Lithium-ion Rechargeable Battery Pack

LGC CHEMICAL

MSDS for Dell Batteries.

- **History**

Version.	Items	Description	Date
V01	Origin	Initial Release	2011.04.05
V02	Add	Add EOL/Drop project (3N73J, X28XH, 98XJG, 56WDR)	2011.09.05
V03	Add	Add new project (9GXD5, HMYXT, J7KGM)	2011.09.06
V04	Add	Add new project (YKF0M, V0XTF)	2011.11.02
V05	Add	Add new project (49VTP, T1G4M)	2012.07.27
V06	Add	Add new project (N4TXM) Add System Type	2012.09.01
V07	Add	Add new project (FP02G) Add System Type	2012.09.14
V08	Add	Add new project (Y9HNT, KR71X, J31N7, 0D47W)	2013.01.09

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

No.	Primary Dell Part Number	Secondary Dell Part Number	Cell type	System Type
1	3N73J	N/A	S3 Cell	
2	X28XH	N/A	S3 Cell	
3	H1391	3XY6Y	C1 Cell	
4	8TJD2	9X6X0	C1 Cell	
5	KCFPM	N/A	S3 Cell	
6	GK2X6	N/A	S3 Cell	
7	8PGNG	N/A	B4 Cell	
8	P27T3	N/A	C2 Cell	
9	TVMVN	PFW7V	C2 Cell	
10	V57XN	YCNCW	D1 Cell	
11	05VFW	9981K	D1 Cell	
12	6K0DT	N/A	D1 Cell	
13	98XJG	N/A	S3 Cell	
14	56WDR	N/A	C2 Cell	
15	9GXD5	CWTM0	D1 Cell	
16	HMYXT	2P6GX	C2 Cell	
17	J7KGM	3CVD9	D1 Cell	
18	YKF0M	N/A	S3 Cell	
19	V0XTF	N/A	486790 Cell	
20	49VTP	N/A	D1 Cell	
21	T1G4M	N/A	C2 Cell	
22	N4TXM	N/A	486790 Cell	XX1D1
23	FP02G	N/A	3281108 Cell	JD33K
24	Y9HNT	W5CVK	556659 (Gen1)	
25	KR71X	XJ8TX	636655 (Gen1)	
26	J31N7	JMWGJ	556659 (Gen2)	
27	0D47W	TJ7V4	636655 (Gen2)	

Signed by Representative: Ahn. HJ

MATERIAL SAFETY DATA SHEET

Lithium-Ion Battery

LG CHEMICAL LIMITED

1. Chemical Product and Company Identification

Product Identification

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

Manufacturer

LG Chemical Limited
Twin Tower
Youido-Dong, Youngdeungpo-Ku
Seoul, Korea

Emergency Overview

May explode in a fire, which could release hydrogen fluoride gas.
Use extinguishing media suitable for materials burning in fire.

Emergency Telephone Number

82-2-3773-7256

2. Composition Information

Lithium Ion Cylindrical Cell		
Hazardous Ingredients	**%**	**CAS Number**
Aluminum Foil	2-10	7429-90-5
Nickel compound (proprietary)	0-25	
Manganese compound (proprietary)	0-15	
Cobalt compound (proprietary)	4-50	
Styrene-Butadiene-Rubber	<1	
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	
Stainless steel, Nickel and inert materials	Remainder	N/A
Lithium Ion Polymer Cell		
Hazardous Ingredients	**%**	**CAS Number**
Aluminum Foil	2-10	7429-90-5
Metal Oxide(proprietary)	20-50	
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	
Stainless steel, Nickel and inert materials	Remainder	N/A

3. Hazards Identification

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

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), International Civil Aviation Administration(ICAO).

Even classified as lithium ion batteries (UN3480), 2012 IATA Dangerous Goods Regulations 53nd edition Packing Instruction 965 Section II is applied.
The Product is handled as Non-Dangerous Goods by meeting the following requirements. (1)

Lithium ion cells and batteries offered for transport are not subject to other additional requirements of the UN Regulations if they meet the following ; (1)–(5)

1. for cells, the Watt-hour rating is not more than 20Wh.
2. for batteries, Watt-hour rating is not more than 100Wh.
3. 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.
4. each cells comply with Special Provision A154.
5. Quantity per Package shall not exceed 10kg

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

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. -Max. temperature should not exceed 170℃.	Pass
Test 6	Impact		Pass
Test 7	Overcharge	-No disassembly and fire within seven days of the test.	Pass

15. Regulatory Information

OSHA hazard communication standard (29 CFR 1910.1200)

_____Hazardous ____✔___Non-hazardous