

# 물질안전보건자료 (Material Safety Data Sheet)

제품명

Copper and copper alloy rods

## 1. Products and Manufacturer

A. Products	Copper and copper alloy wire(C2600)
B. Used for and limit for the use	
Used for	Bolts, nuts, valves, lighters, watches, camera parts, etc.
limit for the use fo product	N/D
C. Manufacturer Infomation	
Company	DAECHANG CO.,LTD
Address	1292-4, Jeongwang-dong, Shiheung-city, Kyunggi-do, 429-450, Korea
Contact no.	031)496-3133

## 2. Hazards Identification on Brass rod

A. Sort of Hazards Identification on Brass rod	Water-reactive substances and mixtures : devison1 Pyrophoric solids : devison1 Acute poison(Oral) : devison4 carcinogenic : devison2 Reproduction-toxicity mutagenic : devison2 Reproduction-toxicity : devison1A specific organ poison(once exposure) : devison3(stimulate respiratory organ ) specific organ poison(repetition exposure) : devison1 acute aquatic environment harmfulness : devison1 chronic aquatic environment harmfulness : devison1
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B. Warning cover clause including a precautionary step pictogram



Signal word

danger

Hazardous and harmful information

- H250 spontaneous combustion when exposed in air.
- H260 Can occur flammable gas when contact with water.
- H302 Hazard when swallowing
- H335 Irritation when stuck to skin
- H341 will generated defect of hereditary.
- H351: Suspected of causing cancer
- H360 Can cause damage to fetus or reproductive ability
- H372 Can cause damage to physical if long term or repeated exposure.
- H400 Highly poisonous to aquatic organisms.
- H410 Due to long term impact highly poisonous to aquatic organisms

Prevention measures word

Prevention

P201 Secure instruction manual before use.

Prevention	<p>P202 Read all of the Prevention measures word and handle after understand.</p> <p>P210 Keep away form heat, spark, flame, high fever – No smoking</p> <p>P222 Don't contact to air.</p> <p>P223 Don't contact with water if it's possible react violently or fire.</p> <p>P231+P232 Handle under an inert gas, prevent humidity.</p> <p>P260 Don't inhalation(dust·gas·steam·spray)</p> <p>P261 Don't inhalation(dust·gas·steam·spray)</p> <p>P264 Wash away with clean water after use</p> <p>P270 Don't be inhaling, drinking and smoking when use this meterial.</p> <p>P271 Only use to outside or be well ventilated place</p> <p>P273 Don't emission</p> <p>P280 Wear(gas mask, hand protection, protective clothing, protective eye glass)</p> <p>P281 Wear a appropriate personal protective equipment.</p>
Action	<p>P301+312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell</p> <p>P304+P340 Move to fresh air if you inhaling and take it rest to breath easier.</p> <p>P308+313: IF exposed or concerned: Get medical advice/attention</p> <p>P312 If you feel uncomfortable, should have a doctor examine you immediately.</p> <p>P314 If you feel uncomfortable, should ask a doctor for medical advise</p> <p>P330 Wipe one's mouth</p> <p>P335+334: Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages</p> <p>P370+P378 Use (...) to put out a fire when fire</p> <p>P391 Collecting leaking things</p>
Storage	<p>P402+P404 Keep storage dry place and enclosed container.</p> <p>P403+P233 Store a well-ventilated place and enclosed tightly.</p> <p>P405 Store with lockes place and enclosed area</p> <p>P422: Store contents under ...</p>
Discard	<p>P501 Discard container(According to states on related regulations)</p>

C. Not include hazards and harmful the classification standard, another hazards(NFPA)

Copper

Health	2
Fire	3
Reactivity	0

Pb

Health	1
Fire	0
Reactivity	0

Iron

Health	1
Fire	3
Reactivity	0

Zinc

Health	1
Fire	1
Reactivity	1

### 3. Title of Component or weight

Elements		CAS No	Weight(%)
Copper	Cu	7440-50-8	68.5~71.5
Lead	Pb	7439-92-1	0.05Max
Iron	Fe	7439-89-6	0.07Max
Zinc	Zn	7440-66-6	28.4~31.5

### 4. First-aid measures

A. Entering into eyes	Take a emergency measures Wash away with clean water longer than 20 minutes.
B. Sticking to skin	If you feel uncomfortable Take a emergency measures Dust from skin that stained with material, immerse in cold water or put a bandage around. Remove contaminated clothing and shoes and isolate the polluted areas. Wash away with clean water longer than 20 minutes if you touch the material Prevention to spread pollution section when contact skin.
C. Inhaling	Take a emergency measures or advise immediately when expose or anxious about exposure. A large quy of dust or exposure fume remove from fresh air and cough or anything take aa emergency measures.
D. Swallowing	Take a emergency measures or advise immediately when expose or anxious about exposure. Rinse mouth Do not mouth-to-mouth resuscitation and take appropriate measures When swallowing or eating,
E. matters that require attention	Contact medical team and a follow-up survey etc, take a emergency measures Health care manpower must be recognize about relevant matter and take a protective action.

### 5. Explosion or fire protection device.

A. appropriate(inappropriate) light water appropriate(inappropriate) light water	Must using a alcohol foam or carbon dioxide about this matter when douse a fire Must using a dry sand or soil when douse a fire
B. Specific harmful from chemical properties	Spontaneous combustion when exposed to air In contact with water releases flammable gases which may ignite spontaneously Can occur toxic gas when degraded on high temperature Unstable at room temperature may cause fire and explosion vigorously by the polymerization Can explosion when apply heat to container. May cause fire or explosion hazard from spillage. In contact with water releases flammable gas. May re-ignite after fire is extinguished. May ignite on contact with water or moist air Detonability from friction, heat, spark, flame. Flammability/inflammability. Some of the material can flash and burn quickly. Some of material could burn, but not to easy ignite. May ignite on contact with water or moist air Some of material may decompose explosively if fire or heated inflammability, material can not burn but occure corrosiveness/toxic from heat

C. Put on body protection and preventive action when fire

Copper

Salvor should wear a appropriate body protection.

Keep a safe distance and douse a fire.

Be careful Some of the meterial is flammable liquid

If not danger, move to container from fire area.

If can not douse, protect around and let a fire goes out nature.

Pb

Salvor should wear a appropriate body protection.

Keep a safe distance and douse a fire.

Be careful fusion and transport.

Dig a ditch and don't be scatter to dispose fighting water.

If not danger, move to container from fire area.

Using a manless fire apparatus in maximum distance when fire on tank.

cool off from much water when fire on tank and after douse the fire

Step back immediately when fire ,sounds weired or discolour on tank.

Step back immediately when fire on tank

In case of large scale fire, using a manless fire apparatus, if impossible keep step back.

Iron

Salvor should wear a appropriate body protection.

Keep a safe distance and douse a fire.

Be careful some of the meterial transport as a inflammable liquid.

If not danger, move to container from fire area.

If can not douse, protect around and let a fire goes out nature.

Zinc

Salvor should wear a appropriate body protection.

Keep a safe distance and douse a fire.

Be careful some of the meterial transport as a inflammable liquid.

Using a manless fire apparatus in maximum distance when fire on tank.

keep water off in the container.

Using a manless fire apparatus in maximum distance when fire on tank.

Step back immediately when fire ,sounds weired or discolour on tank.

Step back immediately when fire on tank

6. Preliminary measures on exposure

A. corrective measure to protect body

Avoid Inhaling from dust, gas. Spray, mist, steam.

Remove all source of ignition because minute particles can cause fire or explosion.

Clean up the spilth immediately and wear a protective clothing

Isolate from area of contamination

Do not enter without protective gear or no necessary

Remove all source of ignition

Using a water spray to reduce steam and keep water off the container.

Keep away water and exposed meterial to use a water spray or dishevel a cloud of steam.

Stop to leak if you can.

Don't contact damaged container or leak things without wear a protective clothing.

Don't be clean and handle without surpervise of professional.

Wear a whole protection steam prptective clothing when exposed without

Check the spread to cover plastic sheet.

Prevent dust production.

Look after to avoid meterial or condition.

B. Preliminary measures to protect environment

Don't discharge to the environment.

Prevention of inflow from closed space, drain, basement when a lot of leak.

### C. purification or removal method

Collect leak things

Build a dike and collect water to douse a fire.

absorb spilt material(ex dry sand or soil) and put the chemical waste container away.

absorb spilt material and area of contamination wash away with clean water

Make a ditch and keep away from leak things when a lot of leak.

Cover with dry sand/soil and inflammable material to spread and contact with rain and cover with plastic sheet.

Soak in water and handle later when a lot of leak.

Use clean shovel to clean up and put on dry container.

Dig a ditch and don't sprinkle water until further notice.

Keep a dry condition and check the spread to cover plastic sheet.

Absorb to use inflammable material or sand and put in container when was exposed a little.

## 7. Handle and storage way

### A. Safe handle method

Do not handle until all safety precautions have been read and understood

Do not allow contact with air.

Keep away from any possible contact with water, because of violent reaction and possible flash fire.

Handle under inert gas. Protect from moisture.

Avoid breathing dust/fume/gas/mist/vapours/spray

Wash away with clean water after use

Do not eat, drink or smoke when using this product

Only use to outside or be well ventilated place

Do not expose to pressure or cut, weld, Pb soldering, bonding, drilling, grinding or heat exposure, flame, sparks, static electricity or other sources of ignition.

Follow all MSDS / label precautions because it may retain product residue even after container is emptied.

Use careful when handle and storage.

Turn on a tap carefully before open.

Look after to avoid material or condition.

Be careful high temperature.

### B. Safe storage way

Keep away from heat, spark, fire – No smoking

Handle under inert gas. Protect from moisture

Store in a dry place. Store in a closed container

Store in a well ventilated place. Keep container tightly closed

Material at room temperature or slightly elevated temperatures in air may be pyrophoric, so keep in optimal temperature.

An empty drum drain completely and close, dispose adequately.

Keep away from food and drink.

## 8. Preliminary measures on exposure / Individual protection device

### A. Chemical exposure standard, Ecological exposure standard etc

#### Internal regulations

Copper

TWA – 1mg/m<sup>3</sup> STEL – 2mg/m<sup>3</sup> Copper(DUST AND MISTY)

TWA – 0.1mg/m<sup>3</sup> Copper(FUME)

Pb

TWA – 0.05mg/m<sup>3</sup> (Lead (inorganic dusts and fumes), acceptance criteria)

Iron

N/D

Zinc

N/D

ACGIH Regulation

Copper

Copper(Fume), Copper(Dusts and mists, as Cu)

TWA 0.2 mg/m<sup>3</sup>, 1 mg/m<sup>3</sup>

Pb

TWA 0.05 mg/m<sup>3</sup>

Iron

N/D

Zinc

N/D

Biological exposure limits

Copper

N/D

Pb

N/D

Iron

N/D

Zinc

N/D

B. Engineering Management

Use a process isolation, local ventilation or adjust air level below exposure standard.

Air out air pollution below exposure standard when occur dust, fume or misty.

Storage and use this material should install a safe washing system.

C. Individual protection device

respiratory organ protection

Copper

Copper(dust and misty)

Wear a protective respiratory that be tested by Korea Occupational Safety and Health Agency.

Wear a qualitative fit test if exposure concentration lower than 10mg/m<sup>3</sup>.

Wear a helmet shape auto operated qualitative fit test with loose-fitting or continuous flow dust mask if exposure concentration lower than 25mg/m<sup>3</sup>.

Wear full-face-piece equipped with appropriate filters, or helmet / hood type, pressure demand supplied-air respirator-type if exposure concentration lower than 50mg/m<sup>3</sup>.

Wear a full-face-piece air line respirator or air supplied respirator if exposure concentration lower than 1000mg/m<sup>3</sup>.

Wear a SCBA qualitative fit test if exposure concentration lower than 10000mg/m<sup>3</sup>SCBA)

Copper(FUME)

Wear a qualitative fit test that be tested by Korea Occupational Safety and Health Agency.

Wear a piece air line respirator if exposure concentration lower than 1mg/m<sup>3</sup>

Wear a helmet shape auto operated qualitative fit test with loose-fitting or continuous flow dust mask if exposure concentration lower than 2.5mg/m<sup>3</sup>.

Wear a auto operated qualitative fit test with loose-fitting or full-face-piece air line respirator if exposure concentration lower than 5mg/m<sup>3</sup>.

Wear full-face-piece equipped with appropriate filters, or helmet / hood type, pressure demand supplied-air respirator-type if exposure concentration lower

Wear a auto operated SCBA or air line respirator SCBA if exposure concentration lower than 1000mg/m<sup>3</sup>.

Pb

Lead (inorganic dusts and fumes)

Wear a qualitative fit test that be tested by Korea Occupational Safety and Health Agency.

Wear a piece air line respirator if exposure concentration lower than 1mg/m<sup>3</sup>

Wear a helmet shape auto operated qualitative fit test with loose-fitting or continuous flow dust mask if exposure concentration lower than 2.5mg/m<sup>3</sup>.

Wear a auto operated qualitative fit test with loose-fitting or full-face-piece air line respirator if exposure concentration lower than 5mg/m<sup>3</sup>.

Wear full-face-piece equipped with appropriate filters, or helmet / hood type, pressure demand supplied-air respirator-type if exposure concentration lower

Wear a auto operated SCBA or air line respirator SCBA if exposure concentration lower than 1000mg/m<sup>3</sup>.

Iron

Wear a qualitative fit test that be tested by Korea Occupational Safety and Health Agency.

Zinc

Wear a qualitative fit test that be tested by Korea Occupational Safety and Health Agency.

## 9. Physical properties

### A. Appearance

Shape	Solid
Color	light yellow

### B. Smell

N/D

### C. Smell threshold value

N/D

### D. pH

N/D

### E. Freezing point/Melting point.

N/D

### F. Boiling point and range

N/D

### G. Flashing point

N/D

### H. Evaporating rate

N/D

### I. flammability(Solid, Gas)

N/D

### J. Ignition or explosion limit of range

N/D

### K. Steam pressure

N/D

### L. solubility

N/D

### M. Vapor density

N/D

### N. Gravity

8.4

### O. n-octanol-water partition coefficient

N/D

### P. spontaneous combustion

N/D

### Q. Pyrolysis temperature

N/D

### R. viscosity

N/D

### S. molecular weight

N/D

## Copper

### A. Appearance

Shape	Solid
Color	Red

### B. Smell

Odorless

### C. Smell threshold value

N/D

### D. pH

N/D

### E. Freezing point/Melting point.

1083 °C

### F. Boiling point and range

2595 °C

### G. Flashing point

N/D

### H. Evaporating rate

N/D

### I. flammability(Solid, Gas)

N/D

### J. Ignition or explosion limit of range

- / -

### K. Steam pressure

N/D

### L. solubility

insolubility

### M. Vapor density

N/D

### N. Gravity

8.9 (Water=1)

### O. n-octanol-water partition coefficient

-0.57 (estimated figure)

### P. spontaneous combustion

N/D

### Q. Pyrolysis temperature

N/D

### R. viscosity

N/D

### S. molecular weight

63.55

## Pb

### A. Appearance

Shape	Solid
Color	N/D

B. Smell	N/D
C. Smell threshold value	N/D
D. pH	N/D
E. Freezing point/Melting point.	327.5 °C
F. Boiling point and range	1740 °C
G. Flashing point	N/D
H. Evaporating rate	N/D
I. flammability(Solid, Gas)	N/A (1)
J. Ignition or explosion limit of range	- / - (N/A)
K. Steam pressure	1.77 mmHg (1000°C)
L. solubility	N/D
M. Vapor density	N/D
N. Gravity	11.34
O. n-octanol-water partition coefficient	2.98
P. spontaneous combustion	N/D
Q. Pyrolysis temperature	N/D
R. viscosity	N/D
S. molecular weight	207.2

#### Iron

A. Appearance	
Shape	Solid
Color	White or gray
B. Smell	Odorless
C. Smell threshold value	1535 °C
D. pH	2750 °C
E. Freezing point/Melting point.	N/D
F. Boiling point and range	N/D
G. Flashing point	N/D
H. Evaporating rate	N/D
I. flammability(Solid, Gas)	N/D
J. Ignition or explosion limit of range	- / -
K. Steam pressure	1 mmHg (at 1787 °C)
L. solubility	(Water solubility: Insoluble. Solvent Availability: Availability: Mt. Insoluble: alkali, alcohol, ether)
M. Vapor density	N/D
N. Gravity	7.86 (water=1)
O. n-octanol-water partition coefficient	N/D
P. spontaneous combustion	N/D
Q. Pyrolysis temperature	N/D
R. viscosity	N/D
S. molecular weight	55.85

#### Zinc

A. Appearance	
Shape	Solid (powder)
Color	Gray~blue
B. Smell	Odorless
C. Smell threshold value	(N/A)
D. pH	N/D
E. Freezing point/Melting point.	419 °C



F. Boiling point and range	907 °C
G. Flashing point	N/D
H. Evaporating rate	N/D
I. flammability(Solid, Gas)	Flammable
J. Ignition or explosion limit of range	- / -
K. Steam pressure	0.1 kPa (487°C)
L. solubility	Reacts
M. Vapor density	N/D
N. Gravity	7.14 (Water=1)
O. n-octanol-water partition coefficient	-0.47 (estimated figure)
P. spontaneous combustion	460 °C (The fine powder, etc.)
Q. Pyrolysis temperature	N/D
R. viscosity	N/D
S. molecular weight	65.38

## 10. Safety and Reactivity

### A. Physical Safe and Reactivity

Copper

Flammability Solid

Can occur toxic gas when degraded on high temperature

Can fire or explosion when severely polymerisation

Can explosion when apply heat to container.

Can ignite from friction, heat, spark, fire.

Can reignite after douse a fire

Explosive reaction with water.

Some of the meterial burn strong heat.

Dust, heum with are can form explosive mixture.

Stream, meterial, decomposition product's inhaling and contacting can occur seriously injury or death.

Oxide show hamful seriously when metal fire.

Pb

Can occur toxic gas when degraded on high temperature

Can explosion when apply heat to container.

Some of meterial could burn, but not to easy ignite.

nonflammability meterial can not burn when heat, but can occur corrosiveness/toxic hume.

Iron

Can explosion when apply heat to container.

Can ignite from friction, heat, spark, fire.

Can reignite after douse a fire

Explosive reaction with water.

Some of the meterial burn strong heat.

Dust, heum with are can form explosive mixture.

Can occur toxic gas when fire.

Stream, meterial, decomposition product's inhaling and contacting can occur seriously injury or death.

Oxide show hamful seriously when metal fire.

Zinc

spontaneous combustion when exposed on air.

In contact with water releases flammable gases which may ignite spontaneously

Keep away from any possible contact with water, because of violent reaction and possible flash fire.

Unstable at room temperature

Can occur flammable gas when contact with water.

Can fire or explosion when contact water.

Zinc

Unstable at room temperature.  
Can occur flammable gas when contact with water.  
Can reignite after douse a fire  
Can ignite from heat, spark, fire.  
Some of the material react with water.  
Can fire or explosion when contact water and humid air.  
Can occur toxic gas when fire.  
Stream, material, decomposition product's inhaling and contacting can occur seriously injury or death.  
Can occur corrosiveness solution when contact with water.

B. Odious Condition

Copper

Keep away from Friction, heat, spark, fire – NO smoking  
Friction, heat, spark, fire

Pb

Heat, sparks, flame such as sources

Iron

friction, heat, Sparks, flames

Zinc

heat  
Keep away from heat, spark, flame, high temperature – NO smoking  
Keep proper temperature and store because can spontaneous combustion when exposed room temperature or elevated air temperature.  
humidity

C. Odious Material

Copper

Water

Pb

Combustible materials, reducing materials

Iron

Water

Zinc

Do not allow contact with air.  
Keep away from any possible contact with water, because of violent reaction and possible flash fire.

Handle under inert gas. Protect from moisture.

Water

D. Toxic substance

Copper

magnetic polarity , Corrosive, toxic gas

Pb

Corrosive, toxic fume

Iron

magnetic polarity , Corrosive, toxic gas

During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

Zinc

magnetic polarity , Corrosive, toxic gas

11. Toxic information

A. Exposed path Information

Copper

N/D

Pb

N/D

Iron

N/D

Zinc

N/D

B. Harmful information

Acute toxicity

Oral

Copper

N/D

Pb

N/D

Iron

LD50 984 mg/kg Rat

Zinc

LD50 630 mg/kg Rat (Elemental)

injectant	
Copper	N/D
Pb	N/D
Iron	LD50 20000 mg/kg Guinea pig
Zinc	N/D
Inhaling	
Copper	N/D
Pb	N/D
Iron	N/D
Zinc	N/D
Skin corrosiveness or magnetic polarity	
Copper	N/D
Pb	N/D
Iron	Test species: Rabbit That stimulate
Zinc	Human / non-stimulated
Serious eye damage or magnetic polarity	
Copper	N/D
Pb	N/D
Iron	N/D
Zinc	N/D
Respiratory organ hypersensitiveness	
Copper	N/D
Pb	N/D
Iron	N/D
Zinc	N/D
Skin hypersensitiveness	
Copper	N/D
Pb	N/D
Iron	N/D
Zinc	N/D
Carcinogenic	
occupation safety and health acts	
Copper	N/D
Pb	N/D
Iron	N/D
Zinc	N/D
Ministry of Labor	
Copper	N/D
Pb	2
Iron	N/D
Zinc	N/D
IARC	
Copper	N/D
Pb	Group 2B
Iron	N/D
Zinc	N/D
OSHA	
Copper	N/D
Pb	N/D
Iron	N/D
Zinc	N/D

ACGIH	
Copper	N/D
Pb	A3
Iron	N/D
Zinc	N/D
NTP	
Copper	N/D
Pb	R
Iron	N/D
Zinc	N/D
EU CLP	
Copper	N/D
Pb	N/D
Iron	N/D
Zinc	N/D
Germ cell mutagenicity	
Copper	N/D
Pb	Pb actually cause the micronucleus induction and chromosomal abnormality.
Iron	N/D
Zinc	N/D
Reproduction-toxicity	
Copper	N/D
Pb	Affect spermiogenesis from person and could occur ovulatory dysfunction from woman.
Iron	N/D
Zinc	N/D
Specific target organ toxic(once exposure)	
Copper	Hume stimulate respiratory tract.
Pb	N/D
Iron	N/D
Zinc	N/D
Specific target organ toxic(repeat exposuer)	
Copper	Get shown injury of liver to person.
Pb	Observed renal insufficiency, cerebropathia in human and affect peripheral nervous system, central nerves. High blood pressure cardiovascular. occur
Iron	N/D
Zinc	N/D
Aspiration Hazard	
Copper	N/D
Pb	N/D
Iron	N/D
Zinc	N/D

## 12. Ecological information

### A. Ecotoxicology

#### Fish

Copper	LC50 0.37 mg/l 96 hr
Pb	LC50 2.2 mg/l 96 hr
Iron	LC50 13.6 mg/l 96 hr
Zinc	LC50 0.24 mg/l 96 hr Oncorhynchus mykiss

Crustacean	
Copper	EC50 0.0318 mg/l 48 hr
Pb	N/D
Iron	N/D
Zinc	EC50 0.354 mg/l 48 hr Daphnia magna
Algal	
Copper	LC50 0.092 mg/l 15 hr
Pb	N/D
Iron	N/D
Zinc	EC50 0.106 mg/l 72 hr (Test species : Pseudokirchneriella subcapitata)
B. Residual and resolvability	
Residual	
Copper	log Kow -0.57 (estimation)
Pb	log Kow 2.98
Iron	N/D
Zinc	log Kow -0.47 (estimation)
Resolvability	
Copper	N/D
Pb	N/D
Iron	N/D
Zinc	N/D
C. Ecological condensability	
condensability	
Copper	BCF 5830
Pb	N/D
Iron	N/D
Zinc	BCF 600 (Fish)
Biodegradability	
Copper	N/D
Pb	N/D
Iron	N/D
Zinc	(Biodegradability tests can not be applied.)
D. Soil rambling	
Copper	N/D
Pb	N/D
Iron	N/D
Zinc	N/D
E. Other harmful	
Copper	N/D
Pb	N/D
Iron	N/D
Zinc	N/D

### 13. Disposal considerations

A. Disposal method	
Copper	Obey the relevant regulations
Pb	Obey the relevant regulations
Iron	Obey the relevant regulations
Zinc	Obey the relevant regulations

## B. Considerations

Copper	Obey the relevant regulations
Pb	Obey the relevant regulations
Iron	Obey the relevant regulations
Zinc	Obey the relevant regulations

## 14. Transport considerations

### A. UN No.

Copper	3089
Pb	there is no information about UN transportation hazard classification.
Iron	3089
Zinc	1436

### B. Maintain optimal

Copper	Metal powder (which is flammable) (except those set forth separate product name)(METAL POWDER, FLAMMABLE, N.O.S.)
Pb	N/D
Iron	METAL POWDER, FLAMMABLE, N.O.S.
Zinc	ZINC POWDER or ZINC DUST

### C. Regulatory on Management Act

Copper	4.1
Pb	N/D
Iron	4.1
Zinc	4.3(4.2)

### D. Container grade

Copper	2
Pb	N/D
Iron	2
Zinc	1

### E. Marine pollutant

Copper	Correspond
Pb	N/D
Iron	N/D
Zinc	Correspond

### F. Any special safety measures that the user needs to know about in relation to transport

#### Contingency action when fire

Copper	F-G
Pb	N/D
Iron	F-G
Zinc	F-G

#### Contingency action when exposure

Copper	S-G
Pb	N/D
Iron	S-G
Zinc	S-O

## 15. Regulatory Information

### A.Regulatory on Occupation safety and health acts

Copper	Pollutants list Work environment measure meterial (measure cycle : 6month) Specific checkup meterial (measure cycle : 12month) Exposure standrad set up meterial
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Pb	Pollutants list Work environment measure material (measure cycle : 6month) Specific checkup material (measure cycle : 12month) Exposure standrad set up material Material limits set
Iron	Pollutants list Work environment measure material (measure cycle : 6month)
Zinc	Pollutants list
B. Toxic Chemicals Control Act	
Copper	N/D
Pb	Restricted substances
Iron	N/D
Zinc	N/D
C. Safety Control of Dangerous Substances Act	
Copper	N/D
Pb	N/D
Iron	N/D
Zinc	2type metals 500kg
D. Wastes Control Act	
Copper	Designated waste
Pb	N/D
Iron	N/D
Zinc	N/D
E. Other domestic and foreign regulation	
domestic	
Residual Organic Pollutants Control Act	
Copper	N/D
Pb	N/D
Iron	N/D
Zinc	N/D
foreign regulation	
US Managemnt info(OSHA regulation)	
Copper	N/D
Pb	N/D
Iron	N/D
Zinc	N/D
US Managemnt info(CERCLA regulation)	
Copper	2267.995 kg 5000 lb
Pb	4.53599 kg 10 lb
Iron	N/D
Zinc	453.599 kg 1000 lb
US Managemnt info(EPCRA 302 regulation)	
Copper	N/D
Pb	N/D
Iron	N/D
Zinc	N/D
US Managemnt info(EPCRA 304 regulation)	
Copper	N/D
Pb	N/D
Iron	N/D
Zinc	N/D

US Managemnt info(EPCRA 313 regulation)	
Copper	Correspond
Pb	Correspond
Iron	N/D
Zinc	Correspond
US Managemnt info(Rotterdam agreement meterial)	
Copper	N/D
Pb	N/D
Iron	N/D
Zinc	N/D
US Managemnt info(Stockholm agreement meterial)	
Copper	N/D
Pb	N/D
Iron	N/D
Zinc	N/D
US Managemnt info(Montreal)	
Copper	N/D
Pb	N/D
Iron	N/D
Zinc	N/D
EU classify information(fixed classify result)	
Copper	N/D
Pb	N/D
Iron	N/D
Zinc	F: R15-17/N: R50-53
EU classify information(danger words)	
Copper	N/D
Pb	N/D
Iron	N/D
Zinc	R15, R17, R50/53
EU classify information(safe words)	
Copper	N/D
Pb	N/D
Iron	N/D
Zinc	S2, S43, S46, S60, S61

## 16. Other information

### A. The source of data

#### Copper

(1) ICSC (1993)(2) HSDB (2003)(3) IUCLID (2000)(4) SRC(5) ACGIH (7th; 2001)(6) EHC 200 (1998)

#### Pb

1(E. Melting point / freezing point)

1(F. Initial boiling point and boiling range)

1(J. Upper / lower flammability or explosive limits)

2(K. Vapor pressure)

IPCS(N. Weight)

3(O. n-Octanol / water partition coefficient)

3(Persistence)



- (1) ICSC
- (2) HSDB
- (3) SRC
- (4) IARC
- (5) EHC
- (6) DFGOT
- (7) ACGIH
- (8) PATTY

Iron

- IUCLID(oral)
- IUCLID(Skin corrosion or irritation )
- IUCLID(Fish)

Zinc

- ICSC(Appearance)
- ICSC(Color)
- ICSC(E. Melting point / freezing point)
- ICSC(F. Initial boiling point and boiling range)
- ICSC(K. Vapor pressure)
- ICSC(M. Solubility)
- ICSC(N. Weight)
- NLM(O. n-Octanol / water partition coefficient)
- ICSC(P. Ignition temperature)
- HSDB(oral)
- IUCLID(Skin corrosion or irritation)
- ECOTOX(Fish)
- ECOTOX(Shellfish)
- ECOTOX(Birds)
- NLM(Persistence)
- IUCLID(Biodegradable)

B. First devised	2013-04-12
C. Revision no and final revision date	
Revision no	0
Final revision date	0
D. atc	

All the information and recommendation set forth in this MSDS is accurate as of the present date.  
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