



## SAFETY DATA SHEET

### 1. Chemical Product and Company Identification

Product Name : **HANDY-FLUX (DIA-700)**  
General Use : Flux for brazing operation  
SDS № : **209-14**  
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 %
Boric Acid (H <sub>3</sub> BO <sub>3</sub> )	10043-35-3	15
Potassium Tetraborate Tetrahydrate (K <sub>2</sub> B <sub>4</sub> O <sub>7</sub> · 4H <sub>2</sub> O)	12045-78-2	10
Potassium Hydrogenfluoride (KHF <sub>2</sub> )	7789-29-9	65
Water (H <sub>2</sub> O)	7732-18-5	10

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

**Table 2: Exposure Guidelines**

Substances (Chemical Formula)	CAS #	ACGIH (*2), TLV-TWA (*3)
Boric Acid (H <sub>3</sub> BO <sub>3</sub> )	10043-35-3	Please refer to Article 8
Potassium Tetraborate Tetrahydrate (K <sub>2</sub> B <sub>4</sub> O <sub>7</sub> · 4H <sub>2</sub> O)	12045-78-2	Ditto
Potassium Hydrogenfluoride (KHF <sub>2</sub> )	7789-29-9	Ditto
Water (H <sub>2</sub> O)	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

	H <sub>3</sub> BO <sub>3</sub>	K <sub>2</sub> B <sub>4</sub> O <sub>7</sub> · 4H <sub>2</sub> O	KHF <sub>2</sub>	H <sub>2</sub> O
JCGIH <*4> in 2002	Not available	Not available	2.5mg/m <sup>3</sup>	Not available
ACGIH TLV-TWA	2mg/m <sup>3</sup>	Not available	2.5mg/m <sup>3</sup>	Not available
TLV-STEL <*5>	6mg/m <sup>3</sup>	Not available	Not available	Not available
OSHA <*6> PEL<*7> TWA	Not available	Not available	2.5mg/m <sup>3</sup>	Not available
NIOSH <*8> PEL TWA	Not available	Not available	Not available	Not available
MSHA <*9> TWA	Not available	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: 470°C

\* Specific gravity: 1.7

- \* Explosion: Non-explosive
- \* Solubility in water: Miscible in water

#### 10. Stability and Reactivity

- \* Stability: stable
- \* Hazardous Polymerization: will not occur

#### 11. Toxicological Information

	H <sub>3</sub> BO <sub>3</sub>	K <sub>2</sub> B <sub>4</sub> O <sub>7</sub> · 4H <sub>2</sub> O	KHF <sub>2</sub>	H <sub>2</sub> O
Mutagenicity	Not available	Not available	Not available	Not available
Reproductive Effects	Not available	Not available	Not available	Not available
Acute Toxicity (RTECS<*10>)	Rat LD <sub>50</sub> : 2660mg/kg	Not available	Rat LD <sub>50</sub> : 160mg/kg	Not available
Oral Toxicity				
Inhalation Toxicity	Not available	Not available	Not available	Not available
Chronic Toxicity	Not available	Not available	Not available	Not available
Sub-Acute Toxicity	Not available	Not available	Not available	Not available
Sensitive Toxicity	Rat: >2000mg/kg	Not available	Not available	Not available
Irritation Scores	Not available	Not available	Not available	Not available
Carcinogenicity	Not available	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 in accordance with 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
H <sub>3</sub> BO <sub>3</sub>	Not applicable	Not applicable	№405	PRTR-1	Not applicable
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
KHF <sub>2</sub>	№487	Not applicable	Not applicable	PRTR-1	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

This information is furnished without warranty, express or implied, except that it is accurate to the best knowledge of Mizuno Handy Harman, Ltd.

It relates only to the specific designated herein and does not relate to use in combination with any other material in any process.

Mizuno Handy Harman, Ltd. assumes no legal responsibility for use of or reliance upon this information.