

# Li-ion Battery Pack

## Safety Data Sheet

### SECTION 1: Identification

#### 1.1. Identification

Product name : Li-ion Battery Pack  
Model : MW74V023

#### 1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Battery

#### 1.3. Details of the supplier of the safety data sheet

Tech gear 5.7 Inc. DBA Fieldsheer Apparel Technologies  
2910 Norman Strasse Rd. #104  
San Marcos, CA 92069  
888-908-6024

#### 1.4. Emergency telephone number

Emergency number : 760-295-3527

### SECTION 2: Hazard(s) identification

For the battery cell, chemical materials are stored in a hermetically sealed case, designed to withstand temperatures and pressures encountered during normal use. As a result, during normal use, there is no physical danger of ignition or explosion and chemical danger of hazardous materials leakage. However, if exposed to a fire, added mechanical shocks, decomposed, or added electric stress by misuse the cell case will be breached and hazardous materials may be released. Moreover, if heated strongly by the surrounding fire, acrid gas may be emitted.

The following hazard classification may be applicable if the battery is damaged, or if proper handling and use instructions are not followed.

#### 2.1. Classification of the substance or mixture

##### GHS US classification

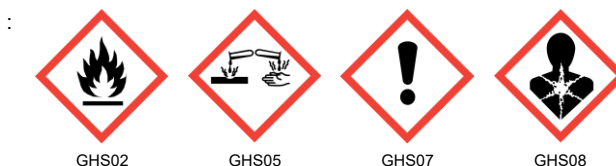
Flam. Sol. 1 H228  
Water-react. 2 H261  
Acute Tox. 4 (Oral) H302  
Skin Corr. 1A H314  
Eye Dam. 1 H318  
Skin Sens. 1 H317  
Carc. 1B H350  
STOT RE 1 H372

Full text of hazard classes and H-statements : see section 16

#### 2.2. Label elements

##### GHS US labeling

Hazard pictograms (GHS US)



Signal word (GHS US) : Danger

Hazard statements (GHS US) : H228 - Flammable solid  
H261 - In contact with water releases flammable gas  
H302 - Harmful if swallowed  
H314 - Causes severe skin burns and eye damage  
H317 - May cause an allergic skin reaction  
H318 - Causes serious eye damage  
H350 - May cause cancer  
H372 - Causes damage to organs through prolonged or repeated exposure

Precautionary statements (GHS US) : P201 - Obtain special instructions before use.  
P202 - Do not handle until all safety precautions have been read and understood.  
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
P223 - Do not allow contact with water.  
P231+P232 - Handle under inert gas. Protect from moisture.

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P240 - Ground/Bond container and receiving equipment.  
P241 - Use explosion-proof electrical/ventilating/lighting equipment.  
P260 - Do not breathe dust/fume/gas/mist/vapors/spray.  
P261 - Avoid breathing dust/fume/gas/mist/vapors/spray.  
P264 - Wash hands, forearms and face thoroughly after handling.  
P270 - Do not eat, drink or smoke when using this product.  
P272 - Contaminated work clothing must not be allowed out of the workplace.  
P280 - Wear protective gloves/protective clothing/eye protection/face protection.  
P301+P312 - If swallowed: Call a poison center or doctor if you feel unwell.  
P301+P330+P331 - If swallowed: rinse mouth. Do NOT induce vomiting.  
P302+P352 - If on skin: Wash with plenty of water.  
P303+P361+P353 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.  
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing.  
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P308+P313 - If exposed or concerned: Get medical advice/attention.  
P310 - Immediately call a poison center or doctor.  
P314 - Get medical advice/attention if you feel unwell.  
P321 - Specific treatment (see supplemental first aid instruction on this label).  
P330 - Rinse mouth.  
P333+P313 - If skin irritation or rash occurs: Get medical advice/attention.  
P335+P334 - Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages.  
P363 - Wash contaminated clothing before reuse.  
P370+P378 - In case of fire: Use media other than water to extinguish.  
P402+P404 - Store in a dry place. Store in a closed container.  
P405 - Store locked up.  
P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

### 2.3. Other hazards

No additional information available

### 2.4. Unknown acute toxicity (GHS US)

Not applicable

## SECTION 3: Composition/Information on ingredients

### 3.1. Substances

Not applicable

### 3.2. Mixtures

| Name                                | Product identifier   | %       |
|-------------------------------------|----------------------|---------|
| Cobaltate (CoO21-), lithium         | (CAS-No.) 12190-79-3 | 15 – 40 |
| Graphite                            | (CAS-No.) 7782-42-5  | 10 – 30 |
| Phosphate(1-), hexafluoro-, lithium | (CAS-No.) 21324-40-3 | 10 – 30 |
| Copper                              | (CAS-No.) 7440-50-8  | 7 – 13  |
| Aluminum                            | (CAS-No.) 7429-90-5  | 5 – 10  |
| Nickel                              | (CAS-No.) 7440-02-0  | 1 – 5   |

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

|                                       |                                                                                                                                                                                                                                 |
|---------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| First-aid measures after inhalation   | : If inhaled, remove to fresh air and keep at rest in a position comfortable for breathing. Seek medical attention.                                                                                                             |
| First-aid measures after skin contact | : Remove contaminated clothes and shoes immediately. After contact with skin, wash immediately with plenty of water and soap.                                                                                                   |
| First-aid measures after eye contact  | : Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice. |
| First-aid measures after ingestion    | : Get immediate medical attention.                                                                                                                                                                                              |

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

|                                     |                                                                            |
|-------------------------------------|----------------------------------------------------------------------------|
| Symptoms/effects after inhalation   | : May cause respiratory irritation.                                        |
| Symptoms/effects after skin contact | : Causes severe skin burns irritation. May cause an allergic skin reaction |
| Symptoms/effects after eye contact  | : Causes eye damage.                                                       |
| Symptoms/effects after ingestion    | : Harmful if swallowed.                                                    |

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

No additional information available

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

Suitable extinguishing media : Use water, carbon dioxide, nitrogen gas, chemical powder fire extinguishing medium and fire foam.

Unsuitable extinguishing media : None.

### 5.2. Special hazards arising from the substance or mixture

Fire hazard : Flammable solid.

Explosion hazard : May explode or cause burns if disassembled, crushed or exposed to fire or high temperature.

### 5.3. Advice for firefighters

Protection during firefighting : Firefighters should wear full protective gear.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

#### 6.1.1. For non-emergency personnel

No additional information available

#### 6.1.2. For emergency responders

Clear the area and allow batteries to cool and vapor to dissipate.

### 6.2. Environmental precautions

Prevent entry to sewers and public waters.

### 6.3. Methods and material for containment and cleaning up

For containment : No special containment necessary.

Methods for cleaning up : Collect material and place in sealed containers for reclamation or disposal.

### 6.4. Reference to other sections

No additional information available

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

Precautions for safe handling : Avoid mechanical or electrical mishandling. Do not short or install with incorrect polarity. Do not open destroy or incinerate.

### 7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store in a cool, dry well-ventilated area. Store away from flammable materials.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

| Graphite (7782-42-5) |                    |                                                                                                    |
|----------------------|--------------------|----------------------------------------------------------------------------------------------------|
| ACGIH                | ACGIH OEL TWA      | 2 mg/m <sup>3</sup> (all forms except graphite fibers-respirable particulate matter)               |
| OSHA                 | OSHA PEL (TWA) [1] | 15 mg/m <sup>3</sup> (synthetic-total dust)<br>5 mg/m <sup>3</sup> (synthetic-respirable fraction) |
| IDLH                 | IDLH               | 1250 mg/m <sup>3</sup>                                                                             |
| NIOSH                | NIOSH REL (TWA)    | 2.5 mg/m <sup>3</sup> (natural-respirable dust)                                                    |
| Copper (7440-50-8)   |                    |                                                                                                    |
| ACGIH                | ACGIH OEL TWA      | 0.2 mg/m <sup>3</sup> (fume)                                                                       |
| OSHA                 | OSHA PEL (TWA) [1] | 0.1 mg/m <sup>3</sup> (fume)<br>1 mg/m <sup>3</sup> (dust and mist)                                |
| IDLH                 | IDLH               | 100 mg/m <sup>3</sup> (dust, fume and mist)                                                        |
| NIOSH                | NIOSH REL (TWA)    | 1 mg/m <sup>3</sup> (dust and mist)<br>0.1 mg/m <sup>3</sup> (fume)                                |

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| Aluminum (7429-90-5)                             |                    |                                                                                |
|--------------------------------------------------|--------------------|--------------------------------------------------------------------------------|
| ACGIH                                            | ACGIH OEL TWA      | 1 mg/m <sup>3</sup> (respirable particulate matter)                            |
| OSHA                                             | OSHA PEL (TWA) [1] | 15 mg/m <sup>3</sup> (total dust)<br>5 mg/m <sup>3</sup> (respirable fraction) |
| NIOSH                                            | NIOSH REL (TWA)    | 10 mg/m <sup>3</sup> (total dust)<br>5 mg/m <sup>3</sup> (respirable dust)     |
| Cobaltate (CoO21-), lithium (12190-79-3)         |                    |                                                                                |
| Not applicable                                   |                    |                                                                                |
| Phosphate(1-), hexafluoro-, lithium (21324-40-3) |                    |                                                                                |
| Not applicable                                   |                    |                                                                                |
| Nickel (7440-02-0)                               |                    |                                                                                |
| ACGIH                                            | ACGIH OEL TWA      | 1.5 mg/m <sup>3</sup> (inhalable particulate matter)                           |
| OSHA                                             | OSHA PEL (TWA) [1] | 1 mg/m <sup>3</sup>                                                            |
| IDLH                                             | IDLH               | 10 mg/m <sup>3</sup>                                                           |
| NIOSH                                            | NIOSH REL (TWA)    | 0.015 mg/m <sup>3</sup>                                                        |

### 8.2. Exposure controls

|                                  |                                                                                                                   |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Appropriate engineering controls | : General (mechanical) room ventilation is expected to be satisfactory for normal handling.                       |
| Hand protection                  | : None required under normal product handling conditions.                                                         |
| Eye protection                   | : None required under normal product handling conditions.                                                         |
| Skin and body protection         | : None required under normal product handling conditions.                                                         |
| Respiratory protection           | : If airborne concentrations are above the applicable exposure limits, use NIOSH approved respiratory protection. |

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

|                                                 |                     |
|-------------------------------------------------|---------------------|
| Physical state                                  | : Solid             |
| Color                                           | : Black             |
| Odor                                            | : No data available |
| Odor threshold                                  | : No data available |
| pH                                              | : No data available |
| pH solution                                     | : Not applicable    |
| Melting point                                   | : No data available |
| Freezing point                                  | : No data available |
| Boiling point                                   | : No data available |
| Flash point                                     | : No data available |
| Relative evaporation rate (butyl acetate=1)     | : No data available |
| Flammability (solid, gas)                       | : No data available |
| Vapor pressure                                  | : No data available |
| Relative vapor density at 20 °C                 | : No data available |
| Relative density                                | : No data available |
| Solubility                                      | : Insoluble         |
| Partition coefficient n-octanol/water (Log Pow) | : No data available |
| Auto-ignition temperature                       | : No data available |
| Decomposition temperature                       | : No data available |
| Viscosity                                       | : No data available |
| Viscosity, kinematic                            | : No data available |
| Viscosity, dynamic                              | : No data available |
| Explosion limits                                | : No data available |
| Explosive properties                            | : No data available |
| Oxidizing properties                            | : No data available |

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### 9.2. Other information

No additional information available

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

In contact with water releases flammable gas.

### 10.2. Chemical stability

The product is stable at normal handling and storage conditions.

### 10.3. Possibility of hazardous reactions

Will not occur.

### 10.4. Conditions to avoid

When cell is exposed to an external short-circuit, crushes, deformation, high temperature above 100 degree C, it will cause heat generation and ignition. Avoid direct sunlight and high humidity.

### 10.5. Incompatible materials

Conductive materials, water, seawater, strong oxidizers and strong acids and bases.

### 10.6. Hazardous decomposition products

Oxides of carbon and lithium oxide fumes.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

Acute toxicity : Not classified

| Li-ion Battery Pack |                           |
|---------------------|---------------------------|
| ATE US (oral)       | 333.333 mg/kg body weight |

| Phosphate(1-), hexafluoro-, lithium (21324-40-3) |                       |
|--------------------------------------------------|-----------------------|
| ATE US (oral)                                    | 100 mg/kg body weight |

| Nickel (7440-02-0)    |                                  |
|-----------------------|----------------------------------|
| LD50 oral rat         | > 9000 mg/kg                     |
| LC50 Inhalation - Rat | > 10.2 mg/l (Exposure time: 1 h) |

|                                   |                                        |
|-----------------------------------|----------------------------------------|
| Skin corrosion/irritation         | : Causes severe skin burns.            |
| Serious eye damage/irritation     | : Causes serious eye damage.           |
| Respiratory or skin sensitization | : May cause an allergic skin reaction. |
| Germ cell mutagenicity            | : Not classified                       |
| Carcinogenicity                   | : May cause cancer.                    |

| Nickel (7440-02-0)                           |                                                   |
|----------------------------------------------|---------------------------------------------------|
| IARC group                                   | 2B - Possibly carcinogenic to humans              |
| National Toxicology Program (NTP) Status     | 3 - Reasonably anticipated to be Human Carcinogen |
| In OSHA Hazard Communication Carcinogen list | Yes                                               |

|                       |                  |
|-----------------------|------------------|
| Reproductive toxicity | : Not classified |
| STOT-single exposure  | : Not classified |

STOT-repeated exposure : Causes damage to organs through prolonged or repeated exposure.

Aspiration hazard : Not classified

## SECTION 12: Ecological information

### 12.1. Toxicity

| Copper (7440-50-8) |                                                                           |
|--------------------|---------------------------------------------------------------------------|
| LC50 - Fish [1]    | 0.0068 – 0.0156 mg/l (Exposure time: 96 h - Species: Pimephales promelas) |

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### Copper (7440-50-8)

|                      |                                                                          |
|----------------------|--------------------------------------------------------------------------|
| EC50 - Crustacea [1] | 0.03 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])        |
| LC50 - Fish [2]      | < 0.3 mg/l (Exposure time: 96 h - Species: Pimephales promelas [static]) |

### Nickel (7440-02-0)

|                      |                                                                         |
|----------------------|-------------------------------------------------------------------------|
| LC50 - Fish [1]      | > 100 mg/l (Exposure time: 96 h - Species: Brachydanio rerio)           |
| EC50 - Crustacea [1] | > 100 mg/l (Exposure time: 48 h - Species: Daphnia magna)               |
| LC50 - Fish [2]      | 1.3 mg/l (Exposure time: 96 h - Species: Cyprinus carpio [semi-static]) |
| EC50 - Crustacea [2] | 1 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])          |

### 12.2. Persistence and degradability

No additional information available

### 12.3. Bioaccumulative potential

No additional information available

### 12.4. Mobility in soil

No additional information available

### 12.5. Other adverse effects

No additional information available

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

Product/Packaging disposal recommendations : Dispose of contents/container in accordance with local/regional/national/international regulations.

## SECTION 14: Transport information

### Department of Transportation (DOT)

In accordance with DOT

Transport document description (DOT) : UN3480 Lithium ion batteries including lithium ion polymer batteries, 9

UN-No.(DOT) : UN3480

Proper Shipping Name (DOT) : Lithium ion batteries including lithium ion polymer batteries

Class (DOT) : 9 - Class 9 - Miscellaneous hazardous material 49 CFR 173.140

Hazard labels (DOT) : 9 - Class 9 (Miscellaneous dangerous materials)



DOT Packaging Non Bulk (49 CFR 173.xxx) : 185

DOT Packaging Bulk (49 CFR 173.xxx) : 185

DOT Special Provisions (49 CFR 172.102) : 422 - When labelling is required, the label to be used must be the label shown in §172.447. Labels conforming to requirements in place on December 31, 2016 may continue to be used until December 31, 2018. When a placard is displayed, the placard must be the placard shown in §172.560.

A51 - When transported by cargo-only aircraft, an oxygen generator must conform to the provisions of an approval issued under Special Provision 60 and be contained in a packaging prepared and originally offered for transportation by the approval holder.

A54 - Lithium batteries or lithium batteries contained or packed with equipment that exceed the maximum gross weight allowed by Column (9B) of the 172.101 Table may only be transported on cargo aircraft if approved by the Associate Administrator.

DOT Packaging Exceptions (49 CFR 173.xxx) : 185

DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : 5 kg

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|                                                              |                                                                                                         |
|--------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) | : 35 kg                                                                                                 |
| DOT Vessel Stowage Location                                  | : A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel. |
| Emergency Response Guide (ERG) Number                        | : 147                                                                                                   |
| Other information                                            | : No supplementary information available.                                                               |

### SECTION 15: Regulatory information

#### 15.1. US Federal regulations

|                                                                                                                                                  |                                                                                                                                               |
|--------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Graphite (7782-42-5)</b>                                                                                                                      |                                                                                                                                               |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory                                                                        |                                                                                                                                               |
| <b>Copper (7440-50-8)</b>                                                                                                                        |                                                                                                                                               |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory<br>Subject to reporting requirements of United States SARA Section 313 |                                                                                                                                               |
| CERCLA RQ                                                                                                                                        | 5000 lb no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm |
| SARA Section 313 - Emission Reporting                                                                                                            | 1 %                                                                                                                                           |
| <b>Aluminum (7429-90-5)</b>                                                                                                                      |                                                                                                                                               |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory<br>Subject to reporting requirements of United States SARA Section 313 |                                                                                                                                               |
| SARA Section 313 - Emission Reporting                                                                                                            | 1 % (dust or fume only)                                                                                                                       |
| <b>Cobaltate (CoO21-), lithium (12190-79-3)</b>                                                                                                  |                                                                                                                                               |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory                                                                        |                                                                                                                                               |
| <b>Phosphate(1-), hexafluoro-, lithium (21324-40-3)</b>                                                                                          |                                                                                                                                               |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory                                                                        |                                                                                                                                               |
| EPA TSCA Regulatory Flag                                                                                                                         | P - P - indicates a commenced Premanufacture Notice (PMN) substance.                                                                          |
| <b>Nickel (7440-02-0)</b>                                                                                                                        |                                                                                                                                               |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory<br>Subject to reporting requirements of United States SARA Section 313 |                                                                                                                                               |
| CERCLA RQ                                                                                                                                        | 100 lb no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm  |
| SARA Section 313 - Emission Reporting                                                                                                            | 0.1 %                                                                                                                                         |

#### 15.2. US State regulations

|                                                                                                                                                                                                          |                                                             |                                                                     |                                                                   |                                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------------|-------------------------------------------------------------------|----------------------------------|
| <b>Nickel (7440-02-0)</b>                                                                                                                                                                                |                                                             |                                                                     |                                                                   |                                  |
| U.S. - California - Proposition 65 - Carcinogens List                                                                                                                                                    | U.S. - California - Proposition 65 - Developmental Toxicity | U.S. - California - Proposition 65 - Reproductive Toxicity - Female | U.S. - California - Proposition 65 - Reproductive Toxicity - Male | No significant risk level (NSRL) |
| Yes                                                                                                                                                                                                      | No                                                          | No                                                                  | No                                                                |                                  |
| <b>Graphite (7782-42-5)</b>                                                                                                                                                                              |                                                             |                                                                     |                                                                   |                                  |
| U.S. - Massachusetts - Right To Know List<br>U.S. - Minnesota - Hazardous Substance List<br>U.S. - New Jersey - Right to Know Hazardous Substance List<br>U.S. - Pennsylvania - RTK (Right to Know) List |                                                             |                                                                     |                                                                   |                                  |
| <b>Copper (7440-50-8)</b>                                                                                                                                                                                |                                                             |                                                                     |                                                                   |                                  |
| U.S. - Massachusetts - Right To Know List<br>U.S. - Minnesota - Hazardous Substance List<br>U.S. - New Jersey - Right to Know Hazardous Substance List<br>U.S. - Pennsylvania - RTK (Right to Know) List |                                                             |                                                                     |                                                                   |                                  |
| <b>Aluminum (7429-90-5)</b>                                                                                                                                                                              |                                                             |                                                                     |                                                                   |                                  |
| U.S. - Massachusetts - Right To Know List<br>U.S. - Minnesota - Hazardous Substance List<br>U.S. - New Jersey - Right to Know Hazardous Substance List<br>U.S. - Pennsylvania - RTK (Right to Know) List |                                                             |                                                                     |                                                                   |                                  |

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**Nickel (7440-02-0)**

- U.S. - Massachusetts - Right To Know List
- U.S. - Minnesota - Hazardous Substance List
- U.S. - New Jersey - Right to Know Hazardous Substance List
- U.S. - Pennsylvania - RTK (Right to Know) List

**SECTION 16: Other information**

*This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.*