



## Technical Data Sheet

Ryobi Lithium-Ion Battery Pack

Battery Voltage: 18V

Battery Capacity: 4Ah / 72Wh

### SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Lithium-Ion Battery -- Rechargeable

**Model Number:**

P108

**Issue Date:**

May 2016

Techtronic Industries Power Equipment  
1428 Pearman Dairy Road  
Anderson, SC 29625

**Company Phone Number:**

**(for Power Tools):** 1-800-525-2579

**(for Outdoor Products):** 1-800-860-4050

**Emergency Contact Number:**

**Chemtrec (United States only):** 1-800-424-9300

**(International):** +1-703-741-5970

### SECTION 2: HAZARDS IDENTIFICATION

Refer to battery cell SDS for more information.

No exposure to hazards during routine handling of product.

#### ▲ WARNING:

- To reduce the risk of injury, user must read operator's manual.
- Risk of fire and burns.
- Do not open, crush, heat above 50°C, incinerate, or short terminals.
- Follow manufacturer's instructions.
- Use only with charger listed in operator's manual.
- Remove battery from tool when storing, changing attachments, or making adjustments.
- To reduce the risk of explosion and possible injury, do not place battery near fire or heat.
- Do not crush, drop, or damage battery pack.
- Do not use a battery pack that has been dropped or received a sharp blow. A damaged battery is subject to explosion. Properly dispose of a dropped or damaged battery immediately.
- Under extreme usage or temperature conditions, battery leakage may occur. If fluid comes in contact with your skin, wash immediately with soap and water. If fluid gets into your eyes, flush them with clean water for at least 10 minutes, then seek immediate medical attention. Following this rule will reduce the risk of serious personal injury.
- Battery cells and battery pack assembly will burn if incinerated.

### SECTION 3: COMPOSITION/INFORMATION OF INGREDIENTS

Refer to battery cell SDS for more information.

## SECTION 4: FIRST AID MEASURES

Refer to battery cell SDS for more information.

No exposure to hazards during routine handling of product.

### ▲ WARNING:

- To reduce the risk of injury, user must read operator's manual.
- Risk of fire and burns.
- Do not open, crush, heat above 50°C, incinerate, or short terminals.
- Follow manufacturer's instructions.
- Use only with charger listed in operator's manual.
- Remove battery from tool when storing, changing attachments, or making adjustments.
- To reduce the risk of explosion and possible injury, do not place battery near fire or heat.
- Do not crush, drop, or damage battery pack.
- Do not use a battery pack that has been dropped or received a sharp blow. A damaged battery is subject to explosion. Properly dispose of a dropped or damaged battery immediately.
- Under extreme usage or temperature conditions, battery leakage may occur. If fluid comes in contact with your skin, wash immediately with soap and water. If fluid gets into your eyes, flush them with clean water for at least 10 minutes, then seek immediate medical attention. Following this rule will reduce the risk of serious personal injury.
- Battery cells and battery pack assembly will burn if incinerated.
- No exposure during routine handling of product. Risk of exposure occurs only if the battery is mechanically or electrically abused.
- No effect under routine handling and use to eyes, skin, or if inhaled. Ingestion is not likely, given the physical size and state of the cell. If swallowed, seek medical attention immediately.
- If exposure to internal materials within cell due to damaged outer casing, the following actions are recommended:

#### EYE CONTACT:

Flush with water for 10 minutes without rubbing and immediately seek medical attention.

#### SKIN CONTACT:

Wash area immediately with soap and water. If irritation continues, seek medical attention.

#### INHALATION:

Leave area immediately, move to fresh air, and seek medical attention.

#### INGESTION:

If swallowed, contact POISON CONTROL CENTER immediately.

## SECTION 5: FIRE FIGHTING MEASURES

Refer to battery cell SDS for more information.

## **SECTION 6: ACCIDENTAL RELEASE MEASURES**

### **PERSONAL PRECAUTIONS:**

- Use standard industrial clothing in normal use.
- If handling large containers of cells, wear steel-toed footwear.

### **ENVIRONMENTAL PRECAUTIONS:**

No special precautions necessary.

### **METHODS FOR CONTAINMENT:**

- Transport container outdoors.
- Always consult and obey all international, federal, and local environmental laws.

### **METHODS FOR CLEANUP:**

No data available

### **OTHER INFORMATION:**

No data available

## **SECTION 7: HANDLING AND STORAGE**

### **HANDLING:**

- Use only approved charging equipment.
- Do not disassemble battery or battery pack.
- Do not puncture, crush, or dispose of in fire.

### **STORAGE:**

To obtain the longest possible battery life, we suggest the following:

- Remove the battery pack from the charger once it is fully charged and ready for use.

For battery pack storage longer than 30 days:

- Store the battery pack where the temperature is below 80°F and away from moisture.
- Store battery packs in a 30%-50% charged condition.
- Every six months of storage, charge the pack as normal.

## **SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**

Refer to battery cell SDS for more information.

## **SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

Battery pack consists of battery cells assembled in resin enclosure and is a solid odorless product that will burn if incinerated.

## SECTION 10: STABILITY AND REACTIVITY

Refer to battery cell SDS for more information.

No exposure to hazards during routine handling of product.

### ▲ WARNING:

- To reduce the risk of injury, user must read operator's manual.
- Risk of fire and burns.
- Do not open, crush, heat above 50°C, incinerate, or short terminals.
- Follow manufacturer's instructions.
- Use only with charger listed in operator's manual.
- Remove battery from tool when storing, changing attachments, or making adjustments.
- To reduce the risk of explosion and possible injury, do not place battery near fire or heat.
- Do not crush, drop, or damage battery pack.
- Do not use a battery pack that has been dropped or received a sharp blow. A damaged battery is subject to explosion. Properly dispose of a dropped or damaged battery immediately.
- Under extreme usage or temperature conditions, battery leakage may occur. If fluid comes in contact with your skin, wash immediately with soap and water. If fluid gets into your eyes, flush them with clean water for at least 10 minutes, then seek immediate medical attention. Following this rule will reduce the risk of serious personal injury.
- Battery cells and battery pack assembly will burn if incinerated.

## SECTION 11: TOXICOLOGY INFORMATION

Refer to battery cell SDS for more information.

No exposure to hazards during routine handling of product.

### ▲ WARNING:

- To reduce the risk of injury, user must read operator's manual.
- Risk of fire and burns.
- Do not open, crush, heat above 50°C, incinerate, or short terminals.
- Follow manufacturer's instructions.
- Use only with charger listed in operator's manual.
- Remove battery from tool when storing, changing attachments, or making adjustments.
- To reduce the risk of explosion and possible injury, do not place battery near fire or heat.
- Do not crush, drop, or damage battery pack.
- Do not use a battery pack that has been dropped or received a sharp blow. A damaged battery is subject to explosion. Properly dispose of a dropped or damaged battery immediately.
- Under extreme usage or temperature conditions, battery leakage may occur. If fluid comes in contact with your skin, wash immediately with soap and water. If fluid gets into your eyes, flush them with clean water for at least 10 minutes, then seek immediate medical attention. Following this rule will reduce the risk of serious personal injury.
- Battery cells and battery pack assembly will burn if incinerated.

## SECTION 12: ECOLOGICAL INFORMATION

### ECOTOXICOLOGICAL INFORMATION:

None in routine handling of product.

### TOXICITY:

No data available

### PERSISTENCE AND DEGRADABILITY (BIOPERSISTENCY & BIODEGRADABILITY):

None in routine handling of product.

### POTENTIAL OF BIOACCUMULATION:

None in routine handling of product.

### MOBILITY IN SOIL:

None in routine handling of product.

### OTHER ADVERSE EFFECTS:

No data available

### DISPOSAL:

Follow guidelines in Section 13.

## SECTION 13: DISPOSAL CONSIDERATIONS

This product contains Lithium-ion batteries. Local, state or federal laws may prohibit disposal of batteries in ordinary trash. Consult your local waste authority for information regarding available recycling and/or disposal options.

### DISPOSAL:

- Dispose in accordance with appropriate regulations.
- Always consult and obey all international, federal, provincial/state, and local hazardous waste disposal laws. Some jurisdictions require recycling of this spent product. Battery recycling is encouraged.
- Lithium-ion batteries are safe for disposal in the normal municipal waste stream since they are not defined by the federal government as hazardous waste. However, Lithium-ion batteries are recyclable.
- To preserve natural resources, please recycle or dispose of batteries properly.

### ▲ WARNING:

- Upon removal, cover the battery pack's terminals with heavy-duty adhesive tape.
- Do not attempt to destroy or disassemble battery pack or remove any of its components.
- Batteries must be recycled or disposed of properly.
- Also, never touch both terminals with metal objects and/or body parts as short circuit may result.
- Keep away from children. Failure to comply with these warnings could result in fire and/or serious injury.
- This product does not contain mercury, cadmium or Lithium (metal).
- DO NOT INCINERATE battery cells.

## **SECTION 14: TRANSPORTATION INFORMATION**

### **U.S. DOT Hazardous Material Regulations (Re: Ground Transport)**

Lithium-ion batteries under 101 watt hours or Lithium-ion batteries packed with equipment under 101 watt hours when packaged correctly are not subject to any regulations when traveling by ground in the continental U.S.

### **Canada Transport Dangerous Goods (Re: Ground Transport)**

Lithium-ion batteries under 101 watt hours or Lithium-ion batteries packed with equipment under 101 watt hours when packaged correctly are not subject to any regulation when traveling by ground in Canada.

### **International Dangerous Goods Regulations (Re: Air, Sea, Ground Transport)**

Lithium-ion batteries under 101 watt hours or Lithium-ion batteries under 101 watt hours packed with equipment are not subject to any regulation when packaged correctly when shipped by sea.

No more than (2) Lithium-ion batteries under 101 watt hours can be shipped in a box by air, and no more than 1 shipment can be sent to a consignee in a day. The package must contain a Red Bordered Lithium-ion label (ICAO) containing an emergency contact telephone number and a Cargo Air Craft only label.

## **SECTION 15: REGULATORY INFORMATION**

Compliant with relevant transportation test requirements as described in the UN Manual of Tests & Criteria, Part III, Sub section 38.3.

### **CALIFORNIA PROPOSITION 65**

#### **▲ WARNING:**

This product may contain chemicals, including lead, known to the State of California to cause cancer, birth defects or other reproductive harm. Wash hands after handling.

## **SECTION 16: OTHER INFORMATION**

The information contained within this document is provided for your information only. In case of any discrepancy, the information provided in the battery cell Safety Data Sheet takes precedence over the information provided in the battery pack Technical Data Sheet.

Prepared by: Techtronic Industries Power Equipment

The batteries referenced herein are considered exempt articles and are not subject to the OSHA Hazard Communication Standard; therefore an SDS is not required. This sheet is being provided as a service to our customers.

The information and recommendations set forth are made in good faith and believed to be accurate as of the date of preparation. TECHTRONIC INDUSTRIES POWER EQUIPMENT makes no warranty, expressed or implied, regarding the accuracy of this data or the results to be obtained from the use thereof.



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## Safety Data Sheet

### 1. Product and Company Identification

**Important Note:** As a solid, manufactured article, exposure to hazardous ingredients is not expected with normal use. This battery is an article pursuant to 29 CFR 1910.1200 and, as such, is not subject to the OSHA Hazard Communication Standard requirement. The information contained in this Safety Data Sheet contains valuable information critical to the safe handling and proper use of the product. This MSDS should be retained and available for employees and other users of this product.

**Commercial product name:**  
INR18650-200 M

**Use of the substance/preparation:**  
Li-ion ion batteries

**Synonyms:**  
Lithium Ion Cell, Lithium-ion Pack, Lithium-ion Battery, Li-Ion Cell, Li-ion Pack, Li-ion Battery

**Manufacturer:**  
SAMSUNG SDI ENERGY MALAYSIA SDN BHD

**Address:**  
HQ: 150-20, Gangseo-ro, Gyeonggi-Yongin-si, Gyeonggi-do, Korea  
Malaysia factory: Lot 535&660, Kawasan Perindustrian, Tuanku Jaafar, 71450 Sungai Gudut,  
Negeri Sembilan, Malaysia

**Company undertaking identification:**  
Emergency Contact(Chemtrec)  
1-800-424-9300; US and Canada • 1-708-677-3987 International

**Further information:**  
Battery-System: Lithium-ion (Li-ion)  
Nominal Voltage: 3.6 V  
Rated Capacity: 2000 Ah  
Wh rating: 7200 Wh  
Anode (negative electrode): based on intercalation graphite  
Cathode (positive electrode): based on lithium metal oxide (Cathod: Nickel, Manganese)

**Remark:**  
The information and recommendations set forth are made in good faith and believed to be accurate as of the date of preparation. SAMSUNG SDI Co., Ltd. makes no warranty, expressed or implied, with respect to this information and disclaims all liabilities from reliance on it.



## 2. Hazards Identification

### Classification of the substance or mixture:

**Preparation Hazards and Classification:** The product is a lithium ion cell or battery and is therefore classed as an article and is not hazardous when used according to the recommendations of the manufacturer. The hazard is associated with the contents of the cell or battery. Under recommended use conditions, the electrode materials and liquid electrolyte are not reactive provided that the cell or battery integrity remains and the seals remain intact. The potential for exposure should not exist unless the cell or battery leaks or is exposed to high temperatures or is mechanically, electrically or physically abused/damaged. If the cell or battery is compromised and starts to leak based upon the battery ingredients, the contents are classified as hazardous.

### Hazard Summary

**Physical hazards:** Not classified for physical hazards.

**Health hazards:** Not classified for health hazards.

**Environmental hazards:** Not classified for hazards to the environment.

**Specific hazards:** Exposure to contents of an open or damaged cell or battery, contact with this material will cause burns to the skin, eyes and mucous membranes. May cause severe irritation upon contact.

**Main Symptoms:** Symptoms include itching, burning, redness and blurring.

### Hazardous Materials Information Label (HMIS)

Health: 0

Flammability: 1

Physical Hazard: 0

### NFPA Hazard Ratings

Health: 0

Flammability: 1

Reactivity: 0

Special Hazard

### GHS precautionary statements

Precautionary Statements: Prevention	<p>P102: Keep out of reach of children</p> <p>P103: Read label prior to use.</p> <p>P201: Do not inhale. Instruct safety precautions have been read and understood</p> <p>P210: Keep away from heat/sparks/open flames/hot surfaces – No smoking</p> <p>P231: Keep dry in original container</p> <p>P234: Wash hands thoroughly after handling</p>
Response if safe battery leaks	<p>P303: Do not breathe vapor or spray</p> <p>P309: Wear protective gloves/protective clothing/eye protection/face protection</p> <p>P310: Get medical IF SWALLOWED. Rins mouth. DO NOT induce vomiting</p> <p>P321: P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing</p> <p>P330: Flush with water (Shower)</p> <p>P331: DO NOT INHALE. Remove victim to fresh air and keep at rest in a position comfortable for breathing</p> <p>P332+P313: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing</p> <p>P340: Irritated skin: Call a POISON CENTER or doctor/physician</p> <p>P361: Wash contaminated clothing before reuse</p> <p>P370: In case of fire: Use carbon dioxide, dry chemical or water extinguisher</p>
Storage (Store as indicated in chapter 7)	<p>S102: Store in a dry place</p> <p>S105: Store covered up</p> <p>S110: Protect from sunlight</p>
Disposal	<p>P400: Store any spilled/leaking electrolyte material in a container resistant to leakage with a resistant inner liner</p> <p>P501: Dispose of batteries in accordance with applicable local orders/waste regulations</p>





**Other Hazards:**

**Appearance, Color and Odor:** See attached user manual

**Primary Route(s) of Exposure:** If these chemicals are contained in a sealed enclosure, Risk of exposure occurs only if the cell or pack is mechanically, thermally, electrically or physically abused to the point of compromising the enclosure.

If this occurs, exposure to the electrolyte solution contained within can occur by inhalation, ingestion, eye contact and skin contact.

**Potential Health Effect(s):**

**Acute (short term):** see Section 8 for exposure controls

In the event that the cell or pack has been ruptured, the electrolyte solution contained within the cell would be dispersed and can cause burns to skin and eyes.

**Inhalation:** Inhalation of materials from a ruptured cell is not an expected route of exposure. Vapors or mists from a ruptured cell may cause respiratory irritation.

**Ingestion:** Swallowing of materials from a ruptured cell is not an expected route of exposure. Swallowing the contents of an open cell can cause serious chemical burns to mouth, esophagus, and gastrointestinal tract.

**Skin:** Contact between the cell and skin will not cause any harm. Skin contact with the contents of an open cell can cause severe irritation or burns to the skin.

**Eye:** Contact between the cell and the eye will not cause any harm. Eye contact with the contents of an open cell can cause severe irritation or burns to the eye.

**CHRONIC (long term):** see Section 11 for additional toxicology data.

**Interactions with other chemicals:** Immersion in high conductivity liquids may cause corrosion and shorting of the cell or battery enclosure. The electrolyte solution inside of the cell may react with leaking flammable materials and present a flammable hazard.

**Potential Environmental Effects:** Not Available

**3. Composition information on ingredients:**

**Hazardous components:**

	Chemical Name	CAS No	*Mass range in cell (g/g %)
Electrolyte	Contains Electrolyte salt and solvents		5-20
Electrolyte salt	Lithium hexafluorophosphate	24304-49-0	0.05 g
Electrolyte solvent	includes one or more of the following: Ethylene Carbonate Propylene Carbonate Dioxol Carbonate	96-49-7 108-10-7 105-59-9	5-20
PVCF	Polysulfone	24307-79-0	<1
Copper	Cu	7440-50-9	0-1%
Aluminum	Al	7429-70-5	2-1%
Cathode	Carbon	7003-29-5	20-5%
Anode	Graphite	7402-49-5	31-3%
Steel, Nickel and other components		Various	Balance



Because of the delamination process, gaseous ingredients will not be available if used properly.  
During charge process a lithium-graphite intercalation phase is formed.

#### **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 after a cell or battery leaks, is exposed to high temperatures or is mechanically weakened or physically abused/damaged. The hazardous contents are organic and inorganic electrolytes contained in cells with lithium metal, steel canisters, graphite and carbon anodes and Polyvinylidene fluoride 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 confined space unless used areas without a respirator or Self-Contained Breathing

Apparatus. Wear adequate personal protective equipment as indicated in Section 8.

**FIRST AID FACILITIES:** Eye wash basin, shower, 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 potential burns. Inhalation of vapors may lead to severe irritation of the mucous 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 irreparable damage and possible eye burns. Skin contact may lead to irritation and possible skin burns.

**CHRONIC:** Skin contact may aggravate or increase existing skin irritation, such as dermatitis. Chronic inhalation may lead to the same symptoms as noted for acute inhalation above.

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

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

#### **5. Fire Fighting Measures**

##### **Suitable extinguishing media**

Cold water and dry powder in large amount are applicable.

Use mistal fire extinction powder or dry sand if only few cells are involved.

##### **Special hazards arising from the chemical**

May form hydrofluoric acid if electrolyte comes into contact with water.

In case of fire, the formation of the following flue gases cannot be excluded:

Hydrogen fluoride (HF), Carbon monoxide and carbon dioxide.

##### **Protective equipment and precautions for firefighters**

Wear self-contained breathing apparatus and protective suit.

##### **Additional information**

If possible, remove cell(s) from fire fighting area. If heated above 125°C, cell(s) may explode/vent. Cell(s)



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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 reuse.

**Respiratory protection:** During normal operation, a respirator is not required. However, if dealing with an electrolyte leakage and smoking vapors are generated, an approved full face organic vapor and gas adsorbent cartridge 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.

## 9. Physical and Chemical Properties

### Appearance

Physical state	Solid
Color	Various
Odor	Odorless

### Important health, safety and environmental information

Test method

pH Value	7.0
Flash point	7.0
Lower explosive limit	7.0
Vapour pressure	7.0
Density	7.0
Water solubility	Insoluble
Ignition temperature	7.0

## 10. Stability and Reactivity

### Stability

Stable

### Conditions to avoid

Keep away from open flames, hot surfaces and sources of ignition. Do not puncture or crush. Incompatible

### Materials to avoid

No materials to be explicitly mentioned.

### Hazardous decomposition products

In case of case cells, there is the possibility of hydrogen acid and carbon dioxide release.

### Possibility of Hazardous Reactions

Will not occur.

### Additional information



No demarcation of sheet and applied as directed

## 11. Toxicological Information

### Information on toxicological effects:

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-volatile provided that the cell or battery, despite remains and the seal is 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:

**Swallowed:** The electrolyte contained within the cell or battery is a corrosive liquid. Ingestion of this electrolyte would be harmful. Swallowing may result in nausea, vomiting, diarrhea, stomach pain and chemical burns to the gastrointestinal tract. During normal usage, ingestion should not be a means of exposure.

**Eye:** The electrolyte contained within the cell or battery is a corrosive liquid and it is expected that it would cause irreversible damage to the eyes. Contact may cause serious burns. Effects may be seen to have after eye contact. Correct handling procedures incorporating appropriate eye protection should minimize the risk of eye irritation.

**Skin:** The electrolyte contained within the cell or battery is a corrosive liquid and it is expected that it would cause skin burns or severe irritation to the skin if not washed off immediately. Correct handling procedures should minimize the risk of skin irritation. People with pre-existing skin conditions, such as dermatitis, should take extreme care so as not to exacerbate the condition.

**Inhaled:** Inhalation of vapors from a leak in cell or battery is expected to cause 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.

**Skin Corrosion/Irritation:** The electrolyte contained within the cell or battery is classified as a corrosive liquid and is expected to exhibit Serious Damage Corrosivity.

**Serious Eye Damage/Irritation:** The electrolyte contained within the cell or battery is classified as a corrosive liquid and is expected to exhibit Serious Damage Corrosivity.

**Respiratory or Skin Sensitization:** The electrolyte contained within the cell or battery is not expected to be a skin sensitizer according to OECD test 436, based on the available data and the known hazards of the components. The electrolyte contained within the battery is not expected to be a respiratory tract sensitizer, based on the available data and the known hazards of the components.

**Germ Cell Mutagenicity:** The electrolyte contained within the cell or battery is not expected to be mutagenic according to test such as OECD tests 471, 475, 476, 478 and 479, based on the available data and the known hazards of the components.

**Carcinogenicity:** The electrolyte contained within the cell or battery is not expected to be a carcinogen. The catholyte contains Cobalt and Nickel components. These components are classified as IARC 2B – possibly carcinogenic to humans, however they do not pose a threat when contained in the cell or battery sealed unit.

**Reproductive Toxicity:** The electrolyte contained within the cell or battery is not expected to be a reproductive hazard according to test such as OECD tests 414 and 401, based on the available data and the known hazards of the components.

**Specific Target Organ Toxicity (STOT) – Single Exposure:** The electrolyte contained within the cell or battery is corrosive and is expected to cause respiratory irritation by inhalation. Inhalation of vapors 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.

**Specific Target Organ Toxicity (STOT) – Repeated Exposure:** The cell or batteries are not expected to cause organ damage from pre-empted or repeated exposure according to tests such as OECD tests 404 and 412, based on the available data and the known hazards of the components.



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**Aspiration Hazard:** The cells or batteries are not classified as an aspiration hazard, based on the available data and the known hazards of the components. However, due to the corrosive nature of the product, if swallowed, do NOT induce vomiting. If vomiting has occurred after ingestion, the person should be observed to ensure that aspiration into the lungs has not occurred and accessed for chemical burns to the gastrointestinal and respiratory tracts.

**12. Ecological Information**

**Further information**

Ecological aspects are not known or expected under normal use. Do not flush into surface water or sanitary sewer system.

**13. Disposal Considerations**

**Advice on disposal**

See recycling symbol on manufacturer

**Contaminated packaging**

Dispose in accordance with local regulations

**14. Transport Information**

With regard to transport, the following regulations are cited and considered:

- UN No. 3480
- UN proper shipping name: Lithium Ion Batteries
- Transport hazard class: 2
- The International Civil Aviation Organization (ICAO) Technical Instructions, Packing Instruction 965, Section 1.1.1.1
- The International Air Transport Association (IATA) Dangerous Goods Regulations - Packing Instruction 965, Section 1.1.1.1
- The International Maritime Dangerous Goods (IMDG) Code (Special provision 188, 200)
- 128 Hazardous Materials Regulations (49 CFR) Code of Federal Regulations
- Sections 1.7.1.1(b) Lithium batteries and cells
- The UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria (20.2) Lithium batteries, Revision 2, Amendment 1 or any subsequent revisions and amendments applicable at the date of the type

If these lithium ion batteries are packed with or packaged in an equipment, then it is the responsibility of the shipper to ensure that the equipment are packed in compliance to the latest edition of the IATA Dangerous Goods Regulations section 1.1 of either Packing Instruction 965 or 967 in order for that equipment to be classified as "NOT RESTRICTED".

**RESTRICTED Non-hazardous non-Dangerous:** If these lithium ion batteries are packed and/or contained in an equipment, UN No. is UN3480.

Our products are properly classified, described, packaged, marked, and labeled, and are in proper condition for transportation according to all the applicable international and national government regulations, referred to in the above mentioned. We further certify that the enclosed products have been tested and fulfilled the requirements and conditions in accordance with UN Recommendations (21 - 1st ed) on the Transport of Dangerous Goods Model Regulations and the Manual of Tests and Criteria.

**Test results of the UN Recommendation on the Transport of Dangerous Goods**

Manual of Test and Criteria (38.3 Lithium batteries)		Test Results	Remark
No.	Test Item		
T1	Altitude Simulation	Pass	
T2	Thermal Test	Pass	
T3	Vibration	Pass	

SAMSUNG SDI ENERGY MALAYSIA SDN BHD  
 Date: January 1, 2016 Reference no: SDI-TT-200-M-D-1  
 MODEL: NFM0050-200 M Revision no: 00



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74	Spots	Pass	
75	External Shell Cracks	Pass	
76	Impact Crush	Pass	
77	Overcharge	Pass	For parts test range not battery only
78	Foreign Debris	Pass	

**15. Regulatory Information**

**Canadian Federal Regulations:**

These products have been classified in accordance with the hazard orders 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-Hazardous Substances List (NHSL). All other ingredients in the product are listed, as required, on Canada's Controlled Substances List (CSL).

**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. 302.104:** 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:1000 Risk Phrases:** R14 - Causes Burns

**NOHSC:1000 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, wash all immediately with clean water (clothing) and wash immediately with plenty of water

S28/29 - Wear suitable protective clothing, gloves and eye/face protection

S58 - Dispose of this material and its container as hazardous waste or as non-hazardous 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 (Oral if the liquid is corrosive)

**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 XIV substances subject to restriction on marketing and use as amended. Aluminium (CAS 7429-90-5)

**Other EU Regulations**

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



SAMSUNG SDI

**Japanese Regulations**

Japanese Industrial Standards (JIS) JIS Z 1203:2012  
Waste disposal and public cleaning law  
Law for Promotion of Effective Utilization of Resources

**Lawinese Regulations**

Regulation of Labeling and Hazard Communication of Dangerous and Harmful Materials (labeling requirements and other relevant provision of chemicals, this product is not classified as dangerous goods)  
Toxic Chemicals Substance Control Law (Not Listed)  
GHS 1000116 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, labeling and hazard communication of chemicals in compliance with the GHS standard for chemical production sites and labeling of transport of goods  
General Rule for Preparation of Precautionary Labels for Chemicals (GB 15253-2009). Specifies the relevant application methods of precautionary labels for chemicals  
Safety Data Sheet for Chemical Products Content and Order of Sections (GB 16483-2008)

**16. Other Information**

**Further Information**

Data of sections A to H, as well as 10 to 12, do not necessarily refer to the use and the regular handling of the product on the so-called normal package, label and paper information, but to release of major amounts in case of accidents and irregularities. The information describes exclusively the safety requirements for the product (s) and is based on the present level of our knowledge. 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 manufacturer's safety data sheet