ELECTRONICS
DISTRIBUTING
COMPANY INC.

Product Data Sheet
Rose Electronics # EPG-1140

The products referenced herein are "articles" under 29 CFR 1910.1200(c) and are not subject to OSHA's requirements for material safety data sheets under its Hazard Communication Standard, 29 CFR 1910.1200. This Product Data Sheet is provided as a service to our customers.

Section I: Company Information:

Identity: Lithium Ion Batteries
Models: EPG-1140
WH Rating: 7.03Wh
Date: 1/17/13

Manufacturer:
Rose Electronics Distributing Company, Inc.
2030 Ringwood Avenue
San Jose, CA 95131
Phone: 1-408-943-0200

Section II: Composition Information:

Rose Electronics EPG-1140 contains 1S1P E-One Moli # ICP103450A.

Component	% (w/w)	Exposure Limits[1,2]	LD_{50}	LC_{50}
Dimethyl Carbonate (CAS No. 616-38-6)	3 - 6	Not established	13000 mg/kg (rat/oral) 5000 mg/kg (rabbit/dermal)	Not established
Ethylene Carbonate (CAS No. 96-49-1)	2 - 5	Not established	10400 mg/kg (rat/oral) >3000 mg/kg (rabbit/dermal)	Not established
Lithium Hexafluorophosphate (CAS No 21324-40-3)	1 – 5	Not established	1702 mg/kg (rat/oral)	>20 mg/kg (rat/4 hour)
Propylene Carbonate (CAS No. 108-32-7)	1 – 4	Not established	29100 mg/kg (rat/oral)	>5000 mg/m^3 (rat/4 hour)
Cobalt Lithium Dioxide (CAS No. 12190-79-3)	10 – 45	0.02 mg/m^3	Not established	Not established
Graphite (CAS No. 7782-42-5, 7440-44-0)	5 – 20	2 mg/m^3	Not established	Not established

1. Exposure Limits are those published by ACGIH, American Conference of Governmental Industrial Hygienists.
2. Exposure limits may vary from time to time and from one jurisdiction to another. Check with local regulatory agency for the exposure limits in your area.
3. Production code EFSPE80057 is Halogen Free.

Section III: Hazards Information

As a solid, these chemicals and metals are contained in a sealed can. For consumer use, exposure to hazardous in gradients is not expected with normal use. Adequate hazard warnings are included on both the package and on the battery. Do not short circuit, puncture, incinerate, crush, immerse, force discharge or expose to temperatures above the declared operating temperature range of the product. Risk of fire or explosion. Under normal conditions of use, the electrode materials and liquid 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, electrolyte leakage, electrode materials reaction with moisture/water or battery vent/ explosion/ fire may follow, depending upon the circumstance.

Section IV: First Aid Measures

First-aid method for different exposure routes	**INHALATION:** Remove victim to fresh air. If breathing is difficult a trained person may administer oxygen at a rate of 10 to 15 liters per minute. If breathing has stopped administer artificial respiration by use of a pocket mask or bag valve mask. Do NOT give mouth-to-mouth artificial respiration. Get medical attention immediately.
	SKIN CONTACT: Immediately wash skin with soap and copious amounts of water for at least 15 minutes. Remove contaminated clothing and administer a safety shower if contamination of the torso or legs above the knee has occurred. Relief from pain and swelling may be obtained by applying topical ointments after washing. Seek immediate medical advice if significant areas of the body have been affected, or if a severe skin reaction occurs. Treatment must be immediate due to the formation of hydrofluoric acid on moist skin. Launder clothing before reuse and discard leather footwear. Soak permeable belongings in benzalkonium chloride after washing.
	EYE CONTACT: Immediately flush eyes with large volumes of water for at least 15 minutes, holding eyelids open while flushing. Care must be taken not to cross contaminate the eyes. In all cases of eye contact seek immediate medical attention. Continue to flush during transport to a medical facility.
	INGESTION: Do not give anything by mouth to a victim who is either unconscious or is losing consciousness. If swallowed, wash mouth with water and have victim spit the wash water out. Repeat. Give one to two glasses of water to wash the throat. Do NOT induce vomiting. If vomiting occurs naturally, have victim lean forward to avoid aspiration. Seek medical attention.
The most important symptoms and hazardous effects：Not applicable	
The protection of first-aiders Notes to physicians：If battery is leaking may extremely corrosive HF is produced upon combustion. Demand to use Ca-gluconate cream or liquid for first-aid.	

Section V: Firefighting Measures

Suitable fire extinguishing media：Dry chemical, alcohol foam, water or carbon dioxide. For incipient fires, carbon dioxide extinguishers are more effective than water.
Specific hazards may be encountered during fire-fighting：Temperature over 100℃(212℉) batteries may burst and release hazardous.
Specific fire-fighting program：Rapidly cool batteries and adjacent structures with water.
Special equipment for the protection of firefighters：Use SCBA (self-contained breathing apparatus) and full protective gear.

Other：(Decomposition products when exposed to a fire situation.)

This information is given for the use of professional fire fighters responding to a warehouse fire where fire from other materials may incinerate Molicels. This section is provided solely in case of exposure, during fire fighting, to the combustion by-products. Hydrofluoric acid is not present in the product. Contact with Molicels causes none of the following symptoms.
Hydrofluoric acid is extremely corrosive. Contact with hydrogen fluoride fumes is to be avoided. Permissible exposure limit is 3 ppm. In case of contact with hydrogen fluoride fumes, immediately leave the area and seek first aid and emergency medical attention. Symptoms may have delayed onset. Fluoride ions penetrate skin readily causing destruction of deep tissue layers and even bone. Fluoride interferes with nerve impulse conduction causing severe pain or absence of sensations. Immediately flush eyes or skin with water for at least 20 minutes to neutralize the acidity and remove some fluoride. Remove and destroy all contaminated clothing and permeable personal possessions.

Before re-use, impermeable possessions should be soaked in benzalkonium chloride after water washing. Following flushing of the affected areas, an iced aqueous solution of benzalkonium chloride or 2.5 % calcium gluconate gel should be applied to react with the fluoride ion. Compresses and wraps may be used for areas where immersion is not practical. Medicated dressing should be changed every 2 minutes. Exposure to hydrofluoric acid fumes sufficient to cause pain requires immediate hospitalization for monitoring for pulmonary edema.

Section VI – Accidental Release Measure

Overview: Evacuate area if fire is present or likely. Spills of this electrolyte from cells pose a risk to the safety of responders if water is present. Contact with water causes the production of extremely toxic and corrosive hydrofluoric acid. Remove all sources of ignition. Electrolyte will remove or soften painted surfaces causing slipperiness to be a hazard.
Personal precautions: For all spills, protect skin and eyes from contact with electrolyte. In all cases, wear self-contained breathing apparatus.
Environmental precautions: Prevent from migration into natural waterways. Absorb spilled material with non-reactive absorbent such as vermiculite, clay or earth.
Cleanup Procedures: Evacuate spill area immediately and remove sources of ignition. Do NOT touch spilled material. Cleanup personnel must be trained in the safe handling of this product. If possible ventilate area by means of non-sparking, grounded ventilation system. Spills may be absorbed on non-reactive absorbents such as vermiculite. Place cells into individual plastic bags and then place into appropriate containers and close tightly for disposal. Ensure that cleanup procedures do not expose spilled material to any moisture. Immediately transport closed containers outside.

Lined steel drums are suitable for storage of damaged cells until they can be proper disposal can be arranged.

Section VII – Handling and Storage

Handling Procedures: This product is flammable and corrosive. Reaction products with water are also toxic.

Eliminate all ignition sources, (e.g. sparks, open flames, hot surfaces). Keep away from heat. Post "NO-SMOKING" signs. It is very important to keep areas where this material is used clear of other materials which can burn (e.g., cardboard, sawdust).

Use non-sparking ventilation systems, approved explosion-proof equipment and intrinsically safe electrical systems in areas of use. To prevent sparking, generously wet hard surfaces before they are chipped, ground, etc, in potentially hazardous areas. Keep aisles and exits free of obstruction. Do not use with incompatible materials such as water, strong oxidizing agents, strong reducing agents, strong acids and strong alkalis. Avoid generating vapour or mists. Prevent the release of vapour and mists into the workplace air. To avoid splashing, carefully dispense into sturdy containers made of compatible materials. Never transfer liquids by pressurizing the original shipping containers with air or inert gas. Do not dispense in storage area unless dispensing area is segregated by fire-resistant construction. Ground all drums, transfer vessels, hoses and piping. Ground clips must contact bare metal. When dispensing in other than a closed system, ensure dispensing container is bonded to receiving transfer equipment and container. Never return contaminated material to its original container. Label containers. Keep containers closed when not in use. Avoid damaging containers. Empty containers may contain hazardous residues.

Storage: Store in a cool, dry, well-ventilated area, out of direct sunlight and away from heat and ignition sources. Keep storage area clear of burnable materials (e.g. old rags, cardboard). Lighted cigarettes, matches, or any other ignition sources should not be allowed around indoor or outdoor storage areas. Inspect all incoming containers to make sure they are properly labeled and not damaged. Keep quantity stored as small as possible. Store away from water, strong oxidizing agents, strong reducing agents, strong acids and strong alkalis. Store in suitable, labeled containers (usually the shipping container). Keep containers tightly closed. Avoid stacking of containers. Protect from damage. Keep empty containers in separate storage area. Empty containers may contain hazardous residues. Keep closed. Store small quantities in approved fireproof flammables cabinet or storage room. Store flammable materials according to occupational health and safety regulations and fire and building codes, which will describe the kind of storage area and the type of storage containers for a specified amount of the material.

Store in an isolated fireproof building, if possible. Ground floor storage facilities are usually recommended. Storage facilities should be made of fire resistant materials. Use a grounded, non-sparking ventilation system, approved explosion-proof equipment and intrinsically safe electrical systems. Store within temperature range recommended by electrolyte manufacturer/supplier.

Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. Keep storage area separate from work areas. Store away from work process and production areas, elevators, building and room exits or main aisles leading to exits. Post warning signs. Inspect periodically for damage or leaks. Have appropriate fire extinguishers and spill clean-up equipment in or near storage area.

Section VIII – Exposure Controls / Personal Protection

Engineering control：General ventilation under normal use conditions.
Control parameters 8-Hour TWAs：None Short-term exposure limits：None Maximum exposure limits：None Biological mark：None
Personal protective equipment Respiratory protection：None under normal use conditions. Hand protection：None under normal use conditions. Eye protection：None under normal use conditions. Wear safety glasses when handling leaking batteries. Skin and body protection：None under normal use conditions. Use butyl gloves when handling leaking batteries. Other：Keep batteries away from small children.. Hygiene methods：Use water cleaning-up.

Section IX – Physical and Chemical Properties

Physical phase：Solid	
Color：Contents silver in color.	Odor：None
Boiling point/boiling range：NA ℃	Melting point：NA ℃
PH value：NA	Decomposition temperature： NA ℃
Flash point： NA ℃	Test method： ☐ Open cup ☐ Close cup
Ignition temperature： NA ℃	Explosion limits (LEL) NA% (UEL) NA %
Vapor pressure：1.1-1.3 kPa @ 20℃	Vapor density：3.5
Relative Density：1.2	Solubility：Miscible in water

Section X – Stability and Reactivity

Stability：Stability Possible hazardous reactions occurring under specific conditions： Contents incompatible with strong oxidizing agents. Conditions to avoid：Does not water, heat, crush, disassemble or short circuit. Materials to avoid：Water, heat, acid material. Hazardous decomposition products： Hydrogen Fluoride, Phosphorus Oxides, Carbon Monoxide, Carbon Dioxide, Lithium Hydroxide, Cobalt Oxides, Aluminium Oxide, possible fluoro-compounds, Carbon soot.

Section XI – Toxicological Information

Acute toxicity：None
Local effects：None
Sensitization：None
Chronic toxicity or long term toxicity：None

Section XII – Ecological Information

Possible environmental effects/environmental mobility：
Abandons the battery to bury underground possibly creates the subsoil and the ground water pollution.
These batteries pass the U. S. EPA's Toxicity Characteristic Leaching Procedure and therefore, may be disposed of with normal waste.
Environmental toxicity: No data available.
Biodegradability: No data available.

Section XIII – Disposal Considerations

Waste disposal procedures : Always consult and obey all international, federal, provincial/state and local hazardous waste disposal laws. Some jurisdictions require recycling of this spent product.

Canadian Environmental Protection Act: Spent cells are not considered hazardous waste. Cells involved in a fire may be considered to be hazardous waste. Comply with all provincial and local regulations.

Resource Conservation and Recovery Act (RCRA): Spent cells are not considered hazardous waste. Cells involved in a fire may be considered to be hazardous waste. Comply with all state and local regulations.

Section XIV – Transport Information

These cells (and therefore the 1-cell pack) have been tested and pass in accordance with the United Nations Manual of Tests and Criteria, Part III subjection 38.3. Not regulated for transport under Special Provision 34 of the Canadian Transport of Dangerous Goods Regulations

United States Hazardous Materials Regulations (49 CFR): These cells have passed the tests listed in the United Nations Manual of Tests and Criteria, Part 38.3. Not regulated for transport by Special Provision 188 of the United States Code of Federal Regulations Title 49.

International Air Transport Association (IATA): These cells must be tested and pass in accordance with the United Nations Manual of Tests and Criteria, Part III subjection 38.3.

Quantities of lithium ion cells and batteries that exceed the “per package” limits described in Section II of the packing instruction 965 and 967 must be assigned to class 9 and shipped as “Section IB”. All applicable requirements contained in the IATA Dangerous Goods Regulations relating to these commodities must be complied with, including the training requirements, with the exception of:

- UN Specification packaging is not required.
- A “Shipper’s Declaration for Dangerous Goods” is not required provided that the air waybill or alternative transport document contains the required information.

Packages must bear the Class 9 hazard label in addition to the lithium battery handling label. Lithium

ion batteries larger than those permitted by Section II of the applicable packing instruction must be assigned to Class 9 and consigned as UN 3480 (Lithium ion batteries) or UN 3481 (Lithium ion batteries contained in equipment or Lithium ion batteries packed with equipment). All applicable requirements contained in the IATA Dangerous Goods Regulations relating to these commodities must be complied with, including the training requirements; a "Shipper's Declaration for Dangerous Goods" must be issued, and packages must bear the Class 9 hazard label.

For air transport, specific quantity limits apply to the net weight of lithium batteries in a package. The maximum net weight of lithium batteries per package for Cargo Aircraft Only is 35 kg. However, there is provision for large lithium batteries that have IATA Lithium Battery Guidance Document - 2013 IDFS/Cargo Page 7 04/10/2012 a net weight exceeding 35 kg to be consigned on a cargo aircraft in accordance with Special Provision A99.

*Packing requirements:
General packing requirement: Cells and batteries must be packed in strong outer packaging that conform to 2.7.5

Additional requirements:
1) Cells and batteries must be packed in inner packaging that completely enclose the cell or battery.
2) Cells and batteries must be protected so as to prevent short circuits.
3) Each package must be capable of withstanding a 1.2m drop test in any orientation without damage to cells or batteries contained therein, shifting of the contents so as to allow battery to battery contact and release of contents.

*Each package must be labeled with a lithium battery handling label.

*Limitation of weight:
Quantity per package for both Passenger Aircraft and Cargo Aircraft can only have 10Kg in gross weight.

*Overpacks: Individual packages each complies with the requirements of part 1 may be placed in an overpack. An over-pack must be marked with the Word "Overpack" and labeled with the lithium battery label, unless the labels on the package inside the overpack are visible.

International Maritime Organization (IMO): These cells have passed the tests listed in the United Nations Manual of Tests and Criteria, Part 38.3. Not regulated for transport under Special Provision 188 of the International Maritime Dangerous Goods Code (IMDG).

UN 3480 - Lithium ion batteries
UN 3481 - Lithium ion batteries packed with equipment/ Lithium ion batteries contained in equipment

Any Lithium ion cells or batteries subsequently repackaged or reshipped are required to meet all of the requirements specified above.

Section XV – Regulatory Information

Applicable regulations :
Local hazardous waste disposal laws.
This product is made from materials with no detectable mercury.

Canadian Federal Regulations:

Canadian Environmental Protection Act: All ingredients in the electrolyte are on the Domestic Substances List.
WHMIS Classification: Not controlled, manufactured article

United States Federal Regulations:

Toxic Substances Control Act: All ingredients are listed in the inventory.
OSHA: Does not meet criteria as per Part 1910.1200, manufactured article.
CERCLA: Does not meet criteria
SARA 313: Does not meet criteria
SARA 311/312 EPA Hazard Categories: Does not meet criteria

EU Regulations

EINECS: Not applicable
EU Classification: Not classifiable
Labels: None

Section XVI – Other Information

Notice: The information and recommendations set forth are made in good faith and are believed to be accurate at the date of preparation. Rose Electronics makes no warranty expressed or implied with respect to this information and recommendations and disclaims all liability from reliance on it.