SECTION 1: Product and Company Identification

ACR Electronics, Inc., 5757 Ravenswood Rd., Ft. Lauderdale, FL. 33312 USA
PHONE: (954)-981-3333 FAX: (954)-961-4403 INTERNET: www.acrelectronics.com
E-MAIL: msds@acrelectronics.com
Hours of Operation: 9am to 5pm Mon. through Fri.
EMERGENCY 24-HOUR TELEPHONE NUMBERS: CHEM-TEL, INC, Inside U.S. (800) 255-3924, Outside U.S. (813) 248-0585 and FAX (813) 248-0582 see www.chemtelinc.com for more information about Chem-Tel, Inc.

Primary Batteries SHIPPING NAME **LITHIUM METAL BATTERIES**

Battery (Li-SO2 Two 1/2AA Cell Pak): AA0715-001
Battery (Li-SO2 One battery pack. Each pack contains two D size cells)
A3-06-2794(ELT 3000); **452-6504-1**(ELT 1000)**; 2714.4 & 2714.91**(Pathfinder 3 Replacement Battery)
1069(RLO 43 Raft Light)
1096, 1098, 1098.1 Battery (Li-SO2 One battery pack. Each pack contains three D size cells)

Batteries Contained in Equipment SHIPPING NAME **LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT**

Battery (Li-SO2 One battery pack. Each pack contains two D size cells)
ELT 3000; A**3-06-2749**(ELT 1000)
2714 Pathfinder 3; **2716** TelluSART MK3

The listed lithium metal batteries meet the requirements of the UN Manual of Tests and Criteria, Part III subsection 38.3. In addition, each shipment must be accompanied by appropriate documentation and the package must be capable of withstanding the drop test requirements.

SECTION 2: Hazards Identinfication

Do not short circuit, recharge, puncture, incinerate, crush, immerse, force discharge or expose to temperatures above the declared operating temperature range of the product. Risk of fire or explosion. The Lithium-Sulfur dioxide batteries described in this Product Safety Data Sheet are sealed units which are not hazardous when used according to the recommendations of the manufacturer.

Under normal conditions of use, the electrode materials and electrolyte they contain are not exposed to the outside, provided the battery integrity is maintained and seals remain intact. Risk of exposure only in case of abuse (mechanical, thermal, electrical) which leads to the activation of safety valves and/or the rupture of the battery containers. Electrolyte leakage, electrode materials reaction with moisture.

SECTION 3: Composition & Information on Ingredients

Each cell consists of a hermetically sealed metallic container containing a number of chemicals and materials of construction of which the following could potentially be hazardous upon release.

Ingredient	Content	CAS No.	CHIP Classification		
Lithium (Li)	< 3.0%	7439-93-2			F; R14/15 **C**; R34 R14/15, R21,R22, R35, R41, R43 S2, S8, S45
Acetonitrile (CH_3CN)	< 9%	75-05-8			**F;** R11, R14/15, R21, R22, S2, S8, S24, S26, S36, S37, S45

Ingredient	Content	CAS No.	CHIP Classification		
Sulfur dioxide (SO_2)	< 30%	7446-09-5			R22, R36/37, R41, S2, S8, S22, S24, S26, S36, S37, S45
Lithium Bromide (LiBr)	2.0 – 2.5%	7550-35-8			NONE KNOWN
Carbon (C_N)	6.5 – 7.0%	1333-86-4			NONE KNOWN

SECTION 4: First Aid Measures	
Inhalation	Remove from exposure, rest and keep warm. In severe cases obtain medical attention.
Skin Contact	Wash off skin thoroughly with water. Remove contaminated clothing and wash before reuse. In severe cases obtain medical attention.
Eye Contact	Irrigate thoroughly with water for at least 15 minutes. Obtain medical attention.
Ingestion	Wash out mouth thoroughly with water and give plenty of water to drink. Obtain medical attention.
Further Treatment	All cases of eye contamination, persistent skin irritation and casualties who have swallowed this substance or been affected by breathing its vapours should be seen by a Doctor.

SECTION 5: Fire Fighting Measures	
CO_2 extinguishers or, even preferably, copious quantities of water or water-based foam can be used to cool down burning Li-SO_2 cells and batteries, as long as the extent of the fire has not progressed to the point that the lithium metal they contain is exposed (marked by deep red flames). Do not use for this purpose sand, dry powder or soda ash, graphite powder or fire blankets. **Use only metal (Class D) extinguishers on raw lithium.**	
Extinguishing Media	Use water or CO_2 on burning Li-SO_2 cells or batteries and class D fire extinguishing agent only on raw lithium

SECTION 6: Accidental Release Measures
Remove personnel from area until fumes dissipate. Do not breathe vapors or touch liquid with bare hands. If the skin has come into contact with the electrolyte it should be washed thoroughly with water. Sand or earth should be used to absorb any exuded material, seal leaking battery and contaminated absorbent material in plastic bag and dispose of as Special Waste in accordance with local regulations.

SECTION 7: Handling and Storage	
Handling	Do not crush, pierce, short (+) and (-) battery terminals with conductive (i.e. metal) goods. Do not directly heat or solder. Do not throw into fire. Do not mix batteries of different types and brands. Do not mix new and used batteries. Keep batteries in non conductive (i.e. plastic) trays.
Storage	Store in a cool (preferably below 30°C) and ventilated area, away from moisture, sources of heat, open flames, food and drink. Keep adequate clearance between walls and batteries. Temperature above 90°C may result in battery leakage and rupture. Since short circuit can cause burn, leakage and rupture hazard, keep batteries in original packaging until use and do not jumble them.
Other	Lithium-Sulfur dioxide batteries are not rechargeable and should not be tentatively charged. Follow Manufacturers recommendations regarding maximum recommended currents and operating temperature range. Applying pressure on deforming the battery may lead to disassembly followed by eye, skin and throat irritation.

SECTION 8: Exposure Controls & Personal Protection					
Occupational exposure standard		Compound	8hr TWA	15min TWA	SK –
		Sulfur (Sulphur) dioxyde	1 ppm	1 ppm	-
	**Respiratory protection**	In all fire situations, use self-contained breathing apparatus.			
	**Hand protection**	In the event of leakage wear butyl rubber gloves.			
	**Eye protection**	Safety glasses are recommended during handling			
	**Other**	In the event of large, wear chemical apron.			

SECTION 9: Physical and Chemical Properties	
Appearance	Cylindrical or prismatic shape
Odor	If leaking, gives off a pungent corrosive odor.
pH	Not applicable
Flash Point	Not applicable unless individual components exposed
Flammability	Not applicable unless individual components exposed
Relative density	Not applicable unless individual components exposed
Solubility (water)	Not applicable unless individual components exposed
Solubility (other)	Not applicable unless individual components exposed

SECTION 10: Stability and Reactivity	
Product is stable under conditions described in Section 7.	
Conditions to avoid	Heat above 70°C or incinerate. Deform. Mutilate. Crush. Pierce. Disassemble. Recharge. Short circuit. Expose over a long period to humid conditions.
Materials to avoid	Oxidising agents, alkalis, water.
Hazardous decomposition Products	Hydrogen (H_2) as well as Lithium oxide (Li_2O) and Lithium hydroxide (LiOH) dust is produced in case of reaction of lithium metal with water.

SECTION 11: Toxicological Information	
Signs & symptoms	None, unless battery ruptures. In the event of exposure to internal contents, corrosive fumes will be very irritating to skin, eyes and mucous membranes. Overexposure can cause symptoms of non-fibrotic lung injury and membrane irritation.
Inhalation	Lung irritant.
Skin contact	Skin irritant
Eye contact	Eye irritant.
Ingestion	Tissue damage to throat and gastro/respiratory tact if swallowed.
Medical conditions generally aggravated by exposure	In the event of exposure to internal contents, eczema, skin allergies, lung injuries, asthma and other respiratory disorders may occur.

SECTION 12: Ecological Information	
Mammalian effects	None known if used/disposed of correctly.
Eco-toxicity	None known if used/disposed of correctly.
Bioaccumulation potential	None known if used/disposed of correctly.
Environmental fate	None known if used/disposed of correctly.

SECTION 13: Disposal Considerations
Lithium batteries are best disposed of as a non-hazardous waste when fully or mostly discharged. The Federal Environmental Protection Agency (EPA) (governed by the Resource Conservation and Recovery Act (RCRA)) do not list or exempt Lithium as a hazardous waste. However, if waste lithium batteries are still fully charged or only partially discharged, they can be considered a reactive hazardous waste because of significant amounts of un-reacted lithium in the battery. The batteries must be neutralized through an approved secondary treatment facility prior to disposal as a hazardous waste (as required by the U.S. Land Ban Restrictions for the hazardous and Solid Waste Amendments of 1984.) Secondary treatment centers receive these batteries as manifested hazardous waste under code "D003 - reactive." Use a professional disposal firm for disposal of mass quantities of un-discharged lithium batteries. DO NOT INCINERATE or subject battery cells to temperatures in excess of 212°F. Such treatment can cause cell rupture.

14 Transport information

· **14.1 UN-Number**
· **DOT, ADR, IMDG, IATA** UN3091 & UN3090

· **14.2 UN proper shipping name**
· **DOT, IMDG, IATA** 3091 LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT
· **ADR** 3090 LITHIUM METAL BATTERIES

· **14.3 Transport hazard class(es)**
· **DOT, IMDG, IATA**

· **Class:** 9 Miscellaneous dangerous substances and articles.
· **Label:** 9

· **ADR**

· **Class:** 9 (M4) Miscellaneous dangerous substances and articles.
· **Label:** 9

· **14.4 Packing group**
· **DOT, ADR, IMDG, IATA** II

· **14.5 Environmental hazards:**
· **Marine pollutant:** No

· **4.6 Special precautions for user:** Warning: Miscellaneous dangerous substance and articles.
· **Danger code (Kemler):** 90
· **EMS Number:** F-A,S-I

· **14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC CODE:** Not applicable.

· **Transport/Additional information:**
· **ADR**
· **Limited quantities (LQ)** 0

· **UN "Model Regulation:**UN3091, LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT, 9, II
· PI970 I

UN "Model Regulation:UN3090, LITHIUM METAL BATTERIES 9, II, PI968 IA

AA0715-001 Only

Li/Battery	Total Wh	Unit weight
.51g	8.64Wh	.075 Lb

1096, 1098, 1098.1 Only

Li/Battery	Total Wh	Unit weight
7.2g	99.9Wh	3 Lb

All other Models

Li/Battery	Total Wh	Unit weight
4.8g	66.6Wh	2 Lb

SECTION 15: Regulatory Information			
Regulations specifically applicable to the product: -ACGIH and OSHA: see exposure limits of the internal ingredients of the battery in section 8. -IATA/ICAO (air transportation): UN 3090 or UN 3091 -IMDG (sea transportation) : UN 3090 or UN 3091 -Transportation within the US-DOT, 49 Code of Federal Regulations			
Risk phrases	Lithium (Li)	R14/15 R21 R22 R35 R41 R42/43	Reacts violently with water, liberating extremely flammable gases. Harmful in contact with skin. Harmful if swallowed. Causes burns. Risk of serious damage to eye. May cause sensitization by inhalation and skin contact.
	Acetonitrile (CH_3CN)	R11 R14/15 R21 R22	Highly flammable. Reacts violently with water, liberating extremely flammable gases. Harmful in contact with skin. Harmful if swallowed.
	Sulfur dioxide (SO_2)	R22 R36/37 R41	Harmful if swallowed. Irritating to respiratory system. Risk of serious damage to eye.
Safety phrases	Lithium (Li)	S2 S8 S45	Keep out of reach of children Keep away from moisture In case of incident, seek medical attention.
	Acetonitrile (CH_3CN)	S2 S8 S24 S26 S36 S37 S45	Keep out of reach of children. Keep away from moisture. Avoid contact with skin. In case of contact with eyes, rinse immediately with plenty of water. Wear suitable protective clothing. Wear suitable gloves. In case of incident, seek medical attention.
	Sulfur dioxide (SO_2)	S2 S8 S22 S24 S26 S36 S37 S45	Keep out of reach of children. Keep away from moisture. Do not breathe dust. Avoid contact with skin. In case of contact with eyes, rinse immediately with plenty of water. Wear suitable protective clothing. Wear suitable gloves. In case of incident, seek medical attention.
UK regulatory references	Classified under CHIP		

SECTION 16: Other Information
This information has been compiled from sources considered to be dependable and is, to the best of our knowledge and belief accurate and reliable as of the date compiled. However, no representation, warranty (either expressed or implied) or guarantee is made to the accuracy, reliability or completeness of the information contained herein. This information relates to the specific materials designated and may not be valid for such material used in combination with any other materials or in any process. It is the user's responsibility to satisfy himself as to the suitability and completeness of this information for his particular use. Cobham Life Support, ACR Products and its affiliates does not accept liability for any loss or damage that may occur, whether direct, indirect, incidental or consequential, from the use of this information.