SDS NO. 44-I
DATE REVISED: 07/20/2011

SAFETY DATA SHEET

This Safety Data Sheet complies with European Commission Directive 91/155/EEC, ISO 11014-1 and ANSI Z400.1

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: ALL-STATE GENERAL PURPOSE AND STAINLESS STEEL SOLDERING FLUXES

ALL-STATE DUZALL® NCR FLUX	P/N: 69080181
ALL-STATE DUZALL® FLUX	P/Ns: 69080161, 69080162, 69080163, 69080164
ALL-STATE NO. 430 ACID FLUX	P/Ns: 69080151, 69080224

Application: Soldering Flux
Classification: None
Supplier: THE ESAB GROUP, INC., 801 Wilson Avenue, P. O. Box 517, Hanover, PA 17331
Telephone No.: 1-717-637-8911, 1-800-933-7070
Emergency No.: 1-717-637-8911 and 1-800-424-9300 (CHEMTREC)
Web site: www.esabna.com

2. HAZARDS IDENTIFICATION

Emergency Overview:

Duzall NCR Flux: Opaque white to yellowish smooth paste with no odor. Harmful if swallowed.

Duzall Flux: White to pale yellow liquid with no odor. Can cause severe burns to skin, eyes and respiratory tract.

No. 430 Acid Flux: Clear water-white liquid with no odor. Can cause severe burns to skin, eyes and respiratory tract.

Paste harmful if swallowed and can irritate eyes. Liquids can cause severe burns to skin, eyes and respiratory tract. Liquid products contain methyl alcohol which may cause blindness and can be fatal if swallowed.

Gloves should be worn when handling to prevent contaminating hands with product.

Persons with a pacemaker should not go near soldering operations until they have consulted their doctor and obtained information from the manufacturer of the device.

When these products are used in a soldering process, the most important hazards are heat, radiation, electric shock and soldering fumes.

Heat:	Spatter and melting metal can cause burn injuries and start fires.
Radiation:	Arc rays can severely damage eyes or skin.
Electricity:	Electric shock can kill.
Fumes:	Overexposure to soldering fumes may result in symptoms like metal fume fever, dizziness, nausea, dryness or irritation of the nose, throat or eyes. Chronic overexposure to soldering fumes may affect pulmonary function. Prolonged inhalation of nickel and chromium compounds above safe exposure limits can cause cancer. Overexposure to manganese and manganese compounds above safe exposure limits can cause irreversible damage to the central nervous system, including the brain, symptoms of which may include slurred speech, lethargy, tremor, muscular weakness, psychological disturbances and spastic gait. Zinc chloride vapors produce irritation to the throat and lungs
Flame Processing:	When used with combustible gas equipment (e.g., oxy-acetylene torch), read the use and safety information for that equipment.

3. COMPOSITION/INFORMATION ON INGREDIENTS

These products are pastes and liquids.

Ingredients	CAS#	EINECS#	Hazard classification[1]	IARC [2]	NTP [3]	OSHA List[4]
Ammonium Chloride	12125-02-9	235-186-4	Xn; R22 Xi; R36	--	--	--
Boric Acid	10043-35-3	233-139-2	Repr. Cat 2; R60-61	--	--	--
Carbowax	25322-68-3	500-038-2	No	--	--	--
Glycerin	56-81-5	200-289-5	No	--	--	--
Hydrobromic Acid	10035-10-6	233-113-0	C; R35 Xi; R37	--	--	--

Ingredients	CAS#	EINECS#	Hazard classification(1)	IARC (2)	NTP (3)	OSHA List(4)
Hydrochloric Acid	7647-01-0	231-595-7	T; R23 C; R35	--	--	--
Methyl Alcohol	67-56-1	200-659-6	F; R11 T; R23/24/25- 39/23/24/25	--	--	--
Monoethanolamine	141-43-5	205-483-3	Xn; R20/21/22 C; R34	--	--	--
Stannous Fluoborate	13814-97-6	237-487-6	No	--	--	--
Zinc Chloride	7646-85-7	231-592-0	Xn; R22 C; R34 N; R50-53	--	--	--

(1) Hazard Classification according to European Council Directive 67/548/EEC, for R-phrases, see Section 16.

(2) Evaluation according to the International Agency for Research on Cancer.
1 –Carcinogenic to humans. 2A – Probably carcinogenic to humans. 2B – Possibly carcinogenic to humans.

(3) Classification according to the 11th Report on Carcinogens, published by the US National Toxicology Program.
K – Known Carcinogen S – Suspect Carcinogen

(4) Carcinogen listing according to OSHA, Occupational Safety & Health Administration (USA).

APPROXIMATE COMPOSITION (Wt. %)

All-State Product Trade Name:	Duzall® NCR Flux	Duzall® Flux	No. 430 Acid Flux
Ammonium Chloride	1-5	7-13	3-7
Boric Acid	--	--	0.1-1
Carbowax	30-60	--	--
Glycerin	15-40	1-5	--
Hydrobromic Acid	1-5	--	--
Hydrochloric Acid	1-5	7-13	10-30
Methyl Alcohol	--	1-5	1-5
Monoethanolamine	1-5	--	--
Stannous Fluorborate	--	--	1-5
Zinc Chloride	--	40-70	15-40

4. FIRST AID MEASURES

Inhalation: If breathing has stopped, perform artificial respiration and obtain medical assistance immediately! If breathing is difficult, provide fresh air and call physician. Call a physician for irritation and/or burns.

Eye contact: Immediately rinse eyes with running water for up to 15 minutes. Get immediate medical assistance.

For radiation burns due to arc flash, see physician. To remove dusts or fumes flush with water for at least fifteen minutes. If irritation persists, obtain medical assistance.

Skin contact: Rinse skin in running water and get immediate medical assistance for irritation or burns. Launder contaminated clothing before reuse. For skin burns from arc radiation, promptly flush with cold water. Get medical attention for burns or irritations that persist. To remove dust or particles wash with mild soap and water.

Ingestion: Call a physician or poison control center immediately. Do not induce vomiting unless directed to do so by a physician.

Electric shock: Disconnect and turn off the power. Use a nonconductive material to pull victim away from contact with live parts or wires. If not breathing, begin artificial respiration, preferably mouth-to-mouth. If no detectable pulse, begin Cardio Pulmonary Resuscitation (CPR). Immediately call a physician.

General: Move to fresh air and call for medical aid.

5. FIRE FIGHTING MEASURES

Materials not flammable. Use water, water fog or foam for surrounding fires. Wear self-contained breathing apparatus as fumes or vapors may be harmful.

No specific recommendations for soldering consumables. The soldering process can ignite combustible and flammable materials. Use the extinguishing media recommended for the burning materials and fire situation. Wear self-contained breathing apparatus as fumes or vapors may be harmful.

6. ACCIDENTAL RELEASE MEASURES

Solid objects may be picked up and placed into a container. Sweep up dusts and place into container. Liquids or pastes should be scooped up and placed into a container. Wear proper protective equipment while handling these materials. Do not discard as refuse.

Personal precautions: refer to Section 8.

Environmental precautions: refer to Section 13.

7. HANDLING AND STORAGE

Handling:

Avoid contact with skin, eyes and clothing. Do not swallow or breathe vapors produced by use of product. Wash hands after using. Wear gloves when handling to avoid exposure to skin. Do not ingest.

Some individuals can develop an allergic reaction to certain materials. Retain all warning and identity labels.

Storage:

Store in cool, dry, well-ventilated place.

8. EXPOSURE CONTROL/PERSONAL PROTECTION

Avoid exposure to soldering fumes, radiation, spatter, electric shock, heated materials and dust.

Engineering measures: (Soldering operations)

Ensure sufficient ventilation, local exhaust, or both, to keep soldering fumes and gases from breathing zone and general area. Keep working place and protective clothing clean and dry. Train welders to avoid contact with live electrical parts and insulate conductive parts. Check condition of protective clothing and equipment on a regular basis.

Personal protective equipment: (Soldering operations)

Use respirator or air supplied respirator when soldering in a confined space, or where local exhaust or ventilation is not sufficient to keep exposure values within safe limits. Use special care when soldering painted or coated steels since hazardous substances from the coating may be emitted. Wear hand, head, eyes, ear and body protection like welders gloves, helmet or face shield with filter lens, safety boots, apron, arm and shoulder protection. Keep protective clothing clean and dry.

Use industrial hygiene monitoring equipment to ensure that exposure does not exceed applicable national exposure limits. The following limits can be used as guidance. For information about soldering flux fume analysis refer to Section 10. When used with soldering products, refer to the soldering product SDS, Section 10, for information on soldering fumes.

Substance		CAS#	ACGIH TLV [(1)] mg/m^3	OSHA PEL [(2)] mg/m^3
Ammonium Chloride (fume)		12125-02-9	10, 20 (STEL)	None
Boric Acid	(as borates)	10043-35-3	2 ***, 6 (STEL) ***	None
Carbowax (Polyethylene Glycol)		25322-68-3	None [10 (mist) AIHA WEEL]	None
Ethanolamine (2-aminoethanol)		141-43-5	7.5 (3 ppm) 15 (6 ppm) (STEL)	6 (3 ppm)
Glycerin		56-81-5	10 (mist)	15*, 5**
Hydrobromic Acid		10035-10-6	6.8 (ceiling)	10 (3 ppm)
Hydrochloric Acid		7647-01-0	2.98 (ceiling)	7 (ceiling)
Methanol (Methyl Alcohol)		67-56-1	262 (200 ppm) 328 (250 ppm) STEL	260 (200 ppm)
Stannous Fluoborate	(as F)	13814-97-6	2.5	2.5
	(as Sn)		2	2
Zinc Chloride (fume)		7646-85-7	1, 2 (STEL)	1

(1) Threshold Limit Values according to American Conference of Governmental Hygienists, 2011

(2) Permissible Exposure Limits according to the Occupational Safety & Health Administration (USA)

Unless noted, all values are for 8 hour time weighted averages (TWA).

* Total dust, ** Respirable fraction, *** Inhalable fraction.

NOTE: Some of these products may not contain all of the materials listed. For details of composition, refer to the COMPOSITION TABLES in Section 3.

9. PHYSICAL AND CHEMICAL PROPERTIES

	Duzall® NCR Flux	Duzall® Flux	No. 430 Acid Flux
Appearance:	Opaque white to yellowish paste	White to pale yellow liquid	Clear, water-white liquid
Specific Gravity:	1.014-1.33	1.414	1.347
Boiling Point:	Not determined.	219°F (103°C)	228°F (108.9°C)
Freezing Point:	Not determined.	Not determined.	Not determined.
Vapor Pressure:	Not determined.	6 mm Hg	9.7 mm Hg
Vapor Density:	Not determined.	0.48	0.48
Evaporation Rate:	<1	<1	<1
Solubility in Water:	Complete.	Appreciable.	Complete.
Flash Point:	None.	None.	None.
Upper/Lower Flame Limit:	None.	None.	None.
Auto-ignition Temperature:	Not determined.	Not determined.	Not determined.

10. STABILITY AND REACTIVITY

General: These products are only intended for normal soldering purposes.

Stability: These products are stable under normal conditions.

Reactivity: Contact with chemical substances like strong bases could cause generation of gas.

When these products are used in a soldering process, hazardous decomposition products would include those from the volatilization, reaction or oxidation of the materials listed in Section 3 and those from the solder, the base metal and coating.

Refer to applicable national exposure limits for fume compounds, including those exposure limits for fume compounds found in Section 8 of this SDS and the soldering consumable SDS. A significant amount of the chromium in the fumes can be hexavalent chromium, which has a very low exposure limit in some countries. Manganese and nickel also have low exposure limits that may be easily exceeded.

Reasonably expected gaseous products would include carbon oxides, nitrogen oxides and ozone. Air contaminants around the soldering area can be affected by the soldering process and influence the composition and quantity of fumes and gases produced.

11. TOXICOLOGICAL INFORMATION

Inhalation of soldering fumes and gases can be dangerous to your health. Classification of soldering fumes is difficult because of varying base materials, coatings, air contamination and processes. The International Agency for Research on Cancer has classified welding fumes as possibly carcinogenic to humans (Group 2B).

Acute toxicity: Products cause severe irritation and/or corrosive burns to skin, eyes and respiratory tract. Considered corrosive and toxic by ingestion.

Overexposure to soldering fumes may result in symptoms like metal fume fever, dizziness, nausea, dryness or irritation of the nose, throat or eyes.

Chronic toxicity: Overexposure to soldering fumes may affect pulmonary function. Prolonged inhalation of nickel and chromium compounds above safe exposure limits can cause cancer. Overexposure to manganese and manganese compounds above safe exposure limits can cause irreversible damage to the central nervous system, including the brain, symptoms of which may include slurred speech, lethargy, tremor, muscular weakness, psychological disturbances and spastic gait. Chronic exposure to fluorides above safe exposure levels can cause changes in bone density and the teeth (fluorosis).

12. ECOLOGICAL INFORMATION

Contains zinc which may be toxic to aquatic species and is regulated as an environmental hazard in the European Union. This hazard is not anticipated from the handling of soldering consumables, but is relevant if consumables enter natural waterways.

Soldering consumables and materials could degrade/weather into components originating from the consumables or from the materials used in the soldering process. Avoid exposure to conditions that could lead to accumulation in soils or groundwater.

13. DISPOSAL CONSIDERATIONS

Discard any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with federal and local regulations. Use recycling procedures if available.

USA RCRA: Unused products or product residue containing Duzall Flux and No. 430 Acid Flux is considered hazardous waste if discarded, RCRA ID characteristic toxic Hazardous Waste D002.

Residues from soldering consumables and processes could degrade and accumulate in soils and groundwater.

14. TRANSPORT INFORMATION

Duzall NCR Flux: Not regulated for transport.

Duzall Flux: UN1760, Corrosive Liquid, N.O.S. (zinc chloride, hydrochloric acid), 8, PG II.

No. 430 Acid Flux: UN1760, Corrosive Liquid, N.O.S. (zinc chloride, hydrochloric acid), 8, PG II.

15. REGULATORY INFORMATION

Read and understand the manufacturer's instructions, your employer's safety practices and the health and safety instructions on the label. Observe any federal and local regulations. Take precautions when soldering and protect yourself and others.

WARNING: Soldering fumes and gases are hazardous to your health and may damage lungs and other organs. Use adequate ventilation.

ELECTRIC SHOCK can kill.

ARC RAYS and SPARKS can injure eyes and burn skin.

Wear correct hand, head, eye and body protection.

Canada: WHMIS classification: Class D; Division 2, Subdivision B
Class E

Canadian Environmental Protection Act (CEPA): All constituents of these products are on the Domestic Substance List (DSL).

USA: Under the OSHA Hazard Communication Standard, these products are considered hazardous.

These products contain or produce 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.)

United States EPA Toxic Substance Control Act: All constituents of these products are on the TSCA inventory list or are excluded from listing.

CERCLA/SARA Title III

Reportable Quantities (RQs) and/or Threshold Planning Quantities (TPQs):

Ingredient name	RQ (lb)	TPQ (lb)
Ammonium Chloride	5000	--
Hydrochloric Acid	5000	--
Methyl Alcohol	5000	--
Zinc Chloride	1000	--

Spills or releases resulting in the loss of any ingredient at or above its RQ require immediate notification to the National Response Center and to your Local Emergency Planning Committee.

Section 311 Hazard Class

As shipped: Immediate delayed In use: Immediate delayed

EPCRA/SARA Title III 313 Toxic Chemicals

The following metallic components are listed as SARA 313 “Toxic Chemicals” and potential subject to annual SARA 313 reporting. See Section 3 for weight percent.

Ingredient name	Disclosure threshold
Methyl Alcohol	1.0% de minimis concentration
Zinc Chloride (as zinc, fume or dust)	1.0% de minimis concentration

16. OTHER INFORMATION

This Safety Data Sheet has been revised due to modifications to several paragraphs and/or new format. This SDS supersedes 44-H.

Refer to ESAB “Welding and Cutting - Risks and Measures”, F52-529 “Precautions and Safe Practices for Electric Welding and Cutting” and F2035 “Precautions and Safe Practices for Gas Welding, Cutting and Heating” available from ESAB, and to:

USA: Contact ESAB at www.esabna.com or 1-800-ESAB-123 if you have questions about this SDS.

American National Standard Z49.1 “Safety in Welding and Cutting”, ANSI/AWS F1.5 “Methods for Sampling and Analyzing Gases from Welding and Allied Processes”, ANSI/AWS F1.1 “Method for Sampling Airborne Particles Generated by Welding and Allied Processes”, AWSF3.2M/F3.2 “Ventilation Guide for Weld Fume”, American Welding Society, 550 North Le Jeune Road, Miami, Florida, 33135. Safety and Health Fact Sheets available from AWS at www.aws.org.

OSHA Publication 2206 (29 C.F.R. 1910), U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954.

American Conference of Governmental Hygienists (ACGIH), Threshold Limit Values and Biological Exposure Indices, 6500 Glenway Ave., Cincinnati, Ohio 45211, USA.

NFPA 51B “Standard for Fire Prevention During Welding, Cutting and Other Hot Work” published by the National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169.

UK: WMA Publication 236 and 237, “Hazards from Welding Fume”, “The arc welder at work, some general aspects of health and safety”.

Germany: Unfallverhütungsvorschrift BGV D1, “Schweißen, Schneiden und verwandte Verfahren”.

Canada: CSA Standard CAN/CSA-W117.2-01 “Safety in Welding, Cutting and Allied Processes”.

These products have been classified according to the hazard criteria of the CPR and the SDS contains all the information required by the CPR.

R-phrases:

R11 – Highly flammable.

R22 – Harmful if swallowed.

R23 – Toxic by inhalation.

R34 – Causes burns.

R35 – Causes severe burns.

R36 – Irritating to eyes.

R37 – Irritating to respiratory system.

R50 – Very toxic to aquatic organisms.

R53 – May cause long-term adverse effects in the aquatic environment.

R60 – May impair fertility.

R61 – May cause harm to the unborn child.

R20/21/22 – Harmful by inhalation, harmful in contact with skin and harmful if swallowed.

R23/24/25 – Toxic by inhalation, in contact with skin and if swallowed.

R39/23/24/25 – Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed.

ESAB requests the users of these products to study this Safety Data Sheet (SDS) and become aware of product hazards and safety information. To promote safe use of these products a user should:

- notify its employees, agents and contractors of the information on this SDS and any product hazards/safety information.
- furnish this same information to each of its customers for these products.
- request such customers to notify employees and customers for the same product hazards and safety information.

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