First issue: January 10, 2018
Revised:
Product number: S3X58-M500L

Safety data sheet

1. Chemical product and Company identification

Product name: Lead free solder paste
Product number: S3X58-M500L
Manufacturer: KOKI COMPANY LIMIED
Address: 32-1,Senju Asahi-cho, Adachi-ku Tokyo 120-0026 Japan
Telephone No. +81-3-5244-1521
Emergency contact: KOKI COMPANY LIMIED
Telephone No. +81-493-56-3409 (9:00am~5:30pm)（JST）
General use Lead free solder paste for soldering

2. Hazards identification

GHS classification

Physical hazards

Explosives	Not applicable
Flammable Gases	Not applicable
Flammable Aerosols	Not applicable
Oxidizing Gases	Not applicable
Gases Under Pressure	Not applicable
Flammable Liquids	Not classified
Flammable Solids	Not applicable
elf-Reactive Substances and Mixtures	Not applicable
Pyrophoric Liquids	Not classified
Pyrophoric Solids	Not applicable
Self-Heating Substances and Mixtures	Not classified
Substances and Mixtures which in contact with Water, emit Flammable Gases	Not applicable
Oxidizing Liquids	Not applicable
Oxidizing Solids	Not applicable
Organic Peroxides	Not classified
Corrosive to Metals	Not classified

Health hazards

Acute Toxicity – Oral	Classification not possible
Acute Toxicity – Dermal	Classification not possible
Acute Toxicity – Inhalation (Gases)	Classification not possible
Acute Toxicity – Inhalation (Vapors)	Classification not possible
Acute Toxicity – Inhalation (Dusts)	Classification not possible
Acute Toxicity – Inhalation (Mists)	Classification not possible
Skin Corrosion/Irritation	Classification not possible
Serious Eye Damage /Eye Irritation	Category1
Respiratory Sensitisation	Classification not possible
Skin Sensitisation	Category1
Germ Cell Mutagenicity	Classification not possible
Carcinogenicity	Classification not possible
Reproductive Toxicity	Classification not possible
Specific Target Organ Toxicity – Single Exposure	Category2(respiratory systems)
Specific Target Organ Toxicity – Repeated Exposure:	Category1(lung) Category2(eyes) Category2(respiratory organs) Category2(liver)
Aspiration Hazard	Classification not possible

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Environment hazards

Hazard to the Aquatic Environment, short -term	Classification not possible
Hazard to the Aquatic Environment, long -term	Classification not possible
Hazard to the ozone layer	Not classified

Label fragment

GHS pictograms



GHS signal word:

Danger

Hazard statement

H318 Causes serious eye damage

H317 May cause an allergic skin reaction.

H371 Cause damage to respiratory systems through prolonged or repeated exposure silver fume.

H372 Causes damage to lung through prolonged or repeated exposure tin dusts.

H373 May cause damage to eyes through prolonged or repeated exposure silver dusts.
May cause damage to respiratory organs through prolonged or repeated exposure silver dusts.
May cause damage to liver through prolonged or repeated exposure copper dusts.

Precautionary statement prevention

P260 Do not breathe dust/fumes/gas/mist/vapor/spray.

P261 Avoid breathing dust/fumes/gas/mist/vapor/spray.

P264 Wash soap and water thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P272 Contaminated work clothing should not be allowed out of the workplace.

P280 Wear eye protection, face protection, and protective gloves.

Precautionary statement response

P302+P352 If on skin: Wash with plenty of soap and water.

P305+P351 +P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy do. Continue rinsing

P308+P311 IF exposed or concerned: Get medical advice/attention

P310 Immediately call a Poison center or doctor/physician.

P314 Get medical advice/attention if you feel unwell.

P333+P313 If skin irritation or rash occurs: Get medical advice/attention.

P362+P364 Take off contaminated clothing and wash it before reuse.

Precautionary statement storage

P405 Store locked up.

Precautionary statement disposal

P501 Dispose of contents/container to …
In accordance with local/regional/national/international regulation (to be specified)

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3. Composition/Data on components

Substance or Mixture: Mixture

Product description: Mixture of organic acid a small mount, rosin, wax, denatured alcohol and solder powder.

Chemical characterization:

Chemical name	Wt%	CAS Registry No.	EINECS No.
Tin	*82～88*	7440-31-5	231-141-8
Silver	*2～3*	7440-22-4	231-131-3
Copper	*0.1～1*	7440-50-8	231-159-6
Denatured acid hydrogenation rosin	*3～5*	Registered	Trade secret
2-(2-Hexyloxyethoxy)ethanol	*3～5*	112-59-4	203-988-3
Dimer acid	*1～3*	Registered	Trade secret

4. First aid measure

After inhalation:

Supply fresh air. If required, provide artificial respiration. Keep patient warm.
Consult a physician after significant exposure.

After skin contact:

Immediately wash with water and soap and rinse thoroughly.
Consult a physician after significant exposure.

After eye contact:

Flush opened eyes with plenty of water for at least 15min. Then consult a doctor.
Remove contact lenses, if present and easy do. Continue rinsing

After ingestion:

If conscious, drink plenty of water. Call a physician immediately. Do not induce vomiting.

5. Fire fighting measures

Extinguishing Media:

Alcohol-resistant foam, dry chemical or carbon dioxide

Special fire fighting procedure:

Use NIOSH approved SCBA & Full protective equipment (FP N).

Special hazards caused by the material, its products of combustion or resulting gases:

In case of fire, the following can be released:

Toxic metal oxide fume.

Protective equipment:

Wear self-contained respirator.
Wear fully protective impervious suit.

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6. Accidental release measures

Person-related safety precautions:

Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation.

Measures for environmental protection:

Do not allow material to be released to the environment without proper governmental permits.

Measures for cleaning/collecting:

Dispose contaminated material as waste according to section 13.
Ensure adequate ventilation.

Additional information:

See Section 7 for information on safe handling
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7. Handling and storage

Information for safe handling:

Open and handle container with care.
Avoid contact with the skin and the eyes. Do not breathe vapors/dust.
Wash hands before breaks and immediately after handling the product.
Ensure good ventilation at the workplace.

Storage

The container uses a thing without damage, corrosion, the breaking.
The violent handling the container lets you fall down abusively and adds a shock or trails.
If the product is putted in and out from a container, spilled.
Take the ground in the container of the receipts and payments in the case static electricity may be generated by the flow.

Further information about storage conditions

Keep container tightly sealed.
Store in cool, dry conditions in well sealed containers.
Store under lock and key and with access restricted to technical experts or their assistants only.

8. Exposure controls and personal protection

Components with limit values that require monitoring at the workplace:

Tin compounds, inorganic, except SnH4 (as Sn)

	mg/m^3
ACGIH TLV	2
Austria TLV	2; 4-STEL
Belgium TWA	2
Canada Quèbec TLV	2
Denmark TWA	2; 4-STEL
Europe Union TWA	2
Hungary TWA	2; 8-STEL
Italy TWA	2
Poland TWA	2
Spain TWA	2; 4-STEL
Switzerland TWA	2; 4-STEL

Silver, metallic (as Ag)

	mg/m^3
ACGIH TLV	0.1
Austria TLV	0.01
Belgium TWA	0.1
Canada Quèbec TLV	0.01

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Denmark TWA	0.01; 0.02-STEL
Europe Union TWA	0.1
France TWA	0.15
Germany TWA	0.1; 0.8-STEL
Hungary TWA	0.1; 0.4-STEL
Italy TWA	0.1
Poland TWA	0.05
Spain TWA	0.1
Sweden TWA	0.1
Switzerland TWA	0.1; 0.8-STEL
The Netherlands	0.01
USA OSHA	0.01
United Kingdom TWA	0.1
Copper, dusts and mists (as Cu)	
	mg/m^3
ACGIH TLV	1
Austria TLV	1
Belgium TWA	1
Canada Quèbec TLV	1
Denmark TWA	1; 2-STEL
France TWA	1; 2-STEL
Germany TWA	0.1; 0.2-STEL
Hungary TWA	1; 4-STEL
Poland TWA	1; 2-STEL
Spain TWA	1
Sweden TWA	0.1
Switzerland TWA	0.1; 0.2-STEL
The Netherlands	0.1
USA OSHA	1
United Kingdom TWA	1; 2-STEL
Denatured acid hydrogenation rosin	
	Not required
2-(2-Hexyloxyethoxy)ethanol	
	Not required
Dimer acid	
	Not required

9. Physical and chemical properties

Form:	Paste
Color:	grey
Odor:	Mild odor
Change in condition	Value(unit)
Melting point(range):	217(℃)
Boiling point(range):	260(℃)
Flash point	141(℃)
Ignition temperature:	Not determined
Explosion limits:	
Lower:	Not determined
Upper:	Not determined
Vapor pressure:	Not determined
Specific gravity:	4～5(g/cm^3)
Solubility in Miscibility with water	Insoluble

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10. Stability and reactivity

Stability Stable

Conditions to be avoided:

-

Materials to be avoided:

Strong oxidizers

Dangerous products of decomposition:

Carbon monoxide, carbon dioxide is produced by combustion.

11. Toxicological information

Acute Toxicity:

Oral: "Classification not possible" (Composition of Unknown Data Components >=90%, ATEmix (Known Data Components) =3567mg/Kg(Category5).

Dermal: "Classification not possible" (Composition of Unknown Data Components >=90%, ATEmix (Known Data Components) =1585mg/Kg(Category4)

Inhalation(Gases ,Vapors and Dusts& Mists):

"Not applicable"

All components are "Not applicable"

Skin Corrosion/Irritation:

"Not applicable"

All components are "Not applicable" or "Classification not possible".

Serious Eye Damage /Eye Irritation:

Category1: Composition of "Category 1" Components>=3.0%

Respiratory Sensitisation:

"Classification not possible" :All components are "Classification not possible"

Skin Sensitisation:

Category1: Composition of "Category 1" Components>=1.0%

Germ Cell Mutagenicity:

"Classification not possible" :All components are "Classification not possible"

Carcinogenicity:

"Classification not possible" :All components are "Classification not possible"

Reproductive Toxicity:

"Classification not possible" :All components are "Classification not possible"

Specific Target Organ Toxicity - Single Exposure:

Category 1(respiratory systems)

Composition of Silver (as "Category 1" Components), >= 1.0 %

(Not classified (tracheas: irritation))

Composition of Copper (as "Category 3" Components) < 1.0 %

Specific Target Organ Toxicity - Repeated Exposure:

Category 1 (lung)

Composition of Tin (as "Category 1" Components), >= 10 %

Category 2(eyes, respiratory organs)

Composition of Silver (as "Category 1" Components), >= 1.0 %,<10%

Category 2 (liver)

Composition of Copper (as "Category 1" Components) < 1.0 %

Aspiration Hazard:

"Classification not possible" :All components are "Classification not possible"

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Chemical name	Tin	Silver	Copper
Wt%	*82～88*	*2～3*	*0.1～1*
Cas.No.	7440-31-5	7440-22-4	7440-50-8
Acute Toxicity – Oral	Classification not possible	Not classified Oral rat LD_{50}>5000mg/kg	Classification not possible
Acute Toxicity – Dermal	Classification not possible	Not classified Dermal rat LD_{50}>2000mg/kg	Classification not possible
Acute Toxicity – Inhalation (Gases)	Classification not possible	Classification not possible	Classification not possible
Acute Toxicity – Inhalation (Vapors)	Classification not possible	Classification not possible	Classification not possible
Acute Toxicity – Inhalation (Dusts)	Classification not possible	Classification not possible	Classification not possible
Acute Toxicity – Inhalation (Mists)	Classification not possible	Classification not possible	Classification not possible
Skin Corrosion /Irritation	Classification not possible	Not classified	Classification not possible
Serious Eye Damage /Eye Irritation	Classification not possible	Category2B	Classification not possible
Respiratory Sensitisation	Classification not possible	Classification not possible	Classification not possible
Skin Sensitisation	Classification not possible	Category1	Classification not possible
Germ Cell Mutagenicity	Classification not possible	Classification not possible	Classification not possible
Carcinogenicity	Classification not possible	Classification not possible	Classification not possible
Reproductive Toxicity	Classification not possible	Classification not possible	Classification not possible
Specific Target Organ Toxicity – Single Exposure	Classification not possible	Category 1 (respiratory systems)	Category 3 （tracheas irritation）
Specific Target Organ Toxicity – Repeated Exposure	Category 1 (lung)	Category 1 (eyes) Category 1 (respiratory organs)	Category 1 (liver）
Aspiration Hazard	Classification not possible	Classification not possible	Classification not possible

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Chemical name	Denatured acid hydrogenation rosin	2-(2-Hexyloxyethoxy) ethanol	Dimer acid
Wt%	*3～5*	*3～5*	*1～3*
Cas.No.	Registered	112-59-4	Registered
Acute Toxicity – Oral	Classification not possible	Category5 Oral rat $LD_{50=}$2655mg/kg	Classification not possible
Acute Toxicity – Dermal	Classification not possible	Category4 Dermal rat LD_{50}1410mg/kg	Classification not possible
Acute Toxicity – Inhalation (Gases)	Classification not possible	Classification not possible	Classification not possible
Acute Toxicity – Inhalation (Vapours)	Classification not possible	Classification not possible	Classification not possible
Acute Toxicity – Inhalation (Dusts)	Classification not possible	Classification not possible	Classification not possible
Acute Toxicity – Inhalation (Mists)	Classification not possible	Classification not possible	Classification not possible
Skin Corrosion /Irritation	Classification not possible	Not classified	Classification not possible
Serious Eye Damage /Eye Irritation	Classification not possible	Category1	Classification not possible
Respiratory Sensitisation	Classification not possible	Classification not possible	Classification not possible
Skin Sensitisation	Classification not possible	Classification not possible	Classification not possible
Germ Cell Mutagenicity	Classification not possible	Classification not possible	Classification not possible
Carcinogenicity	Classification not possible	Classification not possible	Classification not possible
Reproductive Toxicity	Classification not possible	Classification not possible	Classification not possible
Specific Target Organ Toxicity – Single Exposure	Classification not possible	Classification not possible	Classification not possible
Specific Target Organ Toxicity – Repeated Exposure	Classification not possible	Classification not possible	Classification not possible
Aspiration Hazard	Classification not possible	Classification not possible	Classification not possible

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Respiratory Sensitisation

No data.

Skin Corrosion/Irritation:

Silver :(Cas.No.7440-22-4)

"Not classified" : Data of "Slightly irritating(rabbit)"

IUCLID (2000)

Serious Eye Damage /Eye Irritation:

Silver :(Cas.No.7440-22-4)

Category2B: Irritation data: Mild, recovery at 48H(rabbit)

IUCLID (2000)

2-(2-Hexyloxyethoxy)ethanol:(Cas.No.112-59-4)

Category1: CLP regulation(No.1272/2008) :Category1

Irritation data: Severe(750μg,rabbit,24h)

IUCLID (2000)

Skin Sensitisation:

Silver :(Cas.No.7440-22-4)

Contact dermatitis of the allergy is caused by the exposure of the powder.

An allergic reaction was caused by contact to the personal ornament which contains silver.

ACGIH (2001), PATTY (5th,2001)

Germ Cell Mutagenicity:

No data.

Carcinogenicity:

Silver :(Cas.No.7440-22-4)

"Classification not possible"

No information on the classified evaluation organization such as IARC.

Carcinogenic property wasn't admitted in the examination that powder was injected into the rat in the muscle. No proof of the carcinogenic property to the human

PATTY (5th,2001),HSDB (2003)

Reproductive Toxicity:

No Data.

Specific Target Organ Toxicity - Single Exposure:

Tin (Cas.No.7440-31-5)

"Classification not possible"

May cause mechanical irritation to the respiratory tract. ICSC(2004)

But it is presumed an influence based on the physical action of general dusts.

Silver :(Cas.No.7440-22-4)

Category 1 (respiratory systems)

The handicap of the lung which entails pulmonary edema by four-hour exposure to heated metal silver fume happened. The stimulus of the mind way is brought about by the occupation exposure of the powdered dust.

ACGIH (2001),ATSDR ToxFAQs (1997)

Copper (Cas.No.7440-50-8) [Reference Data]

Category 3 （tracheas: irritation）

May cause stimulus to an upper side of tracheas by copper fume.

ACGIH (7th,2001)

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Specific Target Organ Toxicity - Repeated Exposure:

Tin (Cas.No.7440-31-5)

Category 1 (lung)
May cause depend on pneumoconiosis' having been seen by the worker who handled metal tin.
(By 2 data on EHC15)

Silver (Cas.No.7440-22-4)

Category 1 (eyes)
May cause be a decrease in night vision that appears as a functional disorder.
Category 1 (respiratory organs)
May cause suffered from bronchitis from the deposition to the lung by the long time inhalation of the powdered dust.
"Not classified" (skin)
The poisoning that a pigment deposits in the skin and the mucous membrane by the occupation exposure to the silver powder is caused. (argyria)
ATSDR ToxFAQs (1997),ACGIH (2001), PATTY (5th,2001) ,HSDB (2003)

Copper (Cas.No.7440-50-8)

Category 1(liver)
Hepatic fatness was recognized by the worker (estimated intake 200mg/day) it thought to be exposed to the concentration in the high mind.
Digestion pipe difficulty was seen by the worker (estimated intake 200mg/ day) it thought to be exposed to the concentration in the high mind It was judged as the influence not to support classification, because it can think about a "digestion pipe" difficulty with the diarrhea or the nausea, from the description about the exposure example of others.
EHC 200 (1998), ACGIH (7th,2001),PATTY (4th,1994)

Aspiration Hazard:

No Data.

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12. Ecological information

Aquatic Environment Acute Hazard:

"Classification not possible" :All components are "Classification not possible"

Aquatic Environment Chronic Hazard:

"Classification not possible" :
Composition of "Category 4" Components<25%

Hazard to the ozone layer

This paste does not contain the Vienna Convention substances.

Chemical name	Tin	Silver	Copper
Wt%	*82～88*	*2～3*	*0.1～1*
Cas.No.	7440-31-5	7440-22-4	7440-50-8
Aquatic Environment Acute Hazard	Classification not possible	Classification not possible	Classification not possible
Aquatic Environment Chronic Hazard	Classification not possible	Classification not possible	Category4
Hazard to the ozone layer	Not classified	Not classified	Not classified

Chemical name	Denatured acid hydrogenation rosin	2-(2-Hexyloxyethoxy) ethanol	Dimer acid
Wt%	*3～5*	*3～5*	*1～3*
Cas.No.	Registered	112-59-4	Registered
Aquatic Environment Acute Hazard	Classification not possible	Classification not possible	Classification not possible
Aquatic Environment Chronic Hazard	Category4	Classification not possible	Classification not possible
Hazard to the ozone layer	Not classified	Not classified	Not classified

Aquatic Environment Acute Hazard:

No data

Aquatic Environment Chronic Hazard:

Copper (Cas.No.7440-50-8)

Category4
Aquatic toxicity: $L(E)C_{50} \leqq 100mg/L$
But reaction during water isn't clear because cupper is a metal.

Denatured acid hydrogenation rosin (Cas.No Registered)

Category4
EU Risk phrase R53

Hazard to the ozone layer

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13. Disposal considerations

Waste from residues /Product:
Consult state, local or national regulations for proper disposal.
Uncleaned packaging:
Recommendation:
Disposal must be made according to official regulations.

14. Transport information

UN Recommendation on the Transport of Dangerous Goods – Model regulation

UN Number : Not required
Name and Description :
Class
UN packing group :

15. Regulations

Following sentences has to be added.
Not to be used by children below 18 years.
Do not work with the material during pregnancy.

16. Other information

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgment of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

The industrial user shall have thorough instruction in how to do the work, the properties of the product and the necessary precautions.

Department issuing SDS: Quality Assurance Division. Quality Assurance Department.
Contact: Overseas Sales Department