



Advanced Electronics Energy Limited UN

Test Report

Product Model : Lithium ion battery

Model : AE45590P(3.7V/5000mAh/18.5Wh)

ReportNo.: AE-QA-181109002

TEST ITEM	TEST METHOD	CRITERION	Sample No	1#	2#	3#	4#	5#	6#	7#	8#	Test Results	Conclusion
			Mass prior to test	89.6	89.8	89.5	89.2	89.9	89.7	89.4	89.7		
T-1 Altitude Simulation	Test cells and batteries shall be stored at a pressure of 11,6kPa or less for at least six hour at ambient temperature (20±5°C)		OCV prior to test	4.188	4.182	4.182	4.181	4.180	4.182	4.182	4.182		
			Mass loss(%)	0.001	0.002	0.001	0.001	0.001	0.001	0.002	0.001		
T-2 Thermal Test	Test cells and batteries are to be stored for: 1. one temperature cycle: 72±2°C(6h)→-40±2°C(6h)/The maximum time interval between test temperature extremes is 30 minutes/ 2.This procedure is to be repeated 10 times/ after which all test cells and batteries are to be stored for 24 hours at ambient temperature (20±5°C)	1.Cells and batteries Mass loss limit: ≤0.2% / 2.Open circuit voltage not less than 90%, The requirement relating to voltage is not applicable to test cells and batteries at full discharged states.	Change ratio	99.99	99.99	99.98	99.99	99.99	99.99	99.99	99.99		PASS
			Mass loss(%)	0.000	0.002	0.001	0.004	0.001	0.002	0.004	0.000		
T-3 Vibration	1. Cells and batteries are firmly secured to the platform of the vibration machine 2.The vibration :a sinusoidal waveform with a logarithmic sweep between 7 Hz and 200 Hz and back to 7 Hz traversed in 15 minutes/ 3 the logarithmic frequency sweep is as follows: from 7 Hz a peak acceleration of 1 gn is maintained until 18 Hz is reached, The amplitude is then maintained at 0,8 mm (1,6 mm total excursion) and the frequency increased until a peak acceleration of 8 gn occurs (approximately 50Hz), A peak acceleration of 8 gn is then maintained until the frequency is increased to 200 Hz/. 4This cycle repeated 12 times for a total of 3 hours for each of three mutually perpendicular mounting position of the cell. One of the directions of vibration must be perpendicular to the terminal face. /.	3.No leakage, no venting, no disassembly, no rupture and no fire	Change ratio	99.95	99.95	99.92	99.98	99.95	99.94	99.96	99.93	No mass loss No leakage No venting No disassembly No rupture No fire	PASS
			Mass loss(%)	0.002	0.001	0.001	0.002	0.001	0.001	0.001	0.002		
T-4 Shock	1Test cells and batteries shall be secured to the testing machine/ 2. shock: a half-sine shock of peak acceleration of 150 gn and pulse duration of 6 milliseconds, large cells and large batteries shall be subjected to a half-sine or peak acceleration of 50 gn and pulse duration of 11 milliseconds/. 3.Each cell or battery shall be subjected to three shocks in the positive direction followed by three shocks in the negative direction of three mutually perpendicular mounting positions of the cell or battery for a total of 18 shocks		Change ratio	99.94	99.92	99.98	99.92	99.94	99.92	99.99	99.92		PASS
			Mass loss(%)	0.001	0.001	0.002	0.002	0.001	0.001	0.001	0.001		
T-5 External Short Circuit	1The cell or battery to be tested shall be temperature stabilized so that its external case temperature reaches 55±2 C/ 2.the cell or battery shall be subjected to a short circuit condition with a total external resistance of less than 0,1 ohm at 55±2°C, This short circuit condition is continued for at least one hour after the cell or battery external case temperature has returned to. 3 the cell or battery must be observed for a further six hour for the test to be concluded,.	During the test and within six hours after test ,the cells or batteries 1.E external temperature not exceed 170 °C 2.No disassembly, no rupture and no fire.	Temp. (°C)	54.2	54.2	54.2	55.1	54.4	54.6	54.3	54.1	No disassembly No rupture No fire	PASS
			Change ratio	99.90	99.94	99.90	99.91	99.92	99.94	99.92	99.92		
TEST ITEM	TEST METHOD	CRITERION	Sample No	1#	2#	3#	4#	5#	6#	7#	8#	Test Results	Conclusion
T-6 Impact	Flat surface. 15.8mm diameter bar. Mass: 9.1kg, Height: 61±2.5cm	1.Cells external temperature not exceed 170 °C. 2.No disassembly and no fire within six hours of this test	OCV prior to test	3.821	3.830	3.827	3.822	3.820				No disassembly No fire	PASS
			Temp. (°C)	25.2	25.3	25.1	25.4	25.2					
T-7 Overcharge	Twice maximum current specified by the manufacturer 8.4V DC power supply for 24Hr.	No disassembly and no fire within seven days of this test	OCV prior to test	4.177	4.175	4.176	4.179	4.170	4.176	4.170	4.173	No disassembly No fire within 7days	PASS
T-8 Forced Discharge	Maximum discharge current(2C)specified by the manufacturer. 12V DC power supply for 0.5Hr.	No disassembly and no fire within seven days of this test	OCV prior to test	3.322	3.321	3.320	3.321	3.322	3.323	3.324	3.325	No disassembly No fire within 7days	PASS