



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 GENERAL PURPOSE PASTE SOLDER

Manufacturer - THE ESAB GROUP, INC.
Website: 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

APPROXIMATE COMPOSITION (Wt. %)

All-State Product Trade Name	Lead	Tin	Zinc Chloride	Ammonium Chloride
All-State Paste Solder Ⓢ	30-80	30-80	15-24	1-7

NOTE: Ⓢ 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 label 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 ³)	STEL (mg/m ³)	TWA (mg/m ³)	STEL (mg/m ³)
Ammonium Chloride	(12125-02-9)		10 (Fume),	20 (STEL)	10 (Fume)	20
Lead	(7439-92-1)	*	0.05 (Fumes & Dust)		0.05 **	--
Tin	(7440-31-5)		2		2	--
Zinc Chloride	(7646-85-7)	*	1 (Fume),	2 (STEL)	1 (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.

**Exposure should not be greater than 50 micrograms/m³ of air averaged over an 8-hour period.

WARNING: LEAD POISONING HAZARD. Read and comply with OSHA 29 CFR 1910.1025! The use of this solder to make joints or fittings in any private or public potable water system is **PROHIBITED**.

III. Physical Data

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

Boiling Point: 650°F

Melting Point: Varies with alloy.

Solubility in Water: Flux only is soluble.

Specific Gravity (H₂O = 1): Varies with alloy.

Odor and Appearance: Pasty solid, silver-white metallic paste.

IV. Fire & Explosion Hazard

Flammable/Explosive NO (X) YES ()

Extinguishing Media: Use CO₂ or dry chemical on surrounding fire. Do not use water on fire where molten metal is present.

Special Fire Fighting Procedures: Use self-contained respiratory system. Use NIOSH/MSHA approved self-contained breathing apparatus and full body protective clothing.

Unusual Fire and Explosion Hazards: In extremely high temperature fire or in contact with certain acids, may emit toxic fumes. Flux decomposes to form ammonia, hydrogen chloride gas, zinc chloride fumes. Use self-contained respiratory system. Molten metals produce fumes or vapor that may be toxic.

V. Reactivity Data

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

Conditions to Avoid: NONE

Incompatibility (Materials to Avoid): Avoid strong alkalis and oxidizers.

Hazardous Decomposition Products: Hydrogen chloride, ammonia, zinc oxide. Brazing/soldering fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the material being worked, the process, procedures and consumables 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 operations and the volume of the work area, the quality and amount of ventilation, the position of the workers 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). 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

Welding, brazing, braze welding, soldering, and cutting 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.

Route of overexposure: The primary route of entry 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: Severe short-term overexposure may lead to central nervous system disorders, characterized by fever, bodyaches and chills. It should be recognized that exposure of this magnitude in an industrial environment is extremely unlikely. Acute effects of this product are:

Inhalation: Irritant to respiratory system. Headache, cough or fever. Existing lung disorders may be aggravated.

Eye Contact: Irritation to eyes, may burn eye surfaces, tearing. Existing eye disorders will be aggravated.

Skin Contact: Flux causes burns on contact. Dermatitis, possible chemical burn. Existing skin disorders may be aggravated.

Ingestion: Possible chemical burn to digestive system. Nausea, vomiting.

Pre-existing Medical Conditions Aggravated by Overexposure: The symptoms of impaired pulmonary functions or illness may be worsened by fume irritants. Diseases of the blood and blood forming organs, kidneys, and possibly reproductive systems.

Effects of chronic (long-term) overexposure: Prolonged exposure to fume of molten metal or flux used during soldering operation may cause irritation of the respiratory tract. Fumes from soldering contain ammonium chloride, zinc chloride and possibly tin and lead. Chronic overexposure to fumes may cause irritation to the pulmonary system and lung disease. Molten solder alloy fumes do not produce significant amounts of lead fumes below 900°F. Exposure to high levels of airborne or ingested lead may produce symptoms of anemia, insomnia, weakness, constipation, nausea and abdominal pain. Overexposure may cause damage to blood forming, nervous, reproductive, intestinal and urinary systems. For occupational requirements see 29 CFR 1910.1025 Lead Standard and its appendices. Women of childbearing age should avoid exposure to lead and its inorganic compounds due to postnatal effects. Lead can cause potential injury to developing fetus and possible effects on reproduction.

Exposure limits for the ingredients are listed in Section II. The ACGIH TWA and the 1989 OSHA TWA for welding fume is 5 mg/m³. TLV-TWAs should be used as a guide in the control of health hazards and not as fine lines between safe and excessive concentrations. As noted in Section V, the welding fume is a mixture many components. Therefore, a statutory computation of the *equivalent exposure* is required. The equivalent exposure for the welding 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: In case of emergency, call for medical aid, remove immediately from area.

- Eye Contact:** Flush with water for at least fifteen minutes to remove all residue. Promptly get medical attention.
- Skin Contact:** Wash hands with soap and water to remove all residue. If a rash develops, consult a physician. If burns should occur from molten metal, treat for burn and get immediate medical assistance.
- Inhalation:** Remove to fresh air. If fumes, vapors, or dusts are inhaled, call a physician.
- Ingestion:** Call a physician or your Poison Control Center immediately. Advise of Section II. Give large quantities of water.

Carcinogenic Assessment (NTP Annual Report, IARC Monographs, Other): Lead: ACGIH Animal Carcinogen. NTP Sufficient evidence of carcinogenicity from studies in experimental animals. IARC Possibly Carcinogenic to Humans. OSHA regulated.

☉ **WARNING:** This product contains or produces 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.)

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, Washington, D.C. 20402 for more detail on many of the following:

Respiratory Protection: Use NIOSH/MSHA approved respirators or air supplied respirator when soldering in a confined space or where local exhaust or ventilation does not keep exposure below the TLVs and the *equivalent exposure* below one.

Protective Gloves: Chemical and oil impervious.

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

Ventilation: Maintain air flow away from user to remove all fumes, vapors, and dusts, so that PEL is never exceeded. Use fume hood over work area, using 200 ft/min air velocity into hood opening.

Protective Clothing and Equipment: Full protective equipment normally used in a braze/welding operation so as to prevent any contact. Use face shield if danger of splashing, molten metal. Safety eyewash stations should be in close proximity.

Hygienic Work Practices: Wash hands thoroughly after handling to remove all residue. Remove and professionally wash contaminated clothing before re-use. Do not eat or smoke where product is used.

Steps to be taken if material is spilled or released: Contain spill, absorb, and sweep-up. Remove to chemical sewer. Flush area to chemical sewer.

Waste Disposal Methods: Dispose of in accordance with all local, state, and federal regulations.

Precautions to be Taken in Handling and Storage: Wash hands thoroughly after handling to remove all residue. Store material under ambient conditions.

Other Precautions and/or Special Hazards: REFER TO OSHA STANDARD 29 CFR 1910.1025 FOR REQUIREMENTS FOR CONTROL OF EMPLOYEE EXPOSURE TO LEAD. Overheating of alloy can produce metal fumes and oxides. Machining operations such as grinding, sawing, or buffing can generate airborne particulates in the work area. Exposure levels indicated in Section II are relevant to these and other operations. Activities which generate excessive dust or fumes should be avoided. Do not use compressed air for cleaning.

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.