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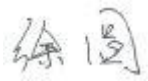
CERTIFICATE OF COMPLIANCE

The following product has been evaluated according to the 6th revised edition 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, batteries and single cell batteries.

☐ Lithium-ion cell ☑ Lithium-ion battery ☐ Lithium-ion single cell battery	
Model name	**L18L3PF1**
Cell Model name	**P594285A1**
Nominal voltage	**11.34V**
Electric power capacity	**36.00Wh**

Approved By: Xuyuan



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UN38.3 Test Report
- L18L3PF1 (Nom. 36.00Wh, 11.34V) -

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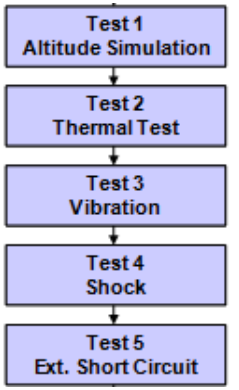
1. UN38.3 Test Condition

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 1) Peak acceleration - For cells & single cell batteries : 150gn - For batteries (whichever is smaller) : 150gn or $\sqrt{\frac{100850}{Mass(kg)}}$ gn 2) Pulse duration : 6msec 3) 6 direction (±x, y, z) x 3 cycle		
Test 5. External Short Circuit	1) Samples to be heated to 57±4℃ in chamber (Measured on external case) 2) Less than 0.1Ω, ext. short-circuit at 57±4℃ 3) 1hr continue after returning to 57±4℃	- 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)

2-1. T1-T4 Test Result

Before			Altitude (T1)					Thermal (T2)					Vibration (T3)					Shock (T4)				
NO.	OCV	Mass	OCV	Mass	After OCV(%)	Mass Loss(%)	Result	OCV	Mass	After OCV(%)	Mass Loss(%)	Result	OCV	Mass	After OCV(%)	Mass Loss(%)	Result	OCV	Mass	After OCV(%)	Mass Loss(%)	Result
A. 1st cycle fully charged state																						
1	12.3319	157.03	12.7401	157.00	100.00	0.019	**Pass**	12.5489	156.95	98.50	0.032	**Pass**	12.5442	156.96	99.96	0.000	**Pass**	12.5320	156.97	99.90	0.000	**Pass**
2	12.3397	156.96	12.7432	156.93	100.00	0.019	**Pass**	12.5510	156.87	98.49	0.038	**Pass**	12.5463	156.88	99.96	0.000	**Pass**	12.5341	156.89	99.90	0.000	**Pass**
3	12.3323	157.08	12.7418	157.05	100.00	0.019	**Pass**	12.5496	157.00	98.49	0.032	**Pass**	12.5452	157.01	99.96	0.000	**Pass**	12.5327	157.02	99.90	0.000	**Pass**
4	12.7389	156.92	12.7365	156.89	99.98	0.019	**Pass**	12.5463	156.84	98.51	0.032	**Pass**	12.5418	156.84	99.96	0.000	**Pass**	12.5296	156.86	99.90	0.000	**Pass**
B. 50th cycle fully charged state																						
5	12.3325	157.00	12.3343	156.96	100.00	0.025	**Pass**	12.1385	156.91	98.41	0.032	**Pass**	12.1362	156.92	99.98	0.000	**Pass**	12.1209	156.93	99.87	0.000	**Pass**
6	12.3289	157.07	12.3308	157.04	100.00	0.019	**Pass**	12.1353	156.99	98.41	0.032	**Pass**	12.1343	157.00	99.99	0.000	**Pass**	12.1172	157.01	99.86	0.000	**Pass**
7	12.3350	156.98	12.3380	156.94	100.00	0.025	**Pass**	12.1416	156.90	98.41	0.025	**Pass**	12.1405	156.90	99.99	0.000	**Pass**	12.1237	156.92	99.86	0.000	**Pass**
8	12.3336	157.08	12.3339	157.04	100.00	0.025	**Pass**	12.1385	156.99	98.42	0.032	**Pass**	12.1383	157.01	100.00	0.000	**Pass**	12.1214	157.01	99.86	0.000	**Pass**

2-2. T5/T7 Test Result

EXT.Short Circuit (T5)

NO.	Initial OCV(V)	Max. Temp (℃)	Result
A. 1st cycle fully charged state			
1	12.5320	58.10	**Pass**
2	12.5341	57.78	**Pass**
3	12.5327	57.43	**Pass**
4	12.5296	56.81	**Pass**
B. 50th cycle fully charged state			
5	12.1209	58.47	**Pass**
6	12.1172	58.21	**Pass**
7	12.1237	57.71	**Pass**
8	12.1214	56.94	**Pass**

Overcharge (T7)

NO.	Initial OCV(V)	Max. Temp (℃)	Result
A. 1st cycle fully charged state			
9	12.7478	24.21	**Pass**
10	12.7439	24.11	**Pass**
11	12.7379	24.21	**Pass**
12	12.7431	23.85	**Pass**
B. 50th cycle fully charged state			
13	12.3247	23.81	**Pass**
14	12.3347	23.61	**Pass**
15	12.3253	23.87	**Pass**
16	12.3337	23.41	**Pass**

2-3. T6/T8 Test Result (P594285A1)

Crush (T6)

A. 1st cycle 50% charged state

NO.	Initial OCV(V)	Max. Temp (℃)	Result
C-1	3.8246	24.34	Pass
C-2	3.8248	25.36	Pass
C-3	3.8240	23.96	Pass
C-4	3.8238	24.08	Pass
C-5	3.8244	24.17	Pass

Forced Discharge (T8)

A. 1st cycle fully discharged state / B. 50th cycle fully discharged state

NO.	Initial OCV(V)	Max. Temp (℃)	Result	NO.	Initial OCV(V)	Max. Temp (℃)	Result
C-6	3.2873	95.03	Pass	C-16	3.3485	83.75	Pass
C-7	3.2909	84.72	Pass	C-17	3.3622	105.54	Pass
C-8	3.2872	89.41	Pass	C-18	3.3468	113.60	Pass
C-9	3.2842	88.08	Pass	C-19	3.3488	90.78	Pass
C-10	3.2933	94.86	Pass	C-20	3.3482	94.48	Pass
C-11	3.2858	92.11	Pass	C-21	3.3528	106.91	Pass
C-12	3.2876	91.82	Pass	C-22	3.3468	87.58	Pass
C-13	3.2858	85.91	Pass	C-23	3.3518	88.36	Pass
C-14	3.2854	99.33	Pass	C-24	3.3462	85.90	Pass
C-15	3.2863	90.32	Pass	C-25	3.3438	90.81	Pass

3. Sample Image