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CERTIFICATE OF COMPLIANCE

The following product has been evaluated according to the 5th revised edition Amendment2 of the UN Manual of Tests and Criteria.

We, LG Chem, Ltd., hereby certify that this battery meets the requirements of the regulation for transportation of lithium-ion cells and batteries and single cell batteries.

☐ Lithium-ion cell ☑ Lithium-ion battery ☐ Lithium-ion single cell battery	
Model name	**L17L3P71**
Cell Model name	**ICP478873L1**
Nominal voltage	**11.58 V**
Electric power capacity	**57 Wh**

Conducted By: Min Je Woo

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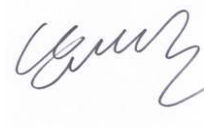

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UN38.3 Test Report
- L17L3P71 (Nom.57Wh, 11.58V)-

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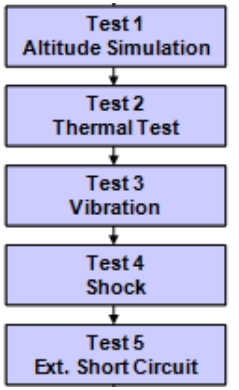
1. UN38.3 Test Condition

Test item	Test Condition	Requirements	Etc.
Test 1. Altitude Simulation	Storing at (low pressure)11.6kPa for 6hr at 20+/-5℃	- After OCV (%) ≥ 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≤M≤75g, less than 0.2%, 3) If M>75g, less than 0.1%	T1~T5 : Sequence Tests 
Test 2. Thermal Test	[72±2℃,6hr ↔ -40±2℃,6hr, interval max. 30min] x 10cycle Storing at 20±5℃ for 24h		
Test 3. Vibration	[7Hz↔200Hz↔7Hz, in 15min] x 12 times x 3 direction 1) sinusoidal waveform with a logarithmic sweep 2) 7Hz 18Hz (maintaining 1gn) app. 50Hz (until 8gn) 200Hz (maintaining 8gn), 1.6mm total excursion		
Test 4. Shock	Half sine shock (peak acceleration : 150gn, pulse duration : 6msec) x 6 (±x, y, z), direction x 3 cycle		
Test 5. External Short Circuit	100mΩ ext. short-circuit at 55±2℃ 1hr continue after returning at 55±2℃	- No disassembly, no rupture, no fire within 6 hours after the test - Max. Temp ≤ 170℃	
Test 6. Impact	Φ=15.8±0.1mm bar, 9.1±0.1kg mass, 61±2.5cm height	- No disassembly, no fire within 6 hours after the test - Max. Temp ≤ 170℃	for cylindrical cells (not less than 18mm diameter)
Test 6. Crush	Crushing rate :1.5cm/s, until 13kN±0.78kN or 100mV drop or 50% deformation		for cylindrical cells (less than 18mm diameter) for prismatic, pouch, coin/button cells
Test 7. Overcharge	Current = Manufacturer's recommended max. continuous charge current X 2 Voltage 1.If charge voltage ≤ 18V, V (min.) = 2 x (max. charge voltage) or 22V. 2.If charge voltage > 18V, V (min.) = 1.2 x (max. charge voltage)	- No disassembly, no fire within 7 days after the test	Only for Single Cell Battery / Battery
Test 8. Forced Discharge	Discharge at max. discharge current (connecting in series with 12V DC power supply), Duration time = rated capacity/initial test current	- No disassembly, no fire within 7 days after the test	Resistance of Electric Loader 1/Ω = (max. discharge current) / (12 + Initial OCV)

2. General Information

1. Standard charge / discharge Condition

	Mode	Condition	End Condition
Charge	CC / CV	Current = 5258 mA Voltage = 13.2 V	Current = 240 mA
Discharge	CC	Current = 956 mA	Voltage = 9.0 V

2. Cycle Condition

	Mode	Condition	End Condition
Charge	CC / CV	Current = 5258 mA Voltage = 13.2 V	Current = 240 mA
Discharge	CC	Current = 956 mA	Voltage = 9.0 V

3. Test Condition

	Mode	Condition
Test 7. Overcharge	CC / CV	Max. Charge Current = 5784 mA CC/CV 2Imax (11568mA) 22 V cut-off 24Hr
Test 8. Forced Discharge	CC	Max. Discharge Current = 4920 mA Duration Time = 60 min

3-1. T1-T4 Test Result

Before			Altitude (T1)					Thermal (T2)					Vibration (T3)					Shock (T4)				
NO.	OCV	Mass (g)	After OCV (V)	Mass (g)	After OCV(%)	Mass Loss(%)	Result	After OCV (V)	Mass (g)	After OCV(%)	Mass Loss(%)	Result	After OCV (V)	Mass (g)	After OCV(%)	Mass Loss(%)	Result	After OCV (V)	Mass (g)	After OCV(%)	Mass Loss(%)	Result
A. 1st cycle fully charged state																						
1	13.033	230.31	13.019	230.30	99.89	0.004	Pass	12.804	230.28	98.35	0.009	Pass	12.795	230.28	99.93	0.000	Pass	12.783	230.26	99.91	0.009	Pass
2	13.029	230.25	13.014	230.25	99.88	0.000	Pass	12.798	230.23	98.34	0.009	Pass	12.789	230.23	99.93	0.000	Pass	12.769	230.22	99.84	0.004	Pass
3	13.026	230.20	13.012	230.20	99.89	0.000	Pass	12.795	230.19	98.33	0.004	Pass	12.783	230.18	99.91	0.004	Pass	12.766	230.18	99.87	0.000	Pass
4	13.031	230.30	13.019	230.29	99.91	0.004	Pass	12.799	230.29	98.31	0.000	Pass	12.786	230.29	99.90	0.000	Pass	12.768	230.28	99.86	0.004	Pass
B. 50th cycle fully charged state																						
5	13.021	230.30	13.009	230.30	99.91	0.000	Pass	12.813	230.30	98.49	0.000	Pass	12.805	230.28	99.94	0.009	Pass	12.796	230.28	99.93	0.000	Pass
6	13.028	230.28	13.011	230.27	99.87	0.004	Pass	12.805	230.27	98.42	0.000	Pass	12.797	230.26	99.94	0.004	Pass	12.789	230.26	99.94	0.000	Pass
7	13.031	230.26	13.019	230.25	99.91	0.004	Pass	12.809	230.25	98.39	0.000	Pass	12.800	230.25	99.93	0.000	Pass	12.793	230.24	99.95	0.004	Pass
8	13.030	230.20	13.017	230.19	99.90	0.004	Pass	12.810	230.18	98.41	0.004	Pass	12.802	230.18	99.94	0.000	Pass	12.796	230.18	99.95	0.000	Pass

3-2. T5/T7 Test Result

EXT.Short Circuit (T5)

NO.	Initial OCV(V)	Max. Temp (℃)	Result
A. 1st cycle fully charged state			
1	12.783	55.49	Pass
2	12.769	56.66	Pass
3	12.766	55.32	Pass
4	12.768	55.56	Pass
B. 50th cycle fully charged state			
5	12.796	56.86	Pass
6	12.789	55.19	Pass
7	12.793	55.49	Pass
8	12.796	56.37	Pass

Over Charge (T7)

NO.	Initial OCV(V)	Max. Temp (℃)	Result
A. 1st cycle fully charged state			
9	12.993	24.89	Pass
10	12.996	25.76	Pass
11	12.999	25.35	Pass
12	13.003	24.76	Pass

Over Charge (T7)

NO.	Initial OCV(V)	Max. Temp (℃)	Result
B. 50th cycle fully charged state			
13	13.005	25.23	Pass
14	12.998	25.61	Pass
15	13.001	24.86	Pass
16	12.997	25.36	Pass

3-3. T6/T8 Test Result (ICP478873L1)

Crush (T6)

NO.	Initial OCV(V)	Max. Temp (℃)	Result
A. 1st cycle 50% charged state			
C-1	3.864	22.06	**Pass**
C-2	3.861	22.98	**Pass**
C-3	3.860	22.79	**Pass**
C-4	3.864	22.06	**Pass**
C-5	3.863	22.34	**Pass**

Forced Discharge (T8)

NO.	Initial OCV(V)	Max. Temp (℃)	Result	NO.	Initial OCV(V)	Max. Temp (℃)	Result
A. 1st cycle fully discharged state				**B. 50th cycle fully discharged state**			
C-6	3.017	41.15	**Pass**	**C-16**	3.080	41.19	**Pass**
C-7	3.027	42.45	**Pass**	**C-17**	3.077	40.98	**Pass**
C-8	3.045	44.60	**Pass**	**C-18**	3.057	44.85	**Pass**
C-9	3.050	44.41	**Pass**	**C-19**	3.062	43.64	**Pass**
C-10	3.013	43.02	**Pass**	**C-20**	3.100	44.92	**Pass**
C-11	3.025	41.41	**Pass**	**C-21**	3.099	44.23	**Pass**
C-12	3.023	43.56	**Pass**	**C-22**	3.068	40.18	**Pass**
C-13	3.018	43.82	**Pass**	**C-23**	3.097	40.41	**Pass**
C-14	3.010	40.69	**Pass**	**C-24**	3.081	44.53	**Pass**
C-15	3.035	43.95	**Pass**	**C-25**	3.067	40.82	**Pass**

4. Sample Image