

TO: \_\_\_\_\_ ( Client )

## Product Specification

Product : Coin-type Lithium Manganese Dioxide Battery  
 Model : CR2450  
 Nominal Capacity : 600mAh

Date of Acceptance: \_\_\_\_\_

<b>ACCEPTANCE</b>	
<b>Company</b>	
<b>Department</b>	
<b>Approved By</b>	
<b>Date</b>	

Date of Submission: \_\_\_\_\_

<b>Shun Wo Corporation</b>		
<b>Described</b>	<b>Quality Control Department</b>	<b>technology department</b>

**History of Specification      Model: CR2450**

No	Date of issued	Version	Modification Reason	Description	Note
1	May 8.2006	A/0	Newly issued		
2	Aug. 12.2006	A/1	Meet the International Standard	Edit condition temperature & relatively humidity of the storage environment	
3	Jul. 16.2007	A/2	Amend packing		
4	sep. 17.2009	A/3	Charge icon	Positive surface have trash can symbol	

1. Scope

This specification is applicable to Lithium-Manganese Dioxide Battery CR2450

2. Battery type and ratings

- 2.1 Battery type CR2450
- 2.2 Nominal voltage 3 V
- 2.3 Nominal capacity 600 mAh (on continuous discharged at 20±2°C under 7.5KΩ, load to 2.0V end-voltage)
- 2.4 Outer dimensions outer dimensions shall be as shown in (Fig1.) dimension drawing
- 2.5 Weight 7.0 grams. (approx)
- 2.6 Terminals positive can (Mark "+"), negative cap
- 2.7 Operating temperature range -20°C ~ + 60°C
- 2.8 Electrochemistry  
 Positive: MnO<sub>2</sub>  
 Negative: Metal Lithium  
 Electrolyte: Contain salt-lithium electrolyte
- 2.9 Environment Matter All materials used for battery production are in keeping with RoHS requirements.

3. Battery performance

3.1 Appearance

Batteries shall have no deformation, dent, stain, leakage and camber or burr on their sealing members.

3.2 Dimensions

Dimensions of batteries when tested in accordance with Subparagraph 4.3(2) shall be as shown in Fig1.dimensions drawing.

3.3 Characteristics

(1) Open-circuit voltage

Open-circuit voltage of batteries when tested in accordance with Subparagraph 4.3(3) shall meet the requirement set forth in Table 1.

(2) Closed-circuit voltage

Closed-circuit voltage of batteries when test in accordance with Subparagraph 4.3(4) shall meet the requirements set forth in Table 1.

[Table 1]

Test Items	Temperature	Initial *	After 12 Months	Remarks
Open-Circuit Voltage	20±2°C	3.0V To 3.4V	3.0V To 3.4V	
	0±2°C	3.0V To 3.4V	3.0V To 3.4V	
Closed-Circuit Voltage	20±2°C	3.0V To 3.4V	3.0V To 3.4V	Load Resistance 7.5kΩ, 0.8Sec.
	0±2°C	3.0V To 3.4V	3.0V To 3.4V	

(Note) \* "Initial " Means Performance Values Measured Within 30 days After Delivery.

(3) Service life

Service life of batteries when tested in accordance with Subparagraph 4.3(5) shall meet the requirements set forth in Table 2.

[Table 2]

Test Items	Temperature	Initial *	After 12 Months	Remarks
Service Life	20±2°C	1400 Hrs. or Longer	1330 Hrs. or Longer	Continuous Discharge Under 7. 5kΩ Load to 2.0V End-Voltage
	0±2°C	1260 Hrs. or Longer	1200 Hrs. or Longer	

(4) Service life at high temperature

Service life of batteries when tested in accordance with Subparagraph 4.3(6) shall meet the requirements set forth in Table 3.

[Table 3]

Test Item	Storage temperature	Storage Time	Requirement	Remarks
Service Life At High Temperature	60±2°C	20 days	1330 Hrs Minimum	After Storage At High Temperature, Continuous Discharge At 20±2°C Under 7.5 kΩ, Load To 2.0V End-Voltage.

(5) Leakage characteristics

Batteries when tested in accordance with Subparagraph 4.4(1) shall have no leakage.

[Table 4]

Test Item	Requirement	Test Conditions
Leakage Characteristics	No Leakage	Temperature: 45 ± 2°C Relative Humidity: ≤75% Storage: 30 Days Shall Be Inspected By Visual Means

4. Testing

4.1 Testing Condition

(1) Temperature and Relative humidity

Unless otherwise specified elsewhere, tests shall be conducted at ordinary temperature (20±2 °C) 、 Relative humidity (45%-75%).

(2) Storage of test specimen batteries

Specimen batteries to be tested shall be kept at the ambient temperature of 23 ±5°C、 the relative humidity of 45%-75%.

4.2 Measuring instruments and devices

(1) Measuring instruments

Outer micrometers or dial gauges specified not less than 0.01mm, and vernier calipers specified not less than 0.02mm or those having equal or better accuracy shall be used.

(2) DC voltmeters

The tolerance shall be not less than 0.25% and the input resistance rating shall be 10MΩ or more.

(3) Load resistance

Load resistance shall include resistance throughout external circuits, and its tolerance shall be ±0.5%.

4.3 Test methods

(1) Appearance

Appearance of batteries shall be inspected by visual means.

(2) Dimensions

Dimension shall be measured with instruments specified in Subparagraph 4.2(1) above, provided that either one or both sides of such instruments shall be insulated in measuring the overall height of the batteries.

(3) Open-circuit voltage

Test specimen batteries shall be kept for 4 hours or longer at the ambient temperature specified in Table 1, and then the voltage between both terminals shall be measured at the same ambient temperature with a voltmeter as specified in Subparagraph 4.2(2).

(4) Closed-circuit voltage

Test specimen batteries shall be kept for 4 hours or longer at the ambient temperature specified in Table 1, and then the voltage between both terminals shall be measured with a voltmeter as specified in subparagraph 4.2(2) while the specified load resistance 4.2(3) is connected between both terminals at the same ambient temperature as specified above; provided that the measured value shall be based on meter reading taken 0.8 seconds after the circuit is closed.

(5) Service life

Test specimen batteries shall be kept for 8 hours or longer at the ambient temperature specified in Table 2, and shall then be continuously discharged at the same ambient temperature and through the specified load resistance. The discharge shall be continued until the terminal voltage of the test specimens falls below the discharge end-point voltage of 2.0V, and the time during which the terminal voltage has been maintained equal to and above the discharge end-point voltage shall be taken as the service life.

(6) Service life at high temperature

Test specimen batteries, stored at the temperature in Table 3, shall be kept for 4 hours or longer at ordinary temperature and at ordinary humidity (45~75%RH) and shall then be continuously discharged through the specified load resistance. The discharge shall be continued until the voltage falls below the discharge end-point voltage of 2.0V, and the time during which the terminal voltage has been maintained equal to and above the discharge end-point voltage shall be taken as the service life.

4.4 Other tests

Tests specified below shall be conducted as required. Except as specified in this paragraph. Test methods be in accordance with the provisions of Paragraph 4.4.

(1) Electrolyte leakage test

Test specimen batteries shall be examined for electrolyte leakage while they are kept at ordinary temperature and at ordinary humidity after having been stored at the temperature, humidity and period specified in Table 4.

## 5. Markings

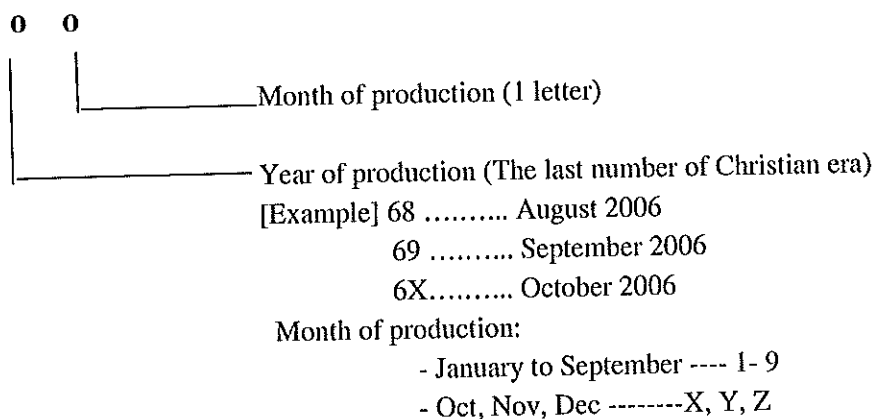
5.1 Battery type: CR2450

5.2 Brand of battery: NEWSUN

5.3 Polarity: + ( " - " shall not be indicated )

5.4 Markings design shall be as shown in Figure 2.

5.5 Manufacturing marks: The year and month of production shall be marked on the negative (-) terminal side.



## 6. Packing

Packing specification shall be as shown in Figure 3.

## 7. Revision of the Specification

Company according to needs in the suitable time to "Revision of the Specification" carries on the revision.

## 8. Notices.

8.1 Do not try to disassemble the battery.

8.2 Do not short-circuit the battery, do not handle or store with metallic materials which can cause short-circuit.

8.3 Do not dispose the battery into water or constant with water.

8.4 Do not punch or hammer the battery.

8.5 Do not connect the positive and negative terminals in reverse polarity.

8.6 Do not mix different type of batteries together, nor mix partially used batteries with new ones.

8.7 Do not connect a lead or spot weld directly on the battery.

8.8 Do not expose batteries for direct sunlight, avoid places that are hot humid or where is likely to form.

8.9 Do not damage or mishandle this package.

8.10 If package is damaged, batteries must be quarantined inspected and repacked.

8.11 Please read the instruction carefully before use.

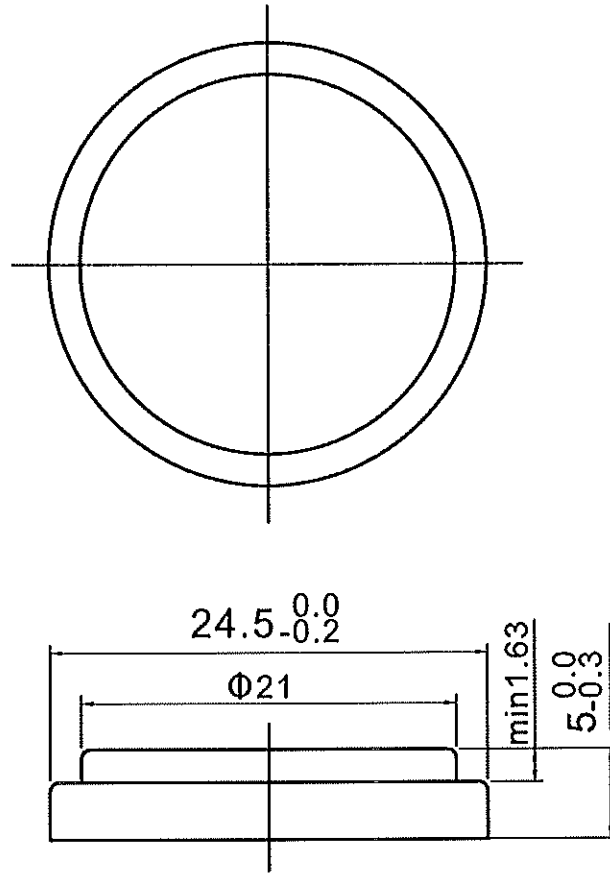
## 9. Warning

9.1 Never recharge/short-circuit / disassemble. Never dispose in fire or expose close to a heat generating area.

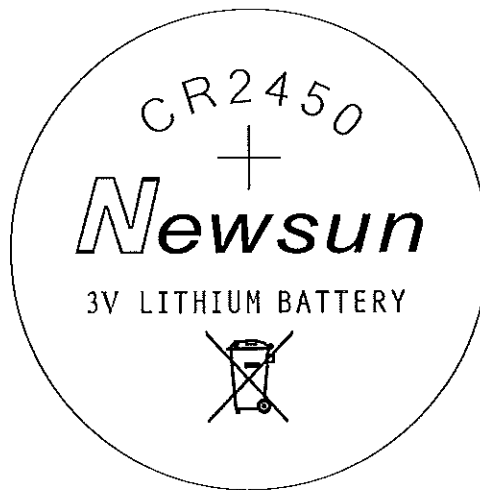
9.2 To prevent to be swallowed by children accidentally, please keep them out of children's in case that they are swallowed, contact a physician immediately.

9.3 Never expose batteries to strong impact because there is the danger of combustion or explosion. Be sure batteries disconnected from circuit when storing or disposing.

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**Fig1. Dimension drawing of CR2450 lithium battery**

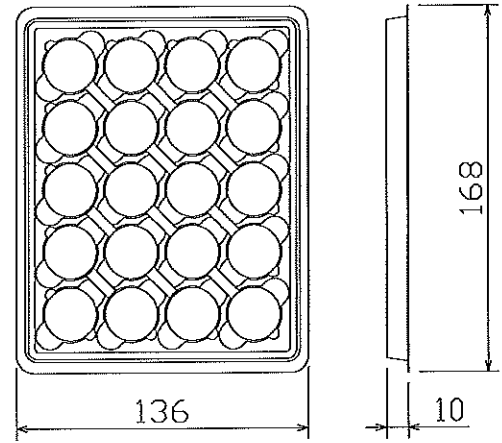
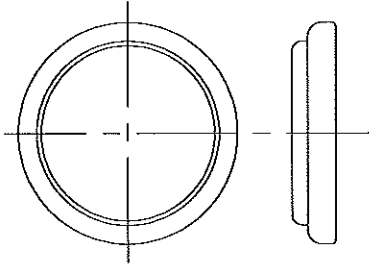


**Fig2. Case Marking CR2450**

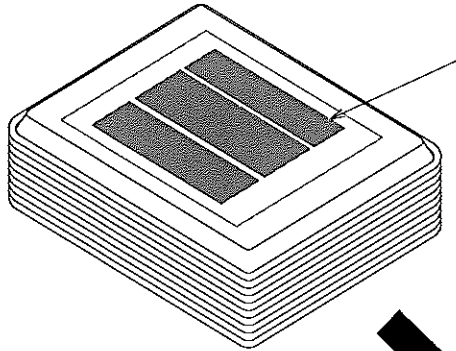
**Fig3. Packaging**

**1、 CR2450 Lithium battery**

**2、 20 pieces per tray.**



**3、 140pcs per shrink packing**



**Explain Card**  
- Caution  
- Name  
- PCS

**4、 1680pcs per box**

