

Complete List of UN 38.3 Tests

Testing needed for lithium-ion battery and/or cells prior to transportation according to UN Manual Transport of Dangerous Goods

TEST NAME	DESCRIPTION	PASS CRITERIA	CELLS OR BATTERIES
T1: Altitude	Simulate air transport under low-pressure conditions. The samples are subjected to 11.6 kPa or less for 6 hours or more at room temp.	No leakage, no venting, no rupture, no fire. Open circuit voltage (OCV) not less than 90% before testing.	Cells and Batteries are subjected to this test.
T2: Thermal Test	Simulates the rapid and extreme temperature changes during transport. 10 cycles of oscillating temperatures	No leakage, no venting, no rupture, no fire. Open circuit voltage (OCV) not less than 90% before testing.	Cells and Batteries are subjected to this test.
T3: Vibration Test	Simulates vibration during transportation. Up to 8G from 7Hz to 200Hz	No leakage, no venting, no rupture, no fire. Open circuit voltage (OCV) not less than 90% before testing.	Cells and Batteries are subjected to this test.
T4: Shock Test	Simulates shock impacts during shipping. Subjected to total of 18 half-sine shock up to 150G in positive and negative direction and all 3 axes.	No leakage, no venting, no rupture, no fire. Open circuit voltage (OCV) not less than 90% before testing.	Cells and Batteries are subjected to this test.
T5: Short Circuit Test	Simulates short circuit experienced during transport. A short of less than .1 ohm is applied at 55C.	External case temperature shall not be above 170C. No fire, no rupture, and no disassembly within 6 hours after the test.	Cells and Batteries are subjected to this test.
T6: Impact Test (cylindrical cells => 18 mm diameter)	Simulates an impact during shipping. A 9.1Kg bar is dropped onto the cell from 61 cm	External case temperature shall not be above 170C. No fire and no disassembly within 6 hours after the test.	Only Cells are subjected to this test.
T7: Crush Test (prismatic, pouch, coin/button and cylindrical cells < 18mm diameter)	Simulates crushing during shipping. Crush the cell at 1.5cm/s until force reaches 13+/- .78 kN or voltage drops by 100mV or cells deforms more than 50% of its original thickness.	External case temperature shall not be above 170C. No fire and no disassembly within 6 hours after the test.	Only Cells are subjected to this test.
T8: Overcharge	Simulates the ability for battery to withstand an overcharge condition during shipping. Overcharge the battery pack 2x max continuous charging current for 24 hours.	No fire, do disassembly within 7 days after the test.	Only Batteries are subjected to this test.
T9: Forced Discharged	Simulates incorrect installation. cell is connected to 12V power supply and current limited to manufacturer's specified maximum discharge current.	No fire, no disassembly within 7 days after the test.	Only Cells are subjected to this test.