

TESTING AND MEASURING EQUIPMENT/ALLOWED SUBCONTRACTING

IEC 62133:2002, Edition 1.0

Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications

R = Required to be at Lab

S = May be subcontracted

W = May be witnessed at MTL

3PPS = Three Phase Power Supply required

Clause	Measurement/testing	Testing / measuring equipment / material needed	Subcontracting
	Power supply for overcharging	dc power supply	R
	Multimeter		R
	Voltmeter	V meter	R
	Equipment to be used for charge/discharge	Cables with an area in order to get low resistance	R
	Distances measurement equipment	Distance measuring equipment and meter stick	R
	Time	Timer	R
	General Temperature type test environment	Temperature measurement recorder.	R



2.1	insulation resistance between the positive terminal and externally exposed metal surfaces of the battery	M ohmmeter 5 Mohm, 500Vdc	R
2.3	Temperature measurement	Thermo couples for temperature measurement	R
4.2.1	Continuous low rate charge test	Multimeter	R
4.2.2	Vibration Test	Vibration generator (amplitude 0,76 mm and a total excursion of 1,52 mm). The equipment can vary the frequency at a rate of 1 Hz/min over a frequency range of 10 to 55 Hz	R
4.2.3	Molded case stress at high ambient temperature	Air circulating oven at a temperature of 70 °C ± 2 °C	R
4.2.4	Temperature cycling test	Temperature chamber cycling -20 °C, +75 °C capable of making all required temperature transitions within 30 minutes	R
4.3.1	Incorrect installation of a cell	Resistor 1 Ohm, Temperature recorder	R
4.3.2	External short circuit	Temperature oven 20 °C ± 5 °C and 55 °C ± 5 °C, Milliohmmeter For this test the total resistance in the circuit shall be of less than 100 mOhm during the test (resistor=component, resistance=value).	R
4.3.3	Free fall test	Concrete floor	R
4.3.4	Mechanical shock	Acceleration equipment, average acceleration in the first 3 ms is minimum 75 gn. The peak acceleration shall be between 125 gn and 175 gn.	R



**IEC SYSTEM FOR CONFIRMITY TESTING
AND CERTIFICATION OF ELECTRICAL
EQUIPMENT**

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4.3.5	Thermal abuse	Gravity or circulating air-convection oven with a ramp rate of 5 °C/min \pm 2 °C/min to 130 °C	R
4.3.6	Crushing of cells	Voltmeter Mechanical pressure equipment 13 kN \pm 1 kN	R
4.3.7	Low pressure	6 hours in 11,6 kPa, vacuum chamber	R
4.3.8	Overcharge for nickel systems	Ammeter	R
4.3.9	Overcharge for lithium systems	Ammeter	R
4.3.10	Forced discharge	Ammeter	R
4.3.11	Cell protection against a high charging rate (lithium systems only)	Ammeter, Voltmeter	R

Note: The presence of equipment alone does not indicate a satisfactory situation. Assessors must evaluate the equipment design, specifications, calibration, measurement uncertainty and documentation to ensure compliance with the intent of the standard, ISO IEC 17025.