PRODUCT SPECIFICATION

Rechargeable Lithium Ion Cell

Model : HW 38120S 10Ah/3.2V

Zhejiang Xinghai Energy Technology Co., Ltd.

Taihu Road Eco & Tec Development zone, Changxing County Zhejiang, China

1. Scope

This specification describes the type and size, performance, technical characteristics, warning and caution of the lithium ion rechargeable cell. The specification only applies to HW 38120S cell supplied by Zhejiang Xinghai Energy Technology Co., Ltd.

2. Definition

2.1 Rated capacity:

Rated capacity = 10Ah, the capacity obtained when a cell is discharged at 2-hour rate to voltage 2.0 V at 25±2.5 °C.

2.2 Standard charge method:

At 25±2.5 °C, charged to 3.65V at a constant current of 0.5C, and then, charged with constant voltage of 3.65V until the charged current drops below 0.01C.

2.3 Standard discharge method:

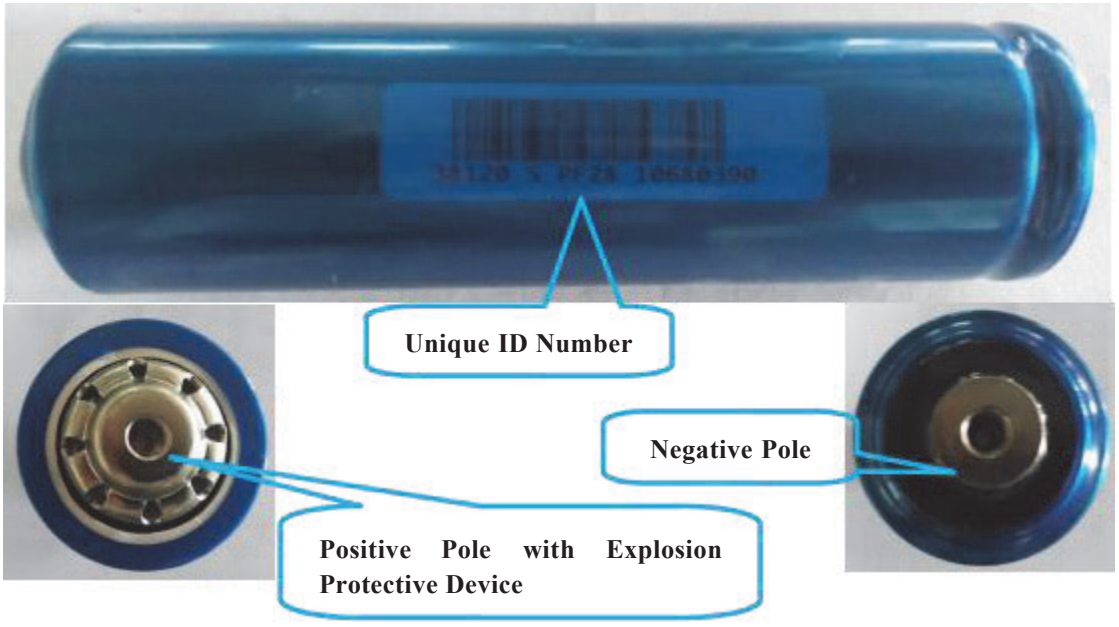
At 25±2.5 °C, discharged to 2.5 V at a constant current of 1C.

3. Cell type, bar code, appearances, and dimensions

3.1 Cell type

HW 38120S

3.2 Cell bar code and appearances



3.3 Cell dimensions:



4. Cell specification (fresh cell tested at 25 ± 2.5°C, using standard charge and discharge unless otherwise specified)

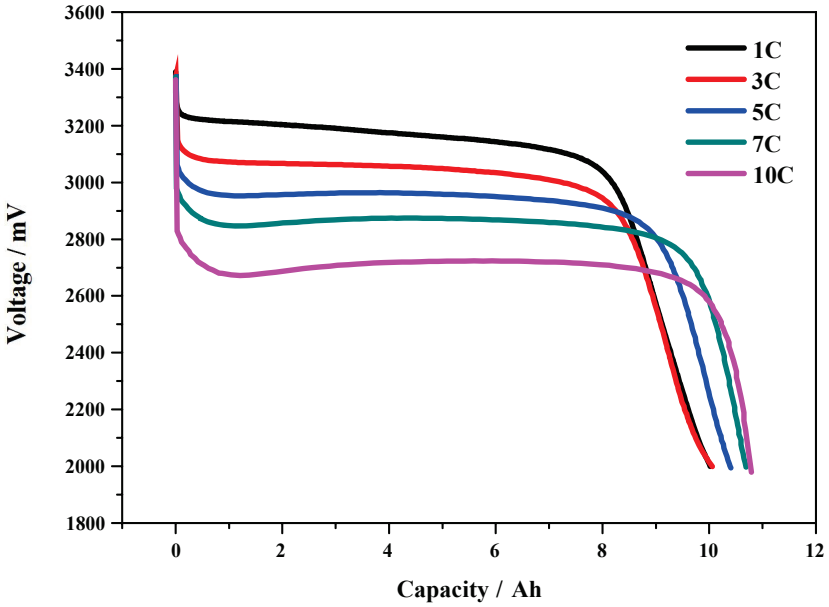
ITEM	SPECIFICATION
Nominal capacity	10Ah @ 0.5C
Minimum capacity	9.5Ah @ 0.5C
Nominal voltage	3.2V
Max Charging voltage	3.65 ±0.05 V
Discharge ending voltage	2.5 ±0.05 V
Charge current	Standard charge: 0.5C Max charge: 2C when T≥10 °C Max charge: 1C when 10 °C≥T≥0 °C Max charge: 0. 1C when 0 °C≥T≥-10 °C
Discharge current	Standard discharge: 1C Max discharge: 3C Max instant discharge: 6C
Recommended charge and discharge cell surface temperature	Charge: 0～45 °C Discharge: -20～60 °C
Maximum allowable charge and discharge cell surface temperature. Charging and discharging at these conditions will shorten cell cycle life.	Charge: 60 °C Discharge: 75 °C
Humidity range	0～90%RH (none condensing)
Internal resistance	≤4mOhm (AC Impedance, 1000HZ)
Cell dimension	Height: 136mm Max Diameter: 38.5mm Max
Weight	330±5 g

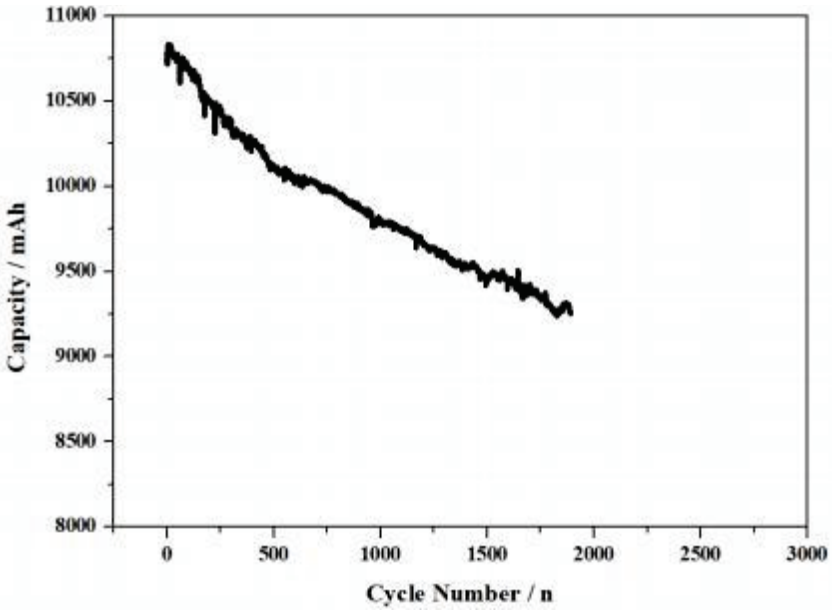
5. Technical characteristics

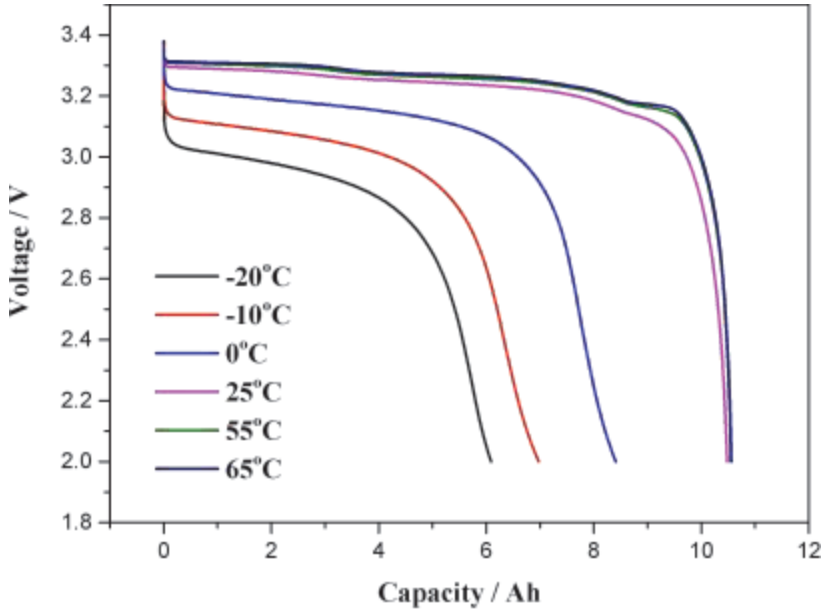
5.1 Electronic performance (fresh cell tested at 25 ± 2.5°C, standard charge and discharge unless otherwise specified)

NO.	ITEM	CRITERION	
5.1.1	Discharge rate capability	discharge capacity at 1C	≥9.8Ah
		discharge capacity at 3C	≥9.5Ah
		discharge capacity at 5C	≥9Ah

5.1.2	Cycle life	discharge capacity of 3000th cycle @ 100% DOD	≥8Ah
5.1.3	High-Low temperature discharge performance (0.5C discharge)	discharge capacity at -10◦C	≥6Ah
		discharge capacity at 0◦C	≥7.5Ah
		discharge capacity at 60◦C	≥9.7Ah
5.1.4	Storage performance	residual capacity after 28d storage	≥9.5Ah
		recover capacity after 28d storage	≥9.8Ah







5.2 Environmental and safety characteristics

Item	Test Method	Criterion
5.2.1 Over discharge	Under the battery discharge to the cut-off voltage, then discharge with 0. 1C, until the voltage of battery is zero.	No explosion, no fire, no leakage
5.2.2 Over charge	After the battery fully charge, overcharge with 0.5C for one hour.	No explosion, no fire, no leakage
5.2.3 Reverse charge	After the battery fully charge, with 1/6C reverse current constant current charging for 8h.	No explosion, no fire, no leakage
5.2.4 130℃ high temperature	After the battery is fully charged, the battery is placed in the oven for 3°C ~ 7°C / min heating rate, the temperature rose to 130°C after the start time, and (130 ± 2)°C temperature range of security within 1h.	No explosion, no fire, no leakage
5.2.5 High and low temperature impact	When the battery is fully charged, shelved at -40°C for 1h, then shelved 1h at 85°C, do such cycle for 32 times, then remove under room temperature for 6h.	No explosion, no fire, no leakage
5.2.6 Vibration	When the battery is fully charged， put the battery on the vibration table of amplitude 2mm, frequency 10Hz-30Hz for one hour.	No explosion, no fire, no leakage, no deformation.

5.2.7 Free fall drop	After the battery fully charge, let the battery fall from a height of 1.0m to the hard wood with thickness of 20mm, each surface for once.	No explosion, no fire, no leakage
5.2.8 Soaking	After the battery fully charged, the battery was sink at room temperature, depth will be subject to immersion cell surface within 24 h, then take out under room temperature for 6 h.	No explosion, no fire, no leakage
5.2.9 Extrusion	After the battery is fully charged, the battery surface with special equipment was squeezed until the batteries dimensions changed to 1 ~ 3mm.	No explosion, no fire
5.2.10 Short circuit	When the battery is fully charged, with the internal resistance of not more than 50mΩ wires connecting to the battery positive and negative extremes for 1h.	No explosion, no fire, no leakage
5.2.11 Constant temperature/humidity/heat	After the battery fully charged the in the relative humidity of 90% ~ 95% of the constant temperature and humidity box, duration of 48 h, then take out under room temperature for 6 h.	No explosion, no fire, no leakage
5.2.12 Nail	A nail (diameter : 2.5~5mm) is penetrated vertically through the center of the fully charged cells.	No explosion, no fire, no leakage

6. Warning in handling the lithium-ion cell

To prevent the possibility of the cell from leaking, heating, explosion, please observe the following precautions:

Don’t immerse the cell in water;

Don’t use and leave the cell near a heat source such as fire or heater;

When charging, use a cell charger specifically for that purpose;

Don’t reverse the positive and negative terminals;

Don’t discard the cell in fire or heater;

Don’t connect the cell to an electrical outlet directly;

Don’t discard the cell in fire or heater;

Don’t connect the positive and negative terminal directly with metal objects;

Don’t transport and store the cell together with metal objects such as necklaces, hairpins;

Don’t directly solder the cell;

Don’t pierce the cell with a nail or other sharp object;

Don’t leave the cell with low SOC for long time, it should keep the cell with around 50% for long term storage (less than 6 months). Should charge the cell to 50% SOC after each 6 months.

7.Shipping

During transportation , keep the battery from acutely vibration, impacting, polarization, drenching.