

MATERIAL SAFETY DATA SHEET (MSDS)

Substance

HSE21 NO FLUX Wire

Revision Date : Dec/ 05/ 2023

1 CHEMICAL BRODUCT AND COMPANY IDENTIFICATION

| A. PRODUCT NAME | HSE21 NO FLUX Wire |
|--|--|
| 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 |
| HAZARD IDENTIFICATION | |
| A. PRODUCT HAZARD CLASS | S |
| Skin hypersensitivity Class : | 1 |
| Specific target organ toxicity | (single exposure) Class : 2 (respiratory system) |
| Specific target organ toxicity | (repeated exposure) Class : 1 |
| | |
| Aquatic environmental toxici B. LABEL COMTENT | ty.Long-term : Class : 3 |
| | ty.Long-term : Class : 3 |
| | ty.Long-term : Class : 3 |
| B. LABEL COMTENT | ty.Long-term : Class : 3 |
| B. LABEL COMTENT | |
| B. LABEL COMTENT . SIGNAL : Danger . HAZARD WORD | pic skin reaction |
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| B. LABEL COMTENT SIGNAL : Danger SIGNAL : Danger HAZARD WORD H317 May cause an allergy H371 May cause damage H372 Causes damage to | pic skin reaction to organs |

-. PREVENTION WORD

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]

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]

P405 Store locked up.

P501 Dispose of contents/ container to an approvedlandfill

C. OTHER HAZARD

: No information

3. COMPOSITION, INFORMATION ON INGREDIENTS

| Chemical name | Contents | CAS No. |
|---------------|----------|-----------|
| Tin | 97.00% | 7440-31-5 |
| Silver | 3.00% | 7440-22-4 |

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 beforereuse

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, acuteand 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 attentionand 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 equipmentand emergency procedures : | |
| Do not touch or walk through spilled material. | |
| B. Environmental precautions : | |
| Pay attention not to cause the influence on theenvironment by discharging into rivers. | |
| Do not release into the environment. | |
| C. Methods and materials for containment andcleaning 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 necessarypersonal protective equipment as described in | |
| in"Section 8 - EXPOSURE CONTROLS / PERSONALPROTECTION". | |
| Safe handling advice : | |
| Prohibit use of heat, sparks, and fire in thesurrounding 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 outof 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-proofconstruction and beams should use a non-combustible material.

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

The storage facility should be provided withnecessary lighting, lighting equipment, and ventilatorto store and handle dangerous goods.

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

Store away from oxidants

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

Protect from sunlight.

Store locked up.

Refer to "Section 10 - STABILITY ANDREACTIVITY".

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

A. Control parameters

| Material name | ACGIH (TLV) | OSHA (PEL) |
|---------------|-------------|------------|
| Tin | 2mg/m3 | 2mg/m3 |
| Silver | 0.1mg/m3 | 0.01mg/m3 |

B. Engineering measures

Workplace storing or handling this product should beequipped with eyewashing station and safety shower. Install ventilation system to keep exposure to airbornecontaminants below the exposure limit if dust and and fume generate in the process handling at elevatedtemperature.

C. Personal protective equipment

Respiratory protection : If necessary, wear appropriate respiratory protectiveequipment.

Hand protection : Wear appropriate protective gloves.

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

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 Wire
- B. Color : Grey
- C. Odor : Scentless
- **D.** Odor threshold : Not applicable

| E. pH: Not applicable F. Melting point: 217-221 °C 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 M. Relative density : Not applicable M. Relative density : Not applicable N. Specific gravity : 7.3 O. Resolution temperature : Not applicable P. Solubility(lies) : Not applicable Q. Partition coefficient: n-octanol/water : Not applicable R. Auto-ignition temperature : Not applicable S. Decomposition temperature : Not applicable Subbility(ies) : 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. Material name Oral LD50 Silver >5000 mg/Kg(Rat) >2000mg/Kg(Rat) Silver >5000 mg/Kg(Rat) >2000mg/Kg(Rat) B. Skin cor | | | | |
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| D. Respiratory organs sensitization : When fume inhales, may cause allergy, edge breath or dyspnea. E. Skin sensitization : May cause allergy skin reaction.Class 1 | B. Skin corrosive / irritation : N | lo data | | J |
| When fume inhales, may cause allergy, edge breath or dyspnea. E. Skin sensitization : May cause allergy skin reaction.Class 1 | C. Serious eyes damage /Eyes | irritation : No data | | |
| E. Skin sensitization : May cause allergy skin reaction.Class 1 | D. Respiratory organs sensitiza | ation : | | |
| | When fume inhales, may ca | use allergy, edge breath o | r dyspnea. | |
| | E. Skin sensitization May cau | se allergy skin reaction.Cl | ass 1 | |
| F. Original generative cell variation : No data | F. Original generative cell varia | ation : No data | | |
| G. Carcinogenicity : No information | G. Carcinogenicity : No informa | ation | | |
| H. Reproduction toxicity : No information | H. Reproduction toxicity : No ir | formation | | |

| 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 Causes damage to organ (liver) through prolonged or repeated exposure Causes damage to organ society : 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. |
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| 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 notconstitute an assessment of workplace risks. Theabove information is based on the present state ofour knowledge of the product at the time ofpublication. 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.