



MATERIAL SAFETY DATA SHEET (MSDS)

Substance

Hee PFM-51W SLV

Revision Date : May/ 10/ 2024

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

- A. PRODUCT NAME** : **Hee PFM-51W SLV**
- B. MATERIAL** : METAL ALLOY
- C. PRODUCT'S USE** : SOLDER, SOLDERING
- D. MANUFACTURE'S NAME** : LT Materials Co.,Ltd.
- E. ADDRESS** : 113-19,Dangha-ro, Namsa-Myeon, Cheoin-Gu, Yongin-Si,
Gyeonggi-Do, Korea
Tel : 82- 31- 330- 1000
Fax : 82-31- 335 – 6205~6

2. HAZARD IDENTIFICATION

A. PRODUCT HAZARD CLASS

Skin hypersensitivity Class : 1

Specific target organ toxicity (single exposure) Class : 2 (respiratory system)

Specific target organ toxicity (repeated exposure) Class : 1

Aquatic environmental toxicity.Long-term : Class : 3

B. LABEL COMTENT



-. SIGNAL : Danger

-. HAZARD WORD

H317 May cause an allergic skin reaction

H371 May cause damage to organs

H372 Causes damage to organs through prolonged or repeated exposure

H412 Harmful to aquatic life with long lasting effects

- . PREVENTION WORD

PREVENTION

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

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P264 Wash ... 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.

P273 Avoid release to the environment.

P280 Wear protective gloves/protective clothing/eye protection/face protection. [As modified by IV ATP]

CORRESPOND

P302+352 IF ON SKIN: Wash with plenty of water/... [As modified by IV ATP]

P308+311: If exposed or concerned: Call a POISON CENTER/ doctor/... [Added by IV ATP]

P314: Get medical advice/attention if you feel unwell.

P333+313 IF SKIN IRRITATION OR A RASH OCCURS: GET MEDICAL ADVICE/ATTENTION.

P362+364: Take off contaminated clothing and wash it before reuse. [Added by IV ATP]

STORAGE

P405 Store locked up.

DISPOSAL

P501 Dispose of contents/ container to an approved landfill

C. OTHER HAZARD

: No information

3. COMPOSITION, INFORMATION ON INGREDIENTS

| Chemical name | Contents | CAS No. |
|---------------|----------|--------------|
| Tin | 82.76% | 7440-31-5 |
| Silver | 2.65% | 7440-22-4 |
| Copper | 0.44% | 7440-50-8 |
| Bismuth | 2.65% | 7440-69-9 |
| FLUX | 11.50% | Trade secret |

4. FIRST AID MEASURES

A. In case of eye contact

Get medical advice and attention if you feel unwell.

B. In case of skin contact

Wash with plenty of soap and water.

Get medical advice and attention if you feel unwell.

If skin irritation or rash occurs, get medical advice and attention.

Take off contaminated clothing and wash it before reuse

C. In case of inhalation

Get medical advice and attention if you feel unwell.

D. In case of ingestion

Get medical advice and attention if you feel unwell.

E. Most important symptoms/effects, acute and delayed

If inhaled : Wheezing.

The effect through prolonged or repeated exposure : May cause eye, nose, throat, skin discoloration.

Eye / skin redness, ocular pain, cough, headache, shortness of breath, sore throat, abdominal pain, nausea, vomiting.

Delayed symptom : Metal fume fever.

F. Indication of immediate medical attention and special treatment needed, if necessary

Rest and medical follow-up are indispensable.

5. FIRE FIGHTING MEASURES

A. Suitable extinguishing media

Small fires: Dry chemical, CO₂ or water spray.

Large fires: Water spray, fog or regular foam.

B. Prohibited media :

Water

C. Specific hazards with regard to fire-fighting :

No information

D. Protection for firefighters :

Fighters should wear protective clothing, respirator, rubber boots and fireproof clothing.

And should work from the windward side.

6. ACCIDENTAL RELEASE MEASURES

A. Personal precautions, protective equipment and emergency procedures :

Do not touch or walk through spilled material.

B. Environmental precautions :

Pay attention not to cause the influence on the environment by discharging into rivers.

Do not release into the environment.

C. Methods and materials for containment and cleaning up :

Gather up, pack in a bag and dispose. Carefully collect remnant and move to a safe place.

7. HANDLING AND STORAGE

A. Handling

Technical measures :

Provide ventilation system and use necessary personal protective equipment as described in "Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION".

Safe handling advice :

Prohibit use of heat, sparks, and fire in the surrounding area.

Evacuate area due to explosion risk in case of fire.

Do not subject to rough handling such as grinding, shock and friction.

Do not contact, breathe or swallow

Use only outdoors or in a well-ventilated area.

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

Avoid release to the environment.

Hygiene measures :

Wash hand thoroughly after handling.

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

B. Storage

Suitable storage conditions :

The storage facility should be designed with fire-proof construction and beams should use a non-combustible material.

The storage floor should be protected from water penetration, or should have water-proof construction.

The storage facility should be provided with necessary lighting, lighting equipment, and ventilator to store and handle dangerous goods.

Keep away from heat, sparks, open flames and hot surfaces. No smoking.

Store away from oxidants

Store in a well-ventilated and cool place keeping container tightly closed.

Protect from sunlight.

Store locked up.

Refer to "Section 10 - STABILITY AND REACTIVITY".

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

A. Control parameters

| Material name | ACGIH (TLV) | OSHA (PEL) |
|---------------|----------------------|------------------------------|
| Tin | 2mg/m ³ | 2mg/m ³ |
| Silver | 0.1mg/m ³ | 0.01mg/m ³ |
| Copper | 0.2mg/m ³ | 0.1 mg/m ³ (fume) |

B. Engineering measures

Workplace storing or handling this product should be equipped with eyewashing station and safety shower.

Install ventilation system to keep exposure to airborne contaminants below the exposure limit if dust and fume generate in the process handling at elevated temperature.

C. Personal protective equipment

Respiratory protection : If necessary, wear appropriate respiratory protective equipment.

Hand protection : Wear appropriate protective gloves.

Eye protection : Wear appropriate protective glasses (ordinary glasses type, ordinary glasses type with side plates, goggle type)

Skin and body protection : Wear suitable protective clothing and face protection.

Specific hygiene measures : Provide eye washing tools and safety shower.

9. PHYSICAL AND CHEMICAL PROPERTIES

A. Appearance : Solder Paste

B. Color : Grey

C. Odor : Scentless

D. Odor threshold : Not applicable

- E. pH : Not applicable
- F. Melting point : 209-217 °C
- G. Boiling point : Not applicable
- H. Flash point : Not applicable
- I. Flammability(Solid,Gas) : Not applicable
- J. Flammability or explosive limits : Not applicable
- K. Vapor pressure : Not applicable
- L. Vapor density : Not applicable
- M. Relative density : Not applicable
- N. Specific gravity : 7.4
- O. Resolution temperature : Not applicable
- P. Solubility(ies) : Not applicable
- Q. Partition coefficient: n-octanol/water : Not applicable
- R. Auto-ignition temperature : Not applicable
- S. Decomposition temperature : Not applicable
- T. Viscosity : Not applicable

10. STABILITY AND REACTIVITY

- A. Stability :
Stable in the air at the normal temperature.
- B. Reactions :
May react with strong oxidizing compound, acids and strong bases.
- C. Hazardous decomposition products :
Non-pertinence
- D. Conditions to avoid :
Non-pertinence
- E. Materials to avoid :
Strong oxidizing compound, acids and strong bases.

11. TOXICOLOGICAL INFORMATION

- A. Acute toxicity : No data
- B. Skin corrosive / irritation : No data
- C. Serious eyes damage /Eyes irritation : No data
- D. Respiratory organs sensitization :
When fume inhales, may cause allergy, edge breath or dyspnea.
- E. Skin sensitization : May cause allergy skin reaction.Class 1
- F. Original generative cell variation : No data
- G. Carcinogenicity : No information
- H. Reproduction toxicity : No information
- I. Specification target internal organs /Whole toxicity (single revelation) :
Causes damage to organ (respiratory system)
May cause respiratory irritation

- J.** Specification target internal organs / wholetoxicity (repeat revelation) :
 Causes damage to organ (lung) through prolonged or repeated exposure
 Causes damage to organ (respiratory organs: inhalation) through prolonged or repeated exposure
 Causes damage to organ (liver) through prolonged or repeated exposure
- K.** Absorption respiratory organs toxicity : No data

12. ECOLOGICAL INFORMATION

- A.** Aquatic environmental toxicity.acute : No classification
- B.** Aquatic environmental toxicity.Long-term :
 May cause toxicity in the aquatic life according to a long-term influence Class 3
- C.** Hazardous property to ozone layer : No classification

13. DISPOSAL CONSIDERATIONS

- A.** Residues
 Wear adequate protectors. Dispose in accordance with local regulations.
 Consign a qualified industrial waste treatment firm, if there is no own disposal equipment.
- B.** A pollution container and packing
 Wear adequate protectors. Dispose in accordance with local regulations.
 Consign a qualified industrial waste treatment firm, if there is no own disposal equipment.

14. TRANSPORT INFORMATION

- A.** UN No. : Not applicable
- B.** Proper Shipping Name : Not applicable
- C.** Class : Not applicable
- D.** Sub Risk : Not applicable
- E.** Packing Group : Not applicable
- F.** International restriction
 RID/ADR information : Not applicable
 IMO information : Non-Hazards
 Marine Pollutant : Not applicable
 IATA information : Non-Hazards
- G.** Domestic restriction
 Rail and road transportation information : Not applicable
 Marine transportation information : Non-Hazards
 Marine Pollutant : Not applicable
 Aviation transportation information : Non-Hazards
- H.** Specific precautionary transport measures and conditions
 Prior to transport, check the containers and loading to prevent leakage or turnover,
 fall and damage transport in accordance with regulations.

15. REGULATORY INFORMATION

- A.** Regulation by Chemical Substance Control Act : Not applicable
- B.** Regulation under dangerous goods safety management law : Not applicable
- C.** Regulation by waste management law : designated wastes
- E.** Other domestic and foreign regulations : Not applicable

16. OTHER INFORMATION

- A.** The information contained in this data sheet does not constitute an assessment of workplace risks. The above information is based on the present state of our knowledge of the product at the time of publication. It is given in good faith, no warranty is implied with the respect to the quality or the specification of the product. The user must satisfy himself that the product is entirely suitable for his purpose.