

ZACLON LLC

MATERIAL SAFETY DATA SHEET

IDENTIFICATION

NAME: Zaclon* Galvanizing Flux Solution, 50%

SARA/TITLE III STATUS: See ADDITIONAL INFORMATION and HAZARDOUS COMP. Section Pg. 2

CHEMICAL FAMILY: Inorganic Salt Solution

GRADE: F; K, KS, Sulfate Control, 50% Solutions

MANUFACTURER/DISTRIBUTOR: Zaclon LLC
PRODUCT INFORMATION PHONE: (800) 356-7327

ADDRESS: 2981 Independence Road
Cleveland, Ohio 44115
TRANSPORTATION EMERGENCY PHONE: CHEMTREC (800) 424-9300

PHYSICAL DATA

BOILING POINT, 760 mm Hg
>100 °C (>212 °F)

MELTING POINT
Not determined.

SPECIFIC GRAVITY
1.2 TO 1.5

VAPOR PRESSURE
24 mm Hg at 20 °C (68 °F)
49 mm Hg at 37.7 °C (100 °F)

VAPOR DENSITY
Vapor is water.

SOLUBILITY IN WATER
100%

pH INFORMATION
2.5 TO 4.0

EVAPORATION RATE
(*BUTYL ACETATE=1*) <1

FORM
Liquid

APPEARANCE
Clear

COLOR
Colorless to water white

ODOR
Odorless

*Reg. U.S. Pat. & Tm. Off., Zaclon LLC Zaclon® Galvanizing Fluxes are made only by Zaclon LLC
The data in the Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

HAZARDOUS COMPONENTS

<u>MATERIAL(s)</u>	<u>CAS #</u>	<u>APPROXIMATE %</u>
Zinc Chloride	7646-85-7 *	15 to 22
Ammonium Chloride	12125-02-9**	20 to 28

*Regulated as a Toxic Chemical under Section 313 of Title III/SARA, and 40 CFR Part 372.

**Ammonium Salts Generate Ammonia in Water. For SARA 313 Requirements, 10% of the Total ammonia present in aqueous ammonia solutions is reportable.

NON-HAZARDOUS COMPONENTS

<u>MATERIAL(s)</u>	<u>CAS #</u>	<u>APPROXIMATE %</u>
Water	7732-18-5	45 to 55
Barium Chloride	10361-37-2	0.5 to 2.5 (Sulfate Control only)

HAZARDOUS REACTIVITY

INSTABILITY Stable

INCOMPATIBILITY Incompatible with cyanide and sulfide salts (may release toxic gases).

DECOMPOSITION At high temperatures (343 oC; 650 oF), as in intended use, ammonium chloride fumes, zinc oxide fumes, zinc chloride fumes, and ammonia and hydrogen chloride gases may be released.

POLYMERIZATION Will not occur.

FIRE AND EXPLOSION DATA

FLASH POINT

Will not burn.

FLAMMABLE LIMITS IN AIR, % BY VOL.

LOWER Not applicable.

UPPER Not applicable

AUTOIGNITION TEMPERATURE: Not Applicable.

AUTODECOMPOSITION TEMPERATURE: Not Available.

FIRE AND EXPLOSION HAZARDS After drying, may release zinc oxide, zinc chloride, and ammonium chloride fumes and ammonia and hydrogen chloride gases at high temperatures.

EXTINGUISHING MEDIA As appropriate for combustibles in area.

SPECIAL FIRE FIGHTING INSTRUCTIONS

None.

HEALTH HAZARD INFORMATION

PRINCIPAL HEALTH HAZARDS (Including Significant Routes, Effects, Symptoms of Over-Exposure, and Medical Conditions Aggravated by Exposure)

Causes eye burns. Causes skin irritation or burns. Causes irritation of lungs and upper respiratory passages.

Inhalation 10 Minute LC50 for zinc chloride: 2000 MG/ in rats.
Oral LD50 for zinc chloride: 1100 mg/kg in rats.
Oral LD50 for ammonium chloride: 1650 mg/kg in rats.
Oral LD50 for barium chloride: 400 mg/kg in rats

The product is corrosive to the eyes and corrosive or irritating to skin. Toxic effects described in animals from short exposures include corrosion of mucosal surfaces, liver effects, and kidney effects. Toxic effects in animals occurring only with inhalation exposures are lower respiratory infection with pulmonary edema. Tests in bacterial or mammalian cell cultures demonstrate mutagenic activity. Tests in some animals indicate that the compound may have embryotoxic activity.

Human health effects of overexposure by inhalation, ingestion, or skin or eye contact may initially include: eye irritation with discomfort, tearing, or blurring of vision; skin irritation with discomfort or rash; or irritation of the upper respiratory passages. Higher exposures may lead to these effects: skin and eye burns or ulceration; temporary lung irritation effects with cough, discomfort, difficulty breathing, or shortness of breath; possibly modest initial symptoms, followed in hours by severe shortness of breath, requiring prompt medical attention; fatality from gross overexposure by fume inhalation or by significant ingestion. There are inconclusive or unverified reports of human sensitization. Individuals with preexisting diseases of the lungs may have increased susceptibility to the toxicity of excessive exposures.

Human health effects of acute over-exposure to barium chloride may include abdominal pain, violent purging with watery and bloody stools, vomiting, muscle twitching, and confusion, followed by reversible muscle paralysis, including paralysis of the respiratory muscles which may be fatal. Chronic overexposure may lead to varying degrees of paralysis of the extremities. Hypertension may also be present. Symptoms of over-exposure will disappear with time as the body eliminates the barium, primarily in the feces. Hypokalemia is often observed; potassium should be administered; large doses may be required.

When the Zaclon® products are heated to high temperatures as those encountered in the galvanizing process, irritating zinc chloride fumes and gaseous hydrogen chloride may be released. Severe exposures may cause pulmonary edema. Heating may also release zinc oxide fumes which may cause metal fume fever.

CARCINOGENICITY No ingredient listed as a carcinogen by IARC, NTP, OSHA, or ACGIH.

EXPOSURE LIMITS (PEL (OSHA), TLV (ACGIH), ETC.)

Zaclon® fluxes are not listed as hazardous materials by OSHA or ACGIH. After drying, however, zinc chloride, zinc oxide, ammonium chloride fumes and hydrogen chloride gas may be released at high temperatures.

The OSHA 8-hour Time Weighted Average (TWA) and ACGIH TLV®-TWA limits for these products are:

zinc chloride = 1 mg/m³; zinc oxide = 5 mg/m³;
hydrogen chloride = 5 ppm or 7 mg/m³ (ceiling).

Exposure limits for ammonium chloride have not been established by OSHA. The ACGIH 8 hour TLV®-TWA is 10 mg/m³ for ammonium chloride fumes and the ACGIH Short Term Exposure Limit (STEL) is 20 mg/m³ for ammonium chloride fumes.

SAFETY PRECAUTIONS

Do not get in eyes, on skin, on clothing.
Avoid breathing mists or fumes.
Wash thoroughly after handling.

FIRST AID

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician. Wash contaminated clothing before reuse and discard shoes.

If inhaled, remove to fresh air immediately. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Call a physician. If swallowed, do not induce vomiting. Give large quantities of water. Call a physician immediately. Never give anything by mouth to an unconscious person.

NOTE TO PHYSICIAN

Emesis should be initiated unless there is evidence of burns of the oral mucosa. Gastric lavage may be advisable. In some cases of excess body loads of zinc, treatment with calcium disodium acetate may be effective.

PROTECTION INFORMATION

GENERALLY APPLICABLE CONTROL MEASURES

Good general ventilation should be provided to keep fume concentrations below the exposure limits.

PERSONAL PROTECTIVE EQUIPMENT

Coverall chemical splash goggles and rubber gloves, and apron should be worn for routine work. A full-length face shield should be worn around galvanizing kettles. If considerable contact is likely, wear impervious (rubber) clothing or acid suit. If air concentrations exceed exposure limits, use OSHA-permissible respiratory equipment.

DISPOSAL INFORMATION

SPILL, LEAK OR RELEASE: Comply with Federal, State and local regulations on reporting releases. Flush entire spill area with plenty of water to chemical sewer.
WASTE DISPOSAL: Comply with Federal, State, and local regulations. If approved, may be flushed to chemical sewer to transferred to a licensed disposal contractor.

SHIPPING INFORMATION

DOT/IMO PROPER SHIPPING NAME

Corrosive Liquid, Acidic, Inorganic, N.O.S.
(Contains Zinc Chloride and Zinc Ammonium Chloride)

HAZARD CLASS 8, Corrosive Material

I.D. NUMBER UN NO. 3264

PACKING GROUP PG III

REPORTABLE QUANTITY 1,000 lbs. (Zinc Chloride and Zinc Ammonium Chloride)

OTHER INFORMATION

SHIPPING CONTAINERS Tank Cars, Tank Trucks, 55 Gallon Drums, Bulk Drums (totes).

STORAGE CONDITIONS Keep containers tightly closed. Do not store with cyanides or sulfides.

NPCA : HMIS RATINGS

Health	3
Flammability	0
Reactivity	0
Personal Protection	*

*Personal protection rating to be supplied by user depending on use conditions.

TITLE III HAZARD CLASSIFICATION:

Acute	Yes
Chronic	No
Fire	No
Reactivity	No
Pressure	No

ADDITIONAL INFORMATION AND REFERENCES

For further information see Zaclon's - Zaclon® Galvanizing Flux Data Sheet.

DATE OF LATEST REVISION/REVIEW: September 2006

PERSON RESPONSIBLE FOR MSDS:

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