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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	**EZ30**
Cell Model name	**ICP2772107L1**
Nominal voltage	**3.8 V**
Electric power capacity	**11.9 Wh**

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UN Test Report
- EZ30(Min.11.9Wh, 3.8V)-

목 차

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LG Chem

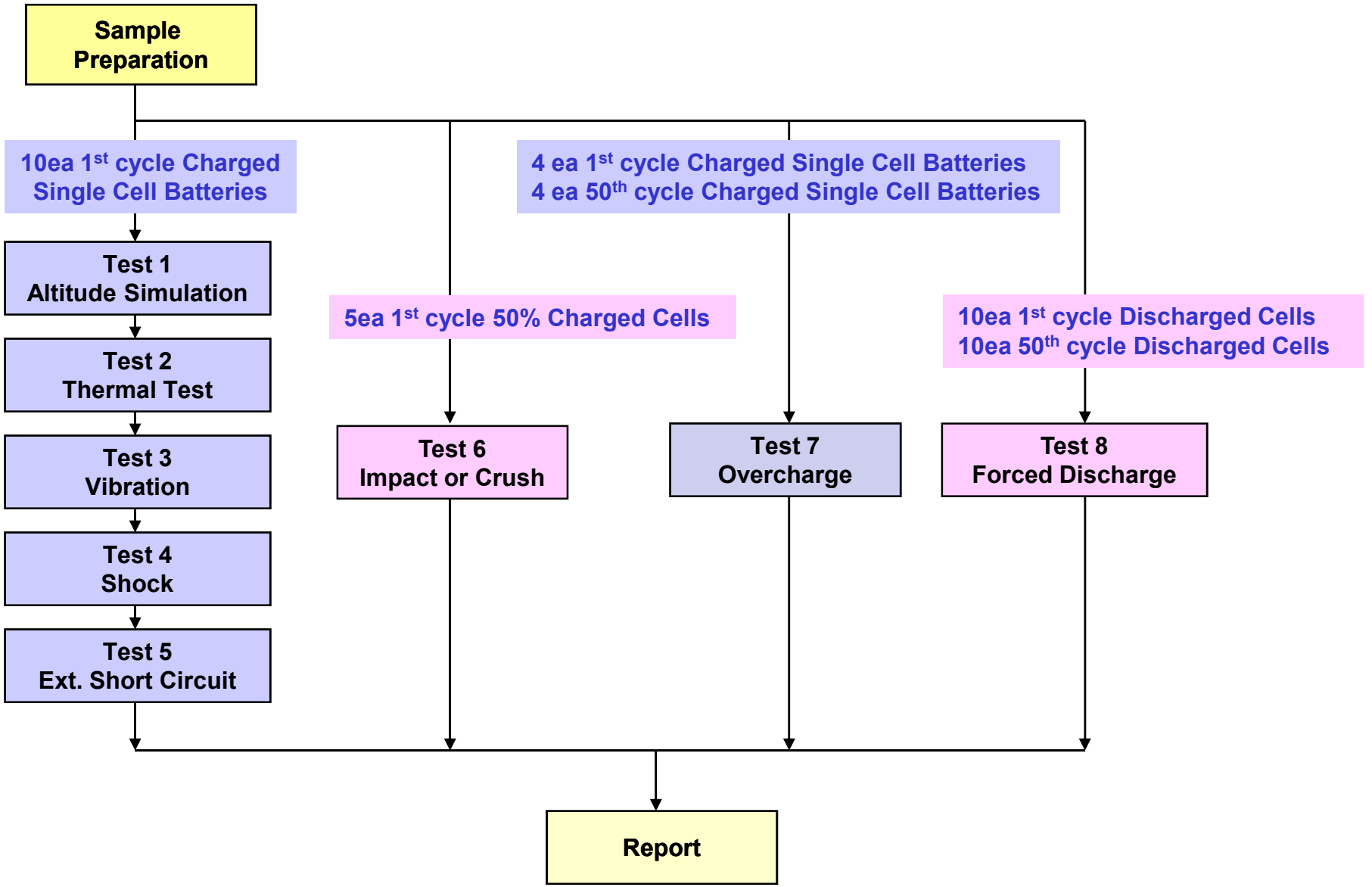
1. UN Transportation Regulation Test

Test	Condition	Requirements
Test 1. Altitude Simulation	Storing at (low pressure)11.6kPa for 6hr at 20+/-5℃	- Measuring mass before/ after each test (If M<1g, less than 0.5%, If 1g≤M≤75g, less than 0.2%, If M>75g, less than 0.1%) - Measuring voltage before/ after each test (more than 90%) - No leakage, no venting, no disassembly, no rupture, no fire
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 - Temp. monitoring (max. 170℃)
Test 6. Impact for cylindrical cells (> 18mm diameter)	Φ=15.8mm bar, 9.1kg mass, 61±2.5cm height	- No disassembly, no fire within 6 hours after the test - Temp. monitoring (max. 170℃)
Test 6. Crush for cylindrical cells (≤ 18mm diameter) for prismatic, pouch, coin/button cells	Crushing rate :1.5cm/s, until 13kN±0.78kN or 100mV drop or 50% deformation	
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 V (min.) = 22V. 2.If charge voltage > 18V, V (min.) = 1.2 x (max. charge voltage)	- No disassembly, no fire within 7 days after the test
Test 8. Forced Discharge	Discharge at max. discharge current (with 12V DC power supply), Duration time = rated capacity/initial test current	

* Tests through T1-T5 shall be conducted in sequence with the same samples.

* We declare that the above-mentioned test is the result of being checked according to UN Test (Manual of Test and Criteria ST/SG/AC.10/11/Rev.5/Amd.2)

2. Test Procedure



3-1. T1-T4 Test Result

Before			Altitude (T1)					Thermal (T2)					Vibration (T3)					Shock (T4)				
NO.	OCV	Mass	OCV	Mass	Residual OCV(%)	Mass Loss(%)	Result	OCV	Mass	Residual OCV(%)	Mass Loss(%)	Result	OCV	Mass	Residual OCV(%)	Mass Loss(%)	Result	OCV	Mass	Residual OCV(%)	Mass Loss(%)	Result
A. 1st cycle fully charged state																						
1	4.322	49.054	4.321	49.053	99.98	0.002	**Pass**	4.262	49.053	98.63	0.000	**Pass**	4.261	49.052	99.98	0.002	**Pass**	4.260	49.051	99.98	0.002	**Pass**
2	4.323	48.963	4.322	48.963	99.98	0.000	**Pass**	4.263	48.961	98.63	0.004	**Pass**	4.262	48.960	99.98	0.002	**Pass**	4.261	48.959	99.98	0.002	**Pass**
3	4.322	48.981	4.321	48.980	99.98	0.002	**Pass**	4.258	48.980	98.54	0.000	**Pass**	4.257	48.978	99.98	0.004	**Pass**	4.256	48.976	99.98	0.004	**Pass**
4	4.322	48.953	4.320	48.951	99.95	0.004	**Pass**	4.260	48.950	98.61	0.002	**Pass**	4.259	48.949	99.98	0.002	**Pass**	4.258	48.949	99.98	0.000	**Pass**
5	4.323	49.012	4.322	49.011	99.98	0.002	**Pass**	4.261	49.010	98.59	0.002	**Pass**	4.260	49.009	99.98	0.002	**Pass**	4.258	49.008	99.95	0.002	**Pass**
6	4.322	48.975	4.321	48.975	99.98	0.000	**Pass**	4.260	48.974	98.59	0.002	**Pass**	4.259	48.973	99.98	0.002	**Pass**	4.258	48.972	99.98	0.002	**Pass**
7	4.322	48.972	4.321	48.970	99.98	0.004	**Pass**	4.261	48.967	98.61	0.006	**Pass**	4.259	48.966	99.95	0.002	**Pass**	4.257	48.965	99.95	0.002	**Pass**
8	4.323	48.941	4.321	48.940	99.95	0.002	**Pass**	4.260	48.940	98.59	0.000	**Pass**	4.259	48.939	99.98	0.002	**Pass**	4.258	48.939	99.98	0.000	**Pass**
9	4.323	49.038	4.322	49.037	99.98	0.002	**Pass**	4.260	49.036	98.57	0.002	**Pass**	4.258	49.036	99.95	0.000	**Pass**	4.257	49.035	99.98	0.002	**Pass**
10	4.322	48.962	4.321	48.960	99.98	0.004	**Pass**	4.263	48.959	98.66	0.002	**Pass**	4.262	48.958	99.98	0.002	**Pass**	4.260	48.956	99.95	0.004	**Pass**
Ave.	4.322	48.985	4.321	48.984	99.97	0.002	-	4.261	48.983	98.60	0.002	-	4.260	48.982	99.97	0.002	-	4.258	48.981	99.97	0.002	-

Requirement	- Measuring mass before/after each test (If M>75g, less than 0.1%, 1g≤M≤75, less than 0.2%, M<1g, less than 0.5%) - Measuring voltage before/after each test (more than 90%, only charged samples) - No leakage, no venting, no disassembly, no rupture, no fire

3-2. T5/T7 Test Result

EXT.Short Circuit (T5)

A. 1st cycle fully charged state

NO.	Initial OCV(V)	Max. Temp (℃)	Result
1	4.260	52.74	Pass
2	4.261	53.48	Pass
3	4.256	56.13	Pass
4	4.258	55.47	Pass
5	4.258	53.10	Pass
6	4.258	52.09	Pass
7	4.257	53.71	Pass
8	4.258	52.16	Pass
9	4.257	53.68	Pass
10	4.260	54.17	Pass
MAX.	4.261	56.13	-

Test Condition

- 100mΩ ext. short-circuit at 55±2℃

Requirement

- Temperature < 170 (℃)
- No disassembly, no rupture, no fire within 6 hours after the test

Over Charge (T7)

A. 1st cycle fully state

	NO.	Initial OCV(V)	Max. Temp (℃)	Result
Charge	11	4.323	24.14	Pass
	12	4.323	22.79	Pass
	13	4.322	22.18	Pass
	14	4.322	24.75	Pass
	MAX.	4.323	24.75	-

Test Condition

- Max. Charge Current : 3120mA
- CC/CV 2Imax(6240mA) 8.7V cut-off 24Hr

Over Charge (T7)

B. 50th cycle fully state

	NO.	Initial OCV(V)	Max. Temp (℃)	Result
Charge	15	4.315	22.47	Pass
	16	4.316	24.91	Pass
	17	4.315	23.03	Pass
	18	4.317	22.77	Pass
	MAX.	4.317	24.91	-

Requirement

- No disassembly, no fire within 7 day after the test

3-3. T6/T8 Test Result (ICP2772107L1)

Crush (T6)				
Direction	NO.	Initial OCV(V)	Max. Temp (℃)	Result
A. 1st cycle 50% charged state				
Flat	C-1	3.854	27.89	Pass
	C-2	3.854	28.35	Pass
	C-3	3.858	27.93	Pass
	C-4	3.857	28.17	Pass
	C-5	3.858	26.66	Pass
MAX.		3.858	28.35	-

Test Condition
- Crushing rate :1.5cm/s, until 13kN±0.78kN or 100mV drop or 50% deformation

Requirement
- Temperature ≤ 170 (℃)
- No disassembly, no fire within 6 hours after the test

Forced Discharge (T8)			
NO.	Initial OCV(V)	Max. Temp (℃)	Result
A. 1st cycle fully Discharged state			
C-6	3.356	82.13	Pass
C-7	3.348	81.77	Pass
C-8	3.328	83.25	Pass
C-9	3.355	81.50	Pass
C-10	3.343	82.47	Pass
C-11	3.357	84.21	Pass
C-12	3.331	83.21	Pass
C-13	3.364	82.17	Pass
C-14	3.361	82.33	Pass
C-15	3.341	81.52	Pass
MAX.	3.364	84.21	-
B. 50th cycle fully discharged state			
C-16	3.380	85.23	Pass
C-17	3.385	84.99	Pass
C-18	3.375	87.51	Pass
C-19	3.389	88.66	Pass
C-20	3.381	87.49	Pass
C-21	3.387	87.93	Pass
C-22	3.385	88.25	Pass
C-23	3.390	89.04	Pass
C-24	3.378	87.97	Pass
C-25	3.379	88.67	Pass
MAX.	3.390	89.04	-

Test Condition
- Discharge at max. discharge current (with 12V DC power supply) : 3120mA Duration time: rated capacity (60.0min)

Requirement
- No disassembly, no fire within 7 days after the test

4. Sample Image

Appendix 1. 1.2m Drop Test Report

A. Test Result

No	Name of Test Items	Standard requirement or The Clause Number of Standard	Test Result		Conclusion
1	1.2m Drop Test	* UNITED NATIONS "Recommendations on the TRANSPORT OF DANGEROUS GOODS" Model Regulations(18th) special provisions 188	Face	The package is not cracked, the contents are not damaged and not shifted.	Passed
			Edge	The package is not cracked, the contents are not damaged and not shifted.	
			Angle	The package is not cracked, the contents are not damaged and not shifted.	
2	Gross Weight Measure	* UNITED NATIONS "Recommendations on the TRANSPORT OF DANGEROUS GOODS" Model Regulations(18th) special provisions 188	7.810 kg		Passed

B. Sample Description

Dimensions	400×300×135mm	**Net Weight of Batteries**	5.876 Kg	**Battery Type**	Rechargeable Li-polymer Battery
Gross weight	7.810 kg	**Battery number**	120Pcs/Carton	**** Description**	Tray (Made of Plastic)

C. Image After Test

* Recommendations on the transport of dangerous goods as below
Each package of cells or batteries, or the completed package must be capable of withstanding a 1.2 m drop test in any orientation without:
1) damage to cells or batteries contained therein
2) shifting of the contents so as to allow battery to battery (or cell to cell) contact
3) release of contents.

** Description: Description about the protection of short-circuit

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