Advanced Calibration Designs

Chlorine Electrolyte

(Revised September 1, 2010)

Material Safety Data Sheet

Emergency Phone: (800) 424-9300

International Emergency Phone: 703-527-3887

Section 1 - Identification

Product Code:	193-0100-00
Product Name:	Chlorine Electrolyte
Used in Part Number:	210-0750-00, 510-0400-0X, 510-0401-0X, 510-0405-0X, 510-0500-01, 510-0600-00, 510-2000-00, 510-2000-05, 510-2000-20, 510-2000-LT, 510-2005-LT
Synonyms:	None
Chemical Family:	Inorganic Salt (Major Components - Lithium Chloride, Cupric Chloride, Hydrochloric Acid, Ethylene Glycol) in water.
CAS #:	7447-41-8, 10125-13-0, 7647-01-0, 000-107-21-1, in 7732-18-5 as listed above.
Molecular Formula:	Mixture of LiCl, $CuCl_2$, HCl, $HOCH_2CH_2OH$ in H_2O.

Section 2 - Ingredients

Chemical	CAS #	%	PEL	TLV
Lithium Chloride	7447-41-8	5 < x < 10	Not established	Not established
Cupric Chloride	10125-13-0	.1 < x < 3	1 mg Cu/m^3-dust/mist	1 mg Cu/m^3-dust/mist
Hydrochloric Acid	7647-01-0	.1 < x < 1	5 ppm	5 ppm
Ethylene Glycol	000-107-21-1	25 < x < 50	no data	100 ppm or 250 mg/m^3
Water	7732-18-5	Remainder	None	None

Section 3 - Physical Data

Boiling Point:	Approximately 150°C.
% Volatiles:	0
Solubility in Water:	Salts approximately 15% in cold water.
Specific Gravity (H_2O = 1):	Approximately 1.1
Freezing / Melting Point:	Approximately -50°C
Evaporation Rate (butyl acetate = 1):	No data
Vapor Density (air = 1):	No data
Vapor Pressure:	Approximately 760 mm at 150°C
Appearance and Odor:	Clear, light green liquid
Other:	No data

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Section 4 - Fire and Explosion Hazard Data

Flash Point (°F):	No data
Flammable Limits in Air, % by volume:	Lower: No data Upper: No data
Autoignition Temperature:	No data
Extinguishing Media:	Extinguishing agent appropriate to surrounding fire
Special Fire Fighting Procedures:	N/A

Section 5 - Health Data

OSHA (PEL):	LiCl	Not Established
	$CuCl_2$	0.1 mg Cu/m^3 - fume, 1 mg Cu/m^3 - dust/mist
	HCl	5 ppm
	$HOCH_2CH_2OH$	No data
	H_2O	None
ACGIH (TLV):	LiCl	Not Established
	$CuCl_2$	0.2 mg Cu/m^3 - fume, 1 mg Cu/m^3 - dust/mist
	HCl	5 ppm
	$HOCH_2CH_2OH$	100 ppm or 250 mg/m^3 vapor, 10 mg/m^3 particulate
	H_2O	None

ANIMAL TOXICITY

LD50:							
Oral - mouse	LiCl	1165 mg/kg	$CuCl_2$	No data	HCl	No data	$HOCH_2CH_2OH$ No data
Oral - rat	LiCl	526 mg/kg	$CuCl_2$	No data	HCl	No data	$HOCH_2CH_2OH$ No data
Oral - rabbit	LiCl	No data	$CuCl_2$	No data	HCl	900 mg/kg	$HOCH_2CH_2OH$ No data
LC50:							
Inhale - rat	LiCl	No data	$CuCl_2$	No data	HCl	3124 ppm/1 hr	$HOCH_2CH_2OH$ No data
LCLo:							
Inhale - human	LiCl	No data	$CuCl_2$	No data	HCl	1300 ppm/30 hr	$HOCH_2CH_2OH$ 10 g/m^3

EFFECTS OF EXPOSURE

Acute Effects

Ingestion:	May cause burning pain in mouth, esophogus and stomach. May cause hemorragic gastritis, nausea, vomiting, abdominal pain and diarrhea; pulmonary edema may also develop.
Skin Contact:	May cause irritation, redness and pain.
Eye Contact:	May cause severe irritation with redness, pain, blurred vision, discoloration and possible eye damage.
Inhalation:	May cause irritation to the upper respitory tract, symptoms may include coughing, sore throat, and shortness of breath.

Medical Conditions, if any, aggravated by the chemical: Not known.
Other health hazards: Solutions are corrosive.
Most likely routes of entry: Ingestion

Section 5 - Health Data *(continued)*

Chronic Effects

Ingestion:	Large doses may cause kidney damage, damage to the central nervous system. Symptoms include anorexia, weakness and fatigue, dehydration, nausea, vomiting, bloody stools, tremors, slurred speech, lethargy, stupor, ringing in the ears, aliguria, pulminary edema and coma. Death may occur from large repeated doses.
Skin Contact:	May cause dermatitis.
Eye Contact:	None known.
Inhalation:	None known. May cause effects similar to those of ingestion.
Other:	Lithium chloride is an experimental neoplatigen and teratogen.

EMERGENCY AND FIRST AID PROCEDURES

Ingestion:	If conscious, give two glasses of water. Induce vomiting by placing finger to back of throat. Keep head below hips to prevent aspiration. Get medical attention.
Skin Contact:	Remove contaminated clothing, flood skin with large amounts of water. If irritation persists seek medical attention.
Eye Contact:	Immediately flush eyes, including under eyelids, with large amounts of water for at least 15 minutes. Call a physician.
Inhalation:	No specific information available, remove individual to fresh air, seek medical attention.

Section 6 - Reactivity

Incompatibility:	Potassium, sodium, hydrazine, nitromethane, aluminum, bromine triflouride, strong oxidizers, acetylene, sodium hypobromite.
Hazardous Decomposition Products:	Emits chlorine, HCl, copper oxides when thermally decomposed.
Conditions to Avoid:	Incompatibles
Stability:	Stable
Hazardous Polymerization:	Will not occur.
Other:	No data

Section 7 - Environmental Information

RCRA Code:	HCL - D002, others - none.
TSCA Registered:	Yes, as separate components.
Spill and Leak Procedures:	Cover spill with dry sand, sweep or scoop up and place in clean container.
Waste Disposal:	Consult state, Local, or Federal EPA regulations for proper disposal.

Section 8 - Protection Information

Ventilation Requirement:	Laboratory fume hood.
Respiratory Protection:	NIOSH/MSHA approved self-contained breathing apparatus for emergency use.
Protective Gloves:	Rubber
Eye/Face Protection:	ANSI approved safety goggles.

Section 9 - Special Precautions

Handling and Storage:	Keep container tightly closed. Store in a cool, dry, dark, well ventilated area.
Other Precautions:	Lab coat and apron, flame and chemical resistant coveralls, eyewash capable of sustained flushing, safety drench shower, and hygienic facilities for washing.

Section 10 - Transportation Information - U.S. Department of Transportation

Per 49CFR:	172.101 with exception 173.4.
Proper Shipping Name:	Dangerous goods in apparatus.
Hazardous Class:	8
Packaging Group:	See packing instructions 916 for air shipment
UN#:	3363

Section 11 - Comments

This data is offered in good faith as typical values and not as a product specification. No warranty, either expressed or implied, is hereby made. The recommended industrial hygiene and safe handling procedures are believed to be generally applicable. However, each user should review these recommendations in the specific context of the intended use and determine whether they are appropriate.