



**Analytical Sensors, Inc.**

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MATERIAL SAFETY DATA SHEET

YSI MODEL 7176 Reference Electrode

Section I. Product Identification

Product Name: 4M LiCl Gel	Catalog No. RF0018-G-MSDS	Effective Date 10/17/02
Hazardous Shipment Labeling: DOT None	IATA None	
Prepared by 	Title Quality Assurance Chemist	
Approved by 	Title Director Regulatory Matters	

Section II - Hazard Ingredients/Identity Information

Hazardous Components Specific Chemical Identity; Common Name(s)	CAS No.	%	OSHA PEL	ACGIH TLV	LD ₅₀
Lithium Chloride (LiCl)	7447-41-8	17	None Listed	None Listed	1060 (ORL-GPG)
Thymol (C ₁₀ H ₁₄ O)	89-83-8	Trace	None Listed	None Listed	None Listed
CMC (CarboxyMethylCellulose)	9004-32-4	3	None Listed	None Listed	None Listed
Deionized Water (H ₂ O)	7732-18-5	80	None Listed	None Listed	190,000 (IPR-MUS)

Section III - Physical/Chemical Characteristics

Boiling Point 750mm Hg	100°C	Freezing Point	1°C
Specific Gravity (H ₂ O = 1)	1.0	Vapor Pressure at	NA
pH at 25 °C	(5.0 – 7.5)	Solubility in water, % by wt at 25°C	Miscible
Volatiles, % by wt	None	Evaporation Rate (Butyl Acetate = 1)	NA
Vapor Density (AIR = 1) NA			
Appearance and Odor Colorless, Odorless liquid			

Section IV - Fire and Explosion Hazard Data

Flash Point (Method Used) Not flammable	Flammable Limits	LEL NA	UEL NA
Extinguishing Media Carbon dioxide, dry chemical powder, water spray or standard foam.			
Special Fire Fighting Procedures None, this solution is non-flammable. But, in case of fire, the HCl can be released. Wear full protective clothing and self-contained positive pressure breathing apparatus certified by NIOSH when fighting chemically related fires.			
Unusual Fire and Explosion Hazards None			

Section V - Reactivity Data

Stability		Conditions to Avoid
Unstable	Stable X	Open containers and poor ventilation.
Incompatibility (Materials to Avoid): Lithium chloride is incompatible with strong oxidizing agents and strong acids.		
Hazardous Decomposition or Byproducts Incomplete combustion may generate carbon monoxide. Fire conditions may produce hydrogen chloride gas and oxides of lithium.		
Hazardous Polymerization	Conditions to Avoid	
May Occur	Will Not Occur X	None



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Section VI - Health Hazard Data

Route(s) of Entry:	Inhalation? Yes	Skin? Yes	Ingestion? Yes
Health Hazards (Acute and Chronic) Acute Effects: Harmful if swallowed, inhaled or absorbed through the skin. Vapor or mist is irritating to the eyes, mucous membranes and upper respiratory tract. Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea and vomiting. Chronic Effects: May cause congenital malformation in the fetus. May cause reproductive disorders. In addition, large doses of lithium ion have caused dizziness and prostration, and can cause kidney damage if sodium intake is limited. The literature states that dehydration, weight loss, dermatological effects and thyroid disturbances have occurred. Central nervous system effects including slurred speech, blurred vision, sensory loss, ataxia and convulsions have been reported. Repeated exposure to lithium ion may also cause diarrhea, vomiting and neuromuscular effects such as tremor, clonus and hyperactive reflexes. For further information refer to the literature, specifically RTECS # OJ5950000. Toxicity Data: LD50 Oral-Rat=526 mg/Kg. Irritation Data: Skin- Rabbit: 500 mg/24 hrs (Severe)			
Carcinogenicity: Not found on these lists.	NTP?	IARC Monographs?	OSHA Regulated?
Signs and Symptoms of Exposure Itching of skin, irritation of eyes if allowed to come in direct contact.			
Medical Conditions Generally Aggravated by Exposure Preclude from exposure those individuals with central nervous system disorders, skin and eye disorder.			
Emergency and First Aid Procedures Inhalation: Irritating to the respiratory system. If inhaled, remove the victim to fresh air. If breathing is difficult, give oxygen. If breathing has stopped begin resuscitation measures. Contact physician. Eye Contact: Irritating to the eyes. Contamination of the eyes should be treated by immediate and prolonged irrigation with copious amounts of water by separating the eyelids with fingers. Contact Physician. Skin Contact: Irritating to the skin. In case of contact, immediately wash skin with soap and copious amounts of water. Remove and wash contaminated clothing promptly. Ingestion: Harmful if swallowed. If ingested, wash out mouth with water and INDUCE vomiting. Do not induce vomiting nor administer liquids to an unconscious person. Get medical attention immediately.			

Section VII - Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled Use sand, vermiculite or other suitable absorbent to absorb the spill. Due to the small quantity involved, a leaking container may be placed in a plastic bag containing absorbent and disposed of as a residual waste according to federal, state and local regulations. Used absorbent should be disposed of in a similar manner. Wash down drain with excess water if local law allows.
Waste Disposal Method Dispose of as a residual waste. Do not pour down drains. Comply fully with all Federal, State, and local regulations. Consult Federal, State, and local laws when disposing of this product.
Precautions to Be taken in Handling and Storing Do not breathe vapor and avoid contact with eyes, skin and clothing. Wash thoroughly after handling. Wash contaminated clothing before reuse. Store at - 20oC. Keep away from oxidizing agents and strong acids. Proper storage must be determined based on other materials stored and their hazards and potential chemical incompatibility. Use only in a chemical fume hood. Keep container tightly closed. None, product is a low hazard. NFPA Rating: Scale (0-4); Health -0, Fire -0, Reactivity -0, Specific - None. Keep closure sealed and store at room temperature to protect product integrity.
Other Precautions LiCl does not appear on any of the SARA lists.

Section VIII - Control Measures

Respiratory Protection (<i>Specify Type</i>) None	
Ventilation	Local Exhaust None
Adequate ventilation is required to protect personnel from exposure to chemical vapors exceeding PEL and to minimize fire hazards. See Section 15 for regulatory standards of exposure.	Mechanical (<i>General</i>) None
	Special None
	Other None
Protective Gloves Yes	Eye Protection Safety glasses
Other Protective Clothing or Equipment Lab Coat	
Work/Hygienic Practices	
Emergency eyewash should be available. Wash hands after working with this product. No eating or drinking while working with this product.	

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