

MATERIAL SAFETY DATA SHEET (MSDS)

Electrolyte Fluid for SPIRFLAME® SFV/ ELE-1 / SFV/ELE-1-Air/Sea

SAT Spirig Advanced Technology Inc., 144 Oakland Street, Springfield, Mass. 1-866-977-4744

Emergency INFOTRAC : **USA 1 - 800 - 535 - 5053**

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Potassium Hydroxide Solution

SECTION 1 -

CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MSDS Name: Potassium Hydroxide Solution
Catalog Numbers: **SFV/ ELE-1**
Synonyms: **Electrolyte Fluid for SPIRFLAME®**
Company Identification: **SAT Spirig Advanced Technology Inc.**, 144 Oakland Street, Springfield, Mass.
For information: PHONE: **USA 1-866-977-4744** FAX: (1) 413 788 0490
Emergency INFOTRAC : **USA 1-800-535-5053**
NFPA Precautionary Label: HEALTH: 3 SEVERE (POISON)
FLAMMABILITY 0 NONE
REACTIVITY 1 SLIGHT

SECTION 2 -

COMPOSITION, INFORMATION ON INGREDIENTS

CAS#	Chemical Name	%	EINECS#
1310-58-3	Potassium hydroxide	40.0 - 50.0	215-181-3
proprietary	Additives, various	< 2	proprietary
7732-18-5	Water	Balance	231-791-2

SECTION 3 -

HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW **POISON! DANGER! CORROSIVE. Causes severe burns to skin, eyes, respiratory tract, and gastrointestinal tract. Material is extremely destructive to all body tissues. May be fatal if swallowed. harmful if inhaled.**

SAF-T-DATA (tm) Rating (Provided here for your convenience)

Health Rating: 3 - Severe (poison)
Flammability Rating: 0 - None
Reactivity Rating: 1 - Slight
Contact Rating: 4 - Extreme (Corrosive)
Lab Protective Equip: Goggles & Shield; Lab Coat & Apron; Vent Hood; Proper Gloves
Storage Color Code: White Stripe (Store Separately)

POTENTIAL HEALTH EFFECTS

Inhalation Respiratory tract irritant, may cause serious burns on acute contact. Severe injury is usually avoided by the self-limiting coughing and sneezing symptoms.

Ingestion Toxic! Corrosive to mucous membranes and may cause perforation of the esophagus and stomach. Abdominal pain, nausea, vomiting, general gastrointestinal upset can be expected.

Skin Contact Irritant, possibly corrosive if contact is prolonged. Soreness, redness, destruction of skin may result.

Eye Contact Irritant, possibly corrosive to eye tissues. Tearing, redness, pain, impaired vision are symptoms.

Chronic Exposure Development of a defatting dermatitis on prolonged contact with potassium hydroxide has been reported. Continued irritation may lead to increased susceptibility to respiratory illness.

Aggravation of Pre-existing Conditions Persons with pre-existing skin disorders or eye problems, or impaired kidney or respiratory function may be more susceptible to the effects of the substance.

SECTION 4 -

FIRST AID MEASURES

Inhalation Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

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Ingestion	DO NOT INDUCE VOMITTING. Give large quantities of water. Never give anything by mouth to an unconscious person. Call a physician immediately.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.
Skin Contact	In case of contact, immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. Call a physician.

SECTION 5 - FIRE FIGHTING MEASURES

Fire	Not considered to be a fire hazard.
Explosion	Not considered to be an explosion hazard.
Fire Extinguishing Media	Use any means suitable for extinguishing surrounding fire. Avoid direct contact of liquid water.
Special Information:	In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Contain and recover liquid when possible. Collect liquid in an appropriate container or absorb with an inert material (e. g.vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

SECTION 7 - HANDLING and STORAGE

Keep in a tightly closed container. Store in a cool, dry, ventilated area. Protect against physical damage. Separate from acids and alkalis. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION

Airborne Exposure Limits (Potassium hydroxide)	OSHA Permissible Exposure Limit (PEL): 2 mg/m ³ Ceiling ACGIH Threshold Limit value (TLV): 2 mg/m ³ Ceiling
Ventilation System	A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, Industrial Ventilation, A Manual of Recommended Practices, most recent edition, for details.
Personal Respirators (NIOSH Approved)	If the exposure limit is exceeded and engineering controls are not feasible, a half facepiece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest.. A full-face piece particulate respirator (NIOSH type N100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.
Eyes Protection	Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.
Skin Protection	Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

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SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Clear, colorless solution
Odor	odorless
Solubility	Completely soluble in water
Specific Gravity	1.51
pH	12.0 (0.1 molar solution)
Vapor Pressure	2.6 mm Hg @ 20 C
Vapor Density	0.62 (Air = 1)
Viscosity	3.7 cP
Boiling Point	10% solution 101°C (213F) 45% solution: 132°C (270F)
Freezing/Melting Point	10% solution -3°C (27F) 45% solution: -29°C (84F)
Decomposition Temperature	Not available.
Evaporate Rate	No information found (BuAc=1)

SECTION 10 - STABILITY AND REACTIVITY

Stability	Stable under ordinary conditions of use and storage
Hazardous Decomposition Products	Oxides of potassium
Hazardous Polymerization	Will not occur
Incompatibilities	Strong acids, aluminum, tin, zinc, chlorinated hydrocarbons
Conditions to Avoid	Heat, incompatibles

SECTION 11 - TOXICOLOGICAL INFORMATION

For potassium hydroxide: Oral rat LD50: 273 mg/kg; Investigated as a mutagen. Skin Irritation Data (std Draize, 50 mg/24 H): Human, Severe; Rabbit, Severe. Eye Irritation Data(Rabbit, non-std test, 1 mg/24 H, rinse): Moderate.

Cancer lists	NTP Carcinogen Potassium hydroxide solution: Known: No; Anticipated: No;
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SECTION 12 - ECOLOGICAL INFORMATION

Environmental Fate	No information found
Environmental Toxicity	Pot. Hydroxide: TLm: 80 ppm/Mosquito fish/24hr./ Fresh water

SECTION 13 - DISPOSAL CONSIDERATIONS

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Although not a listed RCRA hazardous waste, this material may exhibit one or more characteristics of a hazardous waste and require appropriate analysis to determine specific disposal requirements. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

SECTION 14 - TRANSPORT INFORMATION

Domestic (Land, D.O.T.) Proper Shipping Name:	POTASSIUM HYDROXIDE, SOLUTION Hazard Class: 8 UN: UN1814 Packing Group: II Information reported for product/size: 19L
International (Water, I.M.O.) Proper Shipping Name:	POTASSIUM HYDROXIDE, SOLUTION Hazard Class: 8 UN/NA: UN1814 Packing Group: II Information reported for product/size: 19L
International (Air, I.C.A.O.) Proper Shipping Name:	POTASSIUM HYDROXIDE, SOLUTION Hazard Class: 8 UN/NA: UN1814

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Emergency INFOTRAC : USA 1 - 800 - 535 - 5053

Packing Group: II
Information reported for product/size: 19L

SECTION 15 -

REGULATORY INFORMATION

Chemical Inventory Status Part 1 (KOH) TSCA: Yes; EC: Yes; Japan: Yes, Australia: Yes
Chemical Inventory Status Part 2 (KOH) Korea: Yes; DSL (Canada): Yes; NDSL (Canada): Yes, Phil: Yes
Federal, State & International Regulations (Part 1) SARA 302: RQ: No; TPQ: No
SARA 313: List: No; Chemical Catg. No
Federal, State & International Regulations (Part 2) CERCLA: 1000, RCRA (261.33): No, TSCA 8(d): No
Chemical Weapons Convention No
TSCA 12(b) No
CDTA No
SARA 311/312 Acute: Yes / Chronic: Yes / Fire: No / Pressure: No / Reactivity: Yes
Australian Hazchem Code 2R
Poison Schedule S6

WHMIS This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

European/International Regulations / European Labeling in Accordance with EC Directives

Hazard Symbols: C
Risk Phrases: R 35 Causes severe burns.
Safety Phrases: S 2 Keep out of reach of children.
S 24/25 Avoid contact with skin and eyes.
S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S 28A After contact with skin, wash immediately with plenty of water.



SECTION 16 -

OTHER INFORMATION

NFPA Ratings Health: 3 Flammability: 0 Reactivity: 1
Label Hazard Warning POISON! DANGER! CORROSIVE. CAUSES SEVERE BURNS TO SKIN, EYES, RESPIRATORY TRACT, AND GASTROINTESTINAL TRACT. MATERIAL IS EXTREMELY DESTRUCTIVE TO ALL BODY TISSUES. MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED.
Label Precautions Do not breathe mist. Do not get in eyes, on skin, or on clothing. Avoid breathing mist. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.
Label First Aid If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen. In all cases get medical attention immediately.

MSDS Creation Date: 12/12/1995 Review Date: 12/12/1997
Review Date: December 12, 1997 May 25, 1999 May 12, 2000 June 20, 2001 June 5, 2006 November 3, 2008
Database compared with MSDS of leading Chemical Supply houses. No differences found.

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