Explanatory sheet about safety of product for transportation

(Safety data sheet for transportation)

1. Basic item

Product name:	Lithium ion battery (“Lithium ion battery” includes lithium ion polymer battery in this document)
UN number:	3480
Product Part Number:	Refer to Table 1.
Manufacturer:	LG Chemical, Ltd.
Address:	LG Twin Towers, 128 Yeoui-daero, Yeongdeungpo-gu Seoul 07336, Korea
Phone number:	+82-2-3773-1114

2. Product information

Basic composition of the product

This product is a battery which consists of such main component as core battery pack assembled with some Lithium ion cells. And it consists of any combination of plastic casing, tube casing, protection circuit boards, safety devices and interface terminals.

3. Safety information

- LG Chemical certifies the battery has passed and satisfied the UN Manual of Tests and Criteria Part III, sub-section 38.3 testing in LG Chemical Shipping.
- LG Chemical manufactured the battery under the quality management program required in UN model regulations 2.9.4(e).

3-1) Component cell

The Watt-hour rating of the component Lithium ion cells is not more than 20Wh.

3-2) Battery pack

1. The Watt-hour rating of the battery is not more than 100Wh.
2. Package of the battery satisfies the following conditions when LG Chemical ships.
   (1) The product name “Lithium ion batteries” and how to deal with the damage of the package are written on the label.
   (2) The package has passed the drop test from the height of 1.2m.
   (3) The package net weight is not more than 10kg.
   (4) The product and package specification follow and meet IMDG SP188.
3. The battery is not defective for safety reasons, not damaged. It is not collected battery for recycling or disposal.
4. The battery is not subject to the fully regulated requirements for Dangerous Goods in ocean and ground transportation.
5. The battery should be transported by Cargo aircraft as UN3480, class 9 Dangerous Goods, and state of charge not exceeding 30%, attached by required marks and labels, according to Packing Instruction 965 Section IB of the ICAO and IATA regulations.

Jan, 1, 2020

Hak Cheol Shin

LG Chemical Ltd

HAK CHEOL SHIN
Vice Chairman&CEO
LG Chem, Ltd.
128, Yeoui-daero,Yeongdeungpo-gu, Seoul 07336, Korea

<Table 1>

Battery Part Numbers			Battery Information						
Lenovo ASM Lenovo PN Part Number	Lenovo FRU Part Number	Lenovo model name	MSDS Type #	UN DOT 38.3 Test Certificate	Cell Voltage (V)	Battery Voltage (V)	Watt hour Rating (Wh)	Weight (grams)	Equivalent Lithium Content (grams)
45N1166	45N1167		SDS_LGPO201	45N1166_UN38.3	3.70	14.80	63	350	5.28
45N1726	45N1727		SDS_LGPO201	45N1726_UN38.3	3.70	3.70	33	175	2.68
45N1748	45N1749		SDS_LGPO201	45N1748_UN38.3	3.70	7.40	34	180	2.82
SB10F46440	00HW002		SDS_LGPO201	SB10F46440_UN38.3	3.80	15.20	51	270	4.03
SB10F46442	00HW004		SDS_LGPO201	SB10F46442_UN38.3	3.70	7.40	36	180	2.90
SB10F46444	00HW006		SDS_LGPO201	SB10F46444_UN38.3	3.70	7.40	27	200	2.15
SB10F46446	00HW008		SDS_LGPO201	SB10F46446_UN38.3	3.80	15.20	67	315	5.32
SB10F46454	00HW016		SDS_LGPO201	SB10F46454_UN38.3	3.80	7.60	32	154	2.56
SB10F46464	00HW026		SDS_LGPO201	SB10F46464_UN38.3	3.80	15.20	45	240	3.59
SB10F46466	00HW028 01AV438 01AV473		SDS_LGPO201	SB10F46466_UN38.3	3.80	15.20	53	250	4.19
SB10H45075	00NY490 01AV476		SDS_LGPO201	SB10H45075_UN38.3	3.80	15.20	67	365	5.32
SB10H45077	00NY492 01AV477		SDS_LGPO201	SB10H45077_UN38.3	3.80	11.40	90	460	7.22
SB10J78993	00HW045		SDS_LGPO201	SB10J78993_UN38.3	3.82	7.64	37	168	2.95
SB10K97566	01AV409 01AV440 01AV457		SDS_LGPO201	SB10K97566_UN38.3	3.80	15.20	56	250	4.49
SB10K97569	01AV412		SDS_LGPO201	SB10K97569_UN38.3	3.70	11.10	45	235	3.68
SB10K97577	01AV420 01AV489		SDS_LGPO201	SB10K97577_UN38.3	3.80	11.40	24	140	1.89
SB10K97580	01AV423 01AV490		SDS_LGPO201	SB10K97580_UN38.3	3.80	11.40	24	140	1.89
SB10L84121	00UR890 01AV493		SDS_LGPO201	SB10L84121_UN38.3	3.80	15.20	32	220	2.52
SB10K97586	01AV429 01AV494		SDS_LGPO201	SB10K97586_UN38.3	3.86	11.58	57	248	4.44
SB10K97589	01AV432		SDS_LGPO201	SB10K97589_UN38.3	3.80	15.20	51	250	4.09
SB10K97599	01AV454	L16L4P91	SDS_LGPO201	SB10K97599_UN38.3	3.86	7.72	42	173	3.26
SB10T83162	5B10W13919	L16L4P91	SDS_LGPO201	SB10T83162_UN38.3	3.86	7.72	42	173	3.26
SB10K97606	01AV445	L17L3P51	SDS_LGPO201	SB10K97606_UN38.3	3.70	11.10	45	235	3.68
SB10T83130	5B10W13887	L17L3P51	SDS_LGPO201	SB10T83130_UN38.3	3.70	11.10	45	235	3.68
SB10K97610	01AV463	L17L3P52	SDS_LGPO201	SB10K97610_UN38.3	3.70	11.10	45	235	3.68
SB10T83137	5B10W13894	L17L3P52	SDS_LGPO201	SB10T83137_UN38.3	3.70	11.10	45	235	3.68
SB10K97617	01AV470	L17L6P71	SDS_LGPO201	SB10K97617_UN38.3	3.80	11.40	48	240	3.78
SB10T83163	5B10W13920	L17L6P71	SDS_LGPO201	SB10T83163_UN38.3	3.80	11.40	48	240	3.78
SB10K97620	01AV478	L17L3P71	SDS_LGPO201	SB10K97620_UN38.3	3.86	11.58	57	240	4.44
SB10K97634	01AV495	L17L6P51	SDS_LGPO201	SB10K97634_UN38.3	3.80	11.40	90	460	7.22

Battery Part Numbers			Battery Information						
Lenovo ASM Lenovo PN Part Number	Lenovo FRU Part Number	Lenovo model name	MSDS Type #	UN DOT 38.3 Test Certificate	Cell Voltage (V)	Battery Voltage (V)	Watt hour Rating (Wh)	Weight (grams)	Equivalent Lithium Content (grams)
SB10T83194	5B10W13951	L17L6P51	SDS_LGPO201	SB10T83194_UN38.3	3.80	11.40	90	460	7.22
SB10K97659	02DL021	L18L3P72	SDS_LGPO201	SB10K97659_UN38.3	3.85	11.55	51	208	3.96
SB10T83170	5B10W13927	L18L3P72	SDS_LGPO201	SB10T83170_UN38.3	3.85	11.55	51	208	3.96
SB10K97645	02DL007	L18L3P73	SDS_LGPO201	SB10K97645_UN38.3	3.85	11.55	51	220	3.96
SB10T83148	5B10W13905	L18L3P73	SDS_LGPO201	SB10T83148_UN38.3	3.85	11.55	51	220	3.96
SB10K97649	02DL011	L18L3P71	SDS_LGPO201	SB10K97649_UN38.3	3.86	11.58	57	247	4.44
SB10T83156	5B10W13913	L18L3P71	SDS_LGPO201	SB10T83156_UN38.3	3.86	11.58	57	247	4.44
SB10K97651	02DL013	L18L3PD1	SDS_LGPO201	SB10K97651_UN38.3	3.86	11.58	57	247	4.44
SB10T83152	5B10W13909	L18L3PD1	SDS_LGPO201	SB10T83152_UN38.3	3.86	11.58	57	247	4.44
SB10K97642	02DL004	L18L4P71	SDS_LGPO201	SB10K97642_UN38.3	3.85	15.40	51	219	3.97
SB10T83173	5B10W13930	L18L4P71	SDS_LGPO201	SB10T83173_UN38.3	3.85	15.40	51	219	3.97
SB10T83203	5B10W13960	L19L6P72	SDS_LGPO201	SB10T83203_UN38.3	3.85	11.55	68	284	5.32
SB10T83201	5B10W13958	L19L6P71	SDS_LGPO201	SB10T83201_UN38.3	3.85	11.55	94	380	7.50
SB10T83128	5B10W13885	L17L3P53	SDS_LGPO201	SB10T83128_UN38.3	3.80	11.40	45	245	3.68
SB10T83134	5B10W13891	L17L3P54	SDS_LGPO201	SB10T83134_UN38.3	3.80	11.40	42	210	3.37
42T4802	42T4803 42T4853 42T4912		SDS_LGPO201	42T4802_UN38.3	3.70	11.10	94	493	7.56
42T4882	42T4881		SDS_LGPO201	42T4882_UN38.3	3.70	11.10	63	325	5.04
45N1146	45N1147		SDS_LGPO201	45N1146_UN38.3	3.60	10.80	57	330	4.68
SB10F46458	00HW020		SDS_LGPO201	SB10F46458_UN38.3	3.80	11.40	53	260	4.15
SB10J78989	00HW041		SDS_LGPO201	SB10J78989_UN38.3	3.80	11.40	47	180	3.71
SB10J78991	00HW043		SDS_LGPO201	SB10J78991_UN38.3	3.80	11.40	42	220	3.37
SB10J78997	01AV400		SDS_LGPO201	SB10J78997_UN38.3	3.80	11.40	42	220	3.37
SB10J79000	01AV403		SDS_LGPO201	SB10J79000_UN38.3	3.80	7.60	40	180	3.20
SB10K97625	01AV481	L17L3P53	SDS_LGPO201	SB10K97625_UN38.3	3.80	11.40	45	245	3.68
SB10K97630	01AV486	L17L3P54	SDS_LGPO201	SB10K97630_UN38.3	3.80	11.40	42	210	3.37

MATERIAL SAFETY DATA SHEET

Product Name: Lithium Ion Rechargeable Battery

Product Code: None

(All Pouch Cell LG Chem. manufactured and whose capacity is less than 20Wh, And All Pouch pack capacity is less than 100Wh)

1. Chemical Product and Company Identification

Manufacturer

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

Emergency Telephone Number

82-2-3773-7256

2. Composition Information

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

3. Hazards Identification

Primary routes of entry

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

Emergency Overview

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

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 batteries are classified in Class 9 – Miscellaneous dangerous goods as:

- UN 3480, Lithium ion batteries
- UN 3481, Lithium ion batteries contained in equipment; or
- UN 3481, Lithium ion batteries packed with equipment.

With regard to transport of the product, the following regulations are cited and considered:

- The International Civil Aviation Organization (ICAO) Technical Instructions,
- The International Air Transport Association (IATA) Dangerous Goods Regulations
- The International Maritime Dangerous Goods (IMDG) Code,
- US Hazardous Materials Regulations 49 CFR(Code of Federal Regulations) Sections 173-185 Lithium batteries and cells,
- The UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria 38.3 Lithium batteries,

If those lithium-ion batteries are packed with or contained in an equipment, then it is the responsibility of the shipper to ensure that the consignment are packed in compliance to the 61th edition of 2020 IATA Dangerous Goods Regulations Section II of either Packing Instruction 966 or 967 in order for that consignment to be declared as NOT RESTRICTED (non-hazardous/non-Dangerous). If those lithium-ion batteries are packed with or contained in an equipment, UN No. is UN3481

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 III, subsection 38.3

15. Regulatory Information

OSHA hazard communication standard (29 CFR 1910.1200)

_____Hazardous ___✔___Non-hazardous

16. Model list of application

Refer to Table 1.