

Safety Data Sheet

Maraging C300 Steel Powder

SECTION 1: Identification

1.1 Product identifier

Product name	Maraging C300 Steel Powder
Product number	Maraging C300 Steel Powder
Brand	MolyWorks

1.2 Other means of identification

Steel Alloy, UNS K93120, ASTM A538 (C), ASTM A579 grade 73, 18Ni300

1.3 Recommended use of the chemical

Powder metallurgy, Additive manufacturing

1.4 Supplier's details

Name	MolyWorks
Address	70 Commerce Lane Suite I Cloverdale, CA 95425 United States
Telephone	+1 (408) - 438 - 5067
Email	contact@molyworks.com

SECTION 2: Hazard identification

2.1 GHS classification of the substance or mixture in accordance with: OSHA (29 CFR 1910.1200)

- Flammable solids, Cat. 2
- Acute toxicity, oral, Cat. 4
- Sensitization, skin, Cat. 1
- Specific target organ toxicity (repeated exposure), Cat. 1
- Carcinogenicity, Cat. 1B
- Germ cell mutagenicity, Cat. 2
- Sensitization, respiratory, Cat. 1
- Toxic to reproduction, Cat. 1A
- Aquatic Toxicity, Chronic, Cat. 2

2.2 GHS label elements, including precautionary statements



Signal word

Danger

Hazard determining components of labeling

Nickel Powder
Cobalt Powder
Iron Powder

Hazard statement(s)

H228	Flammable solid
H302	Harmful if swallowed
H317	May cause an allergic skin reaction
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled
H341	Suspected of causing genetic defects
H350	May cause cancer by inhalation
H360	May damage fertility or the unborn child
H372	Causes damage to organs lungs through prolonged or repeated exposure by inhalation
H411	Toxic to aquatic life with long lasting effects.

Precautionary statement(s)

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P210	Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ventilating/lighting equipment.
P260	Do not breathe dust/fume/gas/mist/vapors/spray.
P261	Avoid breathing dust/fume/gas/mist/vapors/spray.
P264	Wash hands thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P272	Contaminated work clothing must not be allowed out of the workplace.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301+P312	IF SWALLOWED: Call a POISON CENTER /doctor if you feel unwell
P302+P352	IF ON SKIN: Wash with plenty of water
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P308+P313	IF exposed or concerned: Get medical advice/attention.
P314	Get medical advice/attention if you feel unwell.
P330	Rinse mouth.
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.
P363	Wash contaminated clothing before reuse.
P370+P378	In case of fire: Use appropriate extinguishing media.
P405	Store locked up.
P501	Dispose of contents/container
P284	[In case of inadequate ventilation] wear respiratory protection.

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P342+P311 If experiencing respiratory symptoms: Call a
POISON CENTER/doctor

SECTION 3: Composition/information on ingredients

3.1 Substances

This product contains powder of a single alloyed substance.

3.2 Hazardous and non-hazardous components

CAS no.	Component	Concentration* (weight%)
7439-89-6	Iron Powder	67
7440-02-0	Nickel Powder (<1 mm)	18.5
7440-48-4	Cobalt Powder	9
7439-98-7	Molybdenum Powder	4.8
7440-32-6	Titanium Powder	0.6
7439-96-5	Manganese Powder	0.10
7440-21-3	Silicon Powder	0.10
7429-90-5	Aluminum Powder	0.10

*The specific chemical identity and/or exact percentage of the composition is estimated. Refer to a Certificate of Analysis for more detailed information on composition.

SECTION 4: First-aid measures

4.1 Description of necessary first-aid measures

General advice	Consult a physician.
If inhaled	If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician
In case of skin contact	Wash off with soap and plenty of water.
In case of eye contact	Flush eyes with water as a precaution.
If swallowed	Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms/effects, acute and delayed
The most important known symptoms and effects are described in the labeling (see section 2.2) and/or in section 11

4.3 Indication of immediate medical attention and special treatment needed, if necessary
No data available

SECTION 5: Fire-fighting measures

5.1 Suitable extinguishing media
Use Class E fire extinguisher material, water fog, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Specific hazards arising from the chemical
No data available

5.3 Special protective actions for fire-fighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
Use water spray to cool unopened containers.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. For personal protection see section 8.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up
Sweep up and shovel. Contain spillage, and then collect with an electrically protected vacuum cleaner or by wetbrushing and place in container for disposal according to local regulations (see section 13). Keep in suitable, closed containers for disposal.

6.4 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.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Avoid formation of dust. Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs. Provide appropriate exhaust ventilation at places where dust

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is formed. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge. For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Keep container tightly closed in a dry and well-ventilated place.

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2, no other specific uses are stipulated.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Components with workplace control parameters:

1. Nickel Powder (CAS: 7440-02-0)

PEL (Inhalation): 1 mg/m³ (OSHA)

PEL (Inhalation): metal 0.5 mg/m³, insoluble 0.1 mg/m³ (Cal/OSHA)

REL (Inhalation): Ca, 0.015 mg/m³ (NIOSH)

2. Cobalt Powder (CAS: 7440-48-4)

PEL (Inhalation): 0.1 mg/m³ (OSHA)

PEL (Inhalation): 0.02 mg/m³ (Cal/OSHA)

REL (Inhalation): 0.05 mg/m³ (NIOSH)

3. Molybdenum Powder (CAS: 7439-98-7)

PEL (Inhalation): 0.015 mg/m³ (OSHA)

PEL (Inhalation): metal 0.01 mg/m³ (Cal/OSHA)

4. Manganese Powder (CAS: 7439-96-5)

PEL (Inhalation): 5 mg/m³ (OSHA)

5. Silicon Powder (CAS: 7440-21-3)

PEL (Inhalation): 15 mg/m³ (OSHA)

REL (Inhalation): 10 mg/m³ (NIOSH)

6. Aluminum Powder (CAS: 7429-90-5)

PEL (Inhalation): 15 mg/m³ (OSHA)

REL (Inhalation): 10 mg/m³ (NIOSH)

8.2 Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of each workday. Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapor, gas, etc.) below recommended exposure limits.

8.3 Individual protection measures, such as personal protective equipment (PPE)

Pictograms



Eye/face protection

Face shield and safety glasses. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use. It should not be construed as offering an approval for any specific use scenario.

Body protection

Flame retardant antistatic protective clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Thermal hazards

No data available

Environmental exposure controls

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

SECTION 9: Physical and chemical properties

Physical State	Solid
Appearance	Powder
Color	Grey
Odor	No data available
Odor threshold	No data available
pH	Not applicable
Melting point/freezing point	1426 °C (2600°F)
Initial boiling point and boiling range	No data available
Flash point	Not applicable
Evaporation rate	Not applicable
Flammability (solid, gas)	The substance or mixture is a flammable solid
Upper/lower flammability limits	No data available
Upper/lower explosive limits	No data available
Vapor pressure	No data available

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Vapor density	No data available
Relative density	4.56 (apparent); 5.17 (tap)
Solubility	No data available
Partition coefficient n-octanol/water	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Viscosity	No data available
Explosive properties	Not explosive
Oxidizing properties	The substance or mixture is not classified

SECTION 10: Stability and reactivity

- 10.1 Reactivity**
No data available.
- 10.2 Chemical stability**
Stable under recommended storage conditions.
- 10.3 Possibility of hazardous reactions**
None under normal use conditions.
- 10.4 Conditions to avoid**
Heat, flames and sparks.
- 10.5 Incompatible materials**
Do not store near acids, Strong oxidizing agents, Carbon dioxide (CO₂)
- 10.6 Hazardous decomposition products**
Hazardous decomposition products formed under fire conditions. - Iron oxides
Other decomposition products - No data available
In the event of fire: see section 5

SECTION 11: Toxicological information

- 11.1 Acute toxicity**
The ATE (oral) of the mixture is: 2941.18 mg/kg bw
- 11.2 Skin corrosion/irritation**
May cause abrasive skin irritation
- 11.3 Serious eye damage/irritation**
May cause abrasive eye irritation
- 11.4 Respiratory or skin sensitization**
No data available
- 11.5 Germ cell mutagenicity**
No data available
- 11.6 Carcinogenicity**
OSHA specifically regulated carcinogen, nickel powder, cobalt powder
- 11.7 Reproductive toxicity**
No data available
- 11.8 Summary of evaluation of the CMR properties**

No data available

- 11.9 STOT-single exposure**
No data available
- 11.10 STOT-repeated exposure**
Causes damage to the lungs through prolonged or repeated exposure by inhalation
- 11.11 Aspiration hazard**
No data available

SECTION 12: Ecological information

- 12.1 Toxicity**
No data available
- 12.2 Persistence and degradability**
No data available
- 12.3 Bioaccumulative potential**
No data available
- 12.4 Mobility in soil**
No data available
- 12.5 Results of PBT and vPvB assessment**
No data available
- 12.6 Other adverse effects**
No data available

SECTION 13: Disposal considerations

- 13.1 Disposal of the product**
Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company.
- 13.2 Disposal of contaminated packaging**
Dispose of as unused product.

SECTION 14: Transport information

DOT (US)
UN Number: 3089
Class: 4.1
Packing Group: III
Proper Shipping Name: Metal powders, flammable, n.o.s

IMDG
UN Number: 3089
Class: 4.1
Packing Group: III
Proper Shipping Name: Metal powders, flammable, n.o.s

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IATA

UN Number: 3089

Class: 4.1

Packing Group: III

Proper Shipping Name: Metal powders, flammable, n.o.s.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations specific for the product in question

California Prop. 65 components	
CAS no.	Chemical name
7440-02-0	Nickel Powder (<1 mm) 10/01/1989 - Cancer
7440-48-4	COBALT (powder) 07/01/1992 - Cancer
Massachusetts Right To Know Components	
CAS no.	Chemical name
7440-02-0	Nickel Powder (<1 mm)
7439-96-5	Manganese Powder
7440-48-4	Cobalt Powder
7429-90-5	Aluminum (fume or dust)
New Jersey Right To Know Components	
CAS no.	Common name
7440-02-0	Nickel Powder (<1 mm)
7439-96-5	Manganese Powder
7440-48-4	Cobalt Powder
7440-21-3	Silicon Powder
7439-98-7	Molybdenum Powder
7440-32-6	Titanium Powder
7429-90-5	Aluminum Powder
Pennsylvania Right To Know Components	
CAS no.	Common name
7440-02-0	Nickel Powder (<1 mm)
7439-96-5	Manganese Powder

7440-48-4	Cobalt Powder
7440-21-3	Silicon Powder
7439-98-7	Molybdenum Powder
7429-90-5	Aluminum Powder

SECTION 16: Other information

16.1 Further information/disclaimer

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16.2 Preparation information

MolyWorks Materials Corporation

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