

# MATERIAL SAFETY DATA SHEET

## Section 1: PRODUCT AND COMPANY IDENTIFICATION

Company Name & address:

**SEALED ENERGY SYSTEMS**  
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PRODUCT NAME: **Batteries, Lithium Ion**

SES PORTFOLIO NUMBER: SES/MSDS/LI-ION 2018/REV/02

REVISION NUMBER: 02

DATE OF PREPARATION: 1<sup>st</sup> June, 2015

DATE OF 1<sup>st</sup> REVISION: 1<sup>st</sup> January, 2016

DATE OF 2<sup>nd</sup> REVISION: 1<sup>st</sup> May, 2018

## Section 2: HAZARDS IDENTIFICATION

### Classification of Products:

Secondary battery packs are enclosed in UL-94, V-0 enclosures designed to withstand temperatures and pressures encountered during normal use. The hazardous component in battery packs is the lithium-ion cell. Under normal use the battery cells present no physical danger of ignition or explosion and chemical danger of hazardous materials leakage.

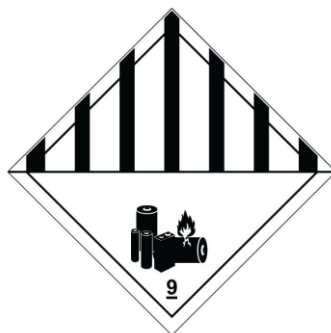
Battery cells are designed to vent gas to prevent explosion, if exposed to a fire, added mechanical shocks, electrically abused or physically damaged. This leaked gas could contain material classified as hazardous.

### Label and Markings:

Example of Battery Pack Markings:



Example of Packing Labels:



**NOTE:** Under normal conditions of battery use, internal components will not present a health hazard. The following information is provided for battery electrolyte (KOH, alkaline sol.) for exposure that may occur during container breakage or under extreme heat conditions such as fire.

**EMERGENCY OVERVIEW:**

The battery should not be opened or burned. Exposure to the ingredients contained within or their combustion products could be harmful. If the battery is opened or broken then the following hazards apply:



**ROUTES OF ENTRY:**

**EYE CONTACT:** Contact with the battery electrolyte can cause severe irritation, burns, and cornea damage upon contact.

**SKIN CONTACT:** Battery electrolyte (acid) can cause severe irritation, burns and ulceration.

**SKIN ABSORPTION:** Not a significant route of entry

**INHALATION:** Acid mist generated during battery charging or spillage of the electrolyte in a confined area may cause respiratory irritation.

**INGESTION:** The electrolyte ingestion irritates the mouth and the throat seriously resulting in serious burns to the mouth and gastrointestinal tract.

**ACUTE HEALTH EFFECTS:** Exposure and/or contact with battery electrolyte (acid) may lead to acute irritation of the skin, corneal damage of the eyes, and irritation of the mucous membranes of the eyes and upper respiratory system, including lung.

**CHRONIC HEALTH EFFECTS:** Chronic overexposure to nickel may result in cancer; dermal contact may result in dermatitis in sensitive individuals.

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:** A knowledge of the available toxicology information and of the physical and chemical properties of the material suggests that overexposure is unlikely to aggravate existing medical conditions.

**INTERACTIONS WITH OTHER CHEMICALS:** Immersion in high conductivity liquids may cause corrosion and breaching of the cell or battery enclosure. If vented cell electrolyte contacts water it will generate detrimental hydrogen fluoride.

**ENVIRONMENTAL EFFECTS:** Not Available

### Section 3: COMPOSITION/ INFORMATION ON INGREDIENTS

Material	Chemical Name	CAS No.	Mass Range in Cell
Electrolyte Salt	Lithium hexafluorophosphate	21324-40-3	0.05-5
Electrolyte Solvent	Include one or more of the followings: Ethelyn Carbonate Propylene Carbonate Diethyl Carbonate	96-49-1 108-32-7 105-58-8	5-20
PVDF	Polyvinylidene difluoride	24937-79-9	<1
Copper	Cu	7440-50-8	<1
Aluminium	Al	7429-90-5	3-15
Cathode	Lithium Cobalt Oxide	12190-79-3	20-50
Anode	Graphite	7782-42-5	10-30
Steel, Nickel, and inert components	-	Various	Balance

### Section 4: FIRST AID MEASURES

#### DESCRIPTION OF FIRST AID MEASURES

The hazardous components of this cell or battery are contained within a sealed unit. The following measures are only applicable if exposure has occurred to components when a cell or battery leaks, is exposed to high temperatures or is mechanically, electrically or physically abused/damaged. The hazardous contents are caustic alkaline electrolytes contained in cells with lithium metal oxide cathodes, graphite and carbon anodes and Polyvinylidene difluoride binders.

**INGESTION:** Have victim rinse mouth thoroughly with water. DO NOT INDUCE VOMITING. Quickly transport victim to an emergency care facility.

**EYE:** If eye contact with contents of an open cell occurs, immediately flush the contaminated eye(s) with water. Quickly transport victim to an emergency care facility

**SKIN CONTACT:** Immediately flush with water. If irritation or pain persists, seek medical attention. Inhalation: Remove the patient from exposure into fresh air, seek medical attention.

#### PROTECTION FOR FIRST

**AIDERS:** Do not enter corrosive vapor contaminated areas without a respirator or self-contained Breathing Apparatus. Wear adequate personal protective equipment as indicated in Section 8.

**FIRST AID FACILITIES:** Eye wash bottle, fountain, safety showers or at least a source of running water are required in the area where the product is used.

**Most important symptoms & effects, acute & delayed, caused by exposure:**

**ACUTE:** The contents of the battery are rated as corrosive. Ingestion of the electrolyte could lead to severe gastrointestinal tract irritation with nausea, vomiting and potentially burns. Inhalation of vapours may lead to severe irritation of the mouth and upper respiratory tract with a burning sensation, pain, burns and inflammation in the nose and throat; there may also be coughing or difficulty breathing. Eye contact may lead to severe eye irritation or in worst case scenario irreversible damage and possible eye burns. Skin contact may lead to irritation and possible skin burns.

**CHRONIC:** Skin contact may aggravate/exacerbate existing skin conditions, such as dermatitis. Chronic inhalation may lead to the same symptoms as listed for acute inhalation above.

**Indication of any immediate medical attention and special treatment needed:**

**ADVICE FROM A DOCTOR:** Treat symptomatically if the person comes into contact with the corrosive electrolyte liquid contents of a damaged battery.

## Section 5: FIRE FIGHTING MEASURES

**NFPA Ratings:**                      **Health: 0**                      **Fire: 0**                      **Reactivity: 0**

*Hazard Scale: 0 = Minimal, 1 = Slight, 2 = Moderate, 3 = Serious, 4 = Severe*

**EXTINGUISHING MEDIA:**

Suitable Extinguishing Media:	Water, Fire Extinguishing Powder, Nitrogen Gas, Carbon Dioxide, or Foam.
Unsuitable Extinguishing Media:	Oxidizing agents, reducing agents, acids or alkalis.
Explosion Data:	Closed containers may explode when exposed to temperature above 120°C
Hazchem Code:	4W (Australia, New Zealand and Malaysia)
Sensitivity to Mechanical Impact:	Extreme mechanical abuse could cause venting of the cells.
Sensitivity to Static Discharge:	If electrolyte is exposed to electrostatic discharge it could ignite.
TDG/DOT ERG Code:	147

**SPECIAL HAZARDS ARISING FROM THE CHEMICAL:**

If a cell vents and exposes lithium hexafluorophosphate mixed with water vapor, this could create a poisonous gas of hydrogen-fluoride gas. Degradation of the cell by heat may produce hazardous fumes of lithium, cobalt-manganese, hydrofluoric acid, hydrogen and oxides of carbon, aluminium, lithium, copper and cobalt.

**ADVICE FOR FIRE FIGHTING:**

When battery cells combust, they tend to ignite other cells in the adjacent area. Prevent this by flooding the area with Carbon Dioxide, Foam, Nitrogen Gas or Fire Extinguishing Powder. Although use of water will extinguish flame it may create hydrogen-fluoride gas. Burning component cells or batteries will burn themselves out. Virtually all fires involving Lithium Ion cells and batteries can be controlled with water. When water is used however, hydrogen gas may be evolved which can form an explosive mixture with air. LITH-X (powdered graphite) or copper powder fire extinguishers, sand, dry ground dolomite or soda ash may also be used. These materials act as soothing agent.

**SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTERS:**

In the case of a fire and release of hydrogen fluoride, it is critical to protect the skin from any contact. Fire fighters should wear a self-contained breathing apparatus. Burning lithium-ion cells and batteries can produce toxic fumes including hydrogen fluoride (HF), oxides or carbon, aluminium, lithium, copper and cobalt. Volatile phosphorous penta-fluoride may form at temperatures above 110°C (230°F).

**WEAR ADEQUATE PERSONAL PROTECTIVE EQUIPMENT:**

Respiratory Protection: Self-contained Breathing Apparatus  
Hand Protection: Protective Gloves  
Eye Protection: Full Face Breathing Apparatus or Googles  
Body Protection: Protective Uniform

If the battery catches fire, is exposed to high heat, or is generating heat or gases, use large amounts of water to cool the battery. **It can take approximately 150 Litres of water, applied directly to a 1 KWH battery, to fully extinguish and cool down a battery fire;** always establish or request an additional water supply. If water is not immediately available, use dry chemicals, CO<sub>2</sub>, foam, or another typical fire-extinguishing agent to fight the fire until water is available. **Battery fires can take up to 24 hours to extinguish.**

## Section 6: ACCIDENTAL RELEASE MEASURES

If battery packs internal cells become damaged, they could possibly leak minuscule amounts of contaminants. The following procedures list precautions and steps to cleaning these contaminants.

**PERSONAL PRECAUTIONS:** Quarantine contaminated area at 75 feet (25 meters) radius from the centre of contamination. Don protective equipment and clothing listed in Section 8.2.

**ENVIRONMENTAL PRECAUTIONS:** Cover spilled materials with absorbent non-reactive material (ie. vermiculite). Keep contaminated non-reactive material away from soil, sewers or waterways. Inform appropriate authorities if contamination occurs.

**METHODS FOR CLEAN UP:** Quarantine contaminated area at 75 feet (25 meters) radius from the centre of contamination. Don protective equipment and clothing listed in Section 8. Do not touch Spilled material. Use only non-sparking tools and equipment. Do not expose spilled material to moisture. Seal all possible locations where contaminants might migrate into the environment. Clean up solids and place them into a waste container safe for disposing of contaminated trash. Clean up spilled liquids with vermiculite and place them into the same container. Appropriately transport contaminated material to a waste facility capable of handling contaminated materials.

**PRECAUTIONS TO PREVENT SECONDARY HAZARD:** Avoid the release of collected materials. Do not bring the collected materials near open flame. Seal contaminants into a waste container safe for disposing of contaminated trash. Transport contaminants to an appropriate waste facility.

## Section 7: HANDLING AND STORAGE

**PRECAUTIONS FOR SAFE HANDLING:**

Avoid shorting the battery. Do not immerse in water. Do not disassemble or deform the battery. Do not expose to or dispose of the battery in fire. Avoid excessive physical shock or vibration. Keep out of the reach of children. Battery must be charged in an approved charger. Never use a modified or damaged charger. Use for specified

product applications only. Store in a cool, dry and well-ventilated area. Never use a battery that has suffered abuse. Refer to data sheet for safe operating instructions.

**CONDITIONS FOR SAFE STORAGE:** Store battery packs in a cool (25°C+/-5°C), Dry (<85% Humidity) well ventilated area. Keep battery packs in packaging material to prevent exposure to elements and conductive material.

Do not store battery packs near heat, high humidity, open flame, sunlight, water, seawater, strong acids, strong oxidizers, strong reducing agents, strong alkalis or metal wire.

**SPECIFIC END USES:** Rechargeable Smart Battery Packs are used across a wide market scope as a DC power supply for portable electronic devices.

## Section 8: EXPOSURE CONTROLS, PERSONAL PROTECTION

### EXPOSURE CONTROL MEASURES

**Exposure Limit Values:** Airborne exposures to hazardous substances are not expected when the cells or batteries are used for their intended purposes. Exposure standards are not applicable to the sealed articles.

Biological Monitoring: Not applicable.

Control Banding: Not applicable.

Recommended monitoring procedures: Follow standard monitoring procedures.

Derived no-effect level (DNEL): Not applicable.

Derived minimal effect level (DMEL): Not applicable.

Predicted no-effect concentrations (PNECs): Not applicable.

### Engineering Controls

**Engineering Controls:** Special ventilation is not required when using these products in normal use scenarios. Ventilation is required if there is leakage from the cell or battery.

### Individual Protection Measures

**Eye and Face protection:** Eye protection is not required when handling cells or batteries during normal use. Wear safety glasses/goggles if handling a leaking or ruptured cell or battery.

**Skin (Hand) protection:** Hand protection is not required when handling the cell or battery during normal use. PVC gloves are recommended when dealing with a leaking or ruptured cell or battery.

**Skin (clothing) protection:** Skin protection is not required when handling the cell or battery during normal use. Wear long sleeved clothing to avoid skin contact if handling a leaking or ruptured cell or battery. Soiled clothing should be washed with detergent prior to re-use.

**Respiratory protection:** During routine operation, a respirator is not required. However, if dealing with an electrolyte leakage and irritating vapours are generated, an approved half face inorganic vapor and gas/acid/particulate respirator is required.

**Thermal Protection:** Not applicable.

**Other Protective Equipment:** Have a safety shower or eye wash station readily available.

**Hygiene Measures:** Do not eat, drink or smoke in work areas. Avoid storing food, drink or tobacco near the product. Practice and maintain good housekeeping.

**Environmental exposure controls:** Avoid release to the environment.

## Section 9: PHYSICAL AND CHEMICAL PROPERTIES

▪ <b>APPEARANCE (PHYSICAL STATE):</b>	Sealed Solid- Prismatic or Cylindrical
▪ <b>COLOUR:</b>	Olive Green / Black / Solid Colour
▪ <b>ODOR:</b>	Odourless
▪ <b>ODOR THRESHOLD:</b>	Not applicable
▪ <b>PH:</b>	Not applicable
▪ <b>MELTING POINT/FREEZING POINT:</b>	Not applicable
▪ <b>VISCOSITY:</b>	Not applicable
▪ <b>INITIAL BOILING POINT AND BOILING RANGE:</b>	Not applicable
▪ <b>FLASH POINT:</b>	Not applicable
▪ <b>EVAPORATION RATE:</b>	Not applicable
▪ <b>FLAMMABILITY (SOLID, GAS):</b>	Not determined
▪ <b>UPPER/LOWER FLAMMABILITY OR EXPLOSIVE LIMITS:</b>	Not determined
▪ <b>VAPOR PRESSURE:</b>	Not applicable
▪ <b>VAPOR DENSITY:</b>	Not applicable
▪ <b>RELATIVE DENSITY:</b>	Not applicable
▪ <b>SOLUBILITY(IES):</b>	Not applicable
▪ <b>PARTITION COEFFICIENT: N-OCTANOL/WATER:</b>	Not applicable
▪ <b>AUTO-IGNITION TEMPERATURE:</b>	Not applicable
▪ <b>DECOMPOSITION TEMPERATURE:</b>	Not applicable

## Section 10: STABILITY AND REACTIVITY

**STABILITY:** ✓Stable. The battery packs manufactured by Sealed Energy Systems are completely stable under normal use and in normal storage conditions.

**REACTIVITY:** The internal cells within the battery packs may become unstable due to abusive conditions.

**CONDITIONS TO AVOID:** Avoid shorting the battery. Do not immerse in water. Do not disassemble or deform the battery. Do not expose to, or dispose of the battery in fire. Avoid excessive physical shock or vibration. Keep out of the reach of children. Battery must be charged in approved charger. Never use a modified or damaged charger. For specified product use only. Store in a cool, dry and well-ventilated area. Never use a battery that has suffered abuse.

**INCOMPATIBILITY:** Conductive materials, water, seawater, strong oxidizers and strong acids

**HAZARDOUS DECOMPOSITION PRODUCTS:** Internal cells may decompose to hydrogen fluoride, phosphorous oxides, sulphur oxides, sulfuric acid, lithium hydroxide, carbon monoxide and carbon dioxide.

**HAZARDOUS POLYMERIZATION:** Will not occur

## Section 11: TOXICOLOGICAL INFORMATION

The hazardous components of the cell or battery are contained within a sealed unit. Under recommended use conditions, the electrode materials and liquid electrolyte are non-reactive provided that the cell or battery integrity remains and the seals remain intact. The potential for exposure should not exist unless the battery leaks, is exposed to high temperature or is mechanically, electrically or physically abused/damaged. The following toxicology data is in respect to if a person comes into contact with the electrolyte.

### Acute toxicity:

**Copper:** 60-100mg sized coarse particulate causes a gastrointestinal disturbance with nausea and inflammation. TDLo, hypodermic - Rabbit 375mg/kg

**Organic electrolyte:** LD50, oral - Rat 2,000mg/kg or more

**Swallowed-** The electrolyte contained within the cells of the battery pack is a corrosive material. Ingestion of this electrolyte would be harmful. Swallowing may result in nausea, vomiting, diarrhea, abdominal pain and chemical burns in the gastrointestinal tract. During normal usage ingestion of a sealed battery pack is physically impossible.

### Skin Corrosion or Irritation:

The electrolyte contained within the cells of the battery pack is a corrosive liquid. If this corrosive liquid make contact to your skin they could cause irritation or even severe chemical burns. A sealed battery presents no danger to a person's hand or skin.

### Serious Eye Damage or Irritation:

The electrolyte contained within the cells of the battery pack is a corrosive liquid. If this electrolytes makes contact with the eye it could cause irritation or even irreversible damage to the eye. A sealed battery presents no danger to eyes.

### Respiratory or Skin Sensitization:

OECD Test 406 as performed by the cell manufacture, presented no evidence that the electrolyte contained within the cell of battery pack cause no respiratory or skin sensitizers.

### Germ Cell Mutagenicity:

OECD Test 471, 475, 476, 478 and 479 Test 406 as performed by the cell manufacture, presented no evidence that the electrolyte contained within the cell of a battery pack cause no mutagenic effect.

### Carcinogenicity:

The electrolyte contained within the cell of a battery pack is not considered by the cell manufacture to be a carcinogen.

### Reproductive Toxicity:

OECD Test 414 and 421 Test 406 as performed by the cell manufacture, presented no evidence that the Electrolyte contained within the cell of a battery pack cause an hazard to the human reproductive system.

### Specific Target Organ Toxicity (STOT)-Single Exposure:

Inhalation of vapors from a leaking cell within a battery pack will cause irritation or even severe pain to the mouth and respiratory tract. Sealed battery packs present no organ toxicity.

### Specific Target Organ Toxicity (STOT) - Repeated Exposure:

OECD Tests 410 and 412 presented that prolonged exposure to a battery pack cells causes no organ damage.

**Aspiration Hazards:**

The electrolyte contained within the cell of the battery pack presents no aspiration concern. Although if the electrolyte is swallowed vomiting could occur and cause aspiration into the lungs.

**Aluminum:** By the long-term inhalation of coarse particulate or fume, it is possible to cause lung damage (aluminum lungs).

**Graphite:** Long-term inhalation of high levels of graphite coarse particulate may cause lung disease or a tracheal disease.

## Section 12: ECOLOGICAL INFORMATION

**ECOTOXICITY:** A sealed battery pack does not pose any ecotoxicity hazard. The internal cells under normal use and conditions pose no ecotoxicity hazard. In the rare case the cells seal is broken or damaged the cell could leak electrolyte. If this electrolyte reacts with water it could potentially cause damage to flora and fauna. Follow the steps under Section 13 to insure cells are disposed of properly.

**PERSISTENCE AND DEGRADABILITY:** No data available.

**BIO ACCUMULATIVE POTENTIAL:** Not applicable.

**MOBILITY IN SOIL:** No data available.

**RESULTS OF PBT AND VPVB ASSESSMENT:** Not applicable.

## Section 13: DISPOSAL

Intact, spent batteries are not considered to be hazardous waste.

**Waste Treatment Methods:** Waste Li-Ion batteries meet the United States federal definition of a solid waste per 40 Code of Federal Regulations (CFR) 261.2. It is recommended that the batteries be recycled even though they can be disposed of in the garbage.

**Recycling:** Waste Li-Ion batteries do not fall under any specific RCRA, F, K, P or U lists. The status of scrap Li-Ion batteries should be confirmed in the nation or US state where disposal occurs.

**Classification of Waste to comply with Waste Regulations:**

**India:** Expended battery packs must be taken for recycling or disposal at an appropriate collection depot by suitably licensed contractors in accordance with government regulations.

**USA:** Expended batteries are not considered hazardous waste. Cells and batteries involved in a fire may be considered to be hazardous waste. Dispose of in accordance with local, state and federal laws and regulations. Consult universal/hazardous waste regulations for further information regarding disposal of spent batteries. If the internal cells are leaking/broken open, consult hazardous waste regulations under US Environmental Protection Agency's Resource Conservation and Recovery Act (RCRA), waste code: D003 (reactivity). Also, consult state and local regulations for further disposal requirements.

**Canada:** Expended battery packs are not considered hazardous waste. Cells and batteries involved in a fire may be considered to be hazardous waste. Dispose of in accordance with local, provincial and federal laws and regulations. Consult the Canadian Environmental Protection Act for additional details.

**EU:** Expended battery pack waste must be disposed of in accordance with relevant EC Directives and national, regional and local environmental control regulations. For disposal within the EC, the appropriate code according to the European Waste Catalogue (EWC) should be used. EU Waste Code: 16 06 05 – other batteries and accumulators.

**Australia:** Expended battery packs must be taken for recycling or disposal at an appropriate collection depot by suitably licensed contractors in accordance with government regulations.

**Taiwan:** Expended battery packs are not considered hazardous waste. Cells and batteries should be recycled at an appropriate collection site in accordance with government regulations.

**Japan:** Recycling of expended lithium-ion battery packs is regulated by the Wastes Disposal and Public Cleaning Law and the Law for Promotion of Effective Utilization.

**Brazil:** Expended battery packs should be recycled in accordance to the National Solid Waste Policy (PNRS) or CONAMA in compliance with the directives and regulations of the National System of Environmental (SISNAMA).

**Malaysia:** Lithium-ion cells and batteries are considered scheduled wastes and must be sent to a proper collection treatment, recycling and Disposal centre; Scheduled Waste Code SW103

Classification of Waste to comply with Transport Regulations: Expended Lithium-Ion Battery packs are not considered hazardous waste. Lithium-ion battery packs that have been involved in a fire maybe considered hazardous waste and should be marked and classified as such.

Classification of Waste Packaging Material: Under normal use packaging is not consider hazardous and should be disposed of in accordance with local recycling regulations. Packaging that has been exposed to a damaged leaking cell should be considered hazardous waste and disposed of in accordance to local rules and regulations.



## Section 14: TRANSPORTATION INFORMATION

**UN Number:** 3480 or 3481

**UN Testing:** UN Manual of Tests and Criteria, Part III subsection 38.3 ST/SG/AC.10/C/3/2010 5th Edition:  
All battery assemblies noted in Section 1.1 have been tested to meet the referenced standard.

**UN Proper Shipping Name:** 3480-Lithium Ion Batteries or 3481-Lithium Ion Batteries Contained in Equipment

**Transport Hazard Classes:**

**Class:** 9

**Subsidiary Risk:** None

**Labels:** Lithium Handling Label, Class 9 Lithium Label, Cargo Aircraft Only Label

**Hazard No. (ADR):** 9

**Tunnel Restriction Code:** E

**Packing Group:** II

**Environmental Hazards:** None

**Special Precautions for User:** Read Material Safety Data Sheet and Specification Data Sheet before use. Australia, New Zealand and Singapore follow Hazchem Code: 4W. TDG/DOT ERG Code: 147 ICAO/IATA ERG Code: 9F.

**Transport in bulk IBC Code:** No applicable code.

**Modal Information:**

<b>Land (ADR):</b>	3480 – 188, 230, 310, 348, 376, 377 and 636 (Special packaging instruction P903 applies). 3481 – 188, 230, 348, 360, 376, 377 and 636 (Special packaging instruction P903 applies).
<b>Land (RID):</b>	3480 – 188, 230, 310, 348, 360, 376, 377 and 636 (Special packaging instruction P903 applies). 3481 – 188, 230, 348, 360, 376, 377 and 636 (Special packaging instruction P903 applies).
<b>Land (ADN):</b>	3480 – 188, 230, 310, 348, 376, 377 and 636 (Special packaging instruction P903 applies). 3481 – 188, 230, 348, 360, 376, 377 AND 636 (Special packaging instruction P903 applies).
<b>Sea (IMDG):</b>	188, 230, 310, 348 and 957 (Special packaging instruction P903 applies). EmS: F-A, S-I; Stowage Category A; IMDG Code: 9033
<b>Air (IATA):</b>	A88, A99, A154, A164, A183, and A206 (Packing Instruction 965, 966, 967). ERG Code: - Lithium ion cell or batteries - Lithium ion batteries in compliance with Packing Instruction 965. Lithium ion cell or batteries packed with equipment - Lithium ion batteries in compliance with Packing Instruction 966. Lithium ion cell or batteries contained in equipment - Lithium ion batteries in compliance with Packing Instruction 967.

All listed provisions may not apply. Sealed Energy Systems products listed under this MSDS will conform to various sections of PI 965 or PI 966 or PI 967 based on the contents and packaging of the shipment. Please see the shipping documents for complete details for individual shipments. This document is not intended to replace or authorize shipments of lithium-ion cells; it is intended as a guide for use by trained individuals.

**International transport regulations:**

1. International Air Transport Association (IATA) pursuant to Packing Instruction 965-967, Section II
2. International Maritime Dangerous Goods Code (IMDG) pursuant to Special Provisions A188 and A230.
3. U.S. hazardous materials regulations pursuant to 49 CFR 173.185 and Special Provision A188.

## IATA Packaging Instruction Packing Instruction 965-967 Section II

Our Li-ion cells pass the tests defined in UN model regulation section 38.3. Cells and batteries are packed according to the requirement of 59<sup>th</sup> Edition of the IATA Dangerous Goods Regulations (DGR).

## Section 15: REGULATORY INFORMATION

### Canadian Federal Regulations:

These products have been classified in accordance with the hazard criteria of the Controlled Products. Regulations and the SDS contains all the information required by the Controlled Products Regulations.

**WHMIS Classification:** Not Controlled, manufactured article.

**New Substance Notification Regulations:** Lithium hexafluorophosphate is listed on the Non-Domestic Substance List (NDSL). All other ingredients in the product are listed, as required, on Canada's Domestic Substances List (DSL).

**National Pollutant Release Inventory (NPRI) Substances:** These products do not contain any NPRI chemicals.

### United States Federal and State Regulations:

**TSCA Status:** All ingredients in these products are listed on the TSCA inventory.

**OSHA:** These products do not meet criteria as per Part 1910.1200, manufactured article.

**SARA EPA Title III:** None.

**Sec. 302/304:** None.

**Sec. 311/312:** None.

**Sec. 313:** None.

**CERCLA RQ:** None.

### Australia and New Zealand

**SUSMP:** Not applicable

**AICS:** All ingredients are on the AICS list.

**HSNO Approval number:** Not applicable

**HSNO Group Title:** Not applicable

**NOHSC:10008 Risk Phrases:** R34 - Causes Burns.

**NOHSC:1008 Safety Phrases:**

S1 – Keep locked up.

S2 – Keep out of reach of children.

S23 – Do not breathe vapor.

S24/25 – Avoid contact with skin and eyes.

S26 – In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S27/28 – After contact with skin, take off immediately all contaminated clothing & wash immediately with water.

S36/37/39 – Wear suitable protective clothing, gloves and eye/face protection.

S56 – Dispose of this material and its container at hazardous waste or special waste collection point.

S62 – If swallowed, DO NOT induce vomiting: seek medical advice immediately and show this container or label.

S64 – If swallowed, rinse mouth with water (Only if the person is conscious).

### EC Classification for the Substance/Preparation:

These products are not classified as hazardous according to Regulation (EC) No. 1272/2008.

Keep out of the reach of children.

**EU Restrictions on use:**

Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use as amended: Aluminium (CAS 7429-90-5)

**Other EU Regulations**

This Safety Data Sheet complies with the requirements of Regulation (EC) No. 1907/2006.

**Japanese Regulations**

Japanese Industrial Standards (JIS) JIS Z 7253:2012 Waste disposal and public cleaning law  
Law for Promotion of Effective Utilization of Resources

**Taiwanese Regulations**

Regulation of Labelling and Hazard Communication of Dangerous and Harmful Materials: Labelling requirements and other relevant provision of chemicals, this product is not classified as dangerous goods.

Toxic Chemicals Substance Control Law: Not Listed.

CNS 1030016 Safety of primary and secondary lithium cells and batteries during transport.

**Chinese Regulations**

General Rule for Classification and Hazard Communication of Chemicals (GB 13690-2009): Specifies the classification, labelling and hazard communication of chemicals in compliance with the GHS standard for chemical production sites and labelling of consumer goods. General Rule for Preparation of Precautionary Labels for Chemicals (GB 15258-2009): Specifies the relevant application methods of precautionary labels for chemicals. Safety Data Sheet for Chemical Products Content and Order of Sections (GB/T 16483-2008)

**Brazil Regulations:**

National Solid Waste Policy (PNRS of CONAMA in compliance with the directives and regulations of National System for the Environment (SISNAMA).

**Malaysian Regulations:**

Guidelines for the classification of used electrical and electronic equipment in Malaysia, 2nd Edition, 2010  
Environmental quality regulations, 2005. Scheduled Waste code: SW103: Waste of batteries containing cadmium and nickel or mercury or lithium.

**Chemical Safety Assessment:** Not applicable

## Section 16: OTHER INFORMATION

**Disclaimer:** 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 express or implied) or guarantee is made to the accuracy, reliability or completeness of the information contained herein. This information relates to the specific material 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 own particular use. We do not accept liability for any loss or damage that may occur, whether direct, indirect, incidental or consequential, from use of this information. This data does not constitute a guarantee for the characteristics of the product(s) as defined by the legal warranty regulations. "(n.a. = not applicable; n.d. = not determined)" The data for the hazardous ingredients were taken respectively from the last version of the sub-contractor's safety data sheet.