HANDY® FLUX TYPE B-1

Safety Data Sheet

according to 29 CFR § 1910.1200, Hazard Communication Standard (HCS)
Issue date: 5/24/2017 Revision date: 4/4/2025 Supersedes: 11/2/2023 Version: 8.0

SECTION 1 Identification

1.1. Product identifier

Product form : Mixture
Trade name : HANDY® FLUX TYPE B-1
Product code : A00000227

1.2. Other means of identification

No additional information available

1.3. Recommended use of the chemical and restrictions on use

Recommended use : Flux for metal brazing

1.4. Supplier's details

Lucas-Milhaupt, LLC
4850 S. Pennsylvania Ave. Suite 200
Cudahy, WI 53110
USA
T (414)-769-6000
LM_Customerservice@lucasmilhaupt.com - www.Lucasmilhaupt.com

1.5. Emergency phone number

Emergency number : CHEMTREC within the USA and Canada: 1-800-424-9300
CHEMTREC outside the USA and Canada +1 701-741-5970

SECTION 2 Hazard identification

2.1. Classification of the substance or mixture

GHS US classification

Acute toxicity (oral), Category 4	H302	Harmful if swallowed.
Acute toxicity (inhalation:dust,mist), Category 4	H332	Harmful if inhaled.
Skin corrosion/irritation, Category 1B	H314	Causes severe skin burns and eye damage.
Reproductive toxicity, Category 1B	H360	May damage fertility or the unborn child.

Full text of H-statements: see section 16

2.2. Label elements

GHS US labelling

Hazard pictograms (GHS US) :



Signal word (GHS US) : Danger
Hazard statements (GHS US) : H302+H332 - Harmful if swallowed or if inhaled
H314 - Causes severe skin burns and eye damage
H360 - May damage fertility or the unborn child.
Precautionary statements (GHS US) : P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
P260 - Do not breathe dusts or mists.
P264 - Wash hands, forearms and face thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.

P271 - Use only outdoors or in a well-ventilated area.
P280 - Wear protective gloves, protective clothing, eye protection, face protection, and hearing protection.
P301+P312 - If swallowed: Call a poison center/doctor if you feel unwell
P301+P330+P331 - If swallowed: rinse mouth. Do NOT induce vomiting.
P303+P361+P353 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313 - If exposed or concerned: Get medical advice/attention.
P310 - Immediately call a poison center/doctor
P312 - Call a poison center/doctor if you feel unwell
P321 - Specific treatment (see supplemental first aid instruction on this label).
P330 - Rinse mouth.
P363 - Take off immediately all contaminated clothing and wash it before reuse.
P405 - Store locked up.
P501 - Dispose of contents and/or container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulations.

2.3. Hazards associated with known or reasonably anticipated uses

No additional information available

2.4. Hazards not otherwise classified

No additional information available

2.5. Unknown acute toxicity

No additional information available

SECTION 3 Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Comments : Mixture of salts composed of potassium,borates and flourides

Name	Product identifier	%
Potassium fluoride (K(HF2))	CAS-No.: 7789-29-9	20 – 30
Boric acid (H3BO3)	CAS-No.: 10043-35-3	20 – 30
Boron potassium oxide (B4K2O7)	CAS-No.: 1332-77-0	20 – 30

Comments : Note: The specific identities of the ingredients of this product are a Trade Secret. Information contained in this Safety Data Sheet accurately discloses the properties, physical and health hazards, first aid measures, and control methods for the safe use of this product. The identities of the ingredients may be determined in accordance with 29CFR 1910.1200(i) or the applicable regulations of other countries.

Full text of hazard classes and H-statements : see section 16

SECTION 4 First-aid measures

4.1. Description of necessary first-aid measures

First-aid measures general : Call a physician immediately.

First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing. Call a physician immediately. Call a doctor.

First-aid measures after skin contact : Rinse skin with water/shower. Take off immediately all contaminated clothing. Call a physician immediately.

First-aid measures after eye contact : In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician immediately.

First-aid measures after ingestion : Rinse mouth. Do not induce vomiting. Call a physician immediately.

Self protection of the first-aider : First aid workers will be equipped with suitable personal protective equipment.

4.2. Most important symptoms/effects, acute and delayed

Symptoms/effects after inhalation : May cause respiratory irritation. Harmful if inhaled.

Symptoms/effects after skin contact : Burns.

Symptoms/effects after eye contact : Serious damage to eyes. Eye irritation.

Symptoms/effects after ingestion : Burns. Harmful if swallowed.

Chronic symptoms : May damage fertility or the unborn child.

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

Other medical advice or treatment : Treat symptomatically.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Water spray. Dry powder. Foam.

Unsuitable extinguishing media : Water.

5.2. Specific hazards arising from the chemical

Fire hazard : No fire hazard.

Explosion hazard : No direct explosion hazard.

Hazardous decomposition products in case of fire : Toxic fumes may be released.

5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions : Fight fire from safe distance and protected location. Do not enter fire area without proper protective equipment, including respiratory protection.

Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6 Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Notify authorities if product enters sewers or public waters. Absorb spillage to prevent material damage.

For non-emergency personnel

Protective equipment : Wear recommended personal protective equipment.

Emergency procedures : Only qualified personnel equipped with suitable protective equipment may intervene. Do not breathe dust/fume/gas/mist/vapours/spray.

For emergency responders

Protective equipment	:	Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".
Emergency procedures	:	Evacuate unnecessary personnel.
Environmental precautions	:	Avoid release to the environment. Notify authorities if product enters sewers or public waters.

6.2. Methods and materials for containment and cleaning up

For containment	:	Using a clean shovel, put the material in a dry container and cover without compressing it.
Methods for cleaning up	:	Mechanically recover the product. Notify authorities if product enters sewers or public waters.
Other information	:	Dispose of materials or solid residues at an authorized site.

For further information refer to section 13

SECTION 7 Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling	:	Wear personal protective equipment. Use only outdoors or in a well-ventilated area. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid contact with skin and eyes. Do not breathe dust/fume/gas/mist/vapours/spray.
Hygiene measures	:	Separate working clothes from town clothes. Launder separately. Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.
Additional hazards when processed	:	Not expected to present a significant hazard under anticipated conditions of normal use.

7.2. Conditions for safe storage, including incompatibilities

Technical measures	:	Keep in a cool, well-ventilated place away from heat.
Storage conditions	:	Keep container tightly closed. Store locked up. Store in a well-ventilated place. Keep cool.
Packaging materials	:	Store always product in container of same material as original container.

SECTION 8 Exposure controls/personal protection

8.1. Control parameters

Boric acid (H3BO3) (10043-35-3)	
USA - ACGIH - Occupational Exposure Limits	
ACGIH OEL TWA	2 mg/m³ (inhalable particulate matter (Borate compounds, inorganic)
ACGIH OEL STEL	6 mg/m³ (inhalable particulate matter (Borate compounds, inorganic)
ACGIH chemical category	Not Classifiable as a Human Carcinogen

8.2. Appropriate engineering controls

Appropriate engineering controls	:	Ensure good ventilation of the work station.
Environmental exposure controls	:	Avoid release to the environment.

8.3. Individual protection measures, such as personal protective equipment

Personal protective equipment:
Wear recommended personal protective equipment.

Hand protection:
Protective gloves

Eye protection:
Safety glasses

Skin and body protection:
Wear suitable protective clothing

Respiratory protection:
[In case of inadequate ventilation] wear respiratory protection.

Personal protective equipment symbol(s):



SECTION 9 Physical and chemical properties

9.1. Basic physical and chemical properties

Physical state	:	Solid
Appearance	:	black or brown paste.
Colour	:	No data available
Odour	:	No data available
Odour threshold	:	No data available
pH	:	No data available
Melting point	:	No data available
Freezing point	:	Not applicable
Boiling point	:	No data available
Flash point	:	Not applicable
Flammability (solid, gas)	:	Non flammable.
Vapour pressure	:	No data available
Relative vapour density at 20°C	:	No data available
Relative density	:	No data available
Solubility	:	No data available
Partition coefficient n-octanol/water (Log Pow)	:	No data available
Auto-ignition temperature	:	Not applicable
Decomposition temperature	:	No data available
Viscosity, kinematic	:	Not applicable
Explosive limits	:	Not applicable
Particle characteristics	:	No data available

9.2. Data relevant with regard to physical hazard classes (supplemental)

No additional information available

SECTION 10 Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials

Alkai earth metals.

10.6. Hazardous decomposition products

Boron oxide, Potassium oxide, and/or flourides.

SECTION 11 Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Harmful if swallowed.
Acute toxicity (dermal) : Not classified
Acute toxicity (inhalation) : Inhalation:dust,mist: Harmful if inhaled.

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ATE US (oral)	526.313 mg/kg bodyweight
ATE US (dust,mist)	3.032 mg/l/4h

Boron potassium oxide (B4K2O7) (1332-77-0)	
LD50 oral rat	> 2500 mg/kg bodyweight Animal: rat, Animal sex: male, Guideline: OECD Guideline 401 (Acute Oral Toxicity)
LD50 dermal rabbit	> 2000 mg/kg (Source: ECHA_API)
LC50 Inhalation - Rat	> 2.04 mg/l/4h
ATE US (dust,mist)	1.5 mg/l/4h

Boric acid (H3BO3) (10043-35-3)	
LD50 oral rat	2660 mg/kg (Source: JAPAN_GHS)
LD50 oral	2660 mg/kg
LD50 dermal rabbit	> 2000 mg/kg (Source: NLM_HSDB)
LD50 dermal	2500 mg/kg
LC50 Inhalation - Rat	> 2.12 mg/l/4h
LC50 Inhalation - Rat (Dust/Mist)	> 2.03 mg/l
ATE US (oral)	2660 mg/kg bodyweight
ATE US (dermal)	2500 mg/kg bodyweight
ATE US (dust,mist)	1.5 mg/l/4h

Potassium fluoride (K(HF2)) (7789-29-9)	
LD50 oral rat	160 mg/kg (Source: NZ_CCID)
ATE US (oral)	160 mg/kg bodyweight

Skin corrosion/irritation : Causes severe skin burns.

Boric acid (H3BO3) (10043-35-3)	
pH	5.1

Serious eye damage/irritation : Assumed to cause serious eye damage

Boric acid (H3BO3) (10043-35-3)	
pH	5.1

Respiratory or skin sensitisation : Not classified
Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Reproductive toxicity : May damage fertility or the unborn child.
STOT-single exposure : Not classified
STOT-repeated exposure : Not classified

Boric acid (H3BO3) (10043-35-3)	
LOAEL (oral, rat, 90 days)	1044 mg/kg bodyweight/day

Potassium fluoride (K(HF2)) (7789-29-9)	
LOAEC (inhalation, rat, vapour, 90 days)	0.001 mg/l air Animal: rat, Animal sex: female

Aspiration hazard : Not classified

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Viscosity, kinematic	Not applicable

Symptoms/effects after inhalation : May cause respiratory irritation. Harmful if inhaled.
Symptoms/effects after skin contact : Burns.
Symptoms/effects after eye contact : Serious damage to eyes. Eye irritation.
Symptoms/effects after ingestion : Burns. Harmful if swallowed.
Chronic symptoms : May damage fertility or the unborn child.

SECTION 12 Ecological information

12.1. Ecotoxicity

Ecology - general : Before neutralisation, the product may represent a danger to aquatic organisms.
Hazardous to the aquatic environment, short–term (acute) : Not classified
Hazardous to the aquatic environment, long–term (chronic) : Not classified

Boron potassium oxide (B4K2O7) (1332-77-0)	
LC50 - Fish [1]	79.7 mg/l Test organisms (species): Pimephales promelas
EC50 72h - Algae [1]	66 mg/l Test organisms (species): Phaeodactylum tricornutum
EC50 72h - Algae [2]	54 mg/l Test organisms (species): Phaeodactylum tricornutum
NOEC chronic fish	11.2 mg/l Test organisms (species): Pimephales promelas Duration: '32 d'

Boric acid (H3BO3) (10043-35-3)	
LC50 - Fish [1]	447 mg/l
EC50 - Crustacea [1]	115 – 153 mg/l (Exposure time: 48 h - Species: Daphnia magna)
LC50 - Fish [2]	74 mg/l Test organisms (species): Limanda limanda

Boric acid (H3BO3) (10043-35-3)	
EC50 72h - Algae [1]	52.4 mg/l
EC50 72h - Algae [2]	54 mg/l Test organisms (species): Phaeodactylum tricornutum
ErC50 algae	290 mg/l
NOEC chronic fish	2.1 mg/l
NOEC chronic crustacea	10.8 mg/l

Potassium fluoride (K(HF2)) (7789-29-9)	
NOEC (chronic)	14.1 mg/l Test organisms (species): Daphnia magna Duration: '21 d'
NOEC chronic fish	4 mg/l Test organisms (species): Oncorhynchus mykiss (previous name: Salmo gairdneri) Duration: '21 d'

12.2. Persistence and degradability

HANDY® FLUX TYPE B-1	
Persistence and degradability	Rapidly degradable

Boron potassium oxide (B4K2O7) (1332-77-0)	
Persistence and degradability	Rapidly degradable

Boric acid (H3BO3) (10043-35-3)	
Persistence and degradability	Not rapidly degradable

Potassium fluoride (K(HF2)) (7789-29-9)	
Persistence and degradability	Not rapidly degradable

12.3. Bioaccumulative potential

Boric acid (H3BO3) (10043-35-3)	
BCF - Fish [1]	(0 dimensionless)
Partition coefficient n-octanol/water (Log Pow)	-1.09 (at 22 °C (at pH 7.5)

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Ozone : Not classified
Fluorinated greenhouse gases : No

SECTION 13 Disposal considerations

Regional waste regulation : Disposal must be done according to official regulations.
Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.
Sewage disposal recommendations : Disposal must be done according to official regulations.
Product/Packaging disposal recommendations : Comply with applicable regulations for solid waste disposal. Disposal must be done according to official regulations.
Additional information : Do not re-use empty containers.

SECTION 14 Transport information

In accordance with DOT / TDG / IMDG / IATA

DOT	TDG	IMDG	IATA
14.1. UN number			
Not regulated for transport			
14.2. Proper Shipping Name			
Not regulated	Not regulated	Not regulated	Not regulated
14.3. Transport hazard class(es)			
Not regulated	Not regulated	Not regulated	Not regulated
14.4. Packing group			
Not regulated	Not regulated	Not regulated	Not regulated
14.5. Environmental hazards			
Not regulated	Not regulated	Not regulated	Not regulated
No supplementary information available			

14.6. Transport in bulk

Not applicable

14.7. Special precautions for user

DOT
Not regulated

TDG
Not regulated

IMDG
Not regulated

IATA
Not regulated

SECTION 15 Regulatory information

15.1. Federal regulations

All components of this product are present and listed as Active on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

This product or mixture is not known to contain a toxic chemical or chemicals in excess of the applicable de minimis concentration as specified in 40 CFR §372.38(a) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

15.2. International regulations

CANADA

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Listed on the Canadian DSL (Domestic Substances List)

Boron potassium oxide (B4K2O7) (1332-77-0)

Listed on the Canadian DSL (Domestic Substances List)

Boric acid (H3BO3) (10043-35-3)

Listed on the Canadian DSL (Domestic Substances List)

Potassium fluoride (K(HF2)) (7789-29-9)

Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

Boron potassium oxide (B4K2O7) (1332-77-0)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

Boric acid (H3BO3) (10043-35-3)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

Potassium fluoride (K(HF2)) (7789-29-9)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

National regulations

Boron potassium oxide (B4K2O7) (1332-77-0)

Listed introduction on Australian Industrial Chemicals Introduction Scheme (AICIS Inventory)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on KECL/KECI (Korean Existing Chemicals Inventory)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Japanese Pollutant Release and Transfer Register Law (PRTR Law)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)
Listed on the NCI (Vietnam - National Chemical Inventory)
Listed on Thailand Existing Chemicals Inventory (DIW)

Boric acid (H3BO3) (10043-35-3)

Listed introduction on Australian Industrial Chemicals Introduction Scheme (AICIS Inventory)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on KECL/KECI (Korean Existing Chemicals Inventory)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Japanese Pollutant Release and Transfer Register Law (PRTR Law)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)
Listed on the NCI (Vietnam - National Chemical Inventory)
Listed on Thailand Existing Chemicals Inventory (DIW)

Potassium fluoride (K(HF2)) (7789-29-9)
Listed introduction on Australian Industrial Chemicals Introduction Scheme (AICIS Inventory)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on KECL/KECI (Korean Existing Chemicals Inventory)
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Listed on the TCSI (Taiwan Chemical Substance Inventory)
Listed on the NCI (Vietnam - National Chemical Inventory)
Listed on Thailand Existing Chemicals Inventory (DIW)

15.3. State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

Component	State or local regulations
Potassium fluoride (K(HF2))(7789-29-9)	U.S. - New Jersey - Right to Know Hazardous Substance List

SECTION 16 Other Information

according to 29 CFR § 1910.1200, Hazard Communication Standard (HCS)

Revision date : 4/4/2025

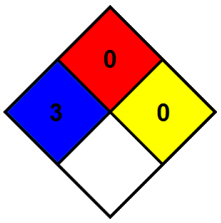
Issue date : 5/24/2017

Full text of hazard classes and H-statements	
H302	Harmful if swallowed
H314	Causes severe skin burns and eye damage
H332	Harmful if inhaled
H360	May damage fertility or the unborn child.

NFPA health hazard : 3 - Materials that, under emergency conditions, can cause serious or permanent injury.

NFPA fire hazard : 0 - Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand.

NFPA reactivity : 0 - Material that in themselves are normally stable, even under fire conditions.



Hazard Rating

Health : 3 Serious Hazard - Major injury likely unless prompt action is taken and medical treatment is given

: * - Chronic (long-term) health effects may result from repeated overexposure

Flammability : 0 Minimal Hazard - Materials that will not burn

Physical : 0 Minimal Hazard - Materials that are normally stable, even under fire conditions, and will NOT react with water, polymerize, decompose, condense, or self-react. Non-Explosives.

Personal protection : B - Safety glasses, Gloves

Safety Data Sheet (SDS), USA

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained therein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).

Lucas-Milhaupt, LLC