

## MATERIAL SAFETY DATA SHEET

### I. PRODUCT IDENTIFICATION

Product Name: AMCO 446 Blue CAS number: N/A - mixture  
Chemical Name & Synonyms: N/A - mixture  
Appearance: Smooth blue paste with no noticeable odor.  
Use: General purpose "silver" solder/braze flux.  
Manufacturer: Force Industries Division Tel. 610-647-3575  
EMERGENCY PHONE No. CALL CHEMTREC (800) 424-9300 \* Available 24 Hours

### II. CHEMICAL COMPOSITION

Material	SARA III	CAS Number	OSHA PEL	ACGIH TLV
Boric Acid	<60%	10043-35-3	15 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>
Potassium bifluoride*	--	7789-29-9	2.5 mg/m <sup>3</sup> as F	2.5 mg/m <sup>3</sup>
Potassium tetraborate**	--	1332-77-0	5 mg/m <sup>3</sup>	3 mg/m <sup>3</sup>

\* Potassium bifluoride is currently not regulated as a SARA list hazard. The PEL expressed is for that of fluoride as F. Chronic fluoride absorption can result in osseous fluorosis, increased radiographic density of the bones and mottling of the teeth. Read OSHA CFR 1910.1000 July 1, 1980 (standard for fluorides).

\*\* The PEL expressed is for that of boron oxide, B<sub>2</sub>O<sub>3</sub>, as a fume. This compound when used as intended will generate fumes of boron oxide. Contact your industrial hygiene department.

Others, if any, are non-hazardous and are claimed as trade secret.

Hazard Rating: HMIS: (H = 0 F = 0 R = 0 PE = C) NFPA: (H = 0 F = 0 R = 0)

### III. POTENTIAL HEALTH EFFECTS AND HEALTH HAZARD DATA

Target organ statement: WARNING! Skin, nasal, and respiratory irritant; nausea. May be harmful if swallowed or if fumes are inhaled.

Effects of Chronic Exposure: Coughing, erythema, nausea. Osseous fluorosis due to fluoride.

Effects of Acute Overexposure

Swallowing: Can cause damage to digestive system. Corrosive to mucous membranes. May cause salivation, nausea, vomiting, diarrhea, and abdominal pain. Potassium ion may cause lower blood pressure, death. Fluoride ion can reduce serum calcium levels, possibly causing fatal hypocalcemia.

Skin Absorption: None currently known. Fumes may be penetrable.

Inhalation: Highly irritating to respiratory system. Coughing and sneezing. Existing lung disorders will be aggravated. Inhalation may yield: chills, labored breathing, fevers, and unproductive cough. The fluoride ion may cause hypo-calcemia - calcium deficiency in the blood. Inflammation and necrosis of mucous membranes.

Skin Contact: Severe dermatitis; possible burns and pustular dermatitis. Existing disorders will be aggravated. Hypocalcemia.

Eye Contact: Strong irritation to eyes, tearing, burn of eye surface, and corrosive to eyes. May cause blindness.

### IV. EMERGENCY AND FIRST AID PROCEDURES

Swallowing: Call a physician or your Poison Control Center IMMEDIATELY. Corrosive to mucous membranes. May contain corrosive hydrofluoric acid solution.

Skin: Promptly flush with water to remove all residue. If rash or burn develops, consult a physician. Severe irritant. Hydrofluoric acid possible.

Inhalation: Remove to fresh air. If fumes are inhaled, call a physician.

Eyes: Flush with water for at least 20 minutes to remove all residue. Get medical help NOW! Blindness can result! Hydrofluoric acid possible.

### V. FIRE AND EXPLOSION DATA

Flashpoint (°F): N/A

Flammable limits in air: LOWER: N/A UPPER: N/A (% by volume)

Extinguishing media: Water, for or foam.

Special firefighting procedures: Full protective equipment required. May release boron oxide and fluoride fumes.

Unusual fire and explosion hazards: Avoid splashing this material and solutions of it onto personnel. Hydrofluoric acid solution may be formed within water runoff.

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## VI. REACTIVITY INFORMATION

Stability considerations / Conditions to avoid: Stable / Excessive heat: decomposes forming corrosive, skin penetrating, and toxic gases.

Hazardous polymerization / Conditions to avoid: Will not occur / None

Incompatibility / Materials to avoid: Acids, alkalis

Hazardous combustion or Decomposition products: Hydrogen fluoride and caustic potash are expected.

## VII. SPILL AND LEAK RESPONSE

Steps to be taken if material is released or spilled: Contain, absorb, sweep-up and dispose. Flush area to chemical sewer. Prevent direct contact to skin, eyes, and clothes.

Waste disposal method: Dispose of in accordance with all local, state, and federal regulations.

## VIII. SPECIAL PROTECTION INFORMATION

Respiratory protection: If the work station is not properly ventilated to exhaust all fumes and dusts, use a NIOSH approved mask for complete respiratory and eye protection.

Ventilation: Maintain air flow away from user to remove all fumes and dusts, so that the PEL is never exceeded. Adhere to environmental regulations for exhausts.

Protective gloves: Chemical and acid impervious

Eye protection: Chemical tight safety goggles. Do NOT wear contact lenses.

Other protective equipment: Full protective equipment normally used in a braze/soldering operation so as to prevent any contact. Review operations to avoid contact with hazardous gas, liquids or solids. See also:  
29 CFR 1910.132 - 29 CFR 1910.140. Personal Protective Equipment  
29 CFR 1910.251 - 29 CFR 1910.257. Welding, Cutting and Brazing

## IX. STORAGE, HANDLING AND SPECIAL PRECAUTIONS

Precautions to be taken in handling and storage: Store flux at ambient conditions, keep containers tightly closed and away from foodstuffs. Wash thoroughly after handling to remove all residue. No eating or smoking in work area.

Other precautions: Do NOT breathe fumes. Professionally wash contaminated clothing before re-use. Existing lung disorders will have increased toxic susceptibility.

## X. PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point (°F @ 760 mmHg):	~212	Specific gravity (H <sub>2</sub> O = 1 @ 72°F):	1.643
Percent volatiles by volume:	N/A	Solubility in water:	Moderate
Evaporation rate (butyl acetate = 1):	N/A		

## XI. OPTIONAL INFORMATION

Department of Transportation: DOMESTIC GROUND

Proper shipping name: Non-regulated

Hazard Class: N/A

ID & Packing Group Number: N/A

Additional Information: N/A

ERG Guide Number: N/A

Toxic Substance Control Act: All components of this compound are listed within the TSCA inventory.

State Right-to-Know Programs:

Pennsylvania: This product contains the following chemicals listed in PA Code Title 34, Hazardous Substance List: Borax

California: This product contains the following compounds subject to the reporting and labeling requirements of Proposition 65: None

NOTES: NA=Not Applicable NE=Not Established H=Health  
F=Fire R=Reactivity PE=Personal Equipment

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