



## SAFETY DATA SHEET

### 1. Chemical Product and Company Identification

Product Name : **HANDY-FLUX (DIA-800)**  
General Use : Flux for brazing operation  
SDS № : **209-13**  
Manufacturer : Mizuno Handy Harman, Ltd.  
Sales Dept. : 2-11-12, Kitaueno, Taitoh-Ku, Tokyo, Japan  
(Phone/Fax №: +81-3-3844-6166 / +81-3-3845-5702)  
Technical Dept. : 13-38 Noborito-cho, Koshigaya-shi, Saitama, Japan  
(Phone/Fax №: +81-489-86-9151 / +81-489-86-9153)  
Emergency phone number : +81-489-86-9151

### 2. Hazards Identification

#### Classification(s)

Acute Toxicity, Inhalation: Hazard Category 3  
Carcinogenicity: Hazard Category 1  
Reproductive Toxicity: Hazard Category 2  
Germ Cell Mutagenicity: Hazard Category 2

Label Symbol(s): Skull & Crossbones, Health Hazard, Corrosion, Exclamation Point

Label Signal Word(s): Danger

#### Label Hazard Statement(s):

Toxic if inhaled.  
May cause cancer.  
Suspected of damaging fertility or the unborn child.  
Suspected of causing genetic defects.



#### Label Precautionary Statement(s):

Do not handle until all safety precautions have been read and understood.  
Obtain special instructions before use.  
Avoid breathing dust or fumes.  
Use only outdoors or in a well-ventilated area. Store locked up.

Wear protective gloves and eye/face protection.

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

If exposed or concerned, get medical advice/ attention.

The acute toxicities of 10-90% of the product's ingredients are unknown.

Warning: These products contain chemicals known to the State of California to cause cancer.

### 3. Composition, Information on Ingredients

**Table 1: Components**

| Ingredient Name (Chemical Formula)                             | CAS # (*1) | WT % |
|--|------------|------|
| Potassium Tetraborate Tetrahydrate ( $K_2B_4O_7 \cdot 4H_2O$ ) | 12045-78-2 | 30   |
| Potassium Tetrafluoroborate ( $KBF_4$ )                        | 14075-53-7 | 60   |
| Water ( $H_2O$ )   | 7732-18-5  | 10   |

\* Gazette Reference №: Please refer to Article 16.

**Table 2: Exposure Guidelines**

| Substances (Chemical Formula)                                  | CAS #      | ACGIH (*2), TLV-TWA (*3)  |
|--|------------|---------------------------|
| Potassium Tetraborate Tetrahydrate ( $K_2B_4O_7 \cdot 4H_2O$ ) | 12045-78-2 | Please refer to Article 8 |
| Potassium Tetrafluoroborate ( $KBF_4$ )                        | 14075-53-7 | Ditto                     |
| Water ( $H_2O$ )   | 7732-18-5  | Ditto                     |

<\*1> <\*2> <\*3>: Please refer to Article 16 (Other Information)

### 4. First Aid Measures

\* Eye contact: Wash immediately with plenty of water.

\* Skin contact: Wash affected area with large quantities of water for at least 5 minutes.

\* Inhalation: Remove the person from area to fresh air, blow the nose and gargle the throat.

\* Ingestion: If the subject is conscious, give 2-4 cups of milk or water.

\* In any case, seek medical assistance immediately

### 5. Fire Fighting

Non-flammable

### 6. Accidental Release Measures

\* Methods and Materials

Isolate the spilt product and transfer to impervious containers.

\* Personal Precautions

Avoid contact with skin, eyes, and mucous membranes. Wear appropriate protective equipment (e.g., gloves, chemical goggles) during cleanup.

\* Environmental Precautions

Prevent spills from entering sewers or contaminating the soil.

## 7. Handling and Storage

Handling: Avoid contact with skin and clothing, using protective equipment as needed.

Storage: Store away from incompatible materials

## 8. Exposure Controls / Personal Protections

\* Control Value: Not established

\* Exposure Guidelines

|                    | K <sub>2</sub> B <sub>4</sub> O <sub>7</sub> · 4H <sub>2</sub> O | KBF <sub>4</sub>     | H <sub>2</sub> O |
|--------------------|--|----------------------|------------------|
| JCGIH <*4> in 2002 | Not available  | Not available        | Not available    |
| ACGIH TLV-TWA      | Not available  | 2.5mg/m <sup>3</sup> | Not available    |
| TLV-STEL <*5>      | Not available  | Not available        | Not available    |
| OSHA <*6>          | Not available  | 2.5mg/m <sup>3</sup> | Not available    |
| PEL<*7> TWA        | Not available  | 2.5mg/m <sup>3</sup> | Not available    |
| NIOSH <*8> PEL TWA | Not available  | Not available        | Not available    |
| MSHA <*9> TWA      | Not available  | Not available        | Not available    |

### Protection measures

\* Equipment: Use at the place where ventilators are equipped.

\* Protection: Use protective respirator, glasses, gloves, and clothes, if preferable

## 9. Physical and Chemical Properties

\* Appearance: White colour

\* Melting point: 500°C

\* Specific gravity: 1.6

\* Explosion: Non-explosive

\* Solubility in water: Miscible in water

## 10. Stability and Reactivity

\* Stability: stable

\* Hazardous Polymerization: will not occur

### 11. Toxicological Information

|                             | K <sub>2</sub> B <sub>4</sub> O <sub>7</sub> · 4H <sub>2</sub> O | KBF <sub>4</sub>       | H <sub>2</sub> O |
|-----------------------------|--|------------------------|------------------|
| Mutagenicity                | Not available  | Not available          | Not available    |
| Reproductive Effects        | Not available  | Not available          | Not available    |
| Acute Toxicity (RTECS<*10>) | Not available  | Rat LD <sub>50</sub> : | Not available    |
| Oral Toxicity               |  | 5854mg/kg              |                  |
| Inhalation Toxicity         | Not available  | Not available          | Not available    |
| Chronic Toxicity            | Not available  | Not available          | Not available    |
| Sub-Acute Toxicity          | Not available  | Not available          | Not available    |
| Sensitive Toxicity          | Not available  | Not available          | Not available    |
| Irritation Scores           | Not available  | Not available          | Not available    |
| Carcinogenicity             | Not available  | Not available          | Not available    |

### 12. Ecological Information

- \* Decomposition: Not available
- \* Accumulation: Not available
- \* Fish toxicity: Not available
- \* Other information: Not available

### 13. Disposal Considerations

Dispose or ask collecting dealer following related regulations and law

### 14. Transportation Information

- \* UN classification: Class 8 (corrosive substance, container grade III)
- \* UN Number: 1760
- \* Necessary measures are taken to avoid toppling and fall-down of cargoes.

## 15. Regulatory Information

|  | Occupational Safety and Health Law | Disposal and Cleaning Control Law on Waste | Chemical Substances Control Law (Chemical Substance Article 2-1) | Regulation on PRTR <*11> | Fire-Fighting Law |
|--|------------------------------------|--|--|--------------------------|-------------------|
| K <sub>2</sub> B <sub>4</sub> O <sub>7</sub> · 4H <sub>2</sub> O | Not applicable                     | Not applicable                             | Not applicable   | Not applicable           | Not applicable    |
| KBF <sub>4</sub>   | Not applicable                     | Not applicable                             | Not applicable   | Not applicable           | Not applicable    |
| H <sub>2</sub> O   | Not applicable                     | Not applicable                             | Not applicable   | Not applicable           | Not applicable    |

## 16. Other Information

Fluxes generate vapour when they are heated and irritate eye, throat, and nose.

Avoid inhalation, exposure to this vapour as much as possible.

Use them where the ventilator is equipped.

Avoid direct contact of fluxes with skin, eye, and ingestion.

### <References>

<\*1> CAS #: Chemical substance register number of Chemical Abstracts Service

<\*2> ACGIH: American Conference of Governmental Industrial Hygienists

<\*3> TLV-TWA: Threshold Limit-Time Weighted Average

<\*4> JCGIH: Japanese Conference of Governmental Industrial Hygienists

<\*5> STEL: Short Term Exposure Limit

<\*6> OSHA: Occupational Safety and Health Administration

<\*7> PEL: Permissible Exposure Limit

<\*8> NIOSH: National Institute for Occupational Safety and Health

<\*9> MSHA: The Federal Mine Safety and Health Act

<\*10> RTECS: Registry of Toxic Effects of Chemical Substances

<\*11> PRTR: Pollutant Release and Transfer Register

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