



## SAFETY DATA SHEET

This Safety Data Sheet complies with European Commission Directive 91/155/EEC, ISO 11014-1 and ANSI Z400.1

### 1. PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** ALL-STATE GENERAL PURPOSE "SILVER" SOLDER/BRAZE FLUXES  
ALL-STATE 110 FLUX PN: 69080215, 69080216, 69080217  
ALL-STATE S-200 FLUX PN: 69080218, 69080219  
ALL-STATE S-300 FLUX PN: 69080222

**Application:** Silver Soldering and Brazing Flux

**Classification:** None

**Supplier:** THE ESAB GROUP, INC., 801 Wilson Avenue, P. O. Box 517, Hanover, PA 17331

**Telephone No.:** 1-717-637-8911, 1-800-933-7070

**Emergency No.:** 1-717-637-8911 and 1-800-424-9300 (CHEMTREC)

**Web site:** [www.esabna.com](http://www.esabna.com)

### 2. HAZARDS IDENTIFICATION

**Emergency Overview:** A white, blue or black paste with no odor. May cause severe irritation or burns to skin and eyes. Harmful and possibly fatal if swallowed or through contact. Specialized first aid required for contact with acidic fluorides.

Gloves should be worn when handling to prevent contaminating hands with product.

Persons with a pacemaker should not go near soldering or brazing operations until they have consulted their doctor and obtained information from the manufacturer of the device.

When these products are used in a soldering or brazing process, the most important hazards are heat, radiation, electric shock and soldering and brazing fumes.

**Heat:** Spatter and melting metal can cause burn injuries and start fires.

**Radiation:** Arc rays can severely damage eyes or skin.

**Electricity:** Electric shock can kill.

**Fumes:** Overexposure to soldering and brazing fumes may result in symptoms like metal fume fever, dizziness, nausea, dryness or irritation of the nose, throat or eyes. Chronic overexposure to soldering and brazing fumes may affect pulmonary function. Prolonged inhalation of nickel and chromium compounds above safe exposure limits can cause cancer. Overexposure to manganese and manganese compounds above safe exposure limits can cause irreversible damage to the central nervous system, including the brain, symptoms of which may include slurred speech, lethargy, tremor, muscular weakness, psychological disturbances and spastic gait. Chronic exposure to fluorides above safe exposure levels can cause changes in bone density and the teeth (fluorosis).

**Flame Processing:** When used with combustible gas equipment (e.g., oxy-acetylene torch), read the use and safety information for that equipment.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

These products are pastes.

Ingredients	CAS#	EINECS#	Hazard classification <sup>(1)</sup>	IARC <sup>(2)</sup>	NTP <sup>(3)</sup>	OSHA List <sup>(4)</sup>
Boric Acid	10043-35-3	233-139-2	Repr. Cat. 2; R60-61	--	--	--
Potassium Bifluoride	7789-29-2	232-156-2	T; R25 C; R34	--	--	--
Potassium Fluoride	7789-23-3	232-151-5	T; R25, C; R34	--	--	--
Potassium Tetraborate	1332-77-0	215-575-5	No	--	--	--

<sup>(1)</sup> Hazard Classification according to European Council Directive 67/548/EEC, for R-phrases, see Section 16.

<sup>(2)</sup> Evaluation according to the International Agency for Research on Cancer.

1 – Human Carcinogen 2B – Possibly carcinogenic to humans

<sup>(3)</sup> Classification according to the 11th Report on Carcinogens, published by the US National Toxicology Program.

K – Known Carcinogen S – Suspect Carcinogen

<sup>(4)</sup> Carcinogen listing according to OSHA, Occupational Safety & Health Administration (USA).

## APPROXIMATE COMPOSITION (Wt. %)

All-State Product Trade Name	110 Flux	S-200 Flux	S-300 Flux
Boric Acid	10-30	40-55	10-30
Potassium Bifluoride	30-60	10-20	30-60
Potassium Fluoride	--	15-25	--
Potassium Tetraborate	10-30	--	10-30

**4. FIRST AID MEASURES**

- Inhalation: If breathing has stopped, perform artificial respiration and obtain medical assistance immediately! If breathing is difficult, provide fresh air and call physician. Treat as potential HF inhalation.
- Eye contact: For radiation burns due to arc flash, see physician. Flush with water for at least fifteen minutes. Get immediate medical attention. Treat as potential HF burn.
- Skin contact: For skin burns from arc radiation, promptly flush with cold water. Remove contaminated clothing and wash before reuse. Get medical attention. Treat as potential HF burn.
- Ingestion: Immediately call a physician or poison control center immediately. Do not induce vomiting unless directed to do so by a physician. Treat as potential HF ingestion.
- Electric shock: Disconnect and turn off the power. Use a nonconductive material to pull victim away from contact with live parts or wires. If not breathing, begin artificial respiration, preferably mouth-to-mouth. If no detectable pulse, begin Cardio Pulmonary Resuscitation (CPR). Immediately call a physician.
- General: Specialized first aid and treatment are required for HF type burns. Move to fresh air and call for medical aid.

**5. FIRE FIGHTING MEASURES**

No specific recommendations for soldering and brazing consumables. Brazing arcs and sparks and the soldering process can ignite combustible and flammable materials. Use the extinguishing media recommended for the burning materials and fire situation. Wear self-contained breathing apparatus as fumes or vapors may be harmful.

**6. ACCIDENTAL RELEASE MEASURES**

Liquids or pastes should be scooped up and placed into a container. Wear proper protective equipment while handling these materials. Do not discard as refuse.

Personal precautions: refer to Section 8.

Environmental precautions: refer to Section 13.

**7. HANDLING AND STORAGE**

Handling:

Avoid contact with skin, eyes and clothing. Do not swallow or breathe vapors produced by use of product. Wash hands after using.

Some individuals can develop an allergic reaction to certain materials. Retain all warning and identity labels.

Storage:

Store in cool, dry, well-ventilated place. Keep separate from chemical substances like acids and strong bases, which could cause chemical reactions.

**8. EXPOSURE CONTROL/PERSONAL PROTECTION**

Avoid exposure to soldering and brazing fumes, radiation, spatter, electric shock, heated materials and dust.

Engineering measures: (Soldering and brazing operations)

Ensure sufficient ventilation, local exhaust, or both, to keep soldering and brazing fumes and gases from breathing zone and general area. Keep working place and protective clothing clean and dry. Train welders to avoid contact with live electrical parts and insulate conductive parts. Check condition of protective clothing and equipment on a regular basis.

Personal protective equipment: (Soldering and brazing operations)

Use respirator or air supplied respirator when soldering or brazing in a confined space, or where local exhaust or ventilation is not sufficient to keep exposure values within safe limits. Use special care when soldering or brazing painted or coated steels since hazardous substances from the coating may be emitted. Wear hand, head, eyes, ear and body protection like welders gloves, helmet or face shield with filter lens, safety boots, apron, arm and shoulder protection. Keep protective clothing clean and dry.

Use industrial hygiene monitoring equipment to ensure that exposure does not exceed applicable national exposure limits. For information about soldering and brazing flux fume refer to Section 10. The following limits can be used as guidance. When used with soldering and brazing products, refer to the soldering and brazing product SDS, Section 10, for information on soldering and brazing fumes.

Substance	CAS#	ACGIH TLV <sup>(1)</sup> mg/m <sup>3</sup>	OSHA PEL <sup>(2)</sup> mg/m <sup>3</sup>
Boric Acid (as borates)	10043-35-3	2 ***, 6 (STEL) ***	None
Potassium Bifluoride (as F)	7789-29-9	2.5	2.5
Potassium Fluoride (as F)	7789-23-3	2.5	2.5
Potassium Tetraborate (as boric oxide fume)	1332-77-0	10	15*

<sup>(1)</sup> Threshold Limit Values according to American Conference of Governmental Hygienists, 2010

<sup>(2)</sup> Permissible Exposure Limits according to the Occupational Safety & Health Administration (USA)

Unless noted, all values are for 8 hour time weighted averages (TWA).

NOTE: Some of these products may not contain all of the materials listed. For details of composition, refer to the COMPOSITION TABLES in Section 3.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Blue (110), White (S-200), or Black (S-300) paste with no odor.
Specific Gravity:	1.64 – 1.86
Boiling Point:	Not determined.
Freezing Point:	Not determined.
Vapor Pressure:	Negligible.
Vapor Density:	Not applicable.
Evaporation Rate:	Not applicable (paste).
Solubility in Water:	Moderate.
Flash Point:	None.
Upper/Lower Flame Limit:	None.
Auto-ignition Temperature:	Not determined.

## 10. STABILITY AND REACTIVITY

General: These products are only intended for normal soldering and brazing purposes.

Stability: These products are stable under normal conditions.

Reactivity: Contact with chemical substances like acids or strong bases could cause generation of gas.

When these products are used in soldering or brazing processes, hazardous decomposition products would include those from the volatilization, reaction or oxidation of the materials listed in Section 3 and those from the base metal and coating.

Refer to applicable national exposure limits for fume compounds, including those exposure limits for fume compounds found in Section 8 of this SDS and the soldering or brazing consumable SDS. A significant amount of the chromium in the fumes can be hexavalent chromium, which has a very low exposure limit in some countries. Manganese and nickel also have low exposure limits that may be easily exceeded.

Reasonably expected gaseous products would include boric oxides, fluorides, nitrogen oxides and ozone. Air contaminants around the soldering or brazing area can be affected by the soldering or brazing process and influence the composition and quantity of fumes and gases produced.

## 11. TOXICOLOGICAL INFORMATION

Inhalation of soldering and brazing fumes and gases can be dangerous to your health. Classification of soldering and brazing fumes is difficult because of varying base materials, coatings, air contamination and processes. The International Agency for Research on Cancer has classified welding fumes as possibly carcinogenic to humans (Group 2B).

Acute toxicity:	Boric Acid:	2.6 g/kg (LD50, oral, rat)
	Potassium Bifluoride:	No information found.
	Potassium Fluoride:	245 mg/kg (LD50, oral, rat)
	Potassium Tetraborate:	90 mL/kg (LD50, oral, rat)

Overexposure to soldering and brazing fumes may result in symptoms like metal fume fever, dizziness, nausea, dryness or irritation of the nose, throat or eyes.

**Chronic toxicity:** Overexposure to soldering and brazing fumes may affect pulmonary function. Prolonged inhalation of nickel and chromium compounds above safe exposure limits can cause cancer. Overexposure to manganese and manganese compounds above safe exposure limits can cause irreversible damage to the central nervous system, including the brain, symptoms of which may include slurred speech, lethargy, tremor, muscular weakness, psychological disturbances and spastic gait. Chronic exposure to fluorides above safe exposure levels can cause changes in bone density and the teeth (fluorosis).

## 12. ECOLOGICAL INFORMATION

Soldering and brazing consumables and materials could degrade/weather into components originating from the consumables or from the materials used in the soldering or brazing processes. Avoid exposure to conditions that could lead to accumulation in soils or groundwater.

## 13. DISPOSAL CONSIDERATIONS

Discard any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with federal and local regulations. Use recycling procedures if available.

USA RCRA: These products are not considered hazardous waste if discarded.

Residues from soldering and brazing consumables and processes could degrade and accumulate in soils and groundwater.

## 14. TRANSPORT INFORMATION

For S-200 Flux:	U.S. DOT:	Class: Corrosive.
		Shipping Name: Corrosive Solid n.o.s. (potassium bifluoride, potassium fluoride) ID Number: UN 1759      Packing group: II
	Canada TDG:	Class: Corrosive.
		Shipping Name: Corrosive Solid n.o.s. (potassium bifluoride, potassium fluoride) ID Number UN 1759      Packing group: II
Product is shipped as a Consumer Commodity (ORM-D)		
For 110 and S-300 Flux:	U.S. DOT:	Class: Corrosive
		Shipping Name: Corrosive Solid n.o.s. (boric acid, potassium bifluoride) ID Number UN 1759      Packing group II
	Canada TDG:	Class: Corrosive
		Shipping Name: Corrosive Solid n.o.s. (boric acid, potassium bifluoride) ID Number: UN 1759      Packing group: II
Product is shipped as a Consumer Commodity (ORM-D)		

## 15. REGULATORY INFORMATION

Read and understand the manufacturer's instructions, your employer's safety practices and the health and safety instructions on the label. Observe any federal and local regulations. Take precautions when soldering and brazing and protect yourself and others.

**WARNING:** Soldering and brazing fumes and gases are hazardous to your health and may damage lungs and other organs. Use adequate ventilation.

**ELECTRIC SHOCK** can kill.

**ARC RAYS** and **SPARKS** can injure eyes and burn skin.

Wear correct hand, head, eye and body protection.

**Canada:** WHMIS classification: Class D; Division 1, Subdivision B Class E: Corrosive

Canadian Environmental Protection Act (CEPA): All constituents of these products are on the Domestic Substance List (DSL).

**USA:** Under the OSHA Hazard Communication Standard, these products are considered hazardous.

These products contain or produce a chemical known to the state of California to cause cancer and birth defects (or other reproductive harm). (California Health & Safety Code § 25249.5 et seq.)

United States EPA Toxic Substance Control Act: All constituents of these products are on the TSCA inventory list or are excluded from listing.

### CERCLA/SARA Title III

Reportable Quantities (RQs) and/or Threshold Planning Quantities (TPQs):

Ingredient name	RQ (lb)	TPQ (lb)
No ingredients listed in this section.	--	--

Spills or releases resulting in the loss of any ingredient at or above its RQ require immediate notification to the National Response Center and to your Local Emergency Planning Committee.

### Section 311 Hazard Class

As shipped: Immediate, chronic In use: Immediate, chronic

### EPCRA/SARA Title III 313 Toxic Chemicals

The following metallic components are listed as SARA 313 "Toxic Chemicals" and potential subject to annual SARA 313 reporting. See Section 3 for weight percent.

Ingredient name	Disclosure threshold
No ingredients listed in this section	--

## 16. OTHER INFORMATION

This Safety Data Sheet has been revised due to modifications to several paragraphs and/or new format. This SDS supersedes 39-E.

Refer to ESAB "Welding and Cutting - Risks and Measures", F52-529 "Precautions and Safe Practices for Electric Welding and Cutting" and F2035 "Precautions and Safe Practices for Gas Welding, Cutting and Heating" available from ESAB, and to:

USA: Contact ESAB at [www.esabna.com](http://www.esabna.com) or 1-800-ESAB-123 if you have questions about this SDS.

American National Standard Z49.1 "Safety in Welding and Cutting", ANSI/AWS F1.5 "Methods for Sampling and Analyzing Gases from Welding and Allied Processes", ANSI/AWS F1.1 "Method for Sampling Airborne Particles Generated by Welding and Allied Processes", AWSF3.2M/F3.2 "Ventilation Guide for Weld Fume", American Welding Society, 550 North Le Jeune Road, Miami, Florida, 33135. Safety and Health Fact Sheets available from AWS at [www.aws.org](http://www.aws.org).

OSHA Publication 2206 (29 C.F.R. 1910), U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954.

American Conference of Governmental Hygienists (ACGIH), Threshold Limit Values and Biological Exposure Indices, 6500 Glenway Ave., Cincinnati, Ohio 45211, USA.

NFPA 51B "Standard for Fire Prevention During Welding, Cutting and Other Hot Work" published by the National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169.

UK: WMA Publication 236 and 237, "Hazards from Welding Fume", "The arc welder at work, some general aspects of health and safety".

Germany: Unfallverhütungsvorschrift BGV D1, "Schweißen, Schneiden und verwandte Verfahren".

Canada: CSA Standard CAN/CSA-W117.2-01 "Safety in Welding, Cutting and Allied Processes".

These products have been classified according to the hazard criteria of the CPR and the SDS contains all the information required by the CPR.

R-phrases: R25 – Toxic if swallowed.

R34 – Causes burns.

R60 – May impair fertility.

R61 – May cause harm to the unborn child.

R23/24/25 – Toxic by inhalation, in contact with skin and if swallowed.

ESAB requests the users of these products to study this Safety Data Sheet (SDS) and become aware of product hazards and safety information. To promote safe use of these products a user should:

- notify its employees, agents and contractors of the information on this SDS and any product hazards/safety information.
- furnish this same information to each of its customers for these products.
- request such customers to notify employees and customers for the same product hazards and safety information.

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