

San-Ai Riken

Sep 7, 2023

SDS

Reporting date: Mar 30, 2016

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1. Product and Company Information

Product Name: Toyo Clean Copper

Company Name: San-ai Riken Co., Ltd.

Address: 3075-11, Shimasu, Itako City, Ibaraki Prefecture

Phone: 0299-64-6011

Fax: 0299-64-6015

Uses of product: Oxidation inhibitor for inside surfaces of copper tubes in brazing

Reference number: 95002090

2. Summary of Danger or Toxicity

Country and Area Information:

Fire Defense Laws:

- Class 4 hazardous materials , Class 1 petroleum (non-aqueous liquid : 200L)

Industrial Safety and Health Act

- Row 4 of Appended Table 1 in enforcement order : Dangerous substances and flammable materials
- Row 5 of Appended Table 1 in enforcement order : Dangerous substances and flammable gases (LPG)
- Article 57(1) (Object substances to be indicated), Isopropyl ether, Hexane, and n-Butane.
- Article 57 2(1) (Object substances to be not notified): isopropyl ether (<40.0wt. %), hexane (>3.0 wt. %), and butane (>30.0 wt. %).

GHS Classification

Physical Hazard :

Combustible/Inflammable aerosol: Category 1

Hazard to Health:

Reproduction toxicity: Category 2

Specific Target Organ/Systemic Toxicity (Single Exposure): Category 3

Environmental Hazard:

Aquatic environmental hazard (short period of time): Category 3

Aquatic environmental hazard (long period of time): Category 3

*Hazards other than those described above are not classified or not eligible for classification.

GHS Label Elements:

Hazard pictograms



Warning statement: Hazard Statement Code

Hazard Information::

- Extremely flammable aerosol (H222)
- Inflammable liquid and vapor (H226)
- Pressure vessels may cause explosion when heated (H229)
- May cause stimulation to respiratory organs (H336)
- May cause harmful effects to reproductive capability and embryo (H360)
- Toxic effects on aquatic lives by continuous exposure for long period of time (H411)

[Safety Measures]

- Keep away from ignition sources like heaters, spark, naked flames, and high temperature materials. No smoking.
- Do not spray on naked flames or other ignition sources.
- Do not puncture or burn, including after use
- Use only outdoors or in the room of well ventilation.
- Avoid releases to the environment
- Wear personal protective equipment (rubber gloves, protective glasses, masks, etc.) and working clothes.
- Avoid aspiration of dusts, smokes, gases, mists, vapors, and sprays.
- Obtain the instruction manual before use.
- Handle after complete reading and understanding of all the description with regard to safety

[First Aid]

- Use CO2 gas, foam agents, powder agents for extinguishment of fire.
- Let the victim have a rest with a posture of easy breathing after moving him to a room of fresh air when a person inhales the product.
- Receive medical examination when a person feels sick.
- Collect and recover the leakage.

[Storage]

- Store the products with locking.
- Store the products in a room where temperatures, T, are in the region, $0 < T < 40$ °C in order to protect the product quality from deterioration.
- Seal closely the vessels and store in the dark place with good ventilation.

[Disposal]

- Entrust the disposal of the ingredients and the vessels to the waste disposer, who obtains permission from prefectural governors.

3. Composition and Ingredient Information

Category of single component or mixture: mixture

Gradients	Content wt%	CAS No.	CSCL No.	ISHA No.	PRTR No	PDSCA
Diisopropylether	<40	108-20-2	Registered	Applicable *1	Not applicable	Not applicable
Isohexane	<3.0	107-83-5	Registered	Applicable *2	Not applicable	Not applicable
Petroleum resins	<10.0	9003-29-6	Registered	Not applicable	Not applicable	Not applicable
Petroleum resins	<15.0	9003-29-6	Registered	Not applicable	Not applicable	Not applicable
Sprays (propane)	1-10	74-98-6	Exempted	Not applicable	Not applicable	Not applicable
Propellants (butane)	25-30	75-28-5 106-97-8	Exempted	Applicable *3	Not applicable	Not applicable

- CSCL: Chemical Substance Control Law(Reference number in gazette list in Japan).
 - ISHA: Industrial Safety and Health Act(Chemical Substances Designated by Cabinet Order: Article 57-2, paragraph 1)
 - *1: The product contains isopropylether less than 40 wt.%.
 - *2: The product contains isohexane less than 3.0 wt. %(substances to be indicated and notified).
 - *3: The propellant contains butane less than 3.0(substances to be indicated and notified).
 - PRTR: Pollutant Release and Transfer Register.
 - PDSCA: Poisonous and Deleterious Substances Control Act.
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4. First Aid Measures

Inhalation

- Move the victim to a room of fresh air, and let him take a posture of easy breathing for a rest, when inhaled.
- Turn the head part of a lying victim sideways, when vomited.
- Move the victim to a room of fresh air and let him take a rest, when he shows symptoms of sleepiness or dizziness.
- Treat the victim with artificial respiration or oxygen inhalation when he complains of difficulty in breathing.
- Receive examination by a medical doctor, when he still feels sick after the treatment described above.

Skin Contact

- Take off immediately the contaminated clothes and shoes, and wash the contaminated area of skin with a plenty of water and, if necessary, with soap for more than 15 min.
- Receive immediately medical examination when a victim feels skin-irritation or finds rough hand skin, skin rashes, and vesicles.
- If frostbite occurs due to exposure to gas, do not remove clothing and rinse with large amounts of water or warm water.
- Do not use solvents or thinners.

Eye Contact

- Wash well eyes immediately with moderately running water for more than 15 min.
- Open eyes with fingers, and wash well every corner of eyelid and eye balls. Wash eyes well before and after removing the contact lenses when a victim wears them.
- Receive immediately medical examination, when a victim feels irritation to eyes and acute pains in eyes.
- May cause irreversible damages to eye when a victim is too late or insufficient to wash his eyes with water.
- Do not use oils or ointments without advice from the medical doctor.
- Receive eventually medical examination. Although there are no pains and no effects on eyesight at present, it sometimes happens that the damage comes later.

Ingestion

- Let a victim drink one or two cups of water.
- Receive immediately medical examination without letting him vomit forcibly.
- Do not give him anything from his mouth, when the victim is unconscious.
- Avoid vomiting. The product is volatile, and thus, vomiting may give rather damages to the lungs.

- If swallowed by a child, take the child to a clinic for medical examination.

The most important micro-symptoms of acute and delayed symptoms

- May cause respiratory irritation
- May cause drowsiness or dizziness

Protection of first-aid providers

- Ventilate.
- Rescuers should wear appropriate protective equipment (gas masks for organic solvents, protective gloves, protective clothing, etc.) according to the situation.
- Be careful of fire and ignition sources.

Special precautions for physicians

- No information

***We recommend the medical examination to the victims in any case.**

5. Firefighting Measures

Extinguishing media:

- CO₂ gas, foam extinguishing agents, and powdered extinguishing agents.

Unusable Extinguishing media:

- Water

Special hazards arising from a fire:

- Generation of toxic gases, CO (carbon monoxide), nitric oxides, etc.
Be careful not to inhale these toxic gases during the fire fighting.

Special extinguishing method:

- Remove flammable materials from the surroundings.
- Prohibit entrance into the fire outbreak place and the surroundings except for persons concerned.
- Extinguish the fire from the windward side.
- Use fire extinguishing agents in the case of the large-scale fire.
- Pay attention to avoid flowing out of substances, which give effects on environment, by the fire extinguishing actions like the water discharge.

Protection of fire-fighting persons:

- Wear personal protective equipment.
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6. Accidental Release Measures

Personal precautions:

- Wear always protective equipment during processing of the leakage.
- Make sure of ventilation as necessary.

- Prohibit entrance into the leakage place except for the persons concerned by pulling a rope around the place.
- Wear properly protective equipment during the work to avoid adhesion of sprays to skin and inhalation of dust and gases..
- Start the work from the windward side, and evacuate the persons on the lee side.
- Prepare the fire-extinguishing materials for ignition.
- Take care of the slippery place where the product leaks.

Precautions for environment:

- Take care not to give any effect on environment when the leakage of the product is discharged into rivers.
- Take care not to discharge the contaminated wastewater to environment when the leakage is diluted with a plenty of water
- The leakage should be properly processed with the use of chemicals on the sea according to the technical standards specified by the Ordinance of the Ministry of Land, Infrastructure and Transport.
- If necessary, promptly contact the relevant ministries and agencies.

Recovery and Neutralization:

- Recollect the leakage with the use of a suction pump after blocking the flow of a large amount of the leakage.
- Recollect a small amount of the leakage into a sealed vessel by absorbing it with sand or waste cloth.
- Make preparations of the fire-extinguisher and remove quickly fire sources in the vicinity before recollecting the leakage.
- Use safety tools which generate no spark.
- Dispose the contaminated things and wastes according to the regulations of each prefecture.

7. Handling and Storage

Handling:

Technical Countermeasures

- Obtain the instruction manual for handling before use.
- Read and understand well precautions for use and not use for other purposes.
- Handle after complete understanding of all the descriptions concerning attention to safety.
- Avoid contact during the pregnancy and lactation period.
- Keep away from ignition sources like heaters, spark, naked flames, and high temperature materials.

- Earth the vessels
- Take precautionary measures for electrostatic discharge.
- Use the tools which generate no spark.
- Use the explosion-proof type electric apparatus (ventilators, lightening equipment, etc.).
- Avoid leakage, overflowing, scattering , and generation of vapors
- Avoid to inhale dusts, smokes, gases, mists, vapors, and sprays.
- Handle in the room of well ventilation.
- No smoking.
- Prohibit to take foods and drinks during handling in order to avoid accidental ingestion.
- Seal closely the vessels after every handling.
- Wash well hands after handling.
- Wear proper protector (rubber gloves, a protective mask, and protective glasses) during handling.
- Wash well mouth, hands, face, etc. after using.

Storage:

Storage Condition

- Seal closely the vessels every time after using.
- Store the vessels in a dark, cool, and well-ventilated locked-room
- Avoid to store in the room exposed to rains, direct sunshine, and high humidity. Temperature of the storage room is recommended to be 0°C to 40°C for protection of the quality from degradation.
- Avoid the storage of the vessels in the horizontal state..
- Seal closely the vessels to avoid leakage of the liquid.

8. Exposure Control and Personal Protection

Protective Measures:

Constituent name	Administrative levels (Industrial Safety and Health Act)	ACGIH (TLV-TWA)	ACGIH (TVL-TWA)
Isopropyl ether	Not set	250ppm	310ppm
Isohexane	Not set	500ppm	1000ppm
Propellant (propane)	Not set	Not set	Not set (CEX)

Facilities for personal protection:

- Prepare the ventilation system or local ventilation apparatus.
- Install facilities in conformity with Industrial Safety and Health Act(Ordinance On Prevention of Organic Solvent Poisoning).

- Ventilate well inside the room. Install the local ventilation system in the room where ventilation is poor and a large amount of vapors is generated.

Protectors

Protectors for respiratory organs:

- Wear the dust protective mask, gas mask, and the protective gas mask to avoid inhalation of organic solvents.

Protectors for hands:

- Wear the gloves of solvent resistance gloves or vinyl gloves.

Protectors for eyes:

- Wear goggles or glasses with side plates

Protectors for skin and body:

- Wear protective clothes and a protective apron.

9. Physical and Chemical Properties

Aerosol

- Physical state: Aerosol
- Color: See physical and chemical properties of content liquid and injectant
- Odor: See physical and chemical properties of contents and propellant
- Flammability: Aerosol GHS classification: Class 1
Flammability: 35 kJ/g min.
Total flammable/inflammable components: 100wt%.
Ignition test: No data available
Explosion test: No data
- Other data internal pressure: 0.45 Mpa

Content liquid

- Outside appearance: colorless and transparent.
- Smell: order of organic solvents.
- pH: no data.
- Melting or freezing point: -60°C (isopropyl ether).
- Boiling point: ca. 68°C (isopropyl ether).
- Flash point: -28°C (isopropyl ether).
- Spontaneous ignition temperature: 405°C (isopropyl ether).
- Range of explosion(isopropyl ether):1.4 vol% (lower limit) ~7.9 vol % (upper limit).
- Vapor pressure: 15.9kPa(20°C)(isopropyl ether).
- Vapor density: 3.5 (isopropyl ether).
- Specific gravity (relative density): 0.77(20°C).

- Solubility: insoluble in water.
- Octanol/water partition coefficient: log Pow=1.52 (isopropyl ether).
- Decomposition temperature: no data.
- Flammability: Inflammable liquid

<Propellant>	Propane	Butane
External appearance:	Colorless gas	Colorless gas
Density:	0.5	0.6
Vapor density	1.6	2.0
Vapor pressure	0.744MPa(20°C)	0.107~0.202MPa(20°C)
Boiling point	-42°C	-0.5~-12°C
Melting point	-187.69°C	-138.3~159.4°C
Flash point	-104°C	-60~-81°C
Ignition point	450°C	365~460°C
Explosion range	2.1vol.%~9.5vol.%	1.8vol.% ~8.4vol.%
Solubility	insoluble in water	insoluble in water

10. Stability and Reactivity

Reactivity:

- There is a risk of rupture at temperatures above 40°C.
- May rupture and ignite if exposed to hot surfaces, sparks, or naked flames.

Stability: Stable under normal conditions for use.

Hazard information:

- May cause an explosion and a fire by the reaction with strong oxidation reagents
measures to avoid hazards:
- Avoid to contact with strong oxidation reagents, heat-sources, and naked fire.
Hazardous substances, which are produced by mixing:
- Strong oxidation reagents. Prevent contact with the strong oxidation reagents because of highly inflammable substance.

11. Hazard Information

Acute toxicity (oral):	Not classified. > 2,000mg/kg(ATEmix)
Acute toxicity (percutaneous):	Not classified. Insufficient data
Acute toxicity (inhalation):	Not classified. Insufficient data
Skin corrosivity/irritation:	Not classified. Insufficient data
Serious eye damage/eye irritation:	Not classified. Insufficient data
Respiratory sensitization:	Not classified. Insufficient data

Skin sensitization: Not classified. Insufficient data.

Mutagenicity (germ-cell mutagenicity):

Not classified. Insufficient data

Carcinogenicity: Not classified. Insufficient data

Genotoxicity: Category 2. Suspected to be a human reproductive toxicant, Category 2 \cong 0.3%

Specific target organ/systemic toxicity (single exposure):

Category 3. Suspected to cause damages to central neurons.

Specific target organ/systemic toxicity (repeated exposure): Not classified. Insufficient data

Aspiration hazards: Not classified. Insufficient data

Propellant(propane)

Acute toxicity: No symptoms by short-term exposure of 10,000 ppm. Short-term exposure of 100,000ppm may cause the dizziness after the inhalation for several min.

Irritation: Skin-inflammation or –eczema by the long term contact,

Irritation to eyes and mucous membrane.

Others: Weak anesthetic effects.

Propellant(butane)

Acute toxicity: Inhalation. Mouse. LC50680mg/L(ca. 26%) 2 hours.

Rat. LC50 658mg/L(ca. 26%) 4 hours

Irritation: Skin-inflammation or –eczema by the long term contact,

Irritation to eyes and mucous membrane.

Others: Weak anesthetic effects.

12. Ecological Information

Aquatic environmental toxicity (acute):

Category 3. Composition of Category 3 \cong 25%

Aquatic environmental toxicity (long period):

Category 3. Composition of Category 3 \cong 25%

Hazardous effects on the ozone layer:

Free of substances regulated by the Montreal Protocol

13. Disposal Considerations

Residual waste:

- Treat the waste by entrusting the disposal, under the entrustment contract to the industrial waste-disposers,-collectors, and -transporters permitted by prefectural governors.
- Refer to“7. Handling and Storage” about handling of the waste.

Contaminated vessels and packages:

- Entrust the disposal of the vessels and packages to the waste disposer after complete removal of the contents according to the legal regulations.
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14. Transport Information

Domestic Regulations

Land transportation:

- Transport using the methods as regulated by "Industrial Safety and Health Act" and "Fire Defense Law"

Marine transportation:

- Transport according to the transportation methods regulated by "Ship Safety Act".

Air transportation:

- Transport according to "Aviation Act"

Specific safety measures:.

- Confirm no leakage from the vessels in transportation. Perform surely prevention of load collapse to avoid falling, dropping, and suffering damages.
- Avoid direct sun light.
- Avoid horizontal loading of the products in transportation.
- Avoid putting the products directly on the hot iron plates or hot ground on transportation in summer..
- Handle carefully the transportation container to avoid giving a shock.
- Avoid falling and collision of the containers.

International regulations

UN number: 1950

Product name (UN shipping name): Aerosol (flammable, not exceeding 1 liter)

UN Classification: Class 2.1 (high-pressure gas)

Container class: Not applicable

Marine pollutant: Not applicable

MARPOL 73/78 Annex II for bulk transport

Liquid substances: Not applicable

Special safety measures for transport or means of transport

15. Regulatory Information

Fire Defense Law:

- Class 4 of hazardous materials. Class 1 petroleum (non-aqueous liquid: 200L).

Industrial Safety and Health Act:

- Appended table 1-4 in enforcement order: dangerous and combustible substances.
- Appended table 1-5 in enforcement order: dangerous and inflammable gas (LPG).
- Article 57(1) (substances to be indicated): isopropyl ether, hexane, and n-butane.
- Article 57(2)-1(substances to be notified): isopropyl ether (<40 wt. %), hexane (<3.0 wt. %), and butane (<30.0 wt. %).

Chemical substance discharge grasp managements

- PRTR: Not applicable after April 1, 2023
- Poisonous and Deleterious Substances Control Act: Not applicable.
- Chemical Substance Control Law: Not regulated.
- Ship Safety Act: Dangerous substance (high pressure gas).
- Aviation Act: Aviation Act Article 86(1): high pressure gas(inflammable gas).
- High Pressure Gas Safety Act: Exempted (liquefied gas, inflammable gas)

16. Other Information

References

1. UN GHS Classification (4th edition), revised in 2012.
2. JIS Z 7252 (2012): Classification Method of Chemical Substances based on GHS.
3. JIS Z 7253 (2012): Transmitting Method of Hazard Information on Chemicals—Labelling and Display in a Workshop, and Safety Data Sheet (SDS) on the basis of GHS..
4. Disclosing Data by National Institute of Technology and Evaluation (NITE).
5. "Guidance for preparation of MSDS" revised by Japan Auto chemical Industry Association.
6. "15107 Kinds of Chemical Products" published by Chemical Industry Nippo-sha (2007).
7. Hand Book of Solvents published by Kodansha.
8. MSDS and other data obtained by our company.

* The SDS offers information on the hazardous chemical products to users in order to assure their safety. Use the SDS as references, and understand please that users should adopt proper measures before handling according to each situation, and therefore, this SDS itself is not a warranty to guarantee the safety.