



Hazard Ratings
4 = Extreme
3 = High
2 = Moderate
1 = Slight
0 = Insignificant

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 BRASS AND BRONZE BRAZING AND WELDING FLUXES

Manufacturer - THE ESAB GROUP, INC.

Telephone No. - 1-717-637-8911

Website: www.esabna.com

1-800-933-7070

Address - 801 Wilson Avenue
Hanover, PA 17331

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

Product Description: Agglomerated pastes for use as fluxing agents in Torch Brazing and in Welding of thicker brasses and bronzes to better withstand the high joining temperatures.

NOMINAL CHEMICAL COMPOSITION (Wt. %)

All-State Product Trade Name	Borax	Boric Acid	Iron Oxide	Water
All-State No. 21 Paste Flux ❶	55-62	12-18	--	Balance
All-State No. 1113 Paste Flux ❶	7-15	65-73	<2	Balance

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	STEL (mg/m ³)
			TWA (mg/m ³)	TWA (mg/m ³)	
Borax**	(1330-43-4)		1	10	--
Boric Acid	(10043-35-3)		10 (B ₂ O ₃)	5 (B ₂ O ₃ - Respirable)	--
Iron Oxide	(1309-37-1)		5 (Iron Oxide Fume)	10 (Fume)	--

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.

(**) Other names for this chemical are: Borate, Disodium Tetraborate; Borax, fused; Sodium Borate; Borates, tetrasodium salts; Tetraborate.

III. Physical Data

Physical State: Gas () Liquid () Solid (X)

Solubility in Water: Moderate

Specific Gravity: (H₂O = 1): **All-State No. 1113 Paste Flux** 1.32

Bulk Density (lbs/ft³): **All-State No. 21 Paste Flux** 78.2

Odor and Appearance: **All-State No. 21 Paste Flux** is a white, smooth paste with no characteristic odor.
All-State No. 1113 Paste Flux is a gray, smooth paste with no characteristic odor.

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.

Special Fire Fighting Procedures: Toxic fumes produced. Wear self-contained respiratory apparatus.

Unusual Fire and Explosion Hazards: None.

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 and brazing 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. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the material being worked (such as paint, plating or galvanizing), the number of welding, brazing and fume generating operations and the volume of the work area, the quality and amount of ventilation, the position of the worker's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning or painting activities). When the materials are consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section II. Decomposition products of normal operation include those originating from

the volatilization, reaction, or oxidation of the ingredients, plus those from the material being worked and the coatings etc. noted above

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). Fumes from brazing and welding on copper based materials and from the use of copper based filler metal may EXCEED THE LIMITS FOR COPPER OF 0.1 mg/m³ and FOR PHOSPHOROUS OF 0.1 mg/m³ BEFORE THE GENERAL LIMIT FOR WELDING FUMES OF 5 mg/m³ IS REACHED. MONITOR FUMES FOR COPPER AND PHOSPHOROUS. 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 F1.5 "Methods for Sampling and Analyzing Gases from Welding and Allied Processes" and ANSI/AWS F1.1 "Method for Sampling Airborne Particles Generated by Welding and Allied Processes", both available from the American Welding Society.

VI. Physical and Health Hazard Data

Electric arc working and torch brazing 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: Short-term exposure to the gases, fumes and dusts may include irritation of the eyes, lungs, nose and throat. Some toxic gases associated with welding and allied processes may cause pulmonary edema, asphyxiation, and death. Acute overexposure may include signs and symptoms such as watery eyes, nose and throat irritation, headache, dizziness, difficulty in breathing, frequent coughing, or chest pain. Acute effects of this product are:

Inhalation: Inhalation of boron compounds causes "boron poisoning." Signs and symptoms are depression of circulation, persistent vomiting and diarrhea, followed by profound shock and coma.

Ingestion: Ingestion of this material results in "boron poisoning." Signs and symptoms are diarrhea, abdominal cramps, erythematous lesions on skin and mucous membranes, circulatory collapse, tachycardia, cyanosis, delirium, convulsions, and coma. Death has occurred from ingestion of as little as 5 grams of Boric Acid.

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

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

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. Long term exposure to welding and brazing gases or dust may contribute to pulmonary irritation or pneumoconiosis. Inhalation of too much iron oxide fume over a long time can cause siderosis, sometimes called "iron pigmentation" of the lung, which can be seen on a chest x-ray but causes little or no disability. Overexposure to boric acid may result in "borism." The symptoms are dry skin, skin eruptions, and gastrointestinal disturbances. Overexposure to boron compounds may affect the central nervous system.

Exposure Limits for the ingredients are listed in Section II. The ACGIH and the 1989 OSHA TWA for welding fume is 5 mg/m³. 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.

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 skin 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, immediately call a physician. If breathing has stopped, perform artificial respiration and obtain medical assistance immediately!

Ingestion: Contains boric acid. Call a physician or your Poison Control Center **IMMEDIATELY!** 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 and brazing in confined spaces or where local exhaust or ventilation does not keep exposure below TLVs.

Eye Protection: Wear helmet or use face shield with filter lens. As a rule of thumb, start with a shade which is too dark to see the weld zone. Then go to the next lighter shade which gives sufficient view of the weld zone. Provide protective screens and flash goggles, if necessary, to shield others. Wear safety glasses or goggles when handling this material to prevent eye contact. Do not wear contact lenses in any environment where dust or fumes are present. Readily available eye baths are recommended in areas where operations may produce dusts.

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. Keep container out of the reach of children. Do not remove the product label. Never bring container into an eating area.

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

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.