Established on Jan. 17, 2005
Revised on Oct.26,.2006
Revised on Oct.03,.2011

MATERIAL SAFETY DATA SHEET

1. COMPANY AND PRODUCT INFORMATION

PRODUCT NAME: Chemical Paste (Flux for soldering)
No. FS100-01

Company : HAKKO CORPORATION
Address : 4-5, Shiokusa 2-chome, Naniwa-ku, Osaka 556-0024 Japan
Section in charge : Research & Development Center

Emergency telephone numbers: 81-6-6561-3225
Person in charge : Sales Division

2. COMPONENTS AND CONTENTS

Characteristics Classification of Single Component Product or Mixture: Mixture

Chemical name	:	Alicyclic amine hydrobromate	Aliphatic amine hydrobromate	Petrolatum	Wax	Tin
Components and contents	:	3～6%	0.5～3%	30～40%	12～20%	40～50%
Chemical Formula and Chemical Structure	:	$C_nH_{2n}NH_2$ ・ HBr	$C_nH_{2n+1}NH_2$ ・ HBr	C_AH_B	C_nH_{2n+2}	Sn
CAS No.	:	—	—	8009-03-8	8002-74-2	7440-31-5
Chemical Substances Control Act	:	—	—	9-1693	—	—
UN Classification	:	N/A	N/A	N/A	N/A	N/A
UN No.	:	—	—	—	—	—

3. DANGER AND HEALTH HAZARD

Name of Classification : Not applicable to classification criteria.
Danger : Dissolves metal oxides and others.

Health Hazard: Irritates skins, and may affect mucous membranes of the eyes, nose, throat and bronchial tube, etc.

Environmental Considerations :

Take care that the material may not contaminate the environments, such as soils and others.

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4. FIRST AID

Eye Contact : Wash eyes immediately with a large quantity of clean water for at least 15 minutes. Seek medical advice as soon as possible.

Skin Contact : Wash out immediately with a large quantity of clean water. If available, use soap for washing.
After starting washing with water, take off the contaminated clothes and shoes. Reuse those clothes and shoes after laundering.

When Inhaled : Move the patient quickly from the exposed site using an appropriate respiratory protector.
If breathing stops, practice artificial respiration. Keep the patient at rest. Seek medical advice immediately.

When Ingested : Seek medical advice immediately.

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5. FIRE-FIGHTING PROCEDURES

Fire-Fighting Methods : Extinguish fire with dry chemicals, carbon dioxide, foaming agents, or sands, etc. Do not try to extinguish fire by spraying water because it will increase the force of the fire. In the case of high temperature, as fume is generated due to the start of resolution, fire fighters should wear masks to prevent inhaling smoke.

Fire extinguishers : Dry chemical, carbon dioxide foaming agent, or sands

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6. SPILL, LEAK, AND DISPOSAL PROCEDURES

Procedures In the Case of Spilling or Leaking on the Ground:

- If it will be possible without any danger, try to avoid further spill-out of this substance.
- Handling people should wear protective equipments, stop the substance further spilling out with earth and sand or others, wipe them off with adsorbents, scoop them with shovels or others after they have coagulated, and dispose them in plastic containers.
- Dispose the collected substances in accordance with the precautions for disposal.

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7. PRECAUTIONS FOR HANDLING AND STORAGE

Handling : • Keep away from any heat source: no fire.

- Do not use this for the purposes other than as flux.
- Do not mix with the other agents.
- Be careful so that it may not contact with skins or eyes or its vapor may not be inhaled.
  Wear protective equipments when handling this material.
  (Gas masks, air-supplying masks, air respirators, protective goggles, oil-proof protective gloves, boots, aprons)
- When handling indoors, thoroughly air the room, and install local ventilation equipments if necessary.
- Use containers without any breakage, corrosion, or cracks, etc. And avoid any rough handling such as letting them fall down or giving shocks for no reasons, etc.
- Be careful not to spill the material out when taking it in and out of its containers. Also, close the container tightly after each occasion of handling.
- Do not take any foods and drinks nor smoke while handling the material. And wash hands and face thoroughly after handling it.

Storage:

- Prevent any spill and leak.
- Avoid direct sunlight, and keep away from any heated units at high temperature.
- Do not store together with any aggressive oxidants, metals, alkalis, fluorine, and aggressively basic substances.

- Avoid any mixing of alien substances.
- Post necessary signs such as “Staff only,” etc. where they can be easily seen.
- Store the material in tightly sealed containers in a dark, cool place.

8. PREVENTION OF EXPOSURE

Control Concentration : Not specified.

Permissible Concentration : (Petrolatum) TWA/PEL 5 mg/m^3 of Mineral Oil Mist (OSHA, ACGIH)
(Tin) TWA/PEL 2 mg/m^3 of Metal Mist (OSHA, ACGIH)

Prevention Measures for Equipment/Ventilation :
Install ventilation equipments, safety showers, and hand washers, etc. as necessity requires in the handling location.

Protective Devices/Respiratory Protection :
The use of protective masks or hose masks is recommended.

Protective Glasses : The use of protective glasses with lateral plates or goggle-type protective glasses is recommended.

Protective Gloves : The use of acid-proof protective gloves is recommended.

Protective clothe : The use of protective boots and protective aprons, etc. is recommended.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Grey opaque semi-solid substance

Specific Gravity of Vapor (Air = 1):
Specific Gravity (20/20℃):
Boiling Point or Range (℃):
Solubility in Water: Slightly soluble.
Coagulating or Melting Point (℃): Over 40℃
Hygroscopicity: Slightly hygroscopic.

10. STABILITY AND REACTIVITY

Ignition Point : Under 199℃
Flash Point : None
Range of Combustion : None
Inflammability : Inflammable.
Combustibility (Spontaneous combustibility/Reactivity to water) : Not combustible.
Oxidization : Not oxidazable

Self-Reactivity/Explosiveness : Neither reactive nor explosive.

Stability/Reactivity : It is slightly hygroscopic and resolves metal oxides, etc.

Others : Highly corrosive against metals.

Substances not to be Mixed and Conditions to be Avoided : Do not store together

with aggressive oxidants, metals, alkalis, fluorine and aggressive basic substances.

11. TOXICOLOGICAL INFORMATION (Cases Regarding Human Bodies, Epidemiological Information)

Skin Corrosivenes : Not corrosive.
Irritation (Skin and Eyes) : Not irritable in general. (Can occasionally cause itches on the skin.)
Sensitization : Contact may cause skin sensitization.
Acute Toxicity (including 50% lethal dose, etc.) : Not reported currently.

Subacute Toxicity : Not reported currently.
Carcinogenicity : Not carcinogenic.

Mutagenicity (microorganisms, chromosome aberration) : Not reported currently.
Reproductive Toxicity : Not reported currently.
Teratogenicity : Not reported currently.

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12. ENVIRONMENTAL IMPACT INFORMATION

Decomposability : Not reported currently
Accumulativeness : Not reported currently
Fish Toxicity : Not reported currently
Other Information :

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13. PRECAUTIONS FOR DISPOSAL

When disposing, be sure to consign to a licensed industrial waste disposal company for handling.

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14. PRECAUTIONS FOR TRANSPORTATION

Confirm that there is no leak from containers, do not fall, drop or damage them while loading, and take certain measures in order to prevent loads from falling off.

It is preferable that the sender should hand instructions for transportation to carriers in the case of transporting in vehicles, etc.

Refer the description in the section of precautions for handling and storage.

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15. APPLICABLE LAWS

Fire Laws	: Not applicable.
Industrial Safety and Health Law	: Not applicable.
Rules for Marine Transportation and Storage of Dangerous Substances	: Not applicable.
Enforcement Regulations of Aviation Law	: Not applicable.
Enforcement Regulations of Marine Safety Law	: Not applicable.
PRTR Law	: Not applicable.

16. ADDITIONAL INFORMATION

Reference: International Chemical Cards
13,700 of Chemical Products
Manufacturer's MSDS

The information contained in this Data Sheet is supplied to our best current knowledge, and may be revised in accordance with new findings and knowledge.
Since the information in this Data Sheet covers the ordinary handling conditions, and evaluation concerning hazards and toxicity is not always sufficient. Therefore, the utmost care must be taken for handling it. The user is responsible for determining the safe conditions. This product has been developed for industrial use. Do not use it for any medical apparatus or pharmaceutical field.