

1. Identification

Product Name	Rechargeable Lithium-Ion Battery Pack
Model Name	SE-140M, MEDXP-400-BASE (21.6V, 6,700mAh) SE-140U, MEDXP-400-AUX (21.6V, 13,400mAh)
Manufacturer	SPS Inc. 70, Techno 8-ro, Yuseong-gu, Daejeon, 34028, Korea +82-42-936-4905
Document Information	Issue Date: July 20, 2021 Version number: Rev.1
Emergency Telephone Number	+82-70-4891-5901

2. Hazard(s) identification

Classification of Products:

The products, rechargeable Lithium ion battery pack, are enclosed in UL-94, V1 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.

Effect(s) of Hazard Exposure:

Human Health Effects if Exposed to Cell Venting:

Skin Contact: The steam or liquid of the cell electrolyte can have adverse reactions to the skin.
If cell electrolyte contacts skin it can cause severe irritation or chemical burns.

Eye Contact: The steam or liquid of the cell electrolyte can have adverse reactions to the eyes.
If cell electrolyte contacts the eyes it can cause severe irritation or chemical burns.

Inhalation: The steam or liquid of the cell electrolyte can have adverse reactions if inhaled.
If cell electrolyte is inhaled it may cause severe respiratory irritation.

Ingested: Swallowing or ingesting the contents of an open cell can cause serious chemical

Burns to the mouth, esophagus and gastrointestinal tract.

Medical Conditions Aggravated by Exposure: Not Available

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

3. Composition/information on ingredients

Substance/Mixture: Mixture.

Other means of identification: Not available.

CAS number/other identifiers

CAS number: Not applicable.

Product code: Not available.

Hazardous Ingredients	%	CAS Number
Aluminum Foil	2-10	7429-90-5
Nickel compound (proprietary)	0-80	
Manganese compound (proprietary)	0-15	
Cobalt compound (proprietary)	0-15	
Polyvinylidene Fluoride (PVDF)	<5	24937-79-9
Copper Foil	2-10	7440-50-8
Carbon (proprietary)	5-30	7440-44-0
Electrolyte (proprietary)	5-20	

USA: This battery pack 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 SDS should be retained and available for employees and other users of this product.

Canada: This product is not a controlled product under WHMIS. This product meets the definition of a "manufactured article" and is not subject to the regulations of the Hazardous Products Act.

4. First-aid measures

Inhalation	Not a health hazard
Eye contact	Not a health hazard
Skin contact	Not a health hazard
Ingestion	If swallowed, obtain medical attention immediately

IF EXPOSURE TO INTERNAL MATERIALS WITHIN CELL DUE TO DAMAGED OUTER CASING, THE FOLLOWING ACTIONS ARE RECOMMENDED;

Inhalation	Leave area immediately and seek medical attention
Eye contact	Rinse eyes with water for 15minutes and seek medical attention
Skin contact	Wash area thoroughly with soap and water and seek medical attention
Ingestion	Drink milk/water and induce vomiting; seek medical attention

5. Fire-fighting measures

General Hazard

Cell is not flammable but internal organic material will burn if the cell is incinerated.
Combustion products include, but are not limited to hydrogen fluoride, carbon monoxide and carbon dioxide.

Extinguishing Media

Use extinguishing media suitable for the materials that are burning.

Special Firefighting Instructions

If possible, remove cell(s) from firefighting area. If heated above 125°C, cell(s) may
Explode/vent.

Firefighting Equipment

Use NIOSH/MSHA approved full-face self-contained breathing apparatus (SCBA) with full
protective gear.

6. Accidental release measures

On Land Place material into suitable containers and call local fire/police department.

In Water If possible, remove from water and call local fire/police department.

7. Handling and storage

Handling No special protective clothing required for handling products. Avoid damaging or rupturing battery.

Storage Store in a cool, dry place at room temperature.
Avoid extreme heat or fire.

8. Exposure controls/personal protection

Engineering controls Not required under normal use conditions.

Personal Protection

Respirator	Not required
Eye/face protection	Not required beyond safety practices of employer.
Gloves	Not required under normal product use conditions. Wear natural rubber gloves when handling a damaged battery.

9. Physical and chemical properties

State	Solid
Odor	None
pH	N/A
Vapor pressure	N/A
Vapor density	N/A
Boiling point	N/A
Solubility in water	Insoluble
Specific gravity	N/A
Density	N/A

10. Stability and reactivity

Reactivity None

Incompatibilities

There are nothings during a normal operation. Avoid exposure to heat, open flame, and corrosives.

Hazardous Decomposition Products

There are nothings during normal operating conditions. If cells are opened, hydrogen fluoride and carbon monoxide may be released.

Conditions to Avoid

Avoid exposure from heat and fire. Do not puncture, crush, and incinerate

11. Toxicological information

This product does not elicit toxicological properties during routine handling and use.

Sensitization	Teratogenicity	Reproductive toxicity	Acute toxicity
NO	NO	NO	NO

If the cells are opened through misuse or damage, discard immediately. Internal components of cell are irritants and sensitizers.

12. Ecological information

Some materials within the battery are bio accumulative. Under normal conditions, these materials are contained and pose no risk to persons or the surrounding environment.

13. Disposal considerations

Disposal methods

The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers

14. Transport information

Lithium Ion batteries are considered to be "Rechargeable batteries" and meet the requirements of transportation by the U.S. Department of Transportation(DOT), the International Civil Aviation Administration(ICAO), the International Maritime Dangerous Goods (IMDG) Code. Even classified as lithium ion batteries (UN3480), 2015 IATA Dangerous Goods Regulations 56th edition Packing Instruction 965 Section IB or II is applied.

The general and additional requirements apply to all lithium ion cells and batteries prepared for transport according to this packing instruction:

- 1) Section IB applies to lithium ion cells with a Watt-hour rating not exceeding 20Wh and lithium ion batteries with a Watt-hour rating not exceeding 100Wh packed in quantities that exceed the allowance permitted in Section IB, Table 965-IB; and

Table 965-IB

Contents	Net quantity per package	
	Passenger	Cargo
Lithium ion cells and batteries	10kg	10kg

- 2) Section II applies to lithium ion cells with a Watt-hour rating not exceeding 20Wh and lithium ion batteries with a Watt-hour rating not exceeding 100Wh packed in quantities not exceeding the allowance permitted in Section II, Table 965-II.

Table 965-II

Contents	Lithium ion cells and/or batteries with a Watt-hour rating not more than 2.7Wh	Lithium ion cells with a Watt-hour rating more than 2.7Wh, but not more than 20Wh	Lithium ion batteries with a Watt-hour rating more than 2.7Wh, but not more than 100Wh
1	2	3	4

Maximum number of cells / batteries per package	No limit	8 cells	2 batteries
Maximum net quantity (mass) per package	2.5kg	n/a	n/a

Cells and/or batteries specified in columns 2, 3 and 4 of Table 965-II must not be combined in the same package. Each cell or battery is of the type proven to meet the requirements of each test in the UN Manual of Tests and Criteria Part 3 subsection 38.3.

3) IMO Class Packing group II, IMO Labels: Class 9. Proper shipping name: Lithium-Ion batteries, UN 3480. IMDG Code: Special provisions 188, 310, 376, 377, 636 and 348 will apply and Packing Instruction P903, P908, P909 and P910. EmS: F-A, S-I Stowage category A.

The product, Li ion battery packs, and cells that used in this product had been evaluated according to the UN Manual of Tests and Criteria.

No.	Test Item	Cell Test Result	Pack Test Result
Test 1	Altitude simulation	Pass	Pass
Test 2	Thermal test	Pass	Pass
Test 3	Vibration	Pass	Pass
Test 4	Shock	Pass	Pass
Test 5	External short circuit	Pass	Pass
Test 6	Impact or Crush	Pass	n/a
Test 7	Overcharge	Pass	Pass
Test 8	Forced discharge	Pass	n/a

15. Regulatory information

This product is not hazardous under the criteria of the Federal Occupational Safety and Health Administration (OSHA) Hazard Communication Standard.(29 CFR 1910.1200) IATA Dangerous Goods Regulations 57th Edition Effective 1 January 2016.

Hazardous

Non-hazardous

16. Other information

The data in this Safety Data Sheet relates only to the specific product designated herein and does

not relate to use in combination with any other product or in any process. This SDS may not meet regulatory requirements in other countries. This information is based on technical information believed to be reliable. It is subject to revision as additional knowledge and experiences are gained.

REFERENCE

International Chemical Safety Cards (ICSCs) International Occupational Safety and Health Information Centre (CIS) 0710 March 1999

Opinion of the scientific committee on toxicity, Eco toxicity and the environment (CSTEE)
Adopted by the CSTEE during the 43rd plenary meeting of 28 May 2004

UN-Recommendations on the Transport of Dangerous Goods Model Regulations.
(ST/SG/AC.10/11/Rev.7)

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TEST CERTIFICATE

Report reference Number : NS2104-B007

Applicant : SPS, INC.

Address of Applicant : 70, Techno 8-ro, Yuseong-gu, Daejeon 34028, Republic of Korea

Product Name : Rechargeable Li-ion Battery pack

Model / Type Designation : SE-140M, MEDXP-400-BASE

Ratings : 21.6 V, 6 700 mAh

Test Standard : ST/SG/AC.10/11/Rev.7
Recommendations on the Transport of Dangerous Goods:
Manual of Tests and Criteria, Part III, Sub-Section 38.3
Lithium metal and lithium ion batteries

Test items and Results	:	Test T.1:	Altitude simulation	Pass
		Test T.2:	Thermal test	Pass
		Test T.3:	Vibration	Pass
		Test T.4:	Shock	Pass
		Test T.5:	External short circuit	Pass
		Test T.7:	Overcharge	Pass

Date of Issue : April 22, 2021

We hereby verify that the mentioned sample(s) complied with the requirements in the UN Manual of Tests and Criteria, Part III, Subsection 38.3, Seventh revised edition and US DOT 49 CFR 173.185.

Authorized Signatory:

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TEST CERTIFICATE

Report reference Number : NS2104-B008

Applicant : SPS, INC.

Address of Applicant : 70, Techno 8-ro, Yuseong-gu, Daejeon 34028, Republic of Korea

Product Name : Rechargeable Li-ion Battery pack

Model / Type Designation : SE-140U, MEDXP-400-AUX

Ratings : 21.6 V, 13 400 mAh

Test Standard : ST/SG/AC.10/11/Rev.7
Recommendations on the Transport of Dangerous Goods:
Manual of Tests and Criteria, Part III, Sub-Section 38.3
Lithium metal and lithium ion batteries

Test items and Results	:	Test T.1:	Altitude simulation	Pass
		Test T.2:	Thermal test	Pass
		Test T.3:	Vibration	Pass
		Test T.4:	Shock	Pass
		Test T.5:	External short circuit	Pass
		Test T.6:	Overcharge	Pass
		Test T.7:	Overcharge	Pass

Date of Issue : April 22, 2021

We hereby verify that the mentioned sample(s) complied with the requirements in the UN Manual of Tests and Criteria, Part III, Subsection 38.3, Seventh revised edition and US DOT 49 CFR 173.185.

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