



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 WELDING AND BRAZING FLUX

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

NOMINAL CHEMICAL COMPOSITION OF THE CLEAR LIQUID FLUX

All-State Product Trade Name	% Trimethoxyborane (Methyl Borate)	% Methyl Alcohol (Methanol)	% Acetone (Dimethyl Ketone)
All-State Jet Flux ❶	40-55	5-30	20-50

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)		
Acetone (Dimethyl Ketone)	(67-64-1)	*	500	750	1000	--
Methyl Alcohol (Methanol)	(67-56-1)	*	200	250	200	--
Trimethoxyborane (Methyl Borate)	(121-43-7)		200	250	200	--

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

Physical State:	Gas ()	Liquid (X)	Solid ()
Vapor Density (air = 1):	1.6		
Vapor Pressure:	100 mm hg		
Boiling Point (@ 760 mmHg):	137° F (58° C)		
Melting Point:	-26° F (-32° C)		
Solubility in Water:	Decomposes @ 10%		
Specific Gravity: (H ₂ O = 1):	0.855		
Evaporation Rate (butyl acetate = 1):	16		
Odor and Appearance:	Clear, colorless liquid with characteristic odor.		

IV. Fire & Explosion Hazard

29 CFR 1901.1200:	Flammable Liquid
Flash Point (C. O. C.) :	18° F (-7.7° C)
Flammable Limits:	LEL 6.0% UEL 36.5%
Extinguishing Media:	Dry chemical, CO ₂ , Water Spray or Foam

Special Fire Fighting Procedures: This product burns with a clear flame which is virtually invisible in daylight. Evacuate nonessential personnel from the fire area. Use standard fire fighting techniques to extinguish fires involving this material. Vapors can travel to source of ignition and flash back. Prevent human exposure to fire, smoke, fumes or products of combustion. Fire fighters should wear full face, positive pressure, self-contained breathing apparatus and impervious protective clothing. Keep containers which are exposed to heat or fire cool with water spray to prevent rupture or build-up of pressure.

Unusual Fire and Explosion Hazards: Do not use welding or cutting torch on or near any shipping/storage container of this material (full or empty) – explosion may occur. This product is sensitive to sparks of electricity due to static discharge. Vapors are heavier than air and can travel long distances to source of ignition and flash back.

V. Reactivity Data

Stability: Stable (X) Unstable () Hazardous polymerization not expected to occur.

Conditions to Avoid: Water, moist air or aqueous liquids will liberate boric acid from the mixture, rendering it unusable. This product is not sensitive to physical impact.

Incompatibility (Materials to Avoid): Avoid strong oxidizing agents, such as peroxides, nitrates, and hypochlorites; aluminum and zinc. Deteriorates many plastics. Hydrolyzes in the presence of water, liberating boric acid.

Hazardous decomposition products: 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. 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 brazer'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 brazing, 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/m³, and oxides of carbon.

VI. Physical and Health Hazard Data

A detailed description of the Health and Physical Hazards and their consequences may be found in ESAB's free publications 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.

EMERGENCY OVERVIEW:

Clear colorless liquid with characteristic odor. **Flammable Liquid** vapors from open containers also flammable. Harmful if inhaled. May be fatal if swallowed. May cause blindness if swallowed. Contact may cause eye or skin irritation.

Potential Health Effects:

Inhalation: High vapor concentrations may cause irritation of eyes, nose and throat. Prolonged inhalation may cause headaches, nausea and drowsiness.

Eye Contact: Contact may cause irritation to the eyes and mucous membranes.

Skin Contact: Prolonged contact causes dryness and irritation.

Ingestion: Ingestion may cause headache, fatigue, nausea, circulatory and/or respiratory failure and death.

Chronic: Repeated and/or prolonged exposure by inhalation/absorption may cause systemic poisoning, blindness, and death. Chronic eye and dermal exposure effects for this product are not known.

ACUTE TOXICITY DATA:

TRIMETHYL BORATE		ACETONE		METHYL ALCOHOL	
ORAL LD ₅₀ (mouse)	1290 mg/kg	ORAL LD ₅₀ (rat)	9750 mg/kg	ORAL LD ₅₀ (rat)	13,000 mg/kg
DERMAL LD ₅₀ (rabbit)	1980 mg/kg	DERMAL LD ₅₀ (rabbit)	20,000 mg/kg	DERMAL LD ₅₀ (rabbit)	20,000 mg/kg
INHAL LC ₅₀ (rat)	6400 mg/kg	INHAL TC _{LO} (human)	500 ppm	INHAL LD ₅₀ (monkey)	1000 ppm
		IP LD ₅₀ (mouse)	1297 mg/kg	SC LD ₅₀ (mouse)	9800 mg/kg

Pre-existing Medical Conditions Aggravated by Overexposure: No data

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

Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes while holding eyelids open. Seek medical attention.

Skin Contact: Copiously flush skin with plenty of water for several minutes.

Inhalation: Remove victim to fresh air. Administer oxygen or artificial respiration only on physician's recommendation.

Ingestion: If swallowed, immediately give several glasses of warm water and induce vomiting. Do not give liquids if victim is unconscious or very drowsy. Seek medical attention immediately.

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:

Respiratory Protection (transferring/handling): May be required when handling or using this product to keep exposure to airborne contaminants below permissible exposure limits. If adequate ventilation is not available during handling or transfer of this product, use NIOSH approved organic vapor respirators with dust, mist and fume filters to reduce the potential of inhalation exposure. Protection provided by air-purifying respirators is limited. Use a positive pressure, air supplied respirator if there is any potential for uncontrolled release, unknown exposure levels or any other circumstances where air-purifying respirators may not provide adequate protection. Respiratory protection programs must follow OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements where there may be the potential for airborne exposure.

Respiratory Protection (during brazing): Use enough ventilation and local exhaust at the flame site to keep the fumes and gases below the TLV-TWA for welding fume of 5 mg/m³ in the brazer's breathing zone and in the general air. Use an approved air-purifying or air-supplied respirator when brazing in a confined space or where local exhaust or ventilation does not keep exposure below the TLV-TWA. Refer to the American Conference of Governmental Industrial Hygienists (ACGIH). Also see ANSI/AWS A5.31-92 (A4.1), "Specifications for Fluxes for Brazing and Braze Welding" for variables that contribute to the quality and quantity of fumes in the affected area which brazing operators and bystanders are exposed to during the brazing process.

Eye Protection: Due to the possibility of eye contact during material transfer, chemical safety goggles, full face shield, or safety glasses with side shields should be worn. Always wear welding glasses, goggles or full face shield with shade 5 lenses when brazing. Protective eyewear and eye safety program should comply with ANSI Standard Z87.1 "Occupational and Educational Eye and Face Protection."

Skin Protection: To prevent contact with skin, wear impervious clothing such as gloves, apron, boots, or full body suits made from neoprene, as appropriate.

Steps to be taken if material is spilled or released: Extinguish all sources of ignition within 35 feet (11m) of spill or vapor release. Provide adequate ventilation. If spill is of significant or unknown quantity, use self-contained breathing apparatus during clean up. Always wear proper protective clothing to prevent skin or eye contact. Released product which has evaporated forms smooth, slippery surface on floors, posing an accident risk. Absorb small spills with sand or fullers earth, and place in appropriate waste container. Large spills should be diluted and pumped into approved containers for disposal in accordance with all local, state, and federal laws and regulations.

Waste Disposal Method: Raw material and/or empty containers may require special disposal considerations, depending on local controls. Contact reliable, licensed chemical waste disposal firm. Disposal regulations vary from state to state. Disposal must be made in accordance with applicable regulations. State and local regulations may be more stringent than federal controls.

Special Handling Considerations: Always wear proper protective clothing when handling. Avoid eye, skin and clothing contact when transferring from container. Flammable Liquid – keep away from heat, sparks and flame. Never transfer liquid within 35 feet (11 m) of an open flame. Protect containers from physical damage or punctures resulting in leakage. In order to reduce potential of static discharge, effectively bond and ground containers when transferring material. Keep container tightly closed when not in use. Do not reuse shipping container. Empty containers retain vapors which must be treated as having the same hazards as containers full of liquid.

Special Storage Considerations: Store in compliance with 29 CFR 1910.106 "Flammable and Combustible Liquids, BOCA National Fire Prevention Code" and "NFPA 30 Flammable and Combustible Liquids Code." Store in a cool, well-ventilated area at least 35 feet (11 m) from open flames or other sources of ignition. Always store product in the original shipping container. Tightly close storage containers after transfer. Vapors can travel to a source of ignition and flash back. Moisture, in any form will contaminate this product, rendering it unusable. Retain all original labels.

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 by **THE ESAB GROUP**.