

MATERIAL SAFETY DATA SHEET

MANUFACTURER'S NAME

N/A

EMERGENCY TELEPHONE NO.

804-798-2691

DISTRIBUTOR'S NAME

JDS INDUSTRIES, INC.
Sioux Falls SD 57104

INFORMATION TELEPHONE NO.

605-339-4010 2704 West 3rd Street

SECTION I -- PRODUCT IDENTIFICATION

FORMULA NUMBER: 170401 CHEMICAL FAMILY: Dilute Aqueous Add
PRODUCT NAME: Oxidation Solution HAZARD CLASS: Corrosive Material
HAZARD MATERIAL DESCRIPTION AND PROPER SHIPPING NAME: Corrosive Liquid N.O.S. UN1760/IMC0 Class 8

SECTION II -- HAZARDOUS INGREDIENTS

INGREDIENT	CAS NO.	WEIGHT %	TLV (TWA)
Selenious Acid	1783-00-8	4%	0.2* mg/m ³
Cupric Sulfate	1158-99-8	8%	1** mg/m ³
Phosphoric Add	7664-38-2	3%	1 mg/m ³
Fluoboric Add	16872-11-0	2%	2.5*** mg/m ³
Nickel Sulfate	7786-81-4	1%	1 (Ni) mg/m ³
Water	7732-48-5	82%

*as Se ** PEL 8-HR TWA (as Cu, dust or mist) ***as F

SECTION III -- PHYSICAL DATA

BOILING RANGE: 214 deg. F % VOLATILE VOLUME: None (except water)\
SPECIFIC GRAVITY (H₂O = t): 1.099 SOLUBILITY IN WATER: Completely miscible
VAPOR DENSITY: Less than Air pH: Less than 1
EVAPORATION RATE: Greater than Ether TOTAL ACIDITY: Under 1.5N (to pH7)
APPEARANCE AND ODOR: Odorless blue liquid
INGESTION: See Inhalation.

SECTION IV -- FIRE AND EXPLOSION DATA

FLASH POINT: Non-flammable LEL: N/A UEL: N/A
EXTINGUISHING MEDIA: Non-flammable
UNUSUAL FIRE AND EXPLOSION HAZARDS: Non-flammable. Non-explosive except with water-reactive substances.
SPECIAL FIREFIGHTING PROCEDURES: Non-flammable

SECTION V -- HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE: ACUTE
EYES: Can cause redness, conjunctivitis, iritis, swelling of eyelids, a watery-mucoid discharge and corneal opacity.
SKIN: Not a primary skin irritant. Can produce redness of skin and slight edema an prolonged or repeated contact. Can cause skin sensitization in some individuals.
INHALATION: Some hydrogen selenide fumes generated in use. Breathing fumes or mists can result in lost sense of smell, nose and throat irritation, garlic odor of breath, headache, dizziness, lassitude, tremors, difficulty breathing, bronchitis, pneumonitis, bronchial asthma.
INGESTION: May produce metallic taste, garlic odor of breath, headache, dizziness, lassitude, nausea, vomiting, abdominal pain, diarrhea, difficulty breathing. Target Organs: liver, kidneys, spleen, lungs; heart, adrenal glands, pancreas.
EMERGENCY AND FIRST AID PROCEDURES:
EYE CONTACT: Rinse thoroughly with water. Instillation of aqueous 1096 sodium thiosulfate solution is also recommended. If irritation persists, get medical attention.
SKIN CONTACT: Remove contaminated clothing. Thoroughly wash exposed area. Application of a 1096 sodium thiosulfate cream has been recommended.
INGESTION: If breathing difficult, provide artificial respiration or oxygen. If conscious and not vomiting, induce emesis. Seek medical attention. A diuretic will speed elimination of selenium. Vitamin B Complex, Vitamin C and methionine supplements are recommended.
INHALATION: Remove from exposure. Provide artificial respiration or oxygen. Consult a physician. Watch for delayed pulmonary edema. Diuretics speed elimination of selenium. Vitamin B Complex, Vitamin C and methionine supplements recommended.
EFFECTS OF OVEREXPOSURE: CHRONIC
EYES: No data specific to chronic exposures. (See acute eye exposure)
SKIN: Selenium may cause skin sensitization resulting in irritation, dermatitis, or edema. Nickel is a strong sensitizer resulting in "Nickel Itch" - erythma, nodular eruptions, eczema.
INHALATION: May cause weakness, pallor, anemia, enlargement of the liver and degenerative changes in target organs. Preclude from contact with product those with Wilson's disease or diseases of the akin, lungs, liver, kidneys, or gastrointestinal tract.

SECTION VI -- REACTIVITY DATA

STABILITY: Stable
HAZARDOUS POLYMERIZATION: Will not occur
HAZARDOUS DECOMPOSITION PRODUCTS: Reaction with organics and strong reducing agents can provide volatile organoselenides or hydrogen selenide. Thermal decomposition after evaporation to dryness can produce selenium dioxide fumes and oxides of phosphorus. Blackening of aluminum products some hydrogen selenide.
INCOMPATIBILITY (MATERIALS TO AVOID): Cyanides, water -reactive substances, organic solvents, oils, strong reducing agents.

SECTION VII -- SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Recover as much free liquid as possible and collect in acid-resistant container. Use absorbent to pick up residue. Avoid discharging the liquid directly into sewer or surface waters. CERCLA Reportable Quantity is 1 lb. for selenious add (approx. 3 gal. of the product).
WASTE DISPOSAL METHOD: Waste Aluma® Black Al 4 or its solutions are assigned the EPA Hazardous Waste Number D010 (EP Toxicity-Selenium). Precipitates filtered from the used solution or generated from treating the liquid are assigned the EPA Hazardous Number DO O (EP Toxicity-Selenium). The wastes can be disposed of through a licensed waste disposal company. To treat the liquid and convert it to a solid waste, add 8 ounces of degreased steel wool or steel machining fines or turnings per gallon of product. Stir frequently or continuously for at least 2 hours. Periodically adjust pH down to 1.5 with nitric add. When reaction is complete, adjust pH to 8.0 with calcium carbonate or calcium hydroxide and filter. Liquid can go down the drain. (see Note 6)

SECTION VIII -- SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: High efficiency particulate filter respirator, supplied-air respirator or self-contained breathing apparatus each with full face piece, helmet or hood if misting is likely, To meet fume or mist TLV's.
VENTILATION: SPECIAL VENTILATION: Equipment for containment and collection of mists if spray application used.
PROTECTIVE GLOVES: Rubber or plastic gloves.
EYE PROTECTION: Glasses, goggles or fact shield.
OTHER PROTECTIVE EQUIPMENT: As appropriate to operation to guard against contamination of clothing and prolonged or repeated skin contact.

SECTION IX -- SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Avoid co-loading or storing with cyanides, water reactive substances or strong reducing agents. Store in acid-resistant containers. Protect containers from physical damage.
OTHER PRECAUTIONS: Workers handling the product should wash before smoking or eating.

NOTES

1. While both selenium and copper are classified as essential trace elements in animals, the Registry of Toxic Effects of Chemical Substance cites experimental evidence of mutagenic, reproductive, and tumorigenic effects of selenites and various coppercompounds. In animal studies, selenites have produced fetotoxic and teratogenic effects. The implications of the experimental data far human exposure are uncertain. However, it would be prudent for pregnant individuals to avoid contact with the product.
2. With regard to carcinogenesis in animals, the status of selenium is indefinite according to IARC (the International Agency for Research on Cancer). Among rats surviving 18 to 24 months an diets containing 4, 7 or 10 ppm selenium, some developed adenoma or low-grade carcinoma in cirrhotic livers and a few others had advanced adenomatoid hyperplasia. Other animal or epidemiological studies suggest that selenium may have anti-carcinogenic effects.
3. RTECS cites experimental evidence of mutagenic effects and equivocal tumorigenic effects of nickel sulfate: NIOSH has proposed that all "airborne nickel" be considered and regulated as an occupational carcinogen, although this is under dispute. There is good evidence that chronic inhalation of nickel dusts and fumes in refining processes can produce cancer in the respiratory passages and lungs. Such exposure would not be anticipated with Aluma® Black A14; and inorganic nickel compounds are not considered carcinogenic by ingestion.
4. HMIS Label ratings for this product: Health-2, Flammability-0, Reactivity-0, Personal Protection-C. 5. NFPA Hazard ratings for this product: Health-2, Flammability-0, Reactivity-0.
6. **ATTENTION!** This product contains the following chemicals covered by Section 313 of SARA Title III: Selenious acid, cupric sulfate and phosphoric add. (The nickel sulfate is below the de minimis concentration limit.)

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