



Lithium-ion Rechargeable Battery Pack

LG Energy Solution

PSDS for Acer Batteries.

The Attached MSDS, accurately represents the chemical construction, of the Acer Batteries listed below.

No.	Acer Model Name	Capacity	List
1	AS16A8K	42Wh	INR18650C4
2	AS16B8J	61Wh	INR18650C4
3	AC14B8K	48Wh	ICP485780A1
4	AC14A8L	52Wh	ICP666180A1
5	AP14F8K	34.5Wh	ICP30100107L1
6	AC16A8N	69Wh	ICP666180B12
7	AP16J8K	45Wh	ICP595490L1
8	AC14B18J	36.7Wh	ICP485780B2
9	AC16B8K	48Wh	ICP485780A1
10	AC14B8K	48Wh	ICP485780A1
11	AC14B18J	36Wh	ICP485780B2
12	AC15A8J	38Wh	R485780C3
13	AC17A8M	61.9Wh	ICP666180B1
14	AC17B8K	48Wh	ICP485780A1
15	AP18B18J	34.31Wh	ICP575577B1
16	AP14A8M	22Wh	ICP3657101L1
17	AP16L8J	36.5Wh	ICP359190D1

Parc.1 Tower 1, 108, Yeoui-daero
Yeongdeungpo-gu, Seoul 07335, Korea
LG Energy Solution, LTD.
President&CEO JONG HYUN KIM

Signed by Representative:

No.	Acer Model Name	Capacity	List
18	AP18H18J	34.31Wh	ICP575577B1
19	AP18H8L	51.47Wh	ICP575577B1
20	AP18C8K	50.29Wh	P498170A1
21	AP18E8M	57.48Wh	MCP367088A1
22	AP19A8K	40.22Wh	P495871A1
23	AP19B8K	43.08Wh	P438170A1
24	AP19B8M	55.97Wh	P498170B1
25	AP21A8T	90.61Wh	MCP4264C7A10
26	AP21D8M	57.48Wh	MCP367088A1

Signed by Representative:



MATERIAL SAFETY DATA SHEET

Lithium-Ion Battery

LG Energy Solution

1. Chemical Product and Company Identification

Product Identification

LG Energy Solution Lithium-Ion Battery Cell

All models manufactured by LG Energy Solution, LTD

Manufacturer

LG Energy Solution, LTD

Tower1, 108, Yeoui-daero, Yeongdeungpo-gu,

Seoul,

Rep. of KOREA

Emergency Telephone Number

82-3773-1114

2. Hazards Identification

Emergency Overview

May explode in a fire, which could release hydrogen fluoride gas.

Use extinguishing media suitable for materials burning in fire.

Primary routes of entry

Skin contact	: NO
Skin absorption	: NO
Eye contact	: NO
Inhalation	: NO
Ingestion	: NO

Symptoms of exposure

Skin contact

No effect under routine handling and use.

Skin absorption

No effect under routine handling and use.

Eye contact

No effect under routine handling and use.

Inhalation

No effect under routine handling and use.

Reported as carcinogen

Not applicable

3. Composition Information

Hazardous Ingredients	%	CAS Number
Aluminum Foil	2-10	7429-90-5
Metal Oxide (proprietary)	20-50	12190-79-3
Polyvinylidene Fluoride (PVDF)	<5	24937-79-9
Copper Foil	2-10	7440-50-8
Carbon (proprietary)	10-30	7440-44-0
Electrolyte (proprietary)	10-20	21324-40-3

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 15 minutes 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 fire fighting 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 individual cells.

Storage

Store in a cool, dry place.

8. Exposure Controls / Personal Protection

Engineering controls

Keep away from heat and open flame. Store in a cool dry place.

Personal Protection

Respirator

Not required during normal operations. SCBA required in the event of a fire.

Eye/face protection

Not required beyond safety practices of employer.

Gloves

Not required for handling of cells.

Foot protection

Steel toed shoes recommended for large container handling.

9. Physical and Chemical Properties

State	Solid
Odor	N/A
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

None during normal operation. Avoid exposure to heat, open flame, and corrosives.

Hazardous Decomposition Products

None during normal operating conditions. If cells are opened, hydrogen fluoride and carbon monoxide may be released.

Conditions To Avoid

Avoid exposure to heat and open flame. Do not puncture, crush or 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

12. Ecological Information

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

13. Disposal Considerations

California regulated debris

RCRA Waste Code : Nonregulated

Dispose of according to all federal, state, and local regulations.

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), 2022 IATA Dangerous Goods Regulations 63rd edition Packing Instruction 965 Section IB or II is applied.

Even classified as lithium batteries packed with equipment (UN3481), 2022 IATA Dangerous Goods Regulations packing instruction 966 is applied.

Even classified as lithium batteries installed in equipment (UN3481), 2022 IATA Dangerous Goods Regulations packing instruction 967 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 20 Wh and lithium ion batteries with a Watt-hour rating not exceeding 100 Wh packed in quantities that exceed the allowance permitted in Section II, Table 965-II; and

Packaging:

Each battery /cell must be protected against a short circuit and placed in an inner packaging that completely encloses the battery /cell, then placed in a strong rigid outer packaging. Cells and batteries must not be packed in the same outer packaging, or placed in an overpack with, dangerous goods classified in Class 1 (except 1.4S), Division 2.1 (flammable gases), Class 3 (flammable liquids), Division 4.1 (flammable solids) and Division 5.1 (oxidizers).

State of Charge (SoC) of the battery or cell must not exceed 30%.

Maximum **10 kg** net quantity of lithium batteries or cells per package. **Cargo Aircraft Only (CAO)**

Package test: 1.2 m drop test.

Labeling / Marking:



Documentation:

Shipper's Declaration is required. The following statement must be mentioned on the (air)waybill:

- ☐ „Dangerous Goods as per associated DGD” or „Dangerous Goods as per associated Shipper's Declaration”
☐ „Cargo Aircraft Only” or „CAO”

The product has been evaluated according to the UN Manual of Tests and Criteria.

The products in this MSDS meet the requirements of Special Provision 188 (SP188) and are not subject to other provisions of IATA, IMDG or ADR.

No.	Test Item	Criteria	Result
Test 1	Altitude simulation	-No leakage, venting, disassembly, rupture and no fire. -Measuring mass before/after each test. (If M>5g, less than 0.1%) -Measuring voltage before/after each test. (more than 90%)	Pass
Test 2	Thermal test		Pass
Test 3	Vibration		Pass
Test 4	Shock		Pass
Test 5	External short circuit	-No disassembly, rupture and fire within six hours of this test.	Pass
Test 6	Impact	-Max. temperature should not exceed 170 °C.	Pass
Test 7	Overcharge	-No disassembly and fire within seven days of the test.	Pass

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 63rd Edition Effective 1 January 2022.

 Hazardous ☒ Non-hazardous

16. Other Information

A. Reference

The information contained herein is believed to be accurate. It is provided independently of any sale of the product for purpose of hazard communication. It is not intended to constitute performance information concerning the product. No express warranty, or implied warranty of merchantability or fitness for a particular purpose is made with respect to the product or the information contained herein.

This Safety Data Sheet was compiled with data and information from the following sources: KOSHA, NITE, ESIS, NLM, SIDS, IPCS

B. Revision number and Last date revised

Not applicable

C. Other

This SDS is prepared according to the Globally Harmonized System (GHS).