

MIM


Safety Data Sheet
PREPARED: August 28, 2019
Revision No. 6.0
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1. Identification
Product name :

 17-4PH, 17-4PH-DM0030,
 17-4PH-DM0069(MPIF35ASTM883),
 AT17-4PH, AT17-4PH TRY1,
 N-17-4PH MOD-V1,
 17-4PH (630 Stainless Steel)

Shape : Powder

GHS Classification of the substance/mixture: Mixture (alloy)

Synonyms:

Stainless steel powder

Company :

Epson Atmix Corporation

Address :

4-44 Kaigan, Kawaragi-aza, O-aza, Hachinohe-shi, Aomori-ken 039-1161 JAPAN

Department :

CS Quality Assurance Department

Tel No :

+81-178-73-2806

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+81-178-44-3182

Home Page address :
<http://www.atmix.co.jp>
**Recommended use of chemical
and restrictions on use :**

Metal injection molding parts, Powder metallurgy parts, etc.

2. Hazard identification
GHS classification according to Annex II :
PHYSICAL HAZARDS
Explosives

No classification

Flammable gases

No classification

Flammable aerosols

No classification

Oxidizing gases

No classification

Gases under pressure

No classification

Flammable liquids

No classification

Flammable solids

No classification

Self-reactive substances and mixtures

No classification

Pyrophonic liquids

No classification

Pyrophonic solids

No classification

Self-heating substances and mixtures

No classification

**Substances and mixtures Which, in contact
with water, emit flammable gases**

No classification

Oxidizing liquids

No classification

Oxidizing solids

No classification

Organic peroxides

No classification

Corrosive to metals

No classification

HEALTH HAZARDS
Acute toxicity (oral)

No classification

Acute toxicity (skin)

No classification

Acute toxicity (Inhalation: Gas)

No classification

Acute toxicity (Inhalation: Vapor)

No classification

Acute toxicity (Inhalation: Dust, mist)

No classification

Skin Corrosion / irritation

No classification

Serious eye damage / eye irritation

No classification

Respiratory sensitization

1

Skin sensitization

1

Germ cell mutagenicity

No classification

Carcinogenicity

2

Reproductive toxicity

No classification

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2. Hazard identification(Continued)

| | | |
|--|---|-------------------|
| HEALTH HAZARDS (continued) | Specific target organ toxicity – Single exposure | No classification |
| | Specific target organ toxicity – Repeated exposure | 1 |
| ENVIRONMENTAL HAZARDS GHS Label Elements Symbols / Pictograms | Aspiration hazard | No classification |
| | Acute aquatic toxicity | No classification |
| | Chronic aquatic toxicity | 3 |



Signal ward
Hazardous statement

Warning

H317: May cause an allergic skin reaction.
H351: Suspected of causing cancer.
H372: Causes damage to organs through prolonged or repeated exposure
H412: Harmful to aquatic life with long-lasting effects.

Precautionary statement

P201: Obtain special instructions before use.
P280: Wear protective gloves.
P264: Wash hands thoroughly after handling.
P261: Avoid breathing dust.

Response precautionary statement

P270: Do not eat, drink or smoke when using this product.
P305 + P351 + P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+313: If eye irritation persists, get medical advice/attention
P303+361+353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P333+313: If skin irritation or a rash occurs: Get medical advice/attention.
P304+312: IF INHALED: Call a POISON CENTER or doctor/physician if you feel unwell.
P301+330+312: IF SWALLOWED: Rinse mouth.Call a POISON CENTER or doctor/physician if you feel unwell.

Storage precautionary statement

P405: Store locked up.

Disposal precautionary statement

P501: Dispose of contents/container to relevant local and national regulations.

**3. Composition / information on ingredients**

| CAS No. | Components | % By Weight | EINECS / ELINCS # |
|-----------|----------------------------------|---------------|-------------------|
| 7439-89-6 | Iron (Fe) | Balance | 231-096-4 |
| 7440-47-3 | Chromium (Non - hexavalent) (Cr) | 15.00 – 17.50 | 231-157-5 |
| 7440-50-8 | Copper (Cu) | 3.00 – 5.00 | 231-159-6 |
| 7440-02-0 | Nickel (Ni) | 3.00 – 5.00 | 231-111-4 |
| 7440-03-1 | Niobium (Nb) | 0.15 – 0.45 | 231-113-5 |
| 7440-21-3 | Silicon (Si) | Max. 0.55 | 231-130-8 |
| 7440-48-4 | Cobalt (Co) | Max. 0.50 | 231-158-0 |
| 7439-96-5 | Manganese (Mn) | Max. 0.30 | 231-105-1 |
| 7439-98-7 | Molybdenum (Mo) | Max. 0.20 | 231-107-2 |
| 7440-44-0 | Carbon (C) | Max. 0.070 | 231-153-3 |
| 7723-14-0 | Phosphorus (P) | Max. 0.040 | 231-768-7 |
| 7704-34-9 | Sulfur (S) | Max. 0.030 | 231-722-6 |

4. First-aid measures

Persons using this product should consult a physician or other medical professional if an accident involving this product in injury. Specific first-aid measures are as follows:

| | |
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| Inhalation : | Remove the exposed person immediately and provide fresh air. Get medical attention. |
| Skin contact : | Promptly flush contaminated skin with soap or mild detergent and water. Contact physician if irritation continues. |
| Eye contact : | Promptly wash eyes with plenty of water while lifting the eye lids. Continue to rinse for at least 15 minutes and get medical attention. |
| Ingestion : | Rinse nose, mouth and throat with water. Drink a few glasses of water. Try to induce vomiting. Get medical attention. |

5. Fire-fighting measures

This is not a flammable solid as tested burning rate test by United Nations Recommendations on the Transport of Dangerous Goods. However, please keep away this product from spark, flame and heat source. Because there is a possibility of exploding.

| | |
|--|---|
| Suitable extinguishing media : | dry sand, dry dolomite, dry graphite |
| Unsuitable extinguishing media : | carbon dioxide, water, foam Especially, liquid base extinguishing must not use molten metal. |
| Specific hazards with regard to fire-fighting : | It may occur with pungency, causticity or toxic gas (Nickel carbonyl, etc) by a fire. |
| Specific methods of fire-fighting : | Move container from fire area if it can be done without risk. |
| Special protective actions for firefighters : | Firefighters should wear protective clothing, respirator, rubber boots, and fireproof clothing. And should work from the windward side. |



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6. Accidental release measures

Personal precaution, protective equipment and emergency procedures :

- Ignition origin is removed.
- Suitable distance is isolated in all directions at once as a leakage district.
- The entries other than parties concerned are prohibited.
- Ventilates before it enters the place sealed up.

**Environmental precaution :
Collection / neutralize**

Don't discharge into an environment.
Leakage thing is collected to the container. And, leakage thing abandons or uses as raw material.

Methods and materials for containment and cleaning up :

Dampens by water, and decentralization to the atmosphere is prevented.

Prevention of secondary hazards :

To prevent scattering, cover with plastic sheet.

7. Handling and storage

Handling

Technical measures :

Provide ventilation and wear protectors.

Local exhaust ventilation :

Provide local exhaust ventilation.

Precaution for safe handling :

No information

Storage

Materials to avoid :

Keep away from strong oxidizing, strong acids, strong bases, halogens and combustible.

Storage condition :

Keep atmosphere out of product. Keep product in dry place.

Container and packing materials :

No information

8. Exposure controls / personal protection

Control parameters

| CAS No. | CHEMICAL NAME | OEL (2010) [mg/m ³] | ACGIH TLV (2007) [mg/m ³] |
|-----------|------------------------------|---------------------------------|--|
| 7439-89-6 | Iron | ----- | 5 – Iron oxide form, dust and fume |
| 7440-47-3 | Chromium (Non-hexavalent) | 0.5 – Chromium Metal | 0.5 – metal & Cr ³⁺ compounds 0.05 – Cr ⁶⁺ water soluble compounds 0.01 – Cr ⁶⁺ water insoluble compounds |
| 7440-50-8 | Copper | ----- | 0.2 – fume (as Cu) 1 – dusts and mists (as Cu) |
| 7440-02-0 | Nickel | 1 – Ni | 1.5 – metal nickel (as Ni) 0.1 – soluble compounds (as Ni) 0.2 – Insoluble compounds (as Ni) |
| 7440-03-1 | Niobium | ----- | 10 – total dust (PNOC) (not classified) |
| 7440-21-3 | Silicon | ----- | 10 – Total dust |
| 7440-48-4 | Cobalt | 0.05 – Co | 0.02 – elemental and inorganic compounds (as Co) |
| 7439-96-5 | Manganese | 0.2 – Mn | 0.2 – Elemental and inorganic compounds (as Mn) |
| 7439-98-7 | Molybdenum | ----- | 10 – Insoluble & Metal compounds (as Mo) |
| 7440-44-0 | Carbon | ----- | ----- |
| 7723-14-0 | Phosphorus | ----- | 0.02 - Phosphorus, red |
| 7704-34-9 | Sulfur | ----- | ----- |

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8. Exposure controls / personal protection(continued)

Protective equipment : Perform the sealing up of the device or provide local exhaust ventilation to prevent revelation.

Protection:

Hand protection : Protective gloves



Eye protection : Safety goggles



Respiratory protection : Dust respirator



Skin and body protection : Protective clothing



Specific hygiene measures : Wash hand politely after it works.

9. Physical and chemical properties

| | | | |
|--|-------------------------|--------------------------------|----------------|
| Physical State: | Solid | Water Solubility: | Insoluble |
| Appearance and Odor: | Metallic gray, Odorless | Other Solubility: | Not applicable |
| Odor Threshold: | Not Applicable | Boiling Point: | Not applicable |
| Vapor Pressure: | Not applicable | Viscosity: | Not applicable |
| Vapor Density (Air=1): | Not applicable | Refractive Index: | Not applicable |
| Formula Weight: | Not applicable | Surface Tension: | Not applicable |
| Density: | About 7.7 gm/cc | % Volatile: | Not applicable |
| Specific Gravity(H₂O=1): | About 7.7 | Evaporation Rate: | Not applicable |
| pH: | Not applicable | Freezing/Melting Point: | About 1440 °C |

10. Stability and reactivity

Stability: Stable in the air at normal temperature.

Reaction : May react with strong oxidizing, strong acids, strong bases and halogens.

Condition to avoid : No information

Hazardous decomposition products : No information

However, there is a possibility that a harmful metallic oxide, carbon monoxide, carbon dioxide, and the oxide of nitrogen, etc. are generated due to a fire.



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11. Toxicological information

Product Toxicity Data: The toxicity data of this product has not been determined by testing or research, but to our best knowledge, the toxicity of this product is low. The toxicity data shown below is for reference only.

| Ingredients | CAS | LD 50 |
|-----------------------------|-----------|------------------------------------|
| Chromium (Non - hexavalent) | 7440-47-3 | Acute Oral LD50:230mg/kg (rat) |
| Nickel | 7440-02-0 | Acute Oral LD50 > 5,000mg/kg (rat) |
| Cobalt | 7440-48-4 | Acute Oral LD50 > 6,000mg/kg (rat) |
| Phosphorus | 7723-14-0 | Acute Oral LD50: 3.03mg/kg (rat) |
| Sulfur | 7704-34-9 | Acute Oral LD50 > 5,000mg/kg (rat) |

Main Routes of Exposure: Skin, eyes and ingestion.

Contact with Eyes: It may cause slight irritation to eyes.

Contact with Skin: No hazard for normal contact. For long-time or repeated contact, it may cause an allergic skin reaction.

Inhalation: Under normal conditions of use and handling, no inhalation hazard is present. It may cause irritation to respiratory system if inhaling dust or powder.

Ingestion: Harmful by ingestion. May cause irritation to intestinal tract and stomach. Symptoms may include nausea, vomiting or diarrhea.

Effects of Overexposure – Chronic: For long-time or repeated contact, it may cause an allergic skin reaction.

Carcinogenicity: Nickel (CAS: 7440-02-0): NTP: Nickel and certain nickel compounds have been listed as being reasonably anticipated to be carcinogens; IARC: Group 2B (possibly carcinogenic to humans); ACGIH: A1 (confirmed human carcinogen); GHS: 2 (suspected of causing cancer.)

Sensitivity: It may cause an allergic skin reaction.

Teratogenicity: Not found.

Mutagenicity: May cause genetic defects.

12. Ecological information

Acute aquatic toxicity No information

Chronic aquatic toxicity Chronic hazards to the aquatic environment - 3

13. Disposal considerations

Residues : Recycles or abandons with government or local disposal regulations.

A pollution container and packing : Recycles or abandons with government or local disposal regulations.

14. Transport information

| | U.S.DOT | RID/ADR | IMDG | IATA | IMO | Canada TDG |
|----------------------|---------------|---------|------|------|-----|------------|
| PROPER SHIPPING NAME | NOT REGULATED | | | | | |
| HAZARD CLASS | | | | | | |
| UN NO | | | | | | |
| PACKING GROUP | | | | | | |
| LABEL | | | | | | |
| REPORTABLE QUANTITY | | | | | | |

15. Regulatory information

• 67/548/EEC ANEEX III

Classification of nickel

| CAS NO | Substance | Danger Symbol | Risk phrases | Safety phrases |
|-----------|-----------|---------------|--|--|
| 7440-02-0 | Nickel | T | R40 : Limited evidence of carcinogenic effect. R43 : may cause sensitization by skin contact. R48/23 : Toxic: danger of serious Damage to health by prolonged Exposure through inhalation. R52/53 : Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. | S36 : wear protective clothing. S37 : Wear suitable gloves. S39 : Wear eye / face protection. S45 : In case of accident or if you feel unwell, seek medical advice immediately. (show the label whenever possible.) |

Classification of cobalt

| CAS NO | Substance | Danger Symbol | Risk phrases | Safety phrases |
|-----------|-----------|---------------|---|--|
| 7440-48-4 | Cobalt | Xn(Harmful) | R42/43 : May cause sensitization by inhalation and skin contact. R53 : May cause long-term adverse effects in the aquatic environment. | S2 : keep out of the reach of children. S22 : do not breathe dust. S24 : avoid contact with skin. S37 : wear suitable gloves. S61 : avoid release to the environment. Refer to special instructions/safety data sheets. |

Please refer any other national measures that may be relevant.
16. Other information

The information given in this safety data sheet is based on all the information and data that we can obtain as of the data issued. However we do not give guarantee regarding the contents, physical or chemical properties, hazards or harm. All remarks and precautions are premised on ordinary handling and it is the user's responsibility to take enough considerations in case of particular use.

Reference:

GHS Annex II

GHS SDS Instruction