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# SDS

## Safety Data Sheet

### Lithium-ion 10900 Battery Cell

#### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Lithium-ion Battery  
Model Number: 10900  
Nominal Voltage: 3.7V, 2.4Wh  
Rated Capacity: 650mAh

##### Recommended use of the chemical and restriction on use

Recommended Use: Lithium-ion Battery  
Restriction on Use: No information available.

##### Information of Supplier

Company Name: Armament Systems and Procedures, INC  
Address: 2511 E Capitol DR, Appleton, WI, USA 54911

#### 2. HAZARD(S) IDENTIFICATION

##### Classification:

This product is an article which is a sealed battery and as such does not require an SDS per the Classification, Labeling and Packaging Regulation unless ruptured. The sealed battery is not hazardous in normal use.

Signal Word: Danger

##### Hazard Statements and Symbol

Hazard statement: No hazard statement  
Pictogram(s): No pictogram  
Precautionary Statements: No precautionary statements

##### Description of any hazards not otherwise classified

In case of mistreatment (abusive charge, external short circuit...) and in case of fault, some electrolyte can leak from the cell through the safety device. In these cases refer to the risk of electrolyte. Contact with internal components may cause irritation or severe burns. Irritating to eyes, respiratory system and skin. The electrode materials are only hazardous if the materials are released by mechanical damaging of the cell or if exposed to fire.

Skin Touch	Contact with battery electrolyte may cause burns and skin irritation.
Eye Touch	Contact with battery electrolyte may cause burns. Eye damage is possible.
Inhalation	Inhalation of a large number of vapors or fumes released due to heat may cause respiratory problems.
Ingestion	Ingestion of battery contents may cause mouth, throat and intestinal burns and damage.

##### Unknown Toxicity

No information available.

### 3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	Molecular Formula	CAS No.	Weight %
Lithium Manganese Nickel and Cobalt	--	--	36.6%
Polyvinylidene Fluoride	(C <sub>2</sub> H <sub>2</sub> F <sub>2</sub> ) <sub>n</sub>	24937-79-9	0.7%
Graphite	C	1333-86-4	0.7%
Graphite	C <sub>24</sub> X <sub>12</sub>	7782-42-5	16.2%
Styrene Butadiene Rubber	C <sub>36</sub> H <sub>42</sub> X <sub>2</sub>	61789-96-6	0.4%
Cellulose CM	C <sub>8</sub> H <sub>16</sub> O <sub>8</sub>	9000-11-7	0.2%
Ethylene Carbonate	C <sub>3</sub> H <sub>4</sub> O <sub>3</sub>	96-49-1	3.3%
Dimethyl Carbonate	C <sub>3</sub> H <sub>6</sub> O <sub>3</sub>	616-38-6	6.7%
Ethyl Methyl Carbonate	C <sub>4</sub> H <sub>8</sub> O <sub>3</sub>	623-53-0	1.1%
Polypropylene	C <sub>3</sub> H <sub>6</sub>	9003-07-0	2.7%
Aluminum Foil	Al	7429-90-5	4.2%
Copper Foil	Cu	7440-50-8	8.2%
Nickel	Ni	7440-02-0	0.3%
Iron	Fe	7439-89-6	16%
Lithium Hexafluorophosphate	LiPF <sub>6</sub>	21324-40-3	1.7%
Polyvinyl Chloride	[C <sub>2</sub> H <sub>3</sub> Cl] <sub>n</sub>	9002-86-2	0.6%
Ethylene Terephthalate	(C <sub>10</sub> H <sub>8</sub> O <sub>4</sub> ) <sub>n</sub>	25038-59-9	0.4%

### 4. FIRST AID MEASURES

#### General Advice

First aid is applicable only in the case of a cell rupture.

Skin Contact	Wash immediately with plenty of water and soap for at least 15 minutes. In the case of skin irritation or allergic reaction, see a physician.
Eye Contact	If symptoms persist, call a physician. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eyes wide open while rinsing. Remove contact lenses, if present and easy to do. Continue rinsing. Do not rub affected area.
Inhalation of Vented Gas	Move to fresh air. If symptoms persist, call a physician. Get medical attention immediately if symptoms occur.
Ingestion	Do not induce vomiting. Rinse mouth immediately and drink plenty of water. Call a physician or poison control center immediately.

#### Most important symptoms and effects, both acute and delayed

Contact with internal components may cause allergic skin sensitizations (rash) and irritate eyes, nose, throat or respiratory system.

#### Indication of any immediate medical attention and special treatment needed

No information available.

### 5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media	Use foam, dry powder or dry sand, CO <sub>2</sub> as appropriate.
Unsuitable Extinguishing Media	CAUTION: Use of water spray when fighting fire may be inefficient.

Specific Hazards Arising from the Chemical	Under fire conditions, batteries may burst and release hazardous decomposition products when exposed to fire situation. This could result in the release of flammable or corrosion materials.
Hazardous Combustion Product	CO, CO <sub>2</sub> , Metal Oxides, Irritating Fumes
Protective Equipment and Precautions for Firefighters	Firefighters must wear fire resistant protective equipment and appropriate breathing apparatus. The staff must be equipped with filter mask (full mask) or isolated breathing apparatus. The staff must wear clothes which can defend against the fire and the toxic gases. Put out the fire in the upwind direction. Remove the container to open space as soon as possible. Spray water on the containers in the fireplace to keep them cool until extinguished.

## 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures	If the battery material is released, remove personnel from area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. The preferred response is to leave the area, dispose of the case after the batteries cool and vapors dissipate. Provide maximum ventilation. Avoid contact with skin, eyes or inhalation of vapors.
Methods for Containment	Prevent further leakage or spillage if safe to do so.
Methods for Cleaning Up	Collect all released material in a plastic lined container. Dispose of according to the local laws and rules. Avoid leaked substances from getting into the earth, canalization or waters.

## 7. HANDLING AND STORAGE

### Precaution for Safe Handling

Always follow the warning information on the batteries and in the manuals of devices. Only use the recommended battery types. Keep batteries away from children. For devices to be used by children, the battery casing should be protected against unauthorized access. Unpacked batteries shall not lie about in bulk. In case of battery change, always replace all batteries with new ones of identical type and brand. Do not swallow batteries. Do not throw batteries into water. Do not throw batteries into fire. Avoid deep discharge. Do not short-circuit batteries. Do not recharge. Do not mix with used different battery types. Do not use after effective date of use.

### Conditions for Safe Storage, Including any Incompatibilities

Storage	Keep containers tightly closed in a dry, cool and well-ventilated place. Store locked up. Keep out of the reach of children.
Incompatible Products	Strong acids. Strong oxidizing agent.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### Control Parameters

Not established

### Appropriate Engineering Controls

Under normal conditions (during discharge) release of ingredients does not occur.

### Individual Protection Measures

Respiratory Protection:	No personal protective equipment normally required. In case of inadequate ventilation wear respiratory protection.
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Eye / Face Protection:	No personal protective equipment normally required.
Skin Protection:	Wear protective clothing to prevent contact.
Hand Protection:	Wear protective gloves.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Solid
Color:	Green
Odor:	Odorless
Odor Threshold:	No information available
pH:	No data available
Melting / Freezing Point:	No data available
Boiling Point / Boiling Range:	No data available
Flash Point:	No data available
Evaporation Rate:	No data available
Flammability (Solid, Gas):	No data available
Flammability Limit in Air:	
Upper Flammability Limit:	No data available
Lower Flammability Limit:	No data available
Vapor Pressure:	No data available
Vapor Density:	No data available
Specific Gravity:	No data available
Solubility:	Insoluble in water
Partition Coefficient: n-octanol/water:	No data available
Autoignition Temperature:	No data available
Decomposition Temperature:	No data available
Kinematic Viscosity:	No data available
Dynamic Viscosity:	No data available

## 10. STABILITY AND REACTIVITY

Reactivity:	No data available
Chemical Stability:	Stable under recommended storage conditions.
Possibility of Hazardous Reactions:	When heated above 80°C the risk of rupture occurs. Due to special safety construction, rupture implies controlled release of pressure without ignition.
Conditions to Avoid:	Do not subject battery to mechanical shock. Keep away from open flames, high temperature.
Incompatible Materials:	Strong acids, strong oxidizing agents.
Hazardous Decomposition Products:	Under fire conditions, the electrode materials can form carcinogenic cobalt oxides.

## 11. TOXICOLOGICAL INFORMATION

### Information on Likely Routes of Exposure

Inhalation:	Inhalation of a large number of vapors or fumes released due to heat may cause respiratory problems.
Eye Contact:	Contact with battery electrolyte may cause burns. Eye damage is possible.
Ski Contact:	Contact with battery electrolyte may cause burns and skin irritation.

Ingestion:	Ingestion of battery contents may cause mouth, throat and intestinal burns and damage. Under normal conditions (during charge and discharge) release of ingredients does not occur. If accidental release occurs see information in section 2, 3 and 4. Swallowing of battery can be harmful. Call the local Poison Control Center for advice and follow up.
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#### Information on Toxicological Characteristics

Acute Toxicity:	No data available.
Skin Corrosion / Irritation:	The liquid in the battery irritates.
Serious Eye Damage / Irritation:	The liquid in the battery irritates.
Respiratory Sensitization:	The liquid in the battery may cause sensitization to some people.
Skin Sensitization:	The liquid in the battery may cause sensitization to some people.
Carcinogenicity:	No data available.
Germ Cell Mutagenicity:	No data available.
Reproductive Toxicity:	No data available.
STOT-Single Exposure:	No data available.
STOT-Repeated Exposure:	No data available.
Aspiration Hazard:	No data available.

## 12. ECOLOGICAL INFORMATION

Ecotoxicity:	Water hazard class 1 (self-assessment): slightly hazardous for water
Persistence and Degradability:	No information available
Bioaccumulation:	No information available
Other Adverse Effects:	No information available

## 13. DISPOSAL CONSIDERATIONS

#### Waste Treatment Methods

Disposal Methods:	Should not be released into the environment.
Contaminated Packaging:	Dispose of in accordance with federal, state and local regulations.

## 14. TRANSPORT INFORMATION

According to PACKING INSTRUCTION 965-970 of IATA DGR 59th Edition for transportation, the special provision 188 of IMDG. The batteries should be securely packed and protected against short-circuits. Examine whether the package of the containers are integrated and tightened closed before transport. Take in a cargo of them without falling, dropping and breakage. Prevent collapse of cargo piles. Don't put the goods together with oxidizer and chief food chemicals. The transport vehicle should prevent exposure to rain and high temperature. For stopovers, the vehicle should be away from fire and heat sources. When transported by sea, the assembly place should keep away from bedroom and kitchen, and isolated from the engine room, power and fire source. Under the condition of Road Transportation, the driver should drive in accordance with regulated route, don't stop over in residential and congested areas. Do not use wood or cement for bulk transport: Lithium batteries shipped as "Lithium Batteries," "Lithium batteries packed with equipment," or "Lithium batteries contained in equipment" may not be classified as "Dangerous Goods" when shipped in accordance with "PI965-967 section II of IATA-DGR" or "special provision 188 of IMO-IMDG Code."

IATA: Proper Shipping Name: Lithium-ion Batteries  
UN Number: UN 3480  
Hazard Class: 9

Packaging Requirement: According to IATA DGR 59<sup>th</sup> Edition (Effective 1 January – 31 December 2018), PACKING INSTRUCTION 965 of section IB for transportation.

IMO: Proper Shipping Name: Lithium-ion batteries  
UN Number: UN 3480  
Hazard Class: Not restricted  
Packing Group: Not restricted

The goods are not restricted to IMO IMDG Code (Amend 38-2016) according to special provision 188.

## 15. REGULATORY INFORMATION

Classification, Labeling and Packaging Regulation  
REACH (EC) 1907/2006  
Dangerous Goods Regulation  
Recommendations on Transport of Dangerous Goods Model Regulations  
International Maritime Dangerous Goods  
Technical Instructions for the Safe Transport of Dangerous Goods  
Classification and Code of Dangerous Goods  
Occupational Safety and Health Act (OSHA)  
Toxic Substances Control Act (TSCA)  
Consumer Product Safety Act (CPSA)  
Federal Environmental Pollution Control Act (FEPCA)  
The Oil Pollution Act (OPA)  
Resource Conservation and Recovery Act (RCRA)  
Safety Drinking Water Act (CWA)  
Code of Federal Regulations (CFR)  
In accordance with all Federal, State and local laws.

## 16. OTHER INFORMATION

According Standard:  
GB/T 16483-2008 Safety Data Sheet for chemical products content and order of sections  
ISO 11014:2009(E) Safety Data Sheet for chemical products – Content and order of sections

### Disclaimer:

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the test.