

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.

(Sheet, strip, bar, wire and pipe: pure copper and copper alloy of 2 or 3 elements targeting only copper element)

Alloy Group	Corresponding JIS No.	Alloy Name	Alloy No.	Shape	Substance Classification
Cu Group	H 3100	Oxygen-free copper	C1020	sheet,	single
		Tough pitch copper	C1100		
		Phosphorus-deoxidized copper	C1201, C1220, C1221		
Cu-Zn Group	H 3100 H 3250 H 3260	Red brass	C2100, C2200,	sheet,	Mixture (alloy)
			C2100, C2200, C2300, C2400	wire,	
		Brass	C2600, C2680, C2801	sheet	
			C2600, C2700, C2800	wire	
			C2700, C2800	Bar	

1-2. Company information

Company name: Mitani Shindo Co.,Ltd

Address: 1-1 Ohyanagi-cho, Kamitoba, Minami-ku Kyoto (Postal code : 601-8128 Japan)

Department: Engineering Department

Supervisors: Hideki Murase (Position: The head of a department)

Tel: 81-75-681-3331, Fax: 81-75-681-3333

Emergency Tel Number: 81-75-681-3331

[Creation date: Oct/1/2013]



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 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
	Skin 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	
	Liver 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.

3. Composition/information on ingredients

3-1. Substance or mixtures:

See the table in 1-1.

3-2. Chemical name:

Alloys and alloy name are shown in the table in 1-1.

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. Components	3.2 Composition (mass %)	3.4 Ordinance No. (Only Substances Subject to SDS Publication)				3.5. CAS No.
		PRTR Law		Industrial Safety and Health Law		
		0.1% max	1% max	0.1% max	1% max	
Copper (Cu)	99.99 min	---	---	379	---	7440-50-8
Phosphorus (P)	0.062 min	---	---	---	---	7723-14-0
Lead (Pb)	0.1 min	---	---	---	---	7439-92-1
Iron (Fe)	3.5 min	---	---	---	---	7439-89-6
Zinc (Zn)	Remnant	---	---	---	---	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: Cough, headache, shortness of breath, pharyngeal pain, stomach pain, nausea, and vomiting.
If on skin: Reddening

If in eyes: Reddening, pain

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:

medical observation over time are indispensable.

5. Fires-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 CO₂

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 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.

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.

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 and biological exposure indices)

- Japan Society for Occupational Health (2005 version):

Not specified.

- ACGIH (2005 version): TLV-TWA 0.2 mg/m³ (as fumes)

TLV-TWA 1 mg/m³ (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.

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

a) Product nomenclature characteristics

	Oxygen-free copper Phosphorus-deoxidized copper etc.	Brass Red brass
9-1. Appearance of a chemical product	Lustrous red-pink solid	Lustrous poppy red solid
• physical state and colour		
• form	Depends on product shape	Depends on product shape
• odour	None	None
9-2. pH, with indication of the concentrations	---	---
9-4. Decomposition temperature	---	---
9-5. Flashpoint	---	---
9-6. Upper/lower flammability	---	---
9-7. Explosive limit	---	---
9-11. Solubility(ies)	---	---
9-12. N-octanol/water partition coefficient	---	---
9-13. Other data (Radioactivity, bulk density, etc.)	---	---

b) Alloy characteristics

	Oxygen-free copper, Tough pitch copper, Phosphorus-deoxidized copper			Red brass			
	C1020	C1100	C1220	C2100	C2200	C2300	C2400
9-3. Melting point (°C)	1083	1083	1083	1065	1045	1025	1000

Safety Data Sheet (SDS)

SDS No. file-1

7/10

Page

9-10. Relative density	8.94	8.89-.94	8.94	8.86	8.80	8.75	8.67
------------------------	------	----------	------	------	------	------	------

	Brass				
	C2600	C2680	C2700	C2800	C2801
9-3. Melting point (°C)	955	930	930	905	905
9-10. Relative density	8.53	8.47	8.47	8.39	8.39

c) Configuration Element Characteristics

	Cu	P	Fe	Zn
9-8. Vapor pressure (Pa)	---	---	---	---
9-9. Vapor temperature (Boiling point) (°C)	2582	280	2860	907

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.

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 LD ₅₀ 120 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⁾ Liver damage due to long-term or repeated exposure (class 1)
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)C₅₀≤100 mg/L data, as this is a metal and its actions in water are unknown, it was designated class 4.

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 containers 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.

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

15. Regulatory information

This product (copper and copper alloy) are solid metal products, and the obligation to submit SDS 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)

16. Other information (References)

16-1. Copper

<References>

- 1) Ullmanns (E) (5th edition, 1995)
- 2) Contamination Dangers Handbook (2nd edition, 1997)
- 3) RTECS (2005)
- 4) ICSC (J) (1993)
- 5) Sax (8th edition, 1992)
- 6) Lange (14th edition 1992)
- 7) Gangolli (1st edition 1993) vol. 2
- 8) Lide (85th edition, 2004-2005)
- 9) SRC (Access on Jul 2005)
- 10) PATTY (4th edition, 1994)
- 11) EHC200 (1998)
- 12) EPA (IRIS (Access on Jul 2005))

- 13) ACGIH (7th edition, 2001)
- 14) Handbook of Danger and Harmful Chemical Substances, Japan Industrial Safety and Health Association (1992)
- 15) Booklet of the Threshold Limit Values and Biological Exposure Indices, 6th edition; Japan Chemical Industry Ecology-Toxicology & Information Center (2004)
- 16) GHS Classification Results (Sumika Technical Information Service, Inc.)
- 17) Japan Chemical Industry Association, "Emergency Measures and Policies, Container Yellow Card (Labeling)"
- 18) Japan Chemical Industry Association, "Chemical Substances Control Law Regulations Search System" (CD-ROM) (2005)
- 19) Japan Chemical Database Ltd., "Comprehensive Chemicals Database" (2005)
- 20) Safety Database (revised and expanded supplementary edition, 1997)
- 21) JETOC, "Collection of Existing Chemical Substance Safety Inspection Data for the Chemical Substances Control Law"
- 22) Ministry of the Environment, "Chemical Substances Ecological Impact Tests"

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.

Category, title and chemical composition of wrought Copper (JIS product) which SDS issue targets to only copper

Category	The former title	Shape			Chemical composition				
		Sheet	Bar	Wire	Cu	Pb	Fe	Zn	P
C1020	Oxygen-free copper	○			≥99.96	---	---	---	---
C1100	Tough pitch copper	○			≥99.90	---	---	---	---
C1220	Phosphorous deoxidized copper 1B	○			≥99.90	---	---	---	0.015 -0.040
C2100	Red brass 1	○		○	94.0 -96.0	≤0.05	≤0.05	remnant	---
C2200	Red brass 2	○		○	89.0 -91.0	≤0.05	≤0.05	remnant	---
C2300	Red brass 3			○	84.0 -86.0	≤0.05	≤0.05	remnant	---
C2400	Red brass 4			○	78.5 -81.5	≤0.05	≤0.05	remnant	---
C2600	Paper-manufacture brass 1 Brass 1	○		○	68.5 -71.5	≤0.05	≤0.05	remnant	---
C2680	Brass 2A	○			64.0 -68.0	≤0.05	≤0.05	remnant	---
C2700	Paper-manufacture brass 2 Brass 2		○	○	63.0 -67.0	≤0.05	≤0.05	remnant	---
C2800	Paper-manufacture brass 3 Brass 3		○	○	59.0 -63.0	≤0.10	≤0.07	remnant	---
C2801	Brass 3	○			59.0 -62.0	≤0.10	≤0.07	remnant	---