hazardous waste**

The classification of the product may meet the criteria for a hazardous waste.

**13.1.2 Packaging**

**Methods of disposal**

Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.


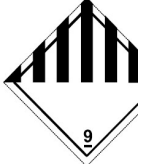


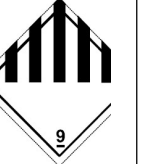

**13.2 Special precautions**

This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.



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**SECTION 14. Transport information**

	<b>DOT Classification</b>	<b>TDG Classification</b>	<b>Mexico Classification</b>	<b>ADR/RID</b>	<b>IMDG</b>	<b>IATA</b>
<b>UN number</b>	UN3077	UN3077	UN3077	UN3077	UN3077	UN3077
<b>UN proper shipping name</b>	Environmentally hazardous substance, solid, n.o.s. (cobalt, Nickel)	Environmentally hazardous substance, solid, n.o.s. (cobalt)	Environmentally hazardous substance, solid, n.o.s. (cobalt)	Environmentally hazardous substance, solid, n.o.s. (cobalt)	Environmentally hazardous substance, solid, n.o.s. (cobalt)	Environmentally hazardous substance, solid, n.o.s. (cobalt)
<b>Transport hazard class(es)</b>	9 	9 	9 	9 	9 	9 
<b>Packing group</b>	III	III	III	III	III	III
<b>Environmental hazards</b>	No.	Yes.	Yes.	Yes.	Yes.	Yes.

**Additional information**

**DOT Classification**

**Reportable quantity** 10 lbs / 4.54 kg. The classification of the product is due solely to the presence of one or more US DOT-listed 'Hazardous substances' that are subject to reportable quantity requirements and only applies to shipments of packages greater than, or equal to, the product reportable quantity. Package sizes less than the product reportable quantity are not regulated as hazardous materials.

**Remarks**

Subject to 49 CFR Chapter 171.4 (c) (2)

**TDG Classification**

Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.43-2.45 (Class 9), 2.7 (Marine pollutant mark). Non-bulk packages of this product are not regulated as dangerous goods when transported by road or rail.

**Remarks** Subject to TDG Special Provision 99 (2)

**Mexico Classification**

The environmentally hazardous substance mark is not required when transported in sizes of ≤5 L or ≤5 kg.

**ADR/RID**

This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8.

**Remarks** Subject to ADR Special Provision A375

**IMDG**

This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8.

**Remarks** Subject to IMDG Code 37-14 Chapter 2.10.2.7

**IATA**

This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 5.0.2.4.1, 5.0.2.6.1.1 and 5.0.2.8.

**Remarks** Subject to IATA Special Provision A 197

**Special precautions for user**

**Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

**Transport in bulk according to Annex II of MARPOL and the IBC Code**

Not available.



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**SECTION 15: Regulatory information**

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

**U.S. Federal regulations**

TSCA 8(a) CDR Exempt/Partial exemption: Not determined  
Clean Water Act (CWA) 307: Nickel

**Clean Air Act**

Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed  
Section 602 Class I Substances : Not listed  
Section 602 Class II Substances : Not listed

**DEA**

List I Chemicals (Precursor Chemicals) : Not listed  
List II Chemicals (Essential Chemicals) : Not listed

**SARA**

**302/304**

Composition/information on ingredients : No products were found  
304 RQ : Not applicable.

**311/312**

Classification : Immediate (acute) health hazard  
Delayed (chronic) health hazard

**Composition/information on ingredients:**

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
nickel	≥10 - ≤25	No.	No.	No.	Yes.	Yes.
cobalt	≥10 - <25	No.	No.	No.	Yes.	Yes.

**313**

	Product name	CAS number	%
<b>Form – Reporting requirements</b>	Nickel	7440-02-0	≥10 - ≤25
	Cobalt	7440-48-4	≥10 - ≤25
<b>Supplier notification</b>	Nickel	7550-02-0	≥10 - ≤25
	Cobalt	7440-48-4	≥10 - ≤25

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

**STATE REGULATIONS**

**Massachusetts:** The following components are listed: NICKEL; COBALT; MOLYBDENUM  
**New York** : The following components are listed: Nickel  
**New Jersey** : The following components are listed: NICKEL; COBALT; MOLYBDENUM; TITANIUM  
**Pennsylvania** : The following components are listed: NICKEL; COBALT FUME; MOLYBDENUM  
**California Prop. 65**

**WARNING:** This product contains a chemical known to the State of California to cause cancer.

Ingredient name	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level
Nickel	Yes.	No.	-	-
Cobalt metal powder	Yes.	No.	-	-

**INTERNATIONAL REGULATIONS**

**Chemical Weapon Convention List Schedules I, II & III Chemicals** : Not listed.  
**Montreal Protocol (Annexes A, B, C, E)** : Not listed.  
**Stockholm Convention on Persistent Organic Pollutants** : Not listed.  
**Rotterdam Convention on Prior Informed Consent (PIC)** : Not listed.  
**UNECE Aarhus Protocol on POPs and Heavy Metals** : Not listed.

**INVENTORY LIST**

**United States** : All components are listed or exempted.



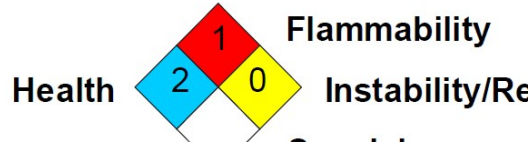
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**15.2 Chemical Safety Assessment**

This product contains substances for which Chemical Safety Assessments are still required.

**SECTION 16. OTHER INFORMATION**

National Fire Protection Association (U.S.A.)



Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

**Abbreviations and acronyms**

- ATE = Acute Toxicity Estimate
- BCF = Bioconcentration Factor
- GHS = Globally Harmonized System of Classification and Labelling of Chemicals
- IATA = International Air Transport Association
- IBC = Intermediate Bulk Container
- IMDG = International Maritime Dangerous Goods
- LogPow = logarithm of the octanol/water partition coefficient
- MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
- UN = United Nations

**Procedure used to derive the classification**

Classification	Justification
Eye Irritation - Category 2A - H319	Calculation method
Respiratory Sensitization - Category 1 - H334	Calculation method
Skin Sensitization - Category 1 - H317	Calculation method
Carcinogenicity - Category 2 - H351	Expert judgment
Toxic to reproduction (fertility) - Category 2 - H361f	Calculation method
Specific Target Organ Toxicity (Repeated Exposure) - Category 1 - H372	Calculation method
Aquatic Hazard (acute) - Category 1 - H400	Calculation method
Aquatic Hazard (long-term) - Category 2 - H411	Calculation method

**Full text of abbreviated H statements**

- H317 : May cause an allergic skin reaction.
- H319 : Causes serious eye irritation.
- H332 : Harmful if inhaled.
- H334 : May cause allergy or asthma symptoms or breathing difficulties if inhaled.
- H350i : May cause cancer if inhaled.
- H351 : Suspected of causing cancer.
- H361f : Suspected of damaging fertility.
- H372 : Causes damage to organs through prolonged or repeated exposure.
- H400 : Very toxic to aquatic life.
- H410 : Very toxic to aquatic life with long lasting effects.
- H411 : Toxic to aquatic life with long lasting effects.
- H412 : Harmful to aquatic life with long lasting effects.

**SDS information**

- Creation date : October 12<sup>th</sup>, 2017
- Revision : 00-B
- Revision date : March 03<sup>th</sup>, 2018
- Revision changes : Addition of H sentence (H400) and explosion/flammability test results.



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