



# Material Safety Data Sheet

(Essentially Similar to U.S. Department of Labor Suggested Form For Hazard Communication Compliance)

## I. Product Identification

**Product Type** - ALL-STATE GENERAL PURPOSE BRAZE WELDING AND WELDING FLUXES  
(All-State No. 5 Red Flux for Torch Brazing on Cast Iron)

**Manufacturer** - THE ESAB GROUP, INC.  
**Website:** [www.esabna.com](http://www.esabna.com)

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

**Address** - 801 Wilson Avenue  
Hanover, PA 17331

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

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Product Description: Agglomerated powders for use as fluxing agents in Arc or Torch Brazing, Braze Welding and other welding processes.

### NOMINAL CHEMICAL COMPOSITION (Wt. %)

All-State Product Trade Name	Borax	Boric Acid	Iron Oxide
All-State No. 1 Blue Flux ❶	30-39	60-69	--
All-State No. 5 Red Flux ❶	28-35	52-55	<10
All-State Brazo Flux ❶	10-30	60-90	--

❶ See Note in Section VI

**THE ESAB GROUP** requests the users of these products to study this Material Safety Data Sheet (MSDS) and the product labels and become fully aware of the product hazards and safety information. To promote the safe use of these products a user should (1) notify and train its employees, agents and contractors concerning the information on this MSDS and any product hazards and safety information, (2) furnish this same information to each of its customers for these products, and (3) request that such customers notify and train their employees and customers, for these products, of the same product hazards and safety information.

## II. Hazardous Ingredients

**IMPORTANT:** This section covers the materials from which this product is manufactured. The fumes and gases produced during normal use of these products are covered in Section V. The term **HAZARDOUS** should be interpreted as a term required and defined by Laws, Statutes, or Regulations, and does not necessarily imply the existence of any hazard when the products are used as directed by **THE ESAB GROUP**.

Material	(CAS No.)	SARA	ACGIH TLV		OSHA - PEL	
			TWA (mg/m <sup>3</sup> )		TWA (mg/m <sup>3</sup> )	STEL (mg/m <sup>3</sup> )
Borax	(1330-43-4)		1		10	--
Boric Acid	(10043-35-3)		10 (B <sub>2</sub> O <sub>3</sub> )		5 (B <sub>2</sub> O <sub>3</sub> - Respirable)	--
Iron Oxide	(1309-37-1)		5		10	--

**NOTE:** In the ingredients table, an asterisk (\*) after the CAS number indicates a toxic chemical subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (SARA) and 40 CFR Part 372.

## III. Physical Data

<b>Physical State:</b>	Gas ( )	Liquid ( )	Solid (X)
<b>Solubility in Water:</b>	Moderate		
<b>Specific Gravity:</b> (H <sub>2</sub> O = 1):	No. 5 Red Flux: 1.87		
<b>Bulk Density</b> (lbs/ft <sup>3</sup> ):	No. 1 Blue Flux: 91	Brazo Flux: 91.2	
<b>Odor and Appearance:</b>	No. 1 Blue Flux:	Light blue powder, odorless.	
	No. 5 Red Flux:	Red powder, odorless.	
	Brazo Flux:	White powder, odorless.	

## IV. Fire & Explosion Hazard

**Flammable/Explosive** NO (X) YES ( )

**Under What Conditions:** Only the packaging for this product will burn.

**Extinguishing Media:** This product will not burn; however, welding arcs and sparks can ignite combustible and flammable materials. Use the extinguishing media recommended for the burning materials and fire situation. See ANSI Z49.1 "Safety in Welding and Cutting" and "Safe Practices" Code: SP, published by the American Welding Society, P. O. Box 351040, Miami, FL 33135, and NFPA 51B "Cutting and Welding Processes," published by the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269 for additional fire prevention and protection information.

## V. Reactivity Data

**Stability:** Stable (X) Unstable ( ) Hazardous polymerization will not occur.

**Incompatibility** (Materials to Avoid): Acetic Anhydride, Elemental Potassium and other Reactive Metals such as Zirconium Metal.

**Hazardous decomposition products:** Boron oxide fumes. Welding fumes and gases cannot be classified simply. The composition and quantity of the fumes and gases are dependent upon the base metal, the flux and filler metal being used. Coatings on the base metal such as paint, galvanizing or plating will produce fumes as well. Other conditions which influence the composition and quality of the fumes and gases to which workers may be exposed are the number of operators relative to the volume of the work area, the quality and amount of ventilation, the position of the welder's head in respect to the fume plume, as well as the presence of contaminants in the atmosphere such as halogenated hydrocarbon vapors from cleaning and degreasing activities.

When welding, the composition of the fumes and gases are usually different from the composition of the ingredients mentioned in Section II. Fume ingredients of normal operation include those originating from volatilization, reaction, or oxidation of the materials noted in the above paragraph. Reasonably expected fume constituents include boric oxide (CAS number 1303-86-2) with OSHA TWA and ACGIH TLV listings of 10 mg/m<sup>3</sup>, and oxides of iron and carbon.

**Reasonably expected decomposition products** from normal use of these products include a complex of the oxides of the materials listed in Section II, as well as carbon monoxide, carbon dioxide, ozone and nitrogen oxides (refer to "Characterization of Arc Welding Fume" available from the American Welding Society). The only way to determine the true identity of the decomposition products is by sampling and analysis. The composition and quantity of the fumes and gases to which a worker may be overexposed can be determined from a sample obtained from inside the welder's helmet, if worn, or in the workers breathing zone. See ANSI/AWS F1.1 "Method for Sampling Airborne Particles Generated by Welding and Allied Processes," available from the American Welding Society.

## VI. Physical and Health Hazard Data

Electric arc working may create one or more of the following health or physical hazards. Fumes and gases can be dangerous to your health. Electric shock can kill you. Arc rays can injure eyes and burn skin. Noise can damage hearing. An additional detailed description of the Health and Physical Hazards and their consequences may be found in ESAB's free publications F52-529 "Precautions and Safe Practices for Electric Welding and Cutting" and 17982 "Standard for Fire Prevention During Welding, Cutting and Other Hot Work." You may obtain copies from your local supplier or by writing to the address in Section I.

**Route of overexposure:** The primary route of entry of this product and of the decomposition products is by inhalation. Skin contact, eye contact, and ingestion are possible. When these products are used as recommended by **THE ESAB GROUP**, and ventilation maintains exposure to the decomposition products below the limits recommended in this section, overexposure is unlikely.

**Effects of Acute (short-term) overexposure:**

**Inhalation:** Irritant to respiratory system. Sneezing and coughing. Pre-existing lung disorders may be aggravated.

**Eye Contact:** Mild irritation to eye surfaces. Existing disorders may be aggravated.

**Skin Contact:** Mild dermatitis or irritation. Pre-existing skin disorders may be aggravated.

**Ingestion:** Nausea, vomiting and diarrhea.

**Pre-existing Medical Conditions Aggravated by Overexposure:** Individuals with allergies or impaired respiratory function may have symptoms worsened by exposure to welding fumes; however, such reaction cannot be predicted due to the variation in composition and quantity of the decomposition products.

**Effects Of Chronic (Long Term) Overexposure** to air contaminants may lead to their accumulation in the lungs, a condition which may be seen as dense areas on chest X-rays. The severity of the change is proportional to the length of the exposure. The changes seen are not necessarily associated with symptoms or signs of reduced lung function or disease. In addition, the changes on X-rays may be caused by non-work factors such as smoking, etc. Prolonged absorption of boric acid in high doses may cause nausea vomiting, diarrhea with delayed effects of skin redness and peeling.

**Exposure Limits** for the ingredients are listed in Section II. The ACGIH and the 1989 OSHA TWA for welding fume is 5 mg/m<sup>3</sup>. At times the limit for a particular hazardous chemical is reached before the limit for welding fumes. TLV-TWAs should be used as a guide in the control of health hazards and not as firm lines between safe and excessive concentrations. As noted in Section V, the fume from welding and allied processes is a mixture of many components. Therefore, a statutory computation of the *equivalent exposure* is required. The *equivalent exposure* value for the welding and brazing fume mixture shall always be less than one. When these products are used as recommended by THE ESAB GROUP, and the preventive measures taught in this MSDS are followed, overexposure to hazardous substances will not occur. Threshold Limit Value for these products is 1 mg per cu meter of air.

**Emergency First Aid Measures:** ALWAYS CONTACT PHYSICIAN OR POISON CONTROL CENTER IN CASE OF MEDICAL EMERGENCY

**Eye Contact:** Flush eyes with plenty of water for at least 15 minutes to remove all residue. Promptly seek medical attention.

**Skin Contact:** Wash hands with soap and water to remove all residue. If rash develops, consult a physician.

**Inhalation:** Remove victim to fresh air. If fumes, vapors or dusts are inhaled, call a physician.

**Ingestion:** Contains boric acid. Call a physician or your Poison Control Center. Advise of Section II.

**Carcinogenic Assessment (NTP Annual Report, IARC Monographs, Other):** NONE.

● **WARNING:** This product, when used for welding or cutting, produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety Code §25249.5 et seq.)

## VII. Precautions for Safe Handling and Use/Applicable Control Measures

Read and understand the manufacturer's instructions and the precautionary label on this product. See American National Standard Z-49.1, "Safety in Welding and Cutting," published by the American Welding Society, P. O. Box 351040, Miami, FL 33135 and OSHA Publication 2206 (29 C.F.R. 1910), U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954 for more detail on many of the following:

**Ventilation:** Use enough ventilation, local exhaust at the arc, or both, to keep the exposure within legal limits. In the worker's breathing zone and the general area, the fumes and gases must be kept below the TLVs and the *equivalent exposure* must compute to less than one. Train the welder to keep his head out the fumes. Adequate ventilation should be used when material is in dusty or molten state.

**Respiratory Protection:** Use respirable fume respirator or air supplied respirator when welding in confined spaces or where local exhaust or ventilation does not keep exposure below TLVs.

**Eye Protection:** Chemical tight safety goggles. Do not wear contact lenses.

**Protective Clothing and Equipment:** Chemical and acid impervious gloves. Wear head, hand, and body protection which help to prevent injury from radiation, sparks and electrical shock. See ANSI Z-49.1 for additional guidelines. Train the welder not to touch live electrical parts and to insulate himself from work and ground.

**Procedure for Cleanup of Spills or Leaks:** Contain spill, absorb, sweep up. Remove to chemical sewer. Flush area to chemical sewer. Avoid breathing dust.

**Waste Disposal Methods:** Prevent waste from contaminating surrounding environment. Discard any product, residue, disposable container, or liner in an environmentally acceptable manner, in full compliance with Federal, State, and Local regulations.

**Precautions to be Taken in Handling and Storage:** Store flux at ambient conditions. Keep under extremely dry and controlled conditions. Wash thoroughly after handling to remove all residue.

**Other Precautions and/or Special Hazards:** Remove and professionally clean contaminated clothing before reuse.

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The opinions expressed in this MSDS are those of qualified experts within **THE ESAB GROUP**. We believe that the information contained herein is current as of the date of this MSDS. Since the use of this information and these opinions and the conditions of use of these products are not within the control of **THE ESAB GROUP**, it is the user's obligation to determine the conditions of safe use of these products.