

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product Identifier

Product Name: Ultra Flux® Silver Brazing Flux
Common Name: Orthodontic Supplies - Soldering/Brazing Flux
Material: Flux
Restrictions on Use: American Orthodontics' products are used for the treatment of malocclusions and craniofacial abnormalities as diagnosed by a trained dental professional or orthodontist. Federal law restricts this device to use by or on the order of a dentist or orthodontist.
EC No.: See "3. Composition/Information on Ingredients"
REACH Registration No.: 01-2119960644-32-XXXX (Potassium Bifluoride)
CAS No. / IUPAC: See "3. Composition/Information on Ingredients"

1.2 Relevant Identified Uses/ Uses Advised Against

Relevant identified uses: Flux for metal brazing; Dental/Orthodontic use only
Uses advised against: Not for Consumer use. Please see "Restrictions on Use"

1.3 Details of the Supplier of the Safety Data Sheet

Company Name:
 American Orthodontics
 3524 Washington Avenue
 Sheboygan, WI 53081
 Phone: 920-457-5051
 Fax: 920-457-1485

E-mail: info@americanortho.com
National Contact: Safety Department

1.4 Emergency Telephone Number

Emergency Response Number:
 920-457-5051
 Only available during office hours: 8:00AM – 5:00PM (Central Time)
 Language of Phone Service: English

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

2.1.1 Classification according to Regulation (EC) No. 1272/2008 [CLP]
 Acute Tox. 3, Skin Corr. 1B (relevant only to Potassium Bifluoride)

2.1.2 Classification according to Directive 67/548/EEC

Relevant only to Potassium Bifluoride
 Acute Toxicity; T; R25
 Skin Corrosion; C; R34
 Serious Eye Irritation; Xi; R36
 Skin Irritant; Xi; R38

2.1.3 Additional information:

Relevant to Mixture
 Acute Toxicity, Oral: Hazard Category 4
 Reproductive Toxicity: Hazard Category 2
 Skin Corrosion: Hazard Category 1C
 Severe Eye Damage: Hazard Category 1

2.2 Label Elements

Labelling according to Regulation (EC) No 1272/2008 [CLP]

Hazard Pictogram(s)

Relevant to Mixture:



Relevant to Potassium Bifluoride (EC# 323-156-2):



Signal Word(s): Danger

Relevant to Mixture

Hazard Statements:

Harmful if swallowed
 Causes severe skin burns and eye damage
 Suspected of damaging fertility or the unborn child

Precautionary Statements:

Read and understand all safety precautions before handling
 Obtain special instructions before use
 Wear protective gloves, protective clothing and eye/face protection
 Wash hands thoroughly after handling
 Do not eat, drink or smoke when using this product
 Seek medical advice/attention immediately if exposed

Supplemental Hazard information (EU): NONE

Relevant to Potassium Bifluoride (EC# 323-156-2)

Hazard Statements:

Acute Toxicity (oral), Hazard Category 3; Toxic if swallowed (H301)
 Skin Corrosion/Irritation, Hazard Category 1A, 1B,1C; Causes Severe skin burns and eye damage (H314)

Precautionary Statements:

See above "Relevant to Mixture"

Supplemental Hazard information (EU): NONE

3. COMPOSITION / INFORMATION ON INGREDIENTS

<u>Ingredient(s)</u>	<u>CAS No.</u>	<u>EC No.</u>	<u>Wt. % Content</u>
Potassium Tetraborate	1332-77-0	N/A	30-40
Boric Acid	10043-35-3	N/A	20-30
Potassium Bifluoride	7789-29-9	232-156-2	20-30
Potassium Pentaborate	11128-29-3	N/A	1-5

See Section 8 for Exposure Control and Limits, and Section 11 for Toxicological Information.

4. FIRST-AID MEASURES

4.1 Description of First-Aid Measures

General Notes

None

Inhalation

- Move individual to fresh air.
- If not breathing, give artificial respiration.
- If breathing is difficult, oxygen should be administered by qualified personnel.
- Call a physician immediately.

Skin Contact

- Remove contaminated clothing immediately.
- Wash affected area with large quantities of water for at least five minutes.
- Seek medical attention if necessary.
- Wash contaminated clothing before use.

Eye Contact

- Rinse eyes with copious amounts of water for at least 15 minutes.
- Remove contact lenses, if easy to do.
- Continue rinsing.
- Hold eyelids open while flushing with water.
- Immediately call a doctor/physician or Poison Control Center.

Ingestion/Swallowing

- DO NOT INDUCE VOMITING.
- If subject is conscious, give 2-14 cups of milk or water
- If individual is unconscious or convulsing, DO NOT give them anything to eat or drink
- Seek immediate medical assistance.

Notes to the Doctor:

Depending upon the dose, ingestion of the component potassium bifluoride may be harmful or toxic. Its concentration in the product is <300 gm/kg. Treat fluoride intoxication symptomatically. No components are readily absorbed through the skin, although skin injury may occur from prolonged contact.

5. FIRE AND EXPLOSION HAZARDS

5.1 Extinguishing Media

Not Applicable

5.2 Special Exposure Hazards from Substance/Mixture

Hazardous Combustion Products:

- This product is non-flammable and non-explosive. If it is present in a fire or explosion, potential decomposition by-products may include boron oxide, potassium oxide and /or fluorides.

5.3 Advice for Firefighters

Firefighting Methods:

- If fighting a fire in which this product is present, wear a self-contained breathing apparatus with full-face piece operated in pressure-demand or other positive pressure mode.

Special protective equipment for fire-fighters:

- Wear NIOSH/MSHA approved positive-pressure self-contained breathing apparatus and protective clothing as specified in 29 CFR 1910.156.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions, Protective Equipment & Emergency Procedures

6.1.1 For Non-Emergency Personnel

Protective Equipment

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

6.1.2 For Emergency Responders

- Full protective gear: Chemical goggles, rubber or neoprene gloves, body/skin protection, NIOSH/MSHA approved respiratory protection.

6.2 Environmental Precautions

Prevent spills from entering sewers or contaminating soil

6.3 Methods & Material for Containment & Cleaning Up

6.3.1 For Containment

- Isolate spilled products and transfer to impervious containers.

6.3.2 For Cleaning Up

- Put on full protective clothing to protect face, skin, eyes, and lungs.
- Control spill source: Contain by diking.
- Ventilate area.
- Soak up spill using an absorbent scoop into container.
- Dispose of materials in accordance with Section 13: Disposal Considerations.

6.4 Reference to other sections (as applicable)

Refer to Section 8 for Exposure Controls and Personal Protection, and Section 13 for proper disposal procedures.

7. HANDLING AND STORAGE

7.1 Precautions for Safe-Handling

Protective Measures:

Measures to prevent fire:

- Keep container closed and store in a cool, dry location away from incompatible materials.

Measures to prevent aerosol and dust generation:

- Use only in area with adequate ventilation.

Advice on General Occupational Hygiene:

- Avoid contact with skin and clothing, using protective equipment as needed.
- Wash hands thoroughly after handling.
- Avoid contact with any dusts, mists, or fumes resulting from the use of this product.
- Do not eat, drink, or smoke in work area.
- Use with adequate ventilation.

7.2 Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures & Storage Conditions

- Keep containers closed and stored in cool, dry location, away from incompatible materials (see Section 10).

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control Parameters

Exposure Limits

Component	OSHA PELs (Permissible Exposure Limits)	ACGIH TLVs (Threshold Limit Values)
Potassium Tetraborate	No OSHA PELs	No ACGIH TLVs
Boric Acid	No OSHA PELs	2mg/ m ³ TWA; 6 mg/ m ³ STEL
Potassium Bifluoride	2.5 mg/ m ³ TWA (as F-)	2.5 mg/ m ³ TWA (as F-)
Potassium Pentaborate	No OSHA PELs	No ACGIH TLVs

Biological Limits

Component	ACGIH BEIs (Threshold Limit Values)
Potassium Tetraborate	No ACGIH BEIs
Boric Acid	No ACGIH BEIs
Potassium Bifluoride	2 mg/ L prior to shift 3 mg/ L end of shift
Potassium Pentaborate	No ACGIH BEIs

8.2 Exposure Controls

8.2.1 Appropriate Engineering Controls

Use dilution or local exhaust ventilation adequate to maintain concentrations of all components and their by-products to within their applicable standards.

8.2.2 Personal Protective Equipment

8.2.2.1 Eye & Face Protection

- Wear eye protection adequate to prevent eye contact with the product and injury from the hazards of brazing.
- Plastic-frame spectacles with side shields and filter lenses (shade #3/#4) are recommended.

8.2.2 Skin Protection

- Wear protective gloves and clothing to prevent skin injuries from the hazards of brazing and/or prolonged contact with the product.
- Avoid flammable fabrics.

8.2.2.3 Respiratory Protection

- If there is a potential to exceed the TLV, NIOSH/MSHA-approved respiratory protection is required.
- For airborne levels up to 10 times the approximate TLVs, an air purifying acid gas cartridge respirator would be suitable. If used in a manner that generates a mist, a dust/mist cartridge as well as the acid gas cartridge would be necessary.
- Above 10 times the TLV, an air supplied full-face piece respirator would be required.

For guidance on selection and use of respirators, consult American National Standard Z88.2 (ANSI, New York, NY 1003, USA)

8.2.3 Environmental Exposure Controls

None

9 PHYSICAL AND CHEMICAL PROPERTIES

9.1 Basic Physical & Chemical Properties

Appearance:	White paste
Odor:	Odorless
Odor Threshold:	N/A
pH:	8.8 to 9.1
Melting Point/Freezing Point:	792°F / 422.4°C
Initial Boiling Point & Boiling Range:	N/A
Flash Point:	N/A
Evaporation Rate:	N/A
Flammability (solid, gas):	N/A
Upper/Lower Flammability or Explosive Limits:	N/A
Vapor Pressure:	N/A
Vapor Density:	N/A
Relative Density (H ₂ O):	approx. 1.50

Solubility(ies):	100% Soluble in water
Partition Coefficient: n-octanol/water):	N/A
Auto-Ignition Temperature:	N/A
Decomposition Temperature:	Not Determined
Viscosity:	Not Determined
Explosive Property:	N/A

9.2 Other Information

None

10 STABILITY AND REACTIVITY

10.1 Reactivity

None reasonably foreseeable

10.2 Chemical Stability

Stable

10.3 Conditions of Instability

None reasonably foreseeable

10.4 Possibility of Hazardous Reactions

None reasonably foreseeable

10.5 Conditions to Avoid

Temperatures at or above 225°C

10.6 Incompatible Materials

Acetic anhydride, alkali and alkali earth metals, zirconium, platinum, bromine trifluoride

10.7 Hazardous Decomposition Products

Boron Oxide, Potassium Oxide, and/or Fluorides

10.8 Hazardous Polymerization

Not expected to occur.

11 TOXICOLOGICAL INFORMATION

Ingredients - Toxicological Data

Component	CAS No.	LD50	LC50
Potassium Tetraborate	1332-77-0	No data available	No data available
Boric Acid	10043-35-3	2,660 mg/kg (oral/rat)	No data available
Potassium Bifluoride	7789-29-9	No data available	No data available
Potassium Pentaborate	11128-29-3	2,800 mg/kg (oral/rat)	No data available

11.1 Information on Toxicological Information

Primary route(s) of Entry: Ingestion; inhalation

Skin Corrosion: May cause skin corrosion or irritation

Serious Eye Damage/Irritation: May cause serious eye damage

Germ Cell Mutagenicity: Some inorganic fluorides have been demonstrated to induce mutagenic changes in mammalian cells in culture. No genetic effects in humans from occupational exposure to potassium bifluoride have been established.

Carcinogenicity: The product contains no chemicals classified as potential or demonstrated carcinogens by IARC, NTP or OSHA

Reproductive Toxicity: In experimental studies, boric acid and other inorganic borates have been found to cause decreased sperm production and testicular effects in male rats, and developmental effects in fetuses of exposed female mice. No reproductive effects in human from occupational exposure to borates have been established.

Aspiration/Inhalation Hazard: Inhalation of toxicological-significant quantities of the components is unlikely when the product is used in accordance with instructions and specified measures (see Section 8)

Signs & Symptoms of Exposure: Irritation to the nose, throat, and respiratory tract; cough, nose bleeds, nausea, vomiting, chest tightness, chills, fever, pneumonitis, tearing and pulmonary edema

Medical Conditions Generally Aggravated by Exposure: Liver and kidney damage, impaired pulmonary function, fluorosis, and/or aggravation of pre-existing diseases of the liver, kidneys, and the skeletal, nervous and gastrointestinal systems

12 ECOLOGICAL INFORMATION

Toxicity (relevant to Boric Acid)

- Freshwater Fish: 1,020 mg/L for 3 days
- Freshwater Fish: 1,260 mg/L for 5 days
- Freshwater Fish: 890 mg/L for 9 days
- Daphnia: 658-875 mg/L for 48 hours (EC50)
- Algae: 290 mg/L, exposure not reported

Other Adverse Effects

Ozone Depletion Potential: This product contains no ingredients listed in the Annexes to the Montreal Protocol on Substances that Deplete the Ozone Layer.

13 DISPOSAL CONSIDERATIONS

Do not discharge waste product into sanitary or storm sewers or allow it to contaminate the soil. Disposal of products containing fluorides and/or borates may be subject to restrictions. Consult applicable Federal, State/Provincial and local regulations.

14 TRANSPORTATION INFORMATION

14.2 UN Number

UN3266

14.3 UN Proper Shipping Name

Corrosive Liquid, Basic, Inorganic, n.o.s. (contains potassium bifluoride and boric acid)

14.4 Transport Hazard Class(es)

8

14.5 Packing Group

III

14.6 Environmental Hazards

Not Applicable

14.7 Special Precautions for User

Not Applicable

15 REGULATORY INFORMATION

15.2 Safety, health and environmental regulations/legislation specific for the substance or mixture

EU Regulations:

- None

National Regulations (USA):

- All components of this product are listed on the EPA’s TSCA inventory.
- SARA Hazard Classes: Acute Health Hazard; Chronic Health Hazard
- SARA Section 313 Notification: This product contains no ingredients in concentrations greater than 1% (for carcinogens 0.1%) regulated under Section 313 of the Emergency Planning and Community Righth-To-Know Act of 1986 or 40CFR372.

Canadian Regulations:

- All components of this product are listed on either the Domestic Substances List (DSL) or the Nondomestic Substances List (NDSL)
- WHMIS Class(es) and Division(s): D2A, D2B, E
- Components on Ingredients Disclosure List:
 1. Boric Acid (CASRN 10043-35-3)
 2. Fluoride compounds, inorganic, n.o.s.
- This product has been classified according to the hazard criteria of the CPR and this SDS contains all of the information required by the CPR.

15.3 Chemical Safety Assessment:

No chemical safety assessment has been carried out for this substance/mixture by the supplier.

16 ADDITIONAL INFORMATION

16.1 Indication of changes/revision to SDS:

1. New format
2. Inclusion of EC Requirements
3. **Revision Date:** 03/23/2015

16.2 Abbreviations and acronyms:

None

16.3 Key literature references and sources for data

1. Guidance on the Compilation of Safety Data Sheets; European Chemical Agency (ECHA); Version 2.1, February 2014
2. Regulation (EC) No 1272/2008 of the European Parliament and the Council of 16 December 2008 on classification, labelling, and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006

Some of the information presented and conclusions drawn herein are from sources other than direct test data on the product itself. The information in the SDS was obtained from sources that we believe are reliable and is believed to be valid and accurate. American Orthodontics, however, makes no warranty, express or implied, regarding its correctness of the information provided. The conditions or method of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage, or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. If the product is used as a component in another product or used in a way other than recommended by the Company, this SDS information may not be applicable. **Reasonable safety precautions must always be observed.**