

# UN TRANSPORT TESTING

for BAK-763448A-PACK

Shenzhen BAK Technology Co., Ltd.

No.2216,tianan Cyber Time Town A, Tianan Cyber Park Chegongmiao, Futian Shenzhen, PRC

Report of UN Lithium Ion Rechargeable battery Transport Testing

Product Type: Lithium Ion Rechargeable Battery

Reference no: battery pack

(P/N: BAK-763448A-PACK)

Product name	Lithium ion rechargeable battery
Part or Product name	BAK-763448A-PACK
Company name	Shenzhen BAK Technology Co., Ltd
Company Street Address	No.2216, Tianan Cyber Time Building, Tianan Cyber Park, Chegongmiao,
Company City, State, Zip	Futian, Shenzhen, China
Company Contact &Phone Number	David Zhang, 0755-83474585

Recommendations on the Transport of Dangerous Goods, Manual Tests And Criteria

Amendments to the sixth Edition

			Mass of Battery/battery	Min
Sample Preparation/Labeling			M<1g	0.50%
	Undischg'd	Dischg'd	1g<w<5g	0.20%
24	U1-U16	D1-D8	M>5g	0.10%

Annotate: The samples' status is good.

The rating of Li-ion Rechargeable battery is 3.7V.

Mmin=>

0.10%

# Test 1 Altitude Simulation

Test Method	<p>Batteries are to be stored under 11.6Kpa for 6hours at 20±5degC</p> <p>Requirement: There must be no mass loss (outside of permissible tolerances), No leakage, no venting, no disassembly, no rupture or fire. Additionally, for those units that are not fully discharged, the open circuit voltage after is no less then 90% of the pre-test value.</p>
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No.	fully discharge or not	Before test	Before test	After test	after test	Mass Loss	Pass?	Vmiu	Pass?	Initial Condition	Final Condition
		Mass(g)	Voltage(V)	Mass(g)	Voltage(V)	$100\%(M1-M2)/M1$	$M1 < M_{min}$	$V_{min}=90\%V1$	$V2 \geq V_{min}$	Note press of any tabs, tape or other connection means	Note Changes from initial condition and leakage disassembly rupture or fire.
		M1	V1	M2	V2	ML	$M_{min}=(0.1\%M1)$	Vmin	$V_{min}=90\%V1$		
U1	Not	49.510	3.95	49.509	3.94	0.0020%	Pass	3.555	Pass	None	None
U2	Not	49.551	3.91	49.550	3.90	0.0020%	Pass	3.519	Pass	None	None
U3	Not	49.612	3.86	49.610	3.83	0.0040%	Pass	3.474	Pass	None	None
U4	Not	49.523	3.85	49.523	3.84	0.0000%	Pass	3.465	Pass	None	None
U5	Not	49.558	3.95	49.557	3.92	0.0020%	Pass	3.555	Pass	None	None
U6	Not	49.589	3.90	49.588	3.86	0.0020%	Pass	3.51	Pass	None	None
U7	Not	49.576	3.85	49.575	3.84	0.0020%	Pass	3.465	Pass	None	None
U8	Not	49.541	3.85	49.540	3.82	0.0020%	Pass	3.465	Pass	None	None
D1	Yes	49.525		49.523		0.0040%	Pass			None	None
D2	Yes	49.514		49.512		0.0040%	Pass			None	None
D3	Yes	49.520		49.519		0.0020%	Pass			None	None
D4	Yes	49.530		49.529		0.0020%	Pass			None	None
D5	Yes	49.532		49.531		0.0020%	Pass			None	None
D6	Yes	49.521		49.520		0.0020%	Pass			None	None
D7	Yes	49.557		49.557		0.0000%	Pass			None	None
D8	Yes	49.569		49.568		0.0020%	Pass			None	None

**Summary of Results :**

**Tested sample were compliant to referenced standard.**

**Additional Comments : None**

Test Engineer D. Zhang Date:2025.01.01

Type:

## Test 2 Thermal test

Test Method	Batteries are to be stored under $75^{\circ}\text{C} \pm 2^{\circ}\text{C}$ for 6hrs, transitions 30-min max, then put into $-40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ for 6hrs, repeat 10 times, store 24-hrs before evaluation. Requirement: There must be no mass loss (outside of permissible tolerances), leakage, venting, disassembly, rupture or fire. Additionally, for those units that are not fully discharged, the open circuit voltage after is no less than 90% of the pre-test value.
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No.	fully discharge or not	Before test	Before test	After test	After test	Mass Loss	Pass?	V <sub>miu</sub>	Pass?	Initial Condition	Final Condition
		Mass(g)	Voltage(V)	Mass(g)	Voltage(V)	$100\%(M1-M2)/M1$	$M1 < M_{min}$	$V_{min} = 90\%V1$	$V2 \geq V_{min}$	Note press of any tabs, tape or other connection means	Note Changes from initial condition and leakage disassembly rupture or fire.
		M1	V1	M2	V2	ML	$M_{min} = (0.1\%M1)$	V <sub>min</sub>	$V_{min} = 90\%V1$		
U1	Not	49.580	3.90	49.578	3.89	0.0040%	Pass	3.51	Pass	None	None
U2	Not	49.609	3.92	49.608	3.91	0.0020%	Pass	3.528	Pass	None	None
U3	Not	49.595	3.86	49.594	3.85	0.0020%	Pass	3.474	Pass	None	None
U4	Not	49.528	3.89	49.527	3.87	0.0020%	Pass	3.501	Pass	None	None
U5	Not	49.582	3.85	49.580	3.83	0.0040%	Pass	3.465	Pass	None	None
U6	Not	49.585	3.89	49.583	3.89	0.0040%	Pass	3.501	Pass	None	None
U7	Not	49.592	3.90	49.591	3.89	0.0020%	Pass	3.51	Pass	None	None
U8	Not	49.538	3.86	49.537	3.85	0.0020%	Pass	3.474	Pass	None	None
D1	Yes	49.591		49.590		0.0020%	Pass			None	None
D2	Yes	49.536		49.535		0.0020%	Pass			None	None
D3	Yes	49.592		49.591		0.0020%	Pass			None	None
D4	Yes	49.536		49.535		0.0020%	Pass			None	None
D5	Yes	49.576		49.575		0.0020%	Pass			None	None
D6	Yes	49.556		49.555		0.0020%	Pass			None	None
D7	Yes	49.589		49.587		0.0040%	Pass			None	None
D8	Yes	49.612		49.611		0.0020%	Pass			None	None

**Summary of Results :**

**Tested sample were compliant to referenced standard.**

**Additional Comments : None**

Test Engineer D. Zhang Date: 2025.01.01

Type:



## Test 4 shock

Test Method	Half-sine, 150G, 6ms, 3 shocks in mutually perpendicular axis for a total of 18 shocks. Requirement: There must be no mass loss (outside of permissible tolerances), leakage, venting, disassembly, rupture or fire. Additionally, for those units that are not fully discharged, the open circuit voltage after is no less than 90% of the pre-test value.
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No.	fully discharge or not	Before test	Before test	After test	After test	Mass Loss	Pass?	V <sub>miu</sub>	Pass?	Initial Condition	Final Condition
		Mass(g)	Voltage(V)	Mass(g)	Voltage(V)	100%(M1-M2)/M1	M1 < M <sub>min</sub>	V <sub>min</sub> = 90%V1	V2 ≥ V <sub>min</sub>	Note press of any tabs, tape or other connection means	Note Changes from initial condition and leakage disassembly rupture or fire.
		M1	V1	M2	V2	ML	M <sub>min</sub> = (0.1%M1)	V <sub>min</sub>	V <sub>min</sub> = 90%V1		
U1	Not	49.585	3.95	49.583	3.94	0.0040%	Pass	3.555	Pass	None	None
U2	Not	49.621	3.96	49.620	3.96	0.0020%	Pass	3.564	Pass	None	None
U3	Not	49.610	3.90	49.610	3.89	0.0000%	Pass	3.51	Pass	None	None
U4	Not	49.592	3.94	49.590	3.93	0.0040%	Pass	3.546	Pass	None	None
U5	Not	49.569	3.92	49.568	3.91	0.0020%	Pass	3.528	Pass	None	None
U6	Not	49.587	3.95	49.586	3.93	0.0020%	Pass	3.555	Pass	None	None
U7	Not	49.576	3.92	49.575	3.90	0.0020%	Pass	3.528	Pass	None	None
U8	Not	49.536	3.95	49.534	3.93	0.0040%	Pass	3.555	Pass	None	None
D1	Yes	49.558		49.556		0.0040%	Pass			None	None
D2	Yes	49.545		49.543		0.0040%	Pass			None	None
D3	Yes	49.578		49.577		0.0020%	Pass			None	None
D4	Yes	49.549		49.548		0.0020%	Pass			None	None
D5	Yes	49.573		49.572		0.0020%	Pass			None	None
D6	Yes	49.591		49.590		0.0020%	Pass			None	None
D7	Yes	49.613		49.612		0.0020%	Pass			None	None
D8	Yes	49.625		49.624		0.0020%	Pass			None	None

### Summary of Results :

Tested sample were compliant to referenced standard.

### Additional Comments : None

Test Engineer D. Zhang Date: 2025.01.01

Type:

## Test 5 External short circuit

Test Method	Thermally stabilized to external case temp of $55^{\circ}\text{C} \pm 2^{\circ}\text{C}$ , 0.1 ohm short applied and held for at least 1 hr after external case temp returns to $55^{\circ}\text{C} \pm 2^{\circ}\text{C}$ ; observed for additional 6 hrs.
	Requirement: The external temperature do not exceed 170 deg C and there is no disassembly and no fire within six hours of test.

No.	U1	U2	U3	U4	U5	U6	U7	U8
Fully discharge or not	Not	Not	Not	Not	Not	Not	Not	Not
Final condition	None	None	None	None	None	None	None	None
Max Temp ( $^{\circ}\text{C}$ )	109	105	123	110	129	117	109	96
Summary of Results	Tested sample were compliant to referenced standard.							
Test Engineers		Date	2025.01.07		Type			
No.	D1	D2	D3	D4	D5	D6	D7	D8
Fully discharge or not	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Max Temp ( $^{\circ}\text{C}$ )	62	65	63	67	70.5	61.9	59	76
Final condition	None	None	None	None	None	None	None	None
Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Summary of Results	Tested sample were compliant to referenced standard.							
Test Engineers	D. Zhang	Date	2025.01.01		Type			

## Test 6 Impact (this test is not required)

Test Method	The battery is to be placed on a flat surface, A 15.8mm diameter bar is to be placed across the centre of the sample. The battery will be rotated 90 degrees around its longitudinal axis for both width and narrow sides subject to this impact. Each sample is to be subjected to only a single impact.
	Requirement: The external temperature of the tested batteries does not exceed 170 degree and there's no disassembly and no fire within six hours of this test.

No.	U1	U2	U3	U4	U5	U6	U7	U8
50% charged	yes	yes	yes	yes	yes	yes	yes	yes
Final condition	None	None	None	None	None	None	None	None
Max Temp ( $^{\circ}\text{C}$ )								
Summary of Results	Tested sample were compliant to referenced standard.							
Test Engineers	e	Date			Type			
No.	D1	D2	D3	D4	D5	D6	D7	D8
Fully discharge or not	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Max Temp ( $^{\circ}\text{C}$ )								
Final condition	None	None	None	None	None	None	None	None
Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Summary of Results	Tested sample were compliant to referenced standard.							
Test Engineers	D.zhang	Date	2025.01.01		Type			

## Test 7. Overcharge

Test Method	The Overcharge condition: charge current 800mA Voltage 4.2V, applied for 24hrs							
No.	U1	U2	U3	U4	U5	U6	U7	U8
Fully charge or not	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Final condition	None	None	None	None	None	None	None	None
Pass?	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Summary of Results	Tested sample were compliant to referenced standard There was no disassembly and no fire within 7 days of the test							
Test Engineers	D. Zhang	Date	2025.01.01	Type				

## Test 8. Forced Discharge (this test is not required)

Test Method	Battery is to be forced discharged at ambient temperature by connecting it in series with a 12V DC power supply at an initial current 1C Requirement: no disassembly, no fire with 5 days of the test							
No.	U1	U2	U3	U4	U5	U6	U7	U8
Fully charge or not								
Final condition	None	None	None	None	None	None	None	None
Pass?								
Summary of Results	Tested sample were compliant to referenced standard There was no disassembly and no fire within 7 days of the test							
Test Engineers	D. Zhang	Date	2025.01.01	Type				

**Final conclusion: The battery passed the UN38.3 test.**

Above text proceed by Shenzhen BAK Technology co., Ltd R&D department

Checker: Chen J

Approval by: Tian X