

LG CHEMICAL LTD
Product Safety Data Sheet

LGC Lithium- Ion Rechargeable Battery Pack

SECTION 1 Product and Company Identification

PSDS Number

DPR-EF05-PSDS[SEC][D2]-V1

PRODUCT IDENTIFICATION

- Model : D2 (SM-N975)
- P/N : EB-BN972ABU L
- Structure: 1P1S Lithium- Ion Rechargeable Battery Pack
- Revision date: MAY, 03, 2019

FURTHER INFORMATION

- Nominal Voltage : 3.85V
- Rated Capacity : 4,170mAh
- Wh rating : 16.05Wh
- Weight : 59.3±2.96g

MANUFACTURING/DISTRIBUTOR

-. LG Chemical Ltd. Twin Tower Youido-Dong 120, Youngdeungpo-Ku, Seoul, Korea

PHONE NUMBER

- Tel: + 82-2-3773-3169

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SECTION 2 Hazards Identification

EMERGENCY OVERVIEW

During a fire, may release irritating gases.

Use extinguishing media suitable for materials burning in fire.

POTENTIAL HEALTH EFFECTS

EYE

No effect under routine handling and use.

SKIN

No effect under routine handling and use. Nothing cause sensitization(allergic reaction)

INHALATION

No effect under routine handling and use.

CHRONIC EFFECTS

None known.

CARCINOGENICITY INFORMATION

The components of this product are not listed by IARC, NTP, OSHA, or ACGH as a carcinogen.

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SECTION 3 Composition and Information on Ingredients

1. Lithium Ion Cell : LGC P545978A1 (1ea)

Chemical Name	Trade names and Synonyms	CAS No.	Content(%)
Cobalt lithium dioxide	Lithium cobalt oxide (LiCoO ₂)	12190-79-3	37~47
Graphite	Graphite	7782-42-5	17~27
Copper	Copper	7440-50-8	6~16
Electrolyte salt	Lithium hexafluorophosphate	21324-40-3	0.03 - 5
Electrolyte	includes one or more of the following: Ethylene Carbonate Propyl propionate Propylene Carbonate	96-49-1 106-36-5 108-32-7	2~10 2~10 2~10
Aluminium	Aluminium	7429-90-5	1~10
Polyethylene	Polyethylene	9002-88-4	0.5~10
1,1-Difluoroethene homopolymer	Poly(vinylene fluoride)	24937-79-9	<5
Nickel	Nickel	7440-02-0	<1
1,2-Oxathiolane, 2,2-dioxide	1,3-Propanesultone	1120-71-4	<1

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2. PCM

Manufacturer name		ITM Semiconductor			
Manufacturer designation					
Product no					
Product name		PCM			
Function designation					
Part name	material name	Weight (g)	Q'ty	Constituent name	Constituent weight (%)
PCM	Chip IC	0.0072	2	ABLIC	0.95
	Chip FET	0.000098	4	AOS	0.01
	Chip Resistor	0.000524	6	Yageo, Rohm, SEM	0.07
	Chip Capacitor	0.004	2	Samhwa	0.53
	Chip Capacitor	0.0013	4	Samhwa, MURATA, SEM, Walsin, Taiyo-yuden	0.17
	Shunt Resistor	0.01	2	Susumu, Rohm	1.32
	UV Coating	0.0106	1	CST	1.40
	Nickel	0.04994	2	MIRAE EIC	6.58
	CREAM SOLDER	0.00337	1	Alpha, Heesung	0.44
	WIRE SOLDER	0.0013	1	Heesung	0.17
	F-PCB	0.1604	1	Unimicron , Uniell flex	21.14
	Connector	0.0026	1	Hirose	0.34
PCB	0.5075	1	APEX, Daymyung	66.88	
Total weight	0.7588(g)				

Table for Banned Brominated Flame Retardants

Part name	Flame Retardant type	CAS number	Weight (ppm)
PCM	Polybrominated biphenyls(PBBs)	59080-40-9	Not Detected
	Polybrominated diphenyl ethers(PBDEs)	101-55-3	Not Detected

Table for Banned Metals and Their Compounds

Part name	Flame Retardant type	CAS number	Weight (ppm)
PCM	Cadmium(Cd)/its compounds	7440-43-9	Not Detected
	Lead(Pb)/its compounds	7439-92-1	CHIP RESISTOR(143529#*) Chip Capacitor(40.6) Shunt Resistor(12.6) Connector(30) CREAM SOLDER(130)
	Mercury(Hg)/its compounds	7439-97-5	Not Detected
	Hexavalent chromium	18540-29-9	Not Detected

Table for solder (if used in the component)

Part name	Type of solder	Composition	Amount
OL107F (A) SAC305 LFM-48U NH (MD5)	CREAM SOLDER (Halogen-free)	Tin : 80~100% silver : 1~10 % Proprietary Resin : 1~10% Copper : 0.1~1%	0.00337g
HSE-02 SR-38 RMA	WIRE SOLDER (Halogen-free)	Tin : 80~100% silver : 1~10 % Proprietary Resin : 1~10% Copper : 0.1~1%	0.0013g

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3. Front tape

Manufacturer name		Ireh		
Manufacturer designation				
Product no				
Product name		Front tape		
Function designation				
Part name	Material name	Weight (g)	Constituent name	Constituent weight (%)
Front tape	PET TAPE	0.894	PET Film	93
			Adhesive	7
	INK	0.001	UV HF YELLOW	100
Total weight		0.662g		

Table for Banned Brominated Flame Retardants

Part name	Flame Retardant type	CAS number	Weight (g)
Front tape	Polybrominated biphenyls (PBBs)	59080-40-9	Not Detected
	Polybrominated diphenyl ethers	101-55-3	Not Detected

Table for Banned Metals and Their Compounds

Part name	Banned Substances	CAS number	Weight (g)
Front tape	Cadmium(Cd) / Its compounds	7440-43-9	Not Detected
	Lead(Pb) / Its compounds	7439-92-1	Not Detected
	Mercury(Hg) / Its compounds	7439-97-5	Not Detected
	Chromium(Cr6+)	18540-29-9	Not Detected

Table for Restricted Halogen Contents

Part name	Flame Retardant type	CAS number	Weight (g)
Front tape	Bromine(Br)	7726-95-6	Not Detected
	Chlorine(Cl)	7782-50-5	0.0000303

Table for Restricted Plasticizers

Part name	Flame Retardant type	CAS number	Weight (g)
Front tape	PVC	9002-86-2	Not Detected

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4. Side Tape (2EA)

Manufacturer name		Ireh		
Manufacturer designation				
Product no				
Product name		Side Tape		
Function designation				
Part name	Material name	Weight (g)	Constituent name	Constituent weight (%)
Side Tape	PET Tape	0.06	PET Film	30.7
			Adhesive	63.8
			INK	5.5
Total weight	0.12g			

Table for Banned Brominated Flame Retardants

Part name	Flame Retardant type	CAS number	Weight (g)
Side Tape	Polybrominated biphenyls (PBBs)	59080-40-9	Not Detected
	Polybrominated diphenyl ethers	101-55-3	Not Detected

Table for Banned Metals and Their Compounds

Part name	Banned Substances	CAS number	Weight (g)
Side Tape	Cadmium(Cd) / Its compounds	7440-43-9	Not Detected
	Lead(Pb) / Its compounds	7439-92-1	Not Detected
	Mercury(Hg) / Its compounds	7439-97-5	Not Detected
	Chromium(Cr6+)	18540-29-9	Not Detected

Table for Restricted Halogen Contents

Part name	Flame Retardant type	CAS number	Weight (g)
Side Tape	Bromine(Br)	7726-95-6	Not Detected
	Chlorine(Cl)	7782-50-5	Not Detected

Table for Restricted Plasticizers

Part name	Flame Retardant type	CAS number	Weight (g)
Side Tape	PVC	9002-86-2	Not Detected

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5. Top Tape

Manufacturer name		Ireh		
Manufacturer designation				
Product no				
Product name		Top Tape		
Function designation				
Part name	Material name	Weight (g)	Constituent name	Constituent weight (%)
Top Tape	PET Tape	0.051	PET Film	30.7
			Adhesive	63.8
			INK	5.5
Total weight	0.051g			

Table for Banned Brominated Flame Retardants

Part name	Flame Retardant type	CAS number	Weight (g)
Top Tape	Polybrominated biphenyls (PBBs)	59080-40-9	Not Detected
	Polybrominated diphenyl ethers	101-55-3	Not Detected

Table for Banned Metals and Their Compounds

Part name	Banned Substances	CAS number	Weight (g)
Top Tape	Cadmium(Cd) / Its compounds	7440-43-9	Not Detected
	Lead(Pb) / Its compounds	7439-92-1	Not Detected
	Mercury(Hg) / Its compounds	7439-97-5	Not Detected
	Chromium(Cr6+)	18540-29-9	Not Detected

Table for Restricted Halogen Contents

Part name	Flame Retardant type	CAS number	Weight (g)
Top Tape	Bromine(Br)	7726-95-6	Not Detected
	Chlorine(Cl)	7782-50-5	Not Detected

Table for Restricted Plasticizers

Part name	Flame Retardant type	CAS number	Weight (g)
Top Tape	PVC	9002-86-2	Not Detected

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6. Bottom Tape

Manufacturer name		Ireh		
Manufacturer designation				
Product no				
Product name		Bottom Tape		
Function designation				
Part name	Material name	Weight (g)	Constituent name	Constituent weight (%)
Bottom Tape	PET Tape	0.023	PET Film	30.7
			Adhesive	63.8
			INK	5.5
Total weight	0.023g			

Table for Banned Brominated Flame Retardants

Part name	Flame Retardant type	CAS number	Weight (g)
Bottom Tape	Polybrominated biphenyls (PBBs)	59080-40-9	Not Detected
	Polybrominated diphenyl ethers	101-55-3	Not Detected

Table for Banned Metals and Their Compounds

Part name	Banned Substances	CAS number	Weight (g)
Bottom Tape	Cadmium(Cd) / Its compounds	7440-43-9	Not Detected
	Lead(Pb) / Its compounds	7439-92-1	Not Detected
	Mercury(Hg) / Its compounds	7439-97-5	Not Detected
	Chromium(Cr6+)	18540-29-9	Not Detected

Table for Restricted Halogen Contents

Part name	Flame Retardant type	CAS number	Weight (g)
Bottom Tape	Bromine(Br)	7726-95-6	Not Detected
	Chlorine(Cl)	7782-50-5	Not Detected

Table for Restricted Plasticizers

Part name	Flame Retardant type	CAS number	Weight (g)
Bottom Tape	PVC	9002-86-2	Not Detected

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7. Poron Tape

Manufacturer name		Ireh		
Manufacturer designation				
Product no				
Product name		Poron Tape		
Function designation				
Part name	Material name	Weight (g)	Constituent name	Constituent weight (%)
Poron Tape	Poron Tape	0.147	PSR 015	70
			Adhesive	30
Total weight	0.147			

Table for Banned Brominated Flame Retardants

Part name	Flame Retardant type	CAS number	Weight (g)
Poron Tape	Polybrominated biphenyls (PBBs)	59080-40-9	Not Detected
	Polybrominated diphenyl ethers	101-55-3	Not Detected

Table for Banned Metals and Their Compounds

Part name	Banned Substances	CAS number	Weight (g)
Poron Tape	Cadmium(Cd) / Its compounds	7440-43-9	Not Detected
	Lead(Pb) / Its compounds	7439-92-1	Not Detected
	Mercury(Hg) / Its compounds	7439-97-5	Not Detected
	Chromium(Cr6+)	18540-29-9	Not Detected

Table for Restricted Halogen Contents

Part name	Flame Retardant type	CAS number	Weight (g)
Poron Tape	Bromine(Br)	7726-95-6	Not Detected
	Chlorine(Cl)	7782-50-5	0.0000184

Table for Restricted Plasticizers

Part name	Flame Retardant type	CAS number	Weight (g)
Poron Tape	PVC	9002-86-2	Not Detected

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8. Printing

Manufacturer name		Daeyoung tech / Domino		
Manufacturer designation				
Product no				
Product name		Pad Printing / Ink Printing		
Function designation				
Part name	Material name	Weight (g)	Constituent name	Constituent weight (%)
Printing	Pad Printing	0.002	UV HF BLACK INK	100
	Ink Printing	0.001	PRINTING INK	70
			MAKE UP INK	30
Total weight	0.03			

Table for Banned Brominated Flame Retardants

Part name	Flame Retardant type	CAS number	Weight (g)
Printing	Polybrominated biphenyls (PBBs)	59080-40-9	Not Detected
	Polybrominated diphenyl ethers	101-55-3	Not Detected

Table for Banned Metals and Their Compounds

Part name	Banned Substances	CAS number	Weight (g)
Printing	Cadmium(Cd) / Its compounds	7440-43-9	Not Detected
	Lead(Pb) / Its compounds	7439-92-1	Not Detected
	Mercury(Hg) / Its compounds	7439-97-5	Not Detected
	Chromium(Cr6+)	18540-29-9	0.000000228

Table for Restricted Halogen Contents

Part name	Flame Retardant type	CAS number	Weight (g)
Printing	Bromine(Br)	7726-95-6	Not Detected
	Chlorine(Cl)	7782-50-5	0.00000076

Table for Restricted Plasticizers

Part name	Flame Retardant type	CAS number	Weight (g)
Printing	PVC	9002-86-2	Not Detected

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UN CLASS

Even classified as lithium batteries, they are exempted from Dangerous Goods .
UN-Recommendations on the Transport of Dangerous Goods Model Regulations.
(ST/SG/AC. 10/11 Rev. 4)

SECTION 4 First Aid Measures

If exposure to internal materials within cell due to damaged outer casing, the following actions are recommended.

EYE CONTACT

In case of eye contact, immediately flush eyes with plenty of water at least 15 minutes.
Get medical attention if irritation persists or develops later.

INHALATION

If exposed to excessive levels of DMAc, fiber dust or fly, remove to fresh air.
Get medical attention if cough or symptoms develop.

SKIN CONTACT

Wash with soap and water. Get medical attention if irritation develops or persists.
Use hand creams to soothe and moisten irritated skin.

INGESTION

Not a probable route. However, in case of gastro intestinal distress following accidental ingestion, call a physician.

SECTION 5 Fire Fighting Measures

FLAMMABLE PROPERTIES

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Flash point	Not applicable
Flammable limits in air	Not applicable
Lower explosive limits	Not established
Upper explosive limits	Not established
Auto-ignition temperature	Not available

UNUSUAL FIRE AND EXPLOSION HAZARDS

During a fire, irritating and toxic gases and aerosols may be generated by thermal decomposition and Combustion.

EXTINGUISHING MEDIA

Use the following extinguishing media suitable for the materials that are burning.
: Water, Carbon Dioxide, Dry Chemical, Foam

FIRE FIGHTING INSTRUCTIONS

Keep personnel removed and upwind of fire.
Wear self-contained breathing apparatus.
Wear full protective equipment.(full Bunker gear)

SECTION 6 Accidental Release Measures

SAFEGUARDS(Personnel)

Review FIRE FIGHTING MEASURES and HANDING sections before proceeding with cleanup.
Use appropriate personal protective equipment during cleanup.

SPILL CLEANUP

Vacuum or sweep up material for salvage or disposal.

ACCIDENTAL RELEASE MEASURES

Wash, shovel or mop up and place in solid waste containers.
Do not flush to drains.

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SECTION 7 Handling and Storage

HANDLING

Use good material handling practice.

STORAGE

Store in a cool, dry place.

SECTION 8 Exposure Controls / Personal Protection

ENGINEERING CONTROLS

Keep away from heat and open flame.

Good general ventilation is recommended. Local exhaust ventilation is recommended where vapors are likely to be released.

PERSONAL PROTECTIVE EQUIPMENT

EYE PROTECTION

Not required beyond safety practices of employer.

But in the event of a fire, safety glasses with side-shields for general protection are recommended.

SKIN PROTECTION

None required normal operations.

If during a fire, wear gloves to prevent skin abrasion and irritation.

RESPIRATOR PROTECTION

Respirator use must be in accordance with OSHA Standard 29 CFR 1910.134

Wear a correctly fitted, NIOSH approved, respirator or industrial type canister mask in enclosed areas with poor or no ventilation areas, or where TLV levels are likely to be exceeded.

SECTION 9 Physical and Chemical Properties

State	Solid
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Odor	Not applicable
PH	Not applicable
Evaporation rate	Not applicable
Vapor pressure	Not applicable
Vapor density	Not applicable
Viscosity	Not applicable
Boiling point	Not applicable
Solubility in water	Insoluble
Specific gravity	Not applicable
Density	Not applicable

SECTION 10 Stability and Reactivity

CHEMICAL STABILITY

Stable at normal temperatures and storage conditions.

CONDITIONS TO AVOID

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

INCOMPATIBILITY

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

DECOMPOSITION

By fire or thermal decomposition, can produce irritating and toxic gases.

HAZARDOUS POLYMERIZATION

Will not occur.

SECTION 11 Toxicological Information

IMMEDIATE (ACUTE) EFFECTS

None known

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DELAYED(SUBCHRONIC & CHRONIC) EFFECTS

None known

OTHER DATA

Not available

SECTION 12 Ecological Information

No ecological information available

SECTION 13 Disposal Considerations

Store in impervious inert container and send to smelter for recycling. Must be treated as special waste. In general, this product may be discarded in accordance with the State and Local regulations.

SECTION 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 latest edition of the IATA Dangerous Goods Regulations Section II of either Packing Instruction 966 or 967 in order for that

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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;

SECTION 15 Regulatory Information

OSHA hazard communication standard (29 CFR 1910.1200)

_____Hazardous ___V___Non-hazardous

SECTION 16 Other Information

The data in this Product 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 PSDS 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, ecotoxicity and the environment(CSTEE)
Adopted by the CSTEE during the 43rd plenary meeting of 28 May 2004