MIM

ATMIX

Safety Data Sheet	PREPARED: October 14, 2020 Revision No. 5.0 Page 1 of 7

1. Identification

Product name : 316L, AT316L, AT316L-H, AT316L MOD3-1, AT316L-N, AT316L-S1, N-AT316L-S1, SUS316L, SUS316L-DM0025, AT316L-DM0062 **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 №:	+81-178-73-2806
FAX №:	+81-178-73-2810
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 and Proposed future entry in Annex VI of CLP Regulation:

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
	Pyrophoric liquids	No classification
	Pyrophoric 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

2. Hazard identification(Continued)

HEALTH HAZARDS (continued)	Specific target organ toxicity – Single exposure	No classification
	Specific target organ toxicity – Repeated exposure	No classification
	Aspiration hazard	No classification
ENVIRONMENTAL HAZARDS	Acute aquatic toxicity	No classification
	Chronic aquatic toxicity	3

GHS Label Elements

Symbols / Pictograms

Signal ward	Warning
Hazardous statement	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. P270: Do not eat, drink or smoke when using this product.
Response precautionary statement	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)	16.00 – 18.00	231-157-5
7440-02-0	Nickel	(Ni)	10.00 – 15.00	231-111-4
7439-98-7	Molybdenum	(Mo)	2.00 – 3.00	231-107-2
7439-96-5	Manganese	(Mn)	Max. 2.00	231-105-1
7440-21-3	Silicon	(Si)	Max. 1.00	231-130-8
7440-50-8	Copper	(Cu)	Max. 0.50	231-159-6
7723-14-0	Phosphorus	(P)	Max. 0.045	231-768-7
7440-44-0	Carbon	(C)	Max. 0.030	231-153-3
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:

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.

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 : Don't discharge into an environment.

Collection / neutralize 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 handing : 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.	CHEMICL NAME	OEL (2010) [mg/m³]	ACGIH TLV (2007) [mg/m³]
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
7440-02-0	Nickel	1 – Ni	1.5 – metal nickel (as Ni) 0.1 – soluble compounds (as Ni) 0.2 – Insoluble compounds (as Ni)
7439-98-7	Molybdenum	----	10 – Insoluble & Metal compounds (as Mo)
7439-96-5	Manganse	0.2 – Mn	0.2 – Elemental and inorganic compounds (as Mn)
7440-21-3	Silicon	----	10 – Total dust
7440-50-8	Copper	----	0.2 – fume (as Cu) 1 – dusts and mists (as Cu)
7723-14-0	Phosphorus	----	0.02 - Phosphorus, red
7440-44-0	Carbon	----	----
7704-34-9	Sulfur	----	----

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(H_2O=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.

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)
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 - 4

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.)

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 handing and it is the user's responsibility to take enough considerations in case of particular use.

Reference:

GHS Annex II

GHS SDS Instruction