

To KODO CO., LTD

SAFETY DATA SHEET

SDS FILE No. (KURAMI WORKS) : 16-5695
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SDS C5191 1/5

1. IDENTIFICATION OF THE SUBSTANCE OR MIXTURE AND OF THE SUPPLIER

Name of chemical substance, etc. : **C5191**
(Product Name)
Supplier's details
Manufacturer's Name : JX NIPPON MINING & METALS CORPORATION KURAMI WORKS
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Person in Charge : Keitaro Kanehama
Senior Technical Supervisor,
Quality Assurance Section

2. HAZARDS IDENTIFICATION

GHS CLASSIFICATION

PHYSICAL HAZARDS

Explosives	Not classified
Flammable Gases	Not classified
Flammable Aerosols	Not classified
Oxidizing Gases	Not classified
Gases Under Pressure	Not classified
Flammable Liquids	Not classified
Flammable Solids	Classification not possible
Self-reactive Substances and Mixtures	Not classified
Pyrophoric Liquids	Not classified
Pyrophoric Solids	Classification not possible
Self-heating Substances and Mixtures	Classification not possible
Substances and Mixtures which, in contact with Water, emit Flammable Gases	Classification not possible
Oxidizing Liquids	Not classified
Oxidizing Solids	Not classified
Organic Peroxides	Not classified
Corrosive to Metals	Classification not possible

HEALTH HAZARDS

Acute Toxicity (Oral)	Classification not possible
Acute Toxicity (Dermal)	Classification not possible
Acute Toxicity (Gases)	Not classified
Acute Toxicity (Vapors)	Classification not possible
Acute Toxicity (Dusts and Mists)	Classification not possible
Skin Corrosion / Irritation	Classification not possible
Serious Eye Damage / Eye Irritation	Classification not possible
Respiratory or Skin Sensitization	Classification not possible
Germ Cell Mutagenicity	Classification not possible
Carcinogenicity	Not classified
Reproductive Toxicity	Classification not possible
Specific Target Organ Systemic Toxicity (Single Exposure)	CATEGORY 3 (Transient target organ effect)
Specific Target Organ Systemic Toxicity (Repeated Exposure)	CATEGORY 1 (liver, lung)
Aspiration Hazard	Classification not possible

ENVIRONMENTAL HAZARDS

Hazardous to The Aquatic Environment (Acute)	Classification not possible
Hazardous to The Aquatic Environment (Chronic)	CATEGORY 4

GHS LABEL ELEMENTS

Pictogram / Hazard Symbol

Exclamation mark Health hazard

Signal word

Danger

Hazard statement

Not for the product as a mixture, however reference can be made to the following for copper and tin.

•Copper

Stimulation of upper airway (single exposure)

Liver disease (long term or repeated exposure in a high aerial density)

Metal hume fever (fume's inhalation)

•Tin

Liver disease (long term or repeated exposure in a high aerial density)

Precautionary statement

Safety measure

Do not handle the product until reading and understanding all of notes concerning safety.

Inhale neither dust nor hume.

Avoid exposing with a protection tool (protective mask etc.) and ventilators.

Avoid the discharge into the environment.

First-aid measure

Do arrangements for medical treatment immediately. (When the exposure or the anxiety exists.)

Storage

Avoid contact with chemical substances such as an acid, alkaline materials, and oxidants and the chlorides.

Disposal

Collect as a metal because the substance that composes the product is recyclable,
and consign it to the disposalcontractor.

3.COMPOSITION / INFORMATION ON INGREDIENTS

Single substance or mixture : mixture

Chemical name : Phosphor bronze alloy

Chemical formula or structural formula : Cu-Sn-P

CAS No. : Shown in table below

Official gazette notification reference No. : No reference

*1 : Law Concerning Reporting, etc. of Releases to the Environment of Specific Chemical Substances and Promoting Improvements
in Their Management

*2 : Industrial Safety and Health Law

Alloy elements and content :

	Content (wt-%)	*1	*2	CAS No.
Copper (Cu)	Balance	-	379	7440-50-8
Tin (Sn)	5.5~7.0	-	322	7440-31-5
Phosphorus (P)	0.03~0.35	-	-	7723-14-0

4.FIRST AID MEASURES

In the situation in which the powder and dust, etc. are generated by the machining and grinding

Eye Contact : Wash the eye for 15minutes or more by a stream of clean water, and see a doctor.

Skin Contact : Wash the adhesion part by soapy water, and flush it with bags of water.

Inhaled : When inhaling voluminosly, transfer the patient to a fresh place of air at once.

The patient shuold be kept warm and at rest while a doctor is sent for.

Ingestion : Wash the mouth well with water and, if possible, induce vomiting, then immediately arrange for medical treatment.

In the situation handled with the product machined

Skin Contact : If heated chips, etc., adhere to your skin to cause a minor burn, immediately allow the affected part to cool under
(Burn) plenty of funning water.

In the situation handled with the product melted

Inhaled : Transfer the patient to a fresh place of air at once.

Practice artificial respiration at once when breathing difficulties or asphyxia is perceived.

In the situation in which processed solution (wastewater etc.) by the etching etc. is generated

Eye Contact : Wash the eye for 15minutes or more by a stream of clean water, and see a doctor.

Skin Contact : Wash the adhesion part by soapy water, and flush it with bags of water.

Inhaled : When inhaling voluminosly, transfer the patient to a fresh place of air at once.

The patient shuold be kept warm and at rest while a doctor is sent for.

Ingestion : Wash the mouth well with water and, if possible, induce vomiting, then immediately arrange for medical treatment.

5.FIRE FIGHTING MEASURES

Suitable extinguishing media : This product is not inflammable.
 Use a special, powdery extinguisher or dry sand. (Water is improper.)
 Peculiar extinction method : Extinguish fire by the fire extinguisher and water, etc. if the product has not melted.
 Do not pour water when melting so that there is fear of the steam explosion.
 Special protective equipment and precautions : Wear the protective clothing, and use the compressed air open-circuit SCBA,
 the compressed air closed-circuit SCBA.

6.ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Not applicable for the solid.
 Environmental precautions : Not applicable for the solid.
 Methods and materials for containment and cleaning up : Not applicable for the solid.

7.HANDLING AND STORAGE

Precautions for safe handling
 Put safety gloves on to protect your hands from edges of coils which might cut your hands.
 Wear safety glasses when metal powders or chips are expected to be generated in the work.
 Put safety shoes on when handling heavy coils.
 Note the cut and the injury of eyes by the splash at the coil end so that there is a spring.
 Conditions for safe storage
 Storage should be a level ground. Avoid an inclining place and unstable accumulation to cause the collapse of cargo piles.
 Do not allow acid, alkali, chloride, sulfide and other corrosive chemicals to come into contact with the product.
 Avoid keeping in the place where humidity is high to prevent discoloration and rust.

8.EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters : Not provided
 Occupational exposure limit values or biological limit values : Not specified for the product as a mixture.
 Refer to the table below when Hume and the dust are generated.

Unit mg/m³

Substance	Japan association Industrial Health (recommended value)	ACGIH(TLV)
Copper	Not specified	Time-Weighted Average
		Fume 0.2
		Dust 1.0
Tin	Not specified	Short term exposure limit
		Dust 2.0
		Time-Weighted Average
Phosphorus	0.1	Inorganic compound 2.0
		Organic compound 0.1
		Time-Weighted Average 0.1

Appropriate engineering controls :
 When the dust and Hume are generated, and the density cannot be maintained below the standard in the above table,
 it is necessary to do the facility measures such as the local exhaust systems.
 Personal protective equipment :
 In places where dust or fume concentration is high, wear the protective mask and safety glasses.
 Wear safety gloves when there is a possibility of injuring the hand and the finger.
 Wear provided work wear and safety shoes.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	: Metal
Appearance	: Reddish Brown (Lustrous solid)
Odour	: None
pH	: Data none
Melting point / freezing point	: 1020°C (Melting point)
Initial boiling point and boiling range	: Data none << Cu:2582°C (Boiling point), Sn:2625°C (Boiling point) >>
Flash point	: Data none
Evaporation rate	: Data none
Flammability (solid, gas)	: Data none
Upper/lower flammability or explosive limits	: Data none
Vapour pressure	: Data none
Vapour density	: Data none
Relative density	: 8. 83 (g/cm ³)
Solubility (ies)	: Data none
Partition coefficient: n-octanol/water	: Data none
Auto-ignition temperature	: Data none
Decomposition temperature	: Data none

10. STABILITY AND REACTIVITY

Chemical stability / Possibility of hazardous reaction	: This product is stabilized under a general environment, and reactivity is small.
Conditions to avoid	: Avoid contact with chemical substances such as an acid, alkaline materials, and oxidants and the chlorides.
Incompatible materials	: The acetylene unites with copper, silver, gold, and other metal ions, and generates the compound with extremely high explosiveness.
Hazardous decomposition product	: This product might generate hydrogen reacting with the acid or the hydroxide alkali.

11. TOXICOLOGICAL INFORMATION

Hazard information is not reported as this compound (alloy).

Hazard information below concerns the individual elements that composes this alloy.

Acute toxicity (Including lethal dose 50%)	: Copper powders LD50 orally administered-mouse >4000mg/kg ²⁾ The symptom of the acute toxicity when swallowing is nausea, vomiting, weakness. The symptom when inhaling the dust and Hume is the cough, breast pain, and the fever. Yellow phosphorus is the most toxic for phosphorus. The symptom of the acute toxicity is the angiopathy, the hepatization (yellow atrophy of the liver), the nausea, the vomit, the diarrhea, the steatosis of liver and kidney, the hypertrophy of liver, the jaundice, the hematuria, the dyspnoea.
Skin Corrosion / Irritation	: The cutaneous sensitization might be caused unusually. (copper).
Serious Eye Damage / Eye Irritation	: Data none
Respiratory or Skin Sensitization	: Copper is classified into the second crowd of skin sensitization (Material which might have sensitization to person) by the Japan Society for Occupational Health (Recommendation;2004).
Germ Cell Mutagenicity	: Data none
Carcinogenicity	: Copper is classified into D (material that cannot be classified into human carcinogenicity) by EPA(1991).
Reproductive Toxicity	: Data none
Specific Target Organ Systemic Toxicity (Single Exposure)	: The Hume of copper stimulates the upper air way. ⁵⁾
Specific Target Organ Systemic Toxicity (Repeated Exposure)	: The appearance of the hepatomegalia was detected of the worker who had been exposed to a high aerial density of copper. ⁷⁾ (Presumption intake 200mg/day) The appearance of the pneumoconiosis was detected of the worker who handled metallic tin. ⁸⁾ The symptom of the phosphorous chronic intoxication is the anorexia, the dispepsia, the loss weight, the anemia, the jaundice, the mucosal bleeding, the urine protein, the yellowed augen of eyes, the intraretinal hemorrhage.
Aspiration Hazard	: Data none

12.ECOLOGICAL INFORMATION

Ecotoxicity : Data none
 Persistence and degradability : Data none
 Bioaccumulative potential : Data none
 Mobility in soil : Data none

13.DISPOSAL CONSIDERATIONS

Waste residues, contaminated packaging : Collect as a metal because the substance that composes the product is recyclable, and consign it to the disposal contractor.

14.TRANSPORT INFORMATION

UN number, UN proper shipping name : Not applicable
 Transport hazard class : Not applicable
 Packing group : Not applicable
 Marine pollutant : No
 Special precautions : Prevent surely the fall and the collapse of piles.
 Avoid rain water, the sea breeze, and seawater, by covering with sheet or other precautions.

15.REGULATORY INFORMATION

Industrial Safety and Health Law : Hazardous substance to be notified. <Copper, Tin>
 << Article 57-2(Law) Attached Table 9, Article 18-2(Enforcement Order of Law) >>
 Water Pollution Control Law : Substance to which effluent standard is provided. <Copper>
 << Article 3(Law) Attached Table 2, Article 1(Ministerial ordinance that provides effluent standard) >>
 Sewage Law : Substance to which effluent standard is provided. <Copper>
 << Article 12-2(Law) Article 9-4(Enforcement Order of Law) >>
 Situation in which dust is generated : Industrial Safety and Health Law << Paragraph 1, Article 2(Ordinance on Prevention of Hazards Due to Dust) >>
 Act of the Occupational Safety and Health Administration (OSHA).

16.OTHER INFORMATION (Cited document etc.)

Cited document

- 1) Dictionary of metallurgical terminology (the Japan Institute of Metals)
- 2) Copper and Copper Alloy Fundamentals and Industrial Technology, Revised Edition (Japan Brass Makers Association)
- 3) JIS Handbook, Nonferrous Materials (Japan Industrial Standards)
- 4) Metal Data Book (Maruzen)
- 5) ACGIH Documentation of the threshold limit values for chemical substances (7th edition, 2001)
- 6) A Handbook on the dangers and Hazards of Chemical Substances, Revised, 4th Edition (Japan Industrial Safety and Health Association)
- 7) Environmental Health Criteria 200 (World Health Organization Geneva 1998)
- 8) Environmental Health Criteria 15 (World Health Organization Geneva 1980)
- 9) Classification and Labelling of Chemicals (National Institute of Technology and Evaluation)
- 10) International Chemical Safety Cards -Japanese Version (National Institute of Health Sciences)
- 11) Iwanami's Dictionary of Physic chemistry, 4th Edition (Iwanami Shoten)
- 12) Copper Alloy Data Book (Japan Copper and Brass Association)

Reference URL : <http://www.copper-brass.gr.jp/> ... Japan Copper and Brass Association

The Safety Data Sheet (SDS) is designed as a reference information to assist safe handling of the dangerous and hazardous substance by the agent.

When the product is handled, it is necessary to understand that handling agents are requested to take appropriate measures on their own responsibility for the individual handling operations.

And, this safety data sheet is not a written guarantee of safety.