



Lithium-ion Rechargeable Battery Pack

LG Chem, Ltd.

SDS for Dell Batteries.

- History

Version.	Items	Description	Date
V01	Origin	Initial Release	2015.08.31
V02	Origin	Add new project	2016.01.07
V03	Origin	Add new project	2016.01.25
V04	Origin	Add new project	2016.02.24
V05	Origin	Add new project	2016.03.23
V06	Origin	Add new project	2016.04.28
V07	Origin	Add new project	2016.05.25
V08	Origin	Add new project	2016.07.21

The Attached SDS, accurately represents the chemical construction, of the Dell Batteries listed below.

No.	Dell Part Number	Dell Type Number	Capacity	List
1	N4TXM/ WNJ9J	XX1DX	36Wh	486790
2	V0XTF	TKN25	49Wh	486790 Cell
3	49VTP	MR90Y	65Wh	D1 Cell
4	0MF69	MR90Y	65Wh	D1 Cell
5	T1G4M	XCMRD	40Wh	C2 Cell
6	4KFGD	N3X1D	65Wh	D1 Cell
7	5DN1K	71R31	97Wh	D1 Cell
8	FT6D9	VJXMC	40Wh	C2 Cell
9	NVWGM	VV0NF	65Wh	D1 Cell
10	Y6KM7	N5YH9	97Wh	D1 Cell
11	Y9HNT	W5CVK	31Wh	556659 (Gen1)
12	KR71X	XJ8TX	34Wh	636655 (Gen1)
13	J31N7	JMWGJ	45Wh	556659 (Gen2)
14	0D47W	TJ7V4	47Wh	636655 (Gen2)
15	6MYFW	DGGGT	40Wh	357993 & 305193(Gen2)
16	FT6D9	VJXMC	40Wh	C2 Cell
17	NVWGM	VV0NF	65Wh	D1 Cell
18	Y6KM7	N5YH9	97Wh	D1 Cell
19	G4YJM	F7HVR	58Wh	606080L1
20	V3D9R	7NXVR		3981108L1
21	CFC6C	7WMM7	28Wh	305193L1
22	PWM3D/ TPVWW	5MTD8	43Wh	D1 Cell
23	3NG29/ W7KJC	YDFD9	65wh	D1 Cell
24	1V2F6	TRHFF	43Wh	606080DL1
25	DFVYN	0PD19	58Wh	606080DL1
26	0WF28	GK5KY	43Wh	606080DL1
27	9P4D2	RYXXH	38Wh	575577L1
28	8V5GX	G5M10	51Wh	575577L1
29	WG6RP	F3G33	39Wh	566860L1
30	W57CV	VFV59	52Wh	566860L1
31	GV7HC	V8XN3	40Wh	646856L1
32	G95J5	3RNFD	54Wh	646856L1
33	HFRC3	2H2G4	38Wh	4763109L1
34	FRVYX	TM9HP	20Wh	405581L1

35	YX81V	271J9	20Wh	405581L1
36	2P9KD	3V806	51Wh	575577L1
37	VTDT2	VMYGJ	58Wh	606080DL1
38	991XP	M5Y1K	40Wh	C4 Cell
39	RTC77	K185W	47Wh	E1 Cell
40	FP02G	JD33K	28Wh	3281108A1
41	70K80/ 7VJMH	T40JJ	1.8Wh	423443A1
42	H132V	T40JJ	1.8Wh	423443A1
43	M9XPM	T40JJ	1.8Wh	423443A1
44	KTCCN	5R9DD	43Wh	606080DL1
45	WTG3T	R0TMP	62Wh	575577A1
46	5PD40	K81RP	21Wh	2857127L1
47	242WD	J60J5	54Wh	485780L1
48	1V0PP	T05W1	72Wh	646064L1
49	RDYCT	MFKVP	89Wh	646064A1
50	RDRH9	NGGX5	47Wh	575577A1
51	G9G1H	WJ5R2	81Wh	645465L1
52	92NCT	GK5KY	43Wh	606080DL1
53	2VMGK	N1WM4	62Wh	575577A1
54	62MJV	RRCGW	56Wh	647363L
55	V55D0	7VKV9	30W	3075109L1
56	VXT50	9KY50	19W	304072L1
57	HK6DV	6MT4T	62Wh	575577A1
58	2VMGK	N1WM4	62Wh	575577A1
59	K5NN2	YDF9	65wh	D1 Cell
60	PKG3N	1MCXM	28wh	305193L1
61	5K9CP	90V7W	56Wh	345594L1 417194L1
62	K5NN2	GK5KY	43Wh	606080DL1
63	9JF93	TRHFF	43Wh	606080DL1
64	HMNMK	0PD19	58Wh	606080DL1
65	5PYY9	RYXXH	38Wh	575577L1
66	K9GVN	G5M10	51Wh	575577L1
67	4H34M	P63NY	43Wh	556354L1 376754L1
68	HMYXT/ 2P6GX	T54FJ	60Wh	C2 Cell
69	GK2X6	J1KND	48Wh	S3 cell
70	T2JX4	WDX0R	42Wh	485780C1
71	81PF3	33YDH	56Wh	485780C1

72	H1391	W1193	60Wh	C1 Cell
73	TVMVN/ PFW7V	T54FJ	60Wh	C1 Cell
74	T453X	4GVGH	84Wh	645465L1
75	JNT6D	VMYGJ	58Wh	606080DL1
76	05VFW/ 9981K	NHXVW	87Wh	D1 Cell
77	RNP72	PW23Y	60Wh	375386A1 457186A1
78	NP0V3	NNF1C	46Wh	275292L1 3153122L1
79	4RRR3	TDW5P	76Wh	647363L1
80	DWJHM	VFV59	52Wh	566860L1
81	CJW7D	3RNFJ	54Wh	646856L1
82	96H67	Y2RV2	3.4Wh	523243A1
84	M6WKR	PWKWM	56Wh	485780C1
85	5JT8G	1WND8	31.5Wh	484078L1
86	X16TW	J0PGR	42Wh	484078L1
87	546FF	44T2R	68Wh	575577B1
88	01D82	9NJM1	99Wh	575577B1
89	NJJ2H	J60J5	54Wh	485779L1
90	J8FXW	6MT4T	62Wh	575577A1
91	C27RW	DJ1J0	42Wh	485780C1
92	2X39G	F3YGT	60Wh	485779A1
93	MYJ96	F3YGT	60Wh	485779A1
94	5D91C	H5H20	56Wh	647363L1
95	5XJ28	6GTPY	97Wh	645465B1
96	96H67	Y2RV2	3.5Wh	523243A1
97	3VC9Y	3DDDG	42Wh	485780C1
98	83XPC	93FTF	51Wh	575577B1
99	DV9NT	GJKNX	68Wh	575577B1
100	FPT1C	GJKNX	68Wh	575577B1
101	NY5PG	VG93N	92Wh	645465A1
102	FTG78	J0PGR	42Wh	484078L1
103	725KY	K5XWW	60Wh	395890L1
104	CFX97	71TG4	45Wh	395890L1
105	V57XN/ YCNCW	M5Y0X	97Wh	D1 cell
106	J7KGM/ 3CVD9	M5Y0X	97Wh	D1 cell
107	8PGNG	JWPHF	57Wh	B1 cell
108	P27T3	R795X	84Wh	B1 cell
109	6K0DT	H7XW1	44WH	D1 cell

SAFETY DATA SHEET

110	YKF0M	8858X	48Wh	S3 cell
111	X28XH	X284G	48Wh	S3 cell
112	3N73J	GW240	32Wh	S3 cell
113	KCFPM	TKV2V	48Wh	S3 cell
114	H1391/ 3XY6Y	W1193	62Wh	C1 cell
115	8TJD2/ 9X6X0	W1193	62Wh	C1 cell
116	9GXD5/ CWTM0	RFJMW	97Wh	D1 cell
117	6CYH6	K5XWW	60Wh	395890L1
118	Y07HK	51KD7	42Wh	485780C1
119	C07K7	WJ5R2	81Wh	ICP645465L1
120	MN791	271J9	20Wh	405581L1
121	R89JJ	TM9HP	20Wh	405581L1
122	242WD	J60J5	54Wh	485779L1
123	K5NN2	YDF9	65wh	D1 Cell
124	0C178	NGGX5	47Wh	575577A1
125	0D074	6MT4T	62Wh	575577A1
126	K1G3K	WJ5R2	81Wh	645465L1
127	4RRR3	TDW5P	76Wh	647363L1
128	546FF	44T2R	68Wh	575577B1
129				
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Signed by Representative:



SAFETY DATA SHEET**Lithium-Ion Battery****LG Chem, Ltd.****1. Identification****Product Identification**

Lithium-Ion Battery (All models manufactured by LG Chem, Ltd)

Manufacturer

LG Chem, Ltd.

LG Twin Towers, 128, Yeoui-daero,

Yeongdeungpo-gu, Seoul 150-721, Korea

Emergency Telephone Number

82-2-3773-7256

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.

Since cell is covered with protection case, it is not exposed for any toxic substance unless there is external damage.**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 on ingredients

Hazardous Ingredients	%	CAS Number
Aluminum Foil	2-10	7429-90-5
Metal Oxide (proprietary)	30-40	12190-79-3
Polyvinylidene Fluoride (PVDF)	<5	24937-79-9
Copper Foil	2-10	7440-50-8
Carbon (proprietary)	20-30	7440-44-0
Electrolyte (proprietary)	10-20	
Stainless steel, Nickel and inert materials	Remainder	N/A

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

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 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), 2016 IATA Dangerous Goods Regulations 57th 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 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 IB, Table 965-IB; and

TABLE 965-IB

	Net quantity per package Passenger aircraft	Net quantity per package Cargo Aircraft Only	
Lithium ion cells and batteries	10 kg	10 kg	
OUTER PACKAGINGS			
Type	Drums	Jerricans	Boxes

2) Section II 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 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 of 2.7 Wh or less	Lithium ion cells with a Watt-hour rating of more than 2.7 Wh but not more than 20 Wh	Lithium ion batteries with a Watt-hour rating of more than 2.7 Wh but not more than 100 Wh
1	2	3	4
Maximum number of cells/batteries per package	No limit	8 cells	2 Batteries
Maximum net quantity per package	2.5 kg	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.

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

No.	Test Item	Criteria	Result
Test 1	Altitude simulation	- After OCV (%) \geq 90% - No leakage, no venting, no disassembly, no rupture, no fire - Mass loss limit (leakage) 1) If $M < 1g$, less than 0.5%, 2) If $1g \leq M \leq 75g$, less than 0.2%, 3) If $M > 75g$, less than 0.1%)	Pass
Test 2	Thermal test		Pass
Test 3	Vibration		Pass
Test 4	Shock		Pass
Test 5	External short circuit	- No disassembly, no rupture, no fire within 6 hours after the test - Max. Temp \leq 170 °C	Pass
Test 6	Impact or Crush	- No disassembly, no fire within 6 hours after the test - Max. Temp \leq 170 °C	Pass
Test 7	Overcharge	- No disassembly, no fire within 7 days after the test	Pass
Test 8	Forced discharge	- No disassembly, no fire within 7 days after 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 57th Edition Effective 1 January 2016.

Hazardous

Non-hazardous

16. Other information

N/A

Appendix

Dell (Australia) contact:

Susan Poh
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