This product (wrought copper and copper alloy) are solid metal products, and the obligation to submit SDS documents according to the Japanese Pollutant Release and Transfer Register (PRTR) law and the Japanese Industrial Safety and Health Law (for chemical substances) does not apply

1.Chemical product and company identification

1-1. Name of chemical substance (product name): see table below.

Alloy group	Corresponding JIS No.	Alloy Name	Alloy No.	Shape	Substance classification
Cu-Pb-Sn-Zn group		Free-cutting phosphor bronze	FX415	Bar Wire	Mixture (alloy)
			FX408		Mixture (alloy)
			FX418		

1-2. Company information

Company name: Fujii manufacturing Co.,Ltd.

Address: 157-8 Naka Shiroi-shi, Chiba (Postal code 〒270-1406)

Department:Technical development department Supervisors:AKIO SHIMIZU (Position: department director)

Tel:047-491-0241 , Fax:047-491-0247

[Creation date: February 08, 2023]

2. Hazards identification

This product (wrought copper and copper alloy) is a molded product, and so is outside the scope of GHS classification. Further, as there is no alloy information, GHS classification information in units of the configuration elements are referenced for the description.

2-1.Copper : GHS classification

Physical hazards:

Explosives:	Outside scope of classification
Flammable gases:	Outside scope of classification
Flammable aerosols:	Outside scope of classification
Oxidizing gases:	Outside scope of classification
Gases under pressure:	Outside scope of classification
Flammable liquids:	Outside scope of classification
Flammable solids:	Cannot classify
Self-reactive substances and mixtures:	Outside scope of classification
Pyrophoric liquids:	Outside scope of classification
Pyrophoric solids:	Cannot classify
Self-heating substances and mixtures:	Cannot classify
Substances and mixtures which, in contact with water, emit flammable gases:	Cannot classify
Oxidizing liquids:	Outside scope of classification
Oxidizing solids:	Outside scope of classification
Organic peroxides:	Outside scope of classification
Corrosive to metales:	Cannot classify

Health Hazards:

Acute toxicity (oral):	Cannot classify

	Acute toxicity (dermal):	Cannot classify
	Acute toxicity (inhalation: gases):	Outside scope of classification
	Acute toxicity (inhalation: vapors):	Outside scope of classification
	Acute toxicity (inhalation: dusts):	Cannot classify
	Acute toxicity (inhalation: mists):	Cannot classify
	Skin corrosion/irritation:	Cannot classify
	Serious eye damage/eye irritation:	Cannot classify
	Respiratory sensitization:	Cannot classify
	Germ cell mutagenicity:	Cannot classify
	Carcinogenicity:	Outside classification
	Reproductive toxicity:	Cannot classify
	Specific target organ toxicity - single exposure:	Class 3 (airway irritant)
	Specific target organ toxicity - repeated exposure:	Class 1 (liver)
	Aspiration hazard:	Cannot classify
Environmental hazards:	Acute aquatic toxicity:	Cannot classify
	Chronic aquatic toxicity:	Class 4

Label elements

Pictgram

Signal word: Danger

Hazard statement: Risk of irritation to respiratory organs
Nerve damage due to long-term or repeated exposure
Risk of harm due to long-term effects

Precautionary statement: [Prevention]
Do not inhale the dust.
Avoid discharging into the environment.
[Response]
If inhaled, move to a location with fresh air, and rest in a posture that facilitates breathing.
If feeling unwell, consult a physician to receive diagnosis and treatment.
[Disposal]
Recycling is possible, so if recovering and discarding, entrust the work to a waste disposal specialist who is licensed by the prefectural governor.

2-2. Lead: GHS classification

Physical hazards:

Explosives:	Outside scope of classification
Flammable gases:	Outside scope of classification
Flammable aerosols:	Outside scope of classification
Oxidizing gases:	Outside scope of classification
Gases under pressure:	Outside scope of classification
Flammable liquids:	Outside scope of classification
Flammable solids:	Outside classification
Self-reactive substances and mixtures:	Outside scope of classification
Pyrophoric liquids:	Outside scope of classification
Pyrophoric solids:	Outside classification
Self-heating substances and mixtures:	Outside classification
Substances and mixtures which, in contact with water, emit flammable gases:	Outside classification

	Oxidizing liquids:	Outside scope of classification
	Oxidizing solids:	Outside scope of classification
	Organic peroxides:	Outside scope of classification
	Corrosive to metals:	Cannot classify
Health hazards:	Acute toxicity (oral):	Cannot classify
	Acute toxicity (dermal):	Cannot classify
	Acute toxicity (inhalation: gases):	Outside scope of classification
	Acute toxicity (inhalation: vapors):	Outside scope of classification
	Acute toxicity (inhalation: dusts):	Cannot classify
	Acute toxicity (inhalation: mists):	Cannot classify
	Skin corrosion/irritation:	Cannot classify
	Serious eye damage/eye irritation:	Cannot classify
	Respiratory sensitization:	Cannot classify
	Germ cell mutagenicity:	Class 2
	Carcinogenicity:	Class 2
	Reproductive toxicity:	Class 1A
	Specific target organ toxicity - single exposure:	Cannot classify
	Specific target organ toxicity - repeated exposure:	Class 1 (Hematopoietic system, central nervous system, peripheral nervous system, cardiovascular system, immune system)
	Aspiration hazard:	Cannot classify
Environmental hazards:	Acute aquatic toxicity:	Cannot classify
	Chronic aquatic toxicity:	Cannot classify

Label element

Pictogram

Signal word: Danger

Hazard statement: Suspected risk of genetic disease

Suspected risk of cancer

Risk of malign influence on reproductive functions or fetus

Damage to the hematopoietic system, kidneys, central nervous system, peripheral nervous system, cardiovascular system, and immune system due to long-term or repeated exposure

Precautionary statement: [Prevention]

When using the product, do not eat, drink, or smoke.

Use suitable protective equipment and ventilation equipment to avoid exposure.

Do not inhale the dust.

Wash hands thoroughly after handling.

Avoid discharging into the environment.

[Response]

If exposed or fear exposure, consult a physician and receive diagnosis treatment.

If feeling unwell, consult a physician and receive treatment.

[Storage]

Lock the storage location.

[Disposal]

Entrust disposal of containers and contents to a specialist disposal processor who is licensed

by the prefectural governor.

2-3. Tin: GHS classification

Physical hazards:

Explosives:	Outside scope of classification
Flammable gases:	Outside scope of classification
Flammable aerosols:	Outside scope of classification
Oxidizing gases:	Outside scope of classification
Gases under pressure:	Outside scope of classification
Flammable liquids:	Outside scope of classification
Flammable solids:	Cannot classify
Self-reactive substances and mixtures:	Outside scope of classification
Pyrophoric liquids:	Outside scope of classification
Pyrophoric solids:	Cannot classify
Self-heating substances and mixtures:	Cannot classify
Substances and mixtures which, in contact with water, emit flammable gases:	Cannot classify
Oxidizing liquids:	Outside scope of classification
Oxidizing solids:	Outside scope of classification
Organic peroxides:	Outside scope of classification
Corrosive to metals:	Cannot classify

Health hazards:

Acute toxicity (oral):	Cannot classify
Acute toxicity (dermal):	Cannot classify
Acute toxicity (inhalation: gases):	Outside scope of classification
Acute toxicity (inhalation: vapors):	Outside scope of classification
Acute toxicity (inhalation: dusts):	Cannot classify
Acute toxicity (inhalation: mists):	Outside scope of classification
Skin corrosion/irritation:	Cannot classify
Serious eye damage/eye irritation:	Cannot classify
Respiratory sensitization:	Cannot classify
Germ cell mutagenicity:	Cannot classify
Carcinogenicity:	Cannot classify
Reproductive toxicity:	Cannot classify
Specific target organ toxicity - single exposure:	Cannot classify
Specific target organ toxicity - repeated exposure:	Class 1 (lungs)
Aspiration hazard:	Cannot classify

Environmental hazards:

Acute aquatic toxicity:	No information
Chronic aquatic toxicity:	No information

Label element

Pictogram

Signal word: Danger

Hazard statement: Organ damage (lungs)

Precautionary statement: [Prevention]

When using the product, do not eat, drink, or smoke.

Use suitable protective equipment and ventilation equipment to avoid exposure.

Do not inhale the dust.
[Response]
If exposed or fear exposure, consult a physician and receive diagnosis treatment.
If feeling unwell, consult a physician and receive treatment.
[Storage]
Lock the storage location.
[Disposal]
Entrust disposal of containers and contents to a specialist disposal processor who is licensed by the prefectural governor.

3. Composition/information on ingredients

3-1. Substance or mixtures: Mixture (alloy)
3-2. Chemical name: Cu-Pb-Sn （Free-cutting phosphor bronze）
Cu-Pb-Sn-Zn （Free-cutting phosphor bronze）
Chemical composition: See the table below
3-3. Chemical formula or structural formula: None
3-4. Ordinance No. (PRTR Law and Industrial Safety and Health Law): See the table below
3-5. CAS No.: See the table below
3-6. Official publication reference No.: N/A

3.2. Elements	3.2. Composition (mass%)			3.4. Ordinance no.(management No.) (Only substances subject to MSDS publication)				3.5.CAS No.
				PRTR law		Industrial safety and health law		
	FX415	FX408	FX418	0.1% max	1% max	0.1% max	1% max	
Copper (Cu)	86.0min	86.0min	86.0min	—	—	379	-	7440-50-8
Lead (Pb)	1.0 – 2.3	0.5 – 1.0	1.5 – 2.0	—	1-353(697)	411	-	7439-92-1
Tin（Sn）	3.0 – 4.5	Confidential	Confidential	—	—	322	-	7440-31-5
Phosphor (P)	0.01 – 0.5	0.01 –- 0.5	0.01 –0.5	—	—	—	-	7723-14-0
Zinc(Zn)	—	Confidential	Confidential	—	—	—	-	7440-66-6

4. First-aid measures

There is no information for mixtures (alloys), so information in units of the configuration elements are referenced for the description.

4-1.Copper

If inhaled: Move the victim to a location with fresh air, and make sure they rest in a pose that facilitates respiration.
If feeling unwell, consult a physician and receive treatment.

If on skin: Remove contaminated clothing.
Wash skin promptly.
If feeling unwell, consult a physician and receive treatment.
Wash contaminated clothing before reuse.

If in eyes: Irrigate carefully for several minutes with water. Next, if wearing contact lenses that can be removed easily, remove the contact lenses. Thereafter, continue to wash.

Consult a physician and receive treatment.

If swallowed: Rise out the mouth promptly, and immediately consult a physician for treatment.

Anticipated acute effects and anticipated delayed effects:

If inhaled: Eye and skin reddening, eye pain, cough, headache, shortness of breath, pharyngeal pain, stomach pain, nausea, and vomiting. Delayed symptom: Metal fume fever.

Protection for first-aid providers:

First-aid providers must wear protective equipment appropriate for the circumstances.

Special notes to an attending physician:

Rest and medical observation over time are indispensable.

4-2. Lead

If inhaled: Move the victim to a location with fresh air, and make sure they rest in a pose that facilitates respiration.

If feeling unwell, consult a physician and receive treatment.

If on skin: Remove contaminated clothing.

Wash skin promptly.

If feeling unwell, consult a physician and receive treatment.

Wash contaminated clothing before reuse.

If in eyes: Irrigate carefully for several minutes with water. Next, if wearing contact lenses that can be removed easily, remove the contact lenses. Thereafter, continue to wash.

Consult a physician and receive treatment.

If swallowed: Rise out the mouth promptly, and immediately consult a physician for treatment.

Anticipated acute effects and anticipated delayed effects:

Stomach cramps, drowsiness, headache, nausea, vomiting, fatigue, wheezing, pallor, hemoglobinuria, and lethargy

Most important signs and symptoms: No description.

Protection for first-aid providers:

First-aid providers must wear protective equipment appropriate for the circumstances.

Special notes to an attending physician:

Rest and medical observation over time are indispensable.

4-3. Tin

If inhaled: Move the victim to a location with fresh air, and make sure they rest in a pose that facilitates respiration.

Seek medical advice.

If on skin: Wash skin promptly.

Seek medical advice.

Wash the contaminated clothes before reusing.

If in eyes: Wash the eyes carefully with water for a few minutes.

Seek medical advice.

Special measures (If emergency treatment is required,refer to the supplementary first-aid instructions)

If swallowed: Rinse mouth with water.

Seek medical advice.

Special measures (If emergency treatment is required,refer to the supplementary first-aid instructions)

Anticipated acute effects and anticipated delayed effects:

If inhaled:Vapor and mist irritate the lungs and upper trachea.
If on skin: Irritates the skin
If in eyes: Irritates the mucosa.

5. Fire-fighting measures

There is no information for mixtures (alloys), so information in units of the configuration elements are referenced for the description.

5-1. Copper

Extinguishing media:	Special powder retardants and dry sand.
Unsuitable extinguishing media:	Water jet, foam extinguisher, and CO_2.
Specific hazards:	There is a risk of irritant, poisonous, or corrosive gas or fumes being emitted by fire. Using water on metal fires may emit hydrogen gas.
Specific extinguishing methods:	Move the container from the region on fire if there is no danger. Ideally, sealant methods and oxygen starvation methods should be used for metal fires.
Protection of firefighters:	When firefighting, wear suitable breathing equipment and (heat-resistant) chemical protective clothing.

5-2. Lead

Extinguishing media:	The product itself is not flammable.
Unsuitable extinguishing media:	Rod infusers, foam extinguisher, and CO_2.
Specific hazards:	There is a risk of irritant or poisonous gas being emitted due to fire.
Specific extinguishing methods:	Move the container from the region on fire if there is no danger.
Protection of firefighters:	When firefighting, wear suitable breathing equipment and (heat-resistant) chemical protective clothing.

5-3. Tin

Extinguishing media:	Special powder retardants and dry sand.
Unsuitable extinguishing media:	Use of other extinguishers is prohibited.
Specific hazards:	The substance is flammable. If the substance is in powder form, the dust may cause an explosion. Reacts with strong oxidizers.
Specific extinguishing methods:	Fire should be extinguished from a distance and only close enough for effective fire fighting. Move the container from the region on fire if there is no danger. If the containers are not movable, cool the container by pouring water on and around the containers. After the fire is extinguished, continue to pour a large amount of water to cool the containers sufficiently.
Protection of firefighters:	When firefighting, wear suitable breathing equipment and (heat-resistant) chemical protective clothing.

6. Accidental release measures

There is no information for mixtures (alloys), so information in units of the configuration elements are referenced for the description.

6-1. Copper

Personnel precautions, protective equipment, and emergency procedures:

Prohibit admission to all non-essential personnel.
Do not touch or walk through any leaking material.
Workers must wear protective equipment (See “8. Exposure Prevention and Protection Measures”), avoid gas and fume inhalation, and contact with the eyes and skin.

Environmental precautions: Be careful not to discharge into rivers, or to affect the environment.

Recovery and neutralization: Sweep together any spills and collect in a sealable container before discarding.

Methods and materials for containment, and methods for cleaning up :

Stop the leak if there is no danger.

Secondary disaster prevention measures:

Promptly remove all ignition sources and flammable substances. (Smoking, fireworks, and naked flames in the vicinity are prohibited.) Prevent inflow to drainage ditches, sewers, basements, or sealed locations.

6-2. Lead

Physical precautions protective equipment, and emergency procedures:

Prohibit admission to all non-essential personnel.
Do not touch or walk through any leaking material.
Workers must wear protective equipment (See “8. Exposure Prevention and Protection Measures”), avoid gas and fume inhalation, and contact with the eyes and skin.

Environmental precautions: Be careful not to discharge into rivers, or to affect the environment.

Recovery and neutralization:

Wipe up any leaks and collect in a sealable empty container before implementing disposal processing.

Methods and materials for containment, and methods for cleaning up :

Stop the leak if there is no danger.

Secondary disaster prevention measures:

Residue on the floor risks slipping, so process assiduously.

6-3. Tin

Physical precautions protective equipment, and emergency procedures:

Do not touch or walk through any leaking material.
Immediately move to a suitable distance in all directions as a leakage area.
Prohibit admission to all non-essential personnel.
Workers must wear protective equipment (See “8. Exposure Prevention and Protection Measures”), avoid gas and fume inhalation, and contact with the eyes and skin.
If fire is not occurring with the spillage, wear highly sealed and no-permeable protective clothing.
Stay on the windward side.
Keep away from low grounds.
Broken containers or the spillage must not be touched without wearing appropriate protective clothing.

Environmental precautions: Be careful not to discharge into rivers, or to affect the environment.

Recovery and neutralization: If the amount of spillage is small, collect the spillage into a dry, clean container using a clean antistatic equipment, cover the top loosely, and dispose of it afterwards.

If there is a large amount of spillage, wet with water and set up protective fences, then dispose of it afterwards.

Methods and materials for containment, and methods for cleaning up:

Stop the leak if there is no danger.

Secondary disaster prevention measures:

Promptly remove all ignition sources and flammable substances. (Smoking, fireworks, and naked flames in the vicinity are prohibited.)
Residue on the floor risks slipping, so process assiduously.

7. Handling and storage

There is no information for mixtures (alloys), so information in units of the configuration elements are referenced for the description.

7-1. Copper

<Handling>

Technical measures: Install equipment measures as described in “8. Exposure controls and personal protection”, and wear protective equipment.

Local / total ventilation: Implement local ventilation and total ventilation as described in “8. Exposure controls and personal protection ”.

Precautions for safe handling:

Conforming to “2. Hazards identification”.

Prevention of contact: Refer to “10. Stability and Reactivity”.

<Storage>

Incompatible materials: Refer to “10. Stability and Reactivity”.

Storage conditions: Avoid locations with sudden temperature changes and high humidity when storing.

7-2. Lead

<Handling>

Technical measures: Install equipment measures as described in “8. Exposure controls and personal protection”, and wear protective equipment.

Local / total ventilation: Implement local ventilation and total ventilation as described in “8. Exposure controls and personal protection ”.

Precautions for safe handling:

Conforming to “2. Hazards identification”.

Prevention of contact: Refer to “10. Stability and Reactivity”.

<Storage>

Technical measures: Technical measures are not required.

Incompatible materials: Refer to “10. Stability and Reactivity”.

Safe storage conditions: Store away from oxidants.
Lock the storage location.

Container and packing materials:

Although there are no packing or container regulations, place in a sealable, undamaged container.

7-3. Tin

<Handling>

Technical measures: Install equipment measures as described in “8. Exposure controls and personal protection”, and wear protective equipment.

Local / total ventilation: Implement local ventilation and total ventilation as described in “8. Exposure controls and personal protection ”.

Precautions for safe handling:

Conforming to “2. Hazards identification”.

Prevention of contact: Refer to “10. Stability and reactivity”.

<Storage>

Technical measures: The walls pillars, and floors of the storage location must be fireproof, and beams are to be made of noncombustible materials.

The roof of the storage location must be made noncombustible materials and covered with light noncombustible materials, such as metal sheets.

The storage location must not have ceilings.

The floor of storage location must be built to avoid flowing in of water or permeation of water.

Storage location must be equipped with lighting, illumination, and ventilation facility necessary for the storage and handling of dangerous goods.

Incompatible materials: Refer to “10. Stability and Reactivity”.

Safe storage conditions: Store away from oxidants.

Container and packing materials:

Although there are no packing or container regulations, place in a sealable, undamaged container.

8. Exposure controls and personal protection

There is no information for mixtures (alloys), so information in units of the configuration elements are referenced for the description.

8-1. Copper

Administrative level:Not specified.

Permissible limit (Exposure limits, biological exposure indices)

・Japan Society for Occupational Health (2005 version): Not specified.

・ACGIH (2005 version): TLV-TWA 0.2 mg/m^3 (as fumes)

TLV-TWA 1 mg/m^3 (as dust or mist)

Facility measures: To maintain the concentrations in air at or below the recommended tolerable concentrations, seal all processes, and use local air filters and other equipment countermeasures.

Protective Equipment

・Respiratory protection: Wear suitable respirator protective equipment.

・Hand protection: Wear suitable protective gloves.

・Eye protection: Protective goggles (regular glasses, regular glasses with lateral plates, or goggles)

・Skin and body protection: Wear protective equipment such as protective clothing and safety boots, etc.

8-2. Lead

Administrative level: 0.05 mg/m^3 (lead and its compounds, as lead)

Permissible limit (Exposure limits, biological exposure indices)

・Japan Society for Occupational Health (2005 version):

0.1 mg/m^3 lead and its compounds, excluding alkyl lead, as lead

・ACGIH (2005 version): TLV-TWA 0.05 mg/m^3 (A3; BEI lead and its inorganic compounds, as lead)

Facility measures: Install eyewash containers and safety showers in worksites where the substance is stored and handled.

Implement ventilation to make sure the airborne concentration remains below the recommended tolerable concentration.

Protective equipment
・Respiratory protection: Wear suitable respirator protective equipment.
・Hand protection: Wear suitable protective gloves.
・Eye protection: Wear protective equipment for eyes and face.
・Skin and body protection: Wear protective equipment such as protective clothing and safety boots, etc.
Hygiene measures: Wash hands thoroughly after handling.

8-3. Tin
Administrative level:Not specified.
Permissible limit (Exposure limits, biological exposure indices)
・Japan society for occupational health (2005 version):
Not specified
・ACGIH (2005 version): TLV-TWA 2 mg/m^3 (As Sn)
Facility measures: If dust or fumes are produced in high-temperature processes, ventilation devices must be installed to keep the contamination substances in the air below the administrative level.
Protective equipment
・Respiratory protection: Wear suitable respirator protective equipment.
・Hand protection: Wear suitable protective gloves.
・Eye protection: Wear protective equipment for eyes and face. Wear safety glasses. If there is a risk that the substance may come in contact with the eyes or face due to scattering or spraying, general chemical splash goggles and face shields must be worn.
・Skin and body protection: Wear protective equipment such as protective clothing and safety boots, etc.
Hygiene measures: Wash hands thoroughly after handling.

9. Physical and chemical properties: Fields marked with "---" in the table indicates no data.

a) Property according to the product name

	Free-cutting phosphor bronze		
	FX415	FX408	FX418
9-1. Appearance of a chemical product	A brown solid with the luster		
・physical state and colour	yellow		
・form	Depends on product form		
・odour	None		
9-2. pH, with indication of the Concentration	—		—
9-3. Melting point (ºC)	930 (Solids phase)		
9-4. Decomposition temperature	—		—
9-5. Flashpoint	—		—
9-6.Upper/lower flammability	—		—
9-7.Explosive limits	—		—
9-8.Vapor pressure(Pa)	—		—
9-9.Boiling point (ºC)	—		—
9-10.Relative density	8.89	8.77	8.79
9-11.Solubility(ies)	—		—
9-12.n-octanol /water partition coefficient	—		—
9-13.Other data (Radioactivity, bulk density, Etc.)	—		—

b）Property according to the constituent element

	Cu	Pb	Sn	Zn	P
9-8.Vapor pressure(Pa)	—	—	—	—	—
9-9. Boiling point (ºC)	2582	1750	2625	907	280

10. Stability and reactivity

There is no information for mixtures (alloys), so information in units of the configuration elements are referenced for the description.

10-1. Copper

Stability: Turns green when exposed to damp air.
Compounds sensitive to shock are formed by acetylene compounds, ethylene oxides, and azides.

Possibility of hazardous reactions: Reacts with oxides (chlorates, bromates, and iodates, etc.), so there is a risk of explosion.

Conditions to avoid: Contact with humidity and hazardous mixtures.

Incompatible materials: Acetylene compounds, ethylene oxides, azides, oxides (chlorates, bromates, and iodates, etc.)

Hazardous decomposition products: CO, CO_2, and copper fumes when burned.

10-2. Lead

Stability: Reacts with pure water and weak organic acids in the presence of oxygen.

Possibility of hazardous reactions: No dangerous or harmful reactions under normal conditions.
Reacts with concentrated nitric acid at high temperatures, boiling concentrated chlorine, and concentrated sulfuric acid.
Reacts with fluorine and chlorine at room temperature.

Conditions to avoided: Mixing powder or granules with air may cause dust explosions.

Incompatible materials: Oxidants.

Hazardous decomposition products: May emit poisonous fumes or gas when heated.

10-3. Tin

Stability: Stable ataroom temperature and in air.
The affinity to oxygen is low, and the color of the substance does not change in dry air at room temperature.
Not oxidized at or below 200 °C. In higher temperature, SnO_2 membrane is formed on the surface.

Possibility of hazardous reactions: Reacts with strong oxidizers, acids, strong bases, halogens, sulfur, etc.
Reacts quickly with halogen to produce tin halide.
Reacts slowly with alkali at low temperature, and rapidly at high temperature.

Conditions to avoided: Scattering of dust.

Incompatible materials: Strong oxidizers, acids, strong bases, halogens, sulfur, etc.

Hazardous decomposition products: None applicable (elements).

11. Toxicological Information

There is no information for mixtures (alloys), so information in units of the configuration elements are referenced for the description.

11-1. Copper

Acute toxicity: Oral: Rabbits LDL_0 120 μg/kg[3)]

Skin irritation/corrosion:

Contact with skin causes reddening symptoms.[14)]

Eye damage/irritation: Contact with eyes causes reddening. Causes painful symptoms.[14)]

Acts as an irritant.[10)]

Respiratory or skin sensitization:

Respiratory organ sensitization: no data.

Skin sensitization: The Japan Society for Occupational Health classified this as skin sensitization group 2 (a substance thought probably to sensitize humans), but The Japanese Society for Dermatoallergology and Contact Dermatitis has no classification.

Reproductive cell mutagenicity:

No data.

Carcinogenicity: EPA classifies this as group D (substance that cannot be classified as carcinogenic to humans).

Reproductive toxicity: No data.

Specific target organ toxicity (single exposure):

Fumes irritate the upper airway.[13)]

Thought to be an airway irritant.

Risk of irritation to the respiratory organs (class 3)

Specific target organ toxicity (repeated exposure):

Hepatomegaly identified in workers exposed to high airborne concentrations (estimated ingestion 200 mg/day).[11)]

Nerve damage due to long-term or repeated exposure (class 1)

Aspiration hazard: No data.

11-2. Lead

Acute toxicity: Oral: No information.

Percutaneous: No information.

Inhalation (dust): No information.

Skin irritation/corrosion: No information.

Eye damage/irritation: No information.

Respiratory or skin sensitization:

Respiratory organ sensitization: No information.

Reproductive cell mutagenicity:

Results have been obtained that contradict the chromosome abnormalities in the peripheral blood lymphocytes of people who work with lead, but as there are reports of chromosome abnormalities and micronucleus induction effects in lead itself[23), 37), 20), 10)], the substance was designated class 2.

Carcinogenicity: Classified as B[23), 30)] and A3[10)], and as B2 by the EPA.

Suspected risk of carcinogenesis (class 2)

IARC group 2 (might be carcinogenic in humans)

Reproductive toxicity: Designated class 1A as there are reports of cases of human exposure affecting spermatogenesis[37), 20), 8), 23)], and reports that ovulation function failure has been observed in cases of exposure among female EHC workers.

Although there are reports of connections to cognitive function development impairment in newborns[10), 20), 8), 23)], and connections to increased spontaneous abortions[20), 8)], no clear conclusions have been obtained.

Risk of malign influence on reproductive functions or fetus (class 1A)

Specific target organ toxicity (single exposure):

Despite reports of cases in which renal function failure has been identified in humans with acute poisoning[20)], the same source also reports that there was no renal failure in subsequent epidemiological surveys.

Specific target organ toxicity (repeated exposure):

From reports that the marker organs are the hematopoietic system, nervous system, and the kidneys and the cardiovascular system[20)], reports that heme synthesis impairment, nephropathy, and encephalopathy have been observed in cases of human exposure[37), 10), 8), 23)], reports of the peripheral nerves and central nervous functions have been affected in cases of human exposure[37), 10), 8)], reports of effects such as hypertension on the cardiovascular system in cases of human exposure[37), 10)], and reports that immunosuppressive actions have been observed in cases of human exposure[8)], the marker organs are thought to be the hematopoietic system, liver, CNS, peripheral nervous system, cardiovascular system, and immune system, all of which have been designated class 1.

Although there are descriptions of case reports of reduced thyroid gland and adrenal functions in EHC, both these case reports are from before 1970, and there have been no similar reports subsequently, and as DFGOT describes no effects on the thyroid gland[20)], the thyroid and adrenal glands are not thought to be marker organs.

Impairment of the hematopoietic system, kidneys, CNS, peripheral nervous system, cardiovascular system, and immune system due to long-term or repeated exposure (class 1)

Aspiration hazard: No data.

11-3. Tin

Acute toxicity: Oral: No information.
Percutaneous: No information.
Inhalation (dust): No information.

Skin irritation/corrosion: No information.

Eye damage/irritation: No definite date available.

Respiratory or skin sensitization: No information.

Reproductive cell mutagenicity: No date available.

Carcinogenicity: No definite date available.

Reproductive toxicity: No information.

Specific target organ toxicity (single exposure):

No definite date available.

Specific target organ toxicity (repeated exposure):

Coniosis was observed in warkers handling metallic tin.

Long-term exposure to this substance may cause benign coniosis(stannosis).

Organ damage from long-term or repeated exposure (Class 1)(Lungs)

Long-term or repeated exposure causes renal disorders.

Long-term or repeated exposure causes lung disorders.

Aspiration hazard: No data.

12. Ecological information

There is no information for mixtures (alloys), so information in units of the configuration elements are referenced for the

description.

12-1. Copper

Acute aquatic environmental harm:

Cannot classify due to insufficient data.

Chronic aquatic environmental harm:

Despite the existence of L(E)C_{50}≦100 mg/L data, as this is a metal and its actions in water are unknown, it was designated class 4.

12-2. Lead

Acute aquatic environmental harm:

No information.

Chronic aquatic environmental harm:

No information.

12-3. Tin

Acute aquatic environmental harm:

No information.

Chronic aquatic environmental harm:

No information.

13. Disposal considerations

There is no information for mixtures (alloys), so information in units of the configuration elements are referenced for the description.

13-1. Copper

Waste from residues:

Follow the relevant laws and local disposal regulations. Entrust disposal to and industrial waste contractor or local public body that is authorized by the prefectural governor where available. If outsourcing waste disposal, thoroughly notify the contractors of the dangers and harmfulness before outsourcing.

Contaminated container and contaminated packaging:

Either clean and recycle the containers, or dispose of them suitably according to the relevant laws and regulations, and local government standards.

When disposing of empty containers, make sure to discard the contents completely.

13-2. Lead

Waste from residues:

Follow the relevant laws and local disposal regulations. Entrust disposal to and industrial waste contractor or local public body that is authorized by the prefectural governor where available. If outsourcing waste disposal, thoroughly notify the contractors of the dangers and harmfulness before outsourcing. Substances in an elemental state can be reused, so recover them.

Contaminated container and contaminated packaging:

Either clean and recycle the containers, or dispose of them suitably according to the relevant laws and regulations, and local disposal regulations.

When disposing of empty containers, make sure to discard the contents completely.

13-3. Tin

Waste from residues:

Follow the relevant laws and local disposal regulations. Entrust disposal to and industrial waste contractor or local public body that is authorized by the prefectural governor where available. If outsourcing waste disposal, thoroughly notify the contractors of the dangers and harmfulness before outsourcing. Do not discharge the waste liquid containing this substance and waste liquid after washing diredtly into waterways or bury or dispose of the unprosessed products.

Contaminated container and contaminated packaging:

Either clean and recycle the containers, or dispose of them suitably according to the relevant laws and regulations, and local government standards.

When disposing of empty containers, make sure to discard the contents completely.

The method of disposing of spray cans differ for each local government. Disposal must be conducted according to the regulations of the relevant local government.

14. Transport Information

There is no information for mixtures (alloys), so information in units of the configuration elements are referenced for the description.

14-1. Copper

<International regulations>

Information on marine transport regulation: Non-dangerous substance.

・UN number: Not applicable

Information on air transport regulation: Non-dangerous substance.

・UN number: Not applicable

<Japanese regulations>

Information on road transport regulation: No special regulations.

Information on marine transport regulation: Non-dangerous substance.

Information on air transport regulation: Non-dangerous substance.

14-2. Lead

<International regulations>

Information on marine transport regulation: Non-dangerous substance.

・UN number: Not applicable

Information on air transport regulation: Non-dangerous substance.

・UN number: Not applicable

<Japanese regulations>

Information on road transport regulation: No regulations.

Information on marine transport regulation: Non-dangerous substance.

Information on air transport regulation: Non-dangerous substance.

14-3. Tin

<International regulations>

Information on marine transport regulation: Non-dangerous substance.

・UN number: Not applicable

Information on air transport regulation: Non-dangerous substance.

・UN number: Not applicable

<Japanese regulations>

Information on road transport regulation: No regulations.

Information on marine transport regulation: Non-dangerous substance.

Information on air transport regulation: Non-dangerous substance.

15. Regulatory informationThis product (copper and copper alloy) are solid metal products, and the obligation to submit MSDS documents according to the Pollutant Release and Transfer Register (PRTR) law and the Industrial Safety and Health Law (for chemical substances) does not apply.
The configuration element unit information is described below for reference.

15-1. Copper
Occupational health and safety law (OHSL):
Materials to be notified
(Law paragraph 57, and edict Paragraph 18.2 table 9)
(Edict No. 379)

15-2. Lead
Occupational health and safety law (OHSL):
Materials to be notified
(Law paragraph 57, and edict paragraph 18.2 table 9)
(Edict No. 411)
Lead (Edict table No. 4 and lead poisoning prevention regulations paragraph 1.1)
Law concerning reporting, etc., of releases to the environment of specific chemical substances and promoting improvements in their management:
Type 1 designated chemical substance
Pollutant release and transfer (PRTR) Law:
(Law paragraph 2.2, edict paragraph 1, Appendix table 1)
(Edict No. 304)
Labor standards law: Toxic chemicals
(Law paragraph 75.2, edict Paragraph 35 table 1.2.4)
Air pollution control act: Harmful substance
(Edict paragraph 1)
Water pollution prevention act: Harmful substance
(Edict paragraph 2, Ministerial ordinance for sewage standards paragraph 1)
Soil contamination countermeasures act:
Special harmful substance
(Law paragraph 2.1, edict paragraph 1)

15-3. Tin
Occupational health and safety law (OHSL):
Materials to be notified
(Law paragraph 57-2, and edict paragraph 18.2 table 9)
(Edict No. 322)

16. Other Information
16-1. Copper
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16-2. Lead
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16-3. Tin

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The Safety Data Sheet is supplied to workers handling hazardous chemical products as reference information to assure safe handling. Make sure the workers engaged in handling understand the importance of suitable measures depending the on individual handling circumstances, etc., and that they are themselves responsible for referencing the SDS before use. Consequently, this datasheet is not a guarantee of safety.