

Safety Data Sheet

17-4 PH Stainless Steel Powder

SECTION 1: Identification

1.1 Product identifier

17-4 PH Stainless Steel Powder

1.2 Other means of identification

17-4 PH Stainless Steel Powder -325 Mesh, 17-4PH, 17/4PH, 17-4 PH, AMS 5604, ASTM 240-QQS 766, DIN 1.4542, UNS S17400; PWA 1091. PDS 10705 GD-GF

1.3 Recommended use of the chemical

Powder metallurgy, Additive manufacturing

1.4 Supplier's details

Name Continuum, a Division of MolyWorks Materials Corporation
 Address 27705 Dutcher Creek Cloverdale, CA 95425 United States
 Contact PERS Account #12323 Domestic: 800-633-8253 International: 801-317-0899

SECTION 2: Hazard identification

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

- Carcinogenicity, Cat. 1A
- Sensitization, skin, Cat. 1
- Eye irritation, Cat. 2
- Specific target organ toxicity (repeated exposure), Cat. 1
- Aquatic Toxicity, Chronic, Cat. 3

2.2 GHS label elements, including precautionary statements Pictogram



Signal word

Danger

Hazard determining components of labeling

Nickel Powder
 Copper Powder
 Iron Powder

Hazard statement(s)

- H317 May cause an allergic skin reaction
 H319 Causes serious eye irritation
 H351 Suspected of causing cancer by inhalation
 H372 Causes damage to organs lungs through prolonged or repeated exposure by inhalation
 H412 Harmful 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.
 P302+P352 IF ON SKIN: Wash with plenty of water
 P308+P313 IF exposed or concerned: Get medical advice/attention.
 P314 Get medical advice/attention if you feel unwell.
 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

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	65 - 80
7440-47-3	Chromium	10 - 20
7440-02-0	Nickel	1 - 10
7440-50-8	Copper	1 - 10

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*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 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. Chromium (CAS: 7440-47-3)

PEL (Inhalation): 0.5 mg/m³ (OSHA)

PEL (Inhalation): 0.5 mg/m³ (Cal/OSHA)

REL (Inhalation): 0.5 mg/m³ (NIOSH)

2. Nickel (CAS: 7440-02-0)

PEL (Inhalation): 1 mg/m³ (OSHA)

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



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

3. Copper (CAS: 7440-50-8)

PEL (Inhalation): 1 mg/m³ (OSHA)

PEL (Inhalation): 1 mg/m³ (Cal/OSHA)

REL (Inhalation): 1 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

Wear suitable protective equipment. 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	No data Available
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
Vapor density	No data available
Relative density	No data available
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)



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- 10.6 Hazardous decomposition products**
Hazardous decomposition products formed under fire conditions. - Iron oxides and Hexavalent Chromium (Chromium VI) which may be considered carcinogenic. In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Acute toxicity

7440-02-0 Nickel	Oral	LD50	>9000 mg/kg (rat)
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11.2 Skin corrosion/irritation

May cause abrasive skin irritation

11.3 Serious eye damage/irritation

Causes serious 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

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

Harmful to aquatic life with long lasting effects

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: Not applicable
Class: Not applicable
Packing Group: Not applicable
Proper Shipping Name: Not applicable

IMDG

UN Number: Not applicable
Class: Not applicable
Packing Group: Not applicable
Proper Shipping Name: Not applicable

IATA

UN Number: Not applicable
Class: Not applicable
Packing Group: Not applicable
Proper Shipping Name: Not applicable

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 10/01/1989 - Cancer
Massachusetts Right To Know Components	
CAS no.	Chemical name
7440-02-0	Nickel



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7440-50-8	Copper
7440-47-3	Chromium
New Jersey Right To Know Components	
CAS no.	Common name
7440-02-0	Nickel
7440-50-8	Copper
7440-47-3	Chromium
Pennsylvania Right To Know Components	
CAS no.	Common name
7440-02-0	Nickel
7440-50-8	Copper
7440-47-3	Chromium

SECTION 16: Other information

16.1 Further information/disclaimer

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16.2 Preparation information

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