

# BCC ELECTRONICS CO., LTD.

# Specification

Name	Li-ion Rechargeable Battery
Model	BCC7420
Specification	7.4 V/20Ah
Draft	
Checked	
Approval	

## 1. SCOPE

This specification defines the characteristics of a lithium-ion rechargeable battery, LiMn<sub>2</sub>O<sub>4</sub> battery.

## 2. SAFETY STANDARDS AND REGULATIONS

2.1 IEC-61960 Secondary cells and batteries containing alkaline or other non-acid electrolytes-Secondary lithium cells and batteries for portable applications

2.2 UL1642 Lithium Batteries

2.3 UN ST/SG/AC.10/11/, Transportation of Dangerous Goods.

## 3. Name

Lithium-ion rechargeable battery. Cathode LiMn<sub>2</sub>O<sub>4</sub>. Anode: Graphite; Separator: PP/PE/PP, Electrolyte: LiPF<sub>6</sub> /EC/DMC/EMC

## 4. CONSTRUCTION

No.	Item	Specifications
1	Shape	Prismatic
2	Dimensions	Thickness: $88 \pm 1$ mm
		Width: $67 \pm 2$ mm
		Overall height: $143 \pm 2$ mm
3	Weight	$\leq 1600$ g



## 5. RATED SPECIFICATIONS

No.	Item	Specifications
1	Rated capacity	$20 \pm 0.5\text{Ah}$
2	Nominal voltage	7.4V
3	Internal resistance (AC)	$\leq 40 \pm 10 \text{ m}\Omega$
4	Rated charge	Constant 4A and constant 8.4V charge until charging current $\leq 0.2\text{A}$ at $20^\circ\text{C}$
5	End of discharge voltage	5.4V
6	Maximum charging current	20A
7	Maximum discharging current	30A
8	Peak current	50A
9	Maximum charging voltage	8.4V
10	Protect voltage of overcharge	$4.25\text{V} \pm 0.025\text{V}$ (Any cell)
11	Protect voltage of overdischarge	$2.7\text{V} \pm 0.025\text{V}$ (Any cell)
12	Operating temperature	Charging: $0 \sim 45^\circ\text{C}$ Discharging: $-20 \sim 55^\circ\text{C}$
13	Storage temperature	$< 1\text{month}$ : $-20 \sim 55^\circ\text{C}$ $< 3\text{months}$ : $-20 \sim 45^\circ\text{C}$ $< 6\text{months}$ : $-20 \sim 25^\circ\text{C}$
14	Storage voltage	7.8V~7.9V
15	Shipping voltage	7.8V~7.9V

## 6. SAFETY PROTECTION FUNCTION

### 6.1 Safety Valve

Controlled release of pressure in the event of excessive internal gas build up.  
Usually caused by incineration of the cell.

### 6.2 Overcharge Protect

The protect device will cut off the charge circuit when the voltage of any cell is above 4.25V and will recover when the voltage of any cell drop to about 4.1V.

### 6.3 Over-discharge Protect

The protect device will cut off the discharge circuit when the voltage of any cell is less than 2.7V and will recover when the voltage of the any cell rise to about

3.0V.

## 7. PERFORMANCE

### 7.1 Test Condition

All tests are carried out at an ambient temperature between 15 °C and 25°C, at a relative humidity between 45% and 85% except where otherwise noted.

### 7.2 Performance

#### 7.2.1 Electrical Performance

Items		Typical	Conditions
Discharge capacity at 25°C	4A	20Ah	Discharge capacity to 5.4V after recommended charge
Discharge capacity at 4A	25°C	20.25 Ah	Discharge capacity to 5.4V after recommended charge
	0°C	20.10 Ah	Discharge capacity to 5.4V after fully charged cell in 0°C for 16h.
	-10°C	20.00 Ah	Discharge capacity to 5.4V after fully charged cell in -10°C for 16h.
	-20°C	19.83 Ah	Discharge capacity to 5.4V after fully charged cell in -20°C for 16h.
	55°C	19.75 Ah	Discharge capacity to 5.4V after fully charged cell in 55°C for 16h.
Cycle Life		80%	The pack will obtain 300 cycles at greater than 80% rated capacity at recommended charge and 10A discharge under ambient conditions.
Capacity Retention		85%	Rated discharge capacity after storage for 28 days. Ah capacity ratio to before storage at rated discharge.
Capacity Recover		95%	Rated discharge capacity after storage, rated discharge then recommended charge. Ah capacity ratio to before storage at rated discharge.

#### 7.2.2 Environmental Performance

Items	Criteria	Typical	Conditions
Thermal Shock	No fire or explosion.	No fire or explosion.	Storage: 75°C for 48h, followed by -20°C for 6h, followed by 21°C for ≥24h. (IEC)

Drop Proof	No leakage, weight loss, distortion or out gassing	No leakage, weight loss, distortion or out gassing	Drop from a height of 90cm onto a concrete floor 3 times each for bottom, side and header orientations.
Vibration Proof	No leakage, weight loss, distortion or out gassing	No leakage, weight loss, distortion or out gassing	Subject to 10–55Hz vibration at an acceleration of 3g for three axes. Rate of change of vibration:1Hz/min.
High Temp. Storage	No fire or explosion	No fire or explosion	leaving at 85°C for 10h.
Wet Proof	No fire or explosion No leakage	No fire or explosion No leakage	65°C/95%RH for 96h.

### 7.3 Safety Performance

#### 7.3.1 Environmental Endurance Performance

Item	Criteria	Typical	Conditions
Heating 130°C	No fire or explosion	No fire or explosion	UL2054 standard

#### 7.3.2 Electrical Endurance Performance

Item	Criteria	Typical	Conditions
Short circuit	No fire or Explosion Temp<150°C	No fire or Explosion Temp<150°C	Fully charged. External circuit resistance is<100mΩ
Overcharge	No fire or explosion	No fire or explosion	Charging at a constant current of 30A to 18.9V from fully charged state. (Protect device is included)

#### 7.3.3 Mechanical Endurance Performance

Item	Criteria	Typical	Conditions
Crush	No fire or explosion	No fire or explosion	Fully charged. crush between two flat plates. Applied force is about 13KN
Impact	No fire or explosion	No fire or explosion	Fully charged. Impact by φ15.8mm bar of 9.1Kg weight dropped from 61cm height on the flat surface.

## 8. SAFETY NOTES AND PRECAUTIONS

- Do not disassemble the battery.
- Keep away from the children.
- Do not expose the battery to water or salt water, and should place the battery in cool and dry environment.
- Do not place the battery in high-temperature locations, such as fire, heater, etc.
- Do not connect the positive terminal and the negative terminal of the battery.
- Do not connect the positive terminal and the negative terminal of the battery to each other with any metal objects.
- Do not knock, strike, step on the battery.
- Do not solder directly onto the battery and pierce the battery with nails or other edge tools.
- In the event that the battery leaks and the fluid gets into one's eye, do not rub the eye. Rinse well with water.
- Immediately discontinue use of the battery, if, while the battery emits an unusual smell, feels hot, changes color, changes shape, or appears abnormal in any other way.

### While Charging

- When charging the battery, please use specified battery charger.
- Do not directly connect the battery with power supply outlet.
- Immediately discontinue use of the battery, if, while the battery emits an unusual smell, feels hot, changes color, changes shape, or appears abnormal in any other way, while charging the battery.
- Do not attach directly the batteries to a car's cigarette lighter.
- Please charge the battery at stated temperature range.

### While Discharging

- Please discharge the battery at stated temperature range.
- Do not discharge the battery with unspecified equipment.
- Using the battery at high temperature may also result in a loss of performance and a shortened life expectancy.
- Do not use the battery at the places of strong static and magnetic field.

**Data in this document is subject to change without notice.**