

Test Report**Report No.: SHES240200378002****Date: 2024-05-10**

Applicant: Suzhou Xinlvzhou Electronics Co., Ltd.
No.158 Shanji Road, Xiangcheng District, Suzhou, Jiangsu, China

Manufacturer: Suzhou Xinlvzhou Electronics Co., Ltd.
No.158 Shanji Road, Xiangcheng District, Suzhou, Jiangsu, China

Factory: Suzhou Xinlvzhou Electronics Co., Ltd.
No.158 Shanji Road, Xiangcheng District, Suzhou, Jiangsu, China

Test object / Model: Primary battery
R6P / AA

Test specifications / IEC 60086-5: 2021 / EN IEC 60086-5: 2021
Test standard:

Purpose of examination: Test according to the test specification.

Test result: See below pages.

Remark: The original Test Report No. SHES240200378001, dated 2024-04-16 was modified on 2024-05-10 to include the following changes and/or additions:
1. Updated battery marking;
2. Updated battery photo.



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Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

1. Function / Description:

Primary battery

2. Ratings:

Model:	R6P / AA
Trademark:	warriors
Rated Voltage:	1.5 V

3. Test:

Possible test case verdicts:

- | | |
|--|----------------------|
| - test case does not apply to the test object: | N/A (Not Applicable) |
| - test object does meet the requirement: | P (Pass) |
| - test object does not meet the requirement: | F (Fail) |

The tests were done in the Electrical Safety Laboratory of SGS-CSTC in Shanghai.

Test item was received on 2024-05-09.

Tests were performed from Original: 2024-02-26 to 2024-03-29.

Marking plate



Test result:

4	Requirements for safety		P
4.1	Design		P
4.1.1	General		P
	Batteries shall be so designed that they do not present a safety hazard under conditions of normal (intended) use.		P
4.1.2	Venting		P
	All batteries shall incorporate a pressure relief feature or shall be so constructed that they will relieve excessive internal pressure at a value and rate which will preclude explosion		P
	The battery case material and/or its final assembly shall be so designed that, in the event of one or more cells venting, the battery case does not present a hazard in its own right		P
4.2	Quality plan		P
	The manufacturer shall prepare a quality plan defining the procedures for the inspection of materials, components, cells and batteries during the course of manufacture, to be applied to the total process of producing a specific type of battery	Provided declaration	P

5	Sampling		P
5.1	General		P
	Samples should be drawn from production lots in accordance with accepted statistical methods and shall meet the requirements specified for dimensions and open circuit voltage set forth in IEC 60086-2.		P
5.2	Sampling for type approval		P
	The number of samples drawn for type approval is given in below,		P
	Open circuit voltage (n = 70) Dimensions (n = 70)		P
	Intended use A Partial use (n = 5) B-1 Transportation-shock (n = 5) B-2 Transportation-vibration (n = 5) C Climatic (n = 5)		P

	Reasonably foreseeable A misuse D Incorrect installation (n = 20) E External short circuit (n = 5) F Overdischarge (n = 20) G Free fall (n = 5)		P
5.3	Validity of testing		P
	Cells or batteries with aqueous electrolyte shall be subjected to the tests, as required in this document.		P
	Testing remains valid until a design change or requirement revision has been made. Retesting is required when:		N/A
	a) a battery specification changes by more than 0,1 g or 20 % mass, whichever is greater, for the cathode, anode or electrolyte;		N/A
	b) a battery specification change would lead to a failure of any of the tests;		N/A
	c) there is an addition of new tests or requirements;		N/A
	d) there is a requirement change that would lead to a failure of any of the tests.		N/A

6	Testing and requirements		P
6.1	General		P
6.1.1	Applicable safety tests		P
	Applicable safety tests are shown in Table 1.		P
	The tests described in Tables 2 and 6 are intended to simulate conditions which the battery is likely to encounter during intended use and reasonably foreseeable misuse.	Cylindrical, R6P	P
6.1.2	Cautionary notice		P
6.1.3	Ambient temperature		P
	Unless otherwise specified, these tests shall be carried out at (20 ± 5) °C		P
6.2	Evaluation of test criteria		P
6.2.1	Explosion		P
	An explosion is considered to have occurred when there is an instantaneous release wherein solid matter from any part of the battery is propelled to a distance greater than 25 cm away from the battery.		P
6.2.2	Fire		P
	A fire is considered to have occurred if flames are emitted from a test cell or battery.		P
6.2.3	Leakage		P

	Leakage is considered to have occurred if there is an unplanned escape of electrolyte from a cell or battery.		P
6.2.4	Venting		P
	Venting is considered to have occurred if there is a release of excessive internal pressure from a cell or battery in a manner intended by design to preclude explosion.		P
6.3	Intended use		P
6.3.1	Intended use tests and requirements		P
6.3.2	Intended use test procedures		P
6.3.2.1	Test A – Storage after partial use		P
	An undischarged battery is discharged under an application or service output test condition, with the load defined in IEC 60086-2 resulting in the longest test duration until the service life falls by 50 % of the highest minimum average duration (MAD) value, followed by storage at (45 ± 2) °C for 30 days	Discharge load: 3.9Ω Discharge time: 0.5h	P
	Results: no leakage, no fire and no explosion..... :	See Table 6.3.2.1	P
6.3.2.2	Test B-1 – Transportation-shock		P
	The shock test shall be carried out under the conditions defined in Table 3 and the sequence in Table 4		P
	Results: no leakage, no fire and no explosion..... :	See Table 6.3.2.2	P
6.3.2.3	Test B-2 – Transportation-vibration		P
	The vibration test shall be carried out under the following test conditions and the sequence in Table 5		P
	Results: no leakage, no fire and no explosion..... :	See Table 6.3.2.3	P
6.3.2.4	Test C – Climatic-temperature cycling		P
	Temperature cycling procedure (see 1) to 7) and/or Figure 2)		P
	Result: no fire and no explosion :	See Table 6.3.2.4	P
6.4	Reasonably foreseeable misuse		P
6.4.1	Reasonably foreseeable misuse tests and requirements		P
6.4.2	Reasonably foreseeable misuse test procedures		P
6.4.2.1	Test D – Incorrect installation (four batteries in series)		P
	The circuit were complete for - 24 hours elapsed, or		N/A
	- until the battery case temperature has returned to ambient		P

	Results: no fire and no explosion	See Table 6.4.2.1	P
6.4.2.2	Test E – External short circuit		P
	The circuit were complete for - 24 hours elapsed, or		N/A
	- until the battery case temperature has returned to ambient		P
	Results: no fire and no explosion	See Table 6.4.2.2	P
6.4.2.3	Test F – Overdischarge		P
	Results: no fire and no explosion	See Table 6.4.2.3	P
6.4.2.4	Test G – Free fall test		P
	Results: no fire and no explosion	See Table 6.4.2.4	P

9	Marking		P
9.1	General batteries		P
	With the exception of small batteries (see 9.2), each battery shall be marked with the following information		P
	a) designation, IEC or common.....	R6P / AA	P
	b) expiration of a recommended usage period or year and month or week of manufacture.....	12-2027	P
	c) polarity of the positive (+) terminal.....		P
	d) nominal voltage.....	1.5 V	P
	e) name or trade mark of the manufacturer or supplier.....	warriors	P
	f) cautionary advice		P
9.2	Swallowable button cells		N/A
	a) designation, IEC or common.....		N/A
	b) expiration of a recommended usage period or year and month or week of manufacture.....		N/A
	c) polarity of the positive (+) terminal.....		N/A
	d) nominal voltage.....		N/A
	e) name or trade mark of the manufacturer or supplier.....		N/A
	f) cautionary advice		N/A
	g) Caution for ingestion of swallowable batteries, see also 7.1 c) and Annex D		N/A
	h) Child resistant packaging		N/A
9.3	Safety pictograms		N/A

	Safety pictograms that could be considered for use as an alternative to written cautionary advice are provided in Annex C.		N/A
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Annex A	Additional information on display and storage		N/A
	It takes the form of advice to battery manufacturers, distributors, users, and equipment designers		N/A
	Storage and stock rotation		N/A

Annex B	Battery compartment design guidelines		N/A
B.1	Background		N/A
B.1.1	General		N/A
B.1.2	Battery failures resulting from poor battery compartment design		N/A
	Poor battery compartment design may lead to reversed battery installation or to short circuiting of the batteries		N/A
B.1.3	Potential hazards resulting from battery reversal		N/A
B.1.4	Potential hazards resulting from a short circuit		N/A
B.2	General guidance for appliance design		N/A
B.2.1	Key battery factors to be first considered		N/A
B.2.2	Other important factors to consider		N/A
B.3	Specific measures against reversed installation		N/A
B.3.1	General		N/A
	To overcome the problems associated with the reversed placement of a battery, consideration should be given at the design stage to ensure that batteries cannot be installed incorrectly or, if so installed, will not make electrical contact		N/A
B.3.2	Design of the positive contact		N/A
B.3.3	Design of the negative contact		N/A
B.3.4	Design with respect to battery orientation		N/A
B.3.5	Dimensional considerations		N/A
B.4	Specific measures to prevent short-circuiting of batteries		N/A
B.4.1	Measures to prevent short-circuiting due to battery jacket damage		N/A
B.4.2	Measures to prevent external short-circuit of a battery caused when coiled spring contacts are employed for battery connection		N/A
B.5	Special considerations regarding recessed negative contacts		N/A

B.6	Waterproof and non-vented devices		N/A
B.7	Other design considerations		N/A

Annex C	Safety pictograms		N/A
C.1	General		N/A
	Cautionary advice to fulfil the marking requirements in this standard has, on a historical basis, been in the form of written text		N/A
C.2	Pictograms		N/A
	The pictogram recommendations and cautionary advices are given in Table C.1		N/A
	 DO NOT CHARGE		N/A
	 DO NOT DEFORM / DAMAGE		N/A
	 DO NOT DISPOSE OF IN FIRE		N/A
	 DO NOT INSERT INCORRECTLY		N/A
	 KEEP OUT OF REACH OF CHILDREN		N/A
	 DO NOT MIX DIFFERENT TYPES OR BRANDS		N/A
	 DO NOT MIX NEW AND USED		N/A
	 DO NOT OPEN / DISMANTLE		N/A
	 DO NOT SHORT CIRCUIT		N/A
	 INSERT CORRECTLY		N/A
C.3	Recommendations for use		N/A

	The following instructions are provided for use of the pictograms		N/A
	a) Pictograms shall be clearly legible		N/A
	b) Whilst colours can be used, they should not detract from the information displayed. If colours are used, the background of pictograms E and J should be blue and the circle and diagonal bar of the other pictograms should be red.		N/A
	c) Not all of the pictograms need to be used together for a particular type or brand of battery. In particular, pictogram D and J are meant as alternatives for a similar purpose		N/A

Annex D	Use of the KEEP OUT OF REACH OF CHILDREN safety sign		N/A
D.1	General		N/A
D.2	Safety sign		N/A
	When a safety sign is used to convey the message that these swallowable button cells (i.e. can fit in the ingestion gauge, see Figure 7) should be kept out of the reach of children, the following best practices apply. The safety sign recommendation and cautionary advice for use on battery packaging are given in Table C.1, safety pictogram E.		N/A
D.3	Best practices for marking the packaging		N/A
	Packaging of swallowable button cells (i.e. can fit in the ingestion gauge, see Figure 7) should be marked with the safety pictogram E of Table C.1 to alert the purchaser of the increased risk of such cells.		N/A
	a) Refer to Table 7 for marking requirements on packaging.		N/A
	b) The safety sign should be on contrasting background. The background should cover at least 50 % of the area of the pictogram.		N/A
	c) The size of the safety sign should be 6 mm in diameter or larger.		N/A
	d) If the text "KEEP OUT OF REACH OF CHILDREN" is used, it should contrast with the background colour on which it is printed.		N/A

Annex E	Child resistant packaging		N/A
E.1	General		N/A
E.1.1	General		N/A
E.1.2	Applicability		N/A
E.1.3	Packaging design		N/A

E.1.3.1	Single cell packaging		N/A
	The packaging for button cells should meet one of the following:		N/A
	a) packaging strength as described in E.1.3.3		N/A
	b) packaging requirements based on local legislation or standardization [8], [9], [10], if applicable.		N/A
E.1.3.2	Multi-cell packaging		N/A
	Each cell containment in a multi-cell packaging should meet the above requirements even when another cell containment is removed from the packaging.		N/A
E.1.3.3	Packaging strength		N/A
	The packaging strength should be such that the packaging passes the tests described in Clause E.2.		N/A
E.2	Packaging tests		N/A
E.2.1	General		N/A
	The following test methods were developed based on the analysis of the behaviour of children in a test where they were required to try and open button cell packaging within a limited time. The tests should be conducted by an instructed person or, alternatively, if necessary, using suitable equipment.		N/A
E.2.2	Test items		N/A
	a) Bending test		N/A
	b) Torsion test		N/A
	c) Tearing test		N/A
	d) Pushing test		N/A
E.2.3	Test procedure		N/A
	The test procedure is conducted with ten sample packagings. Each sample is subjected to a series of tests in the order and frequency outlined in Table E.1.		N/A
E.2.4	Criteria		N/A
	Each test sample should meet the following criteria.		N/A
	a) each cell should be kept in its packaging until the end of the test series		N/A
	b) in order to prevent a child from pulling the cell out from its compartment, the packaging should not open too wide. The maximum allowable size of an opening in the packaging is 6 mm diameter for a round hole and 10 mm length for a slit. See Figure E.5 for maximum packaging openings.		N/A

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6.3.2.1	TABLE: Test A – Storage after partial use				P
Model, Sample number	OCV at start of test (Vdc)	Lowest resistive load (Ω)	MAD (h)	Storage temperature (45 $\pm$ 5 °C)	Results
Cell (#01)	1.486	3.9	0.5	45	Pass
Cell (#02)	1.485	3.9	0.5	45	Pass
Cell (#03)	1.484	3.9	0.5	45	Pass
Cell (#04)	1.487	3.9	0.5	45	Pass
Cell (#05)	1.485	3.9	0.5	45	Pass
Supplementary information:					
- No fire - No explosion - No leakage					

6.3.2.2	TABLE: Test B-1 – Transportation-shock			P
Model, Sample number	Ambient (20 $\pm$ 5 °C)	OCV at start of test (Vdc)	Results	
Cell (#06)	20.8	1.701	Pass	
Cell (#07)	20.8	1.694	Pass	
Cell (#08)	20.8	1.691	Pass	
Cell (#09)	20.8	1.697	Pass	
Cell (#10)	20.8	1.698	Pass	
Supplementary information:				
- No fire - No explosion - No leakage				

6.3.2.3	TABLE: Test B-2 – Transportation-Vibration			P
Model, Sample number	Ambient (20 $\pm$ 5 °C)	OCV at start of test (Vdc)	Results	
Cell (#11)	21.2	1.700	Pass	
Cell (#12)	21.2	1.695	Pass	
Cell (#13)	21.2	1.700	Pass	
Cell (#14)	21.2	1.692	Pass	
Cell (#15)	21.2	1.696	Pass	
Supplementary information:				
- No fire - No explosion - No leakage				

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6.3.2.4	TABLE: Test C – Climatic-temperature cycling		P
Model, Sample number		OCV at start of test (Vdc)	Results
Cell (#16)		1.692	Pass
Cell (#17)		1.702	Pass
Cell (#18)		1.701	Pass
Cell (#19)		1.697	Pass
Cell (#20)		1.692	Pass
Supplementary information:			
- No fire			
- No explosion			

6.4.2.1	TABLE: Test D – Incorrect installation				P
Model, Sample number	Ambient (20 ± 5 °C)	OCV of reversed battery (Vdc)	Resistance of circuitry (Ω)	Maximum case temperature (°C)	Results
Cell (#21)	22.1	1.713	0,08	46.7	Pass
Cell (#25)	22.1	1.714	0,08	44.9	Pass
Cell (#29)	22.1	1.713	0,08	52.6	Pass
Cell (#33)	22.1	1.713	0,08	42.2	Pass
Cell (#37)	22.1	1.713	0,08	50.8	Pass
Supplementary information:					
- No fire					
- No explosion					

6.4.2.2	TABLE: Test E – External short circuit				P
Model, Sample number	Ambient (20 ± 5 °C)	OCV of reversed cell (Vdc)	Resistance of circuitry (Ω)	Maximum case temperature (°C)	Results
Cell (#41)	20.4	1.713	0,079	51.4	Pass
Cell (#42)	20.4	1.714	0,081	49.4	Pass
Cell (#43)	20.4	1.713	0,079	44.2	Pass
Cell (#44)	20.4	1.713	0,079	50.3	Pass
Cell (#45)	20.4	1.714	0,079	63.6	Pass
Supplementary information:					
- No fire					
- No explosion					

6.4.2.3	TABLE: Test F – Overdischarge					P
Model, Sample number	Ambient (20 ± 5 °C)	OCV at start of test (Vdc)	Highest MAD (h)	R1 (Ω)	Results	
Cell (#46-49)	20.4	1.374	10	16	Pass	
Cell (#50-53)	20.4	1.374	10	16	Pass	
Cell (#54-57)	20.4	1.376	10	16	Pass	
Cell (#58-61)	20.4	1.373	10	16	Pass	
Cell (#62-65)	20.4	1.376	10	16	Pass	
Supplementary information:						
- No fire						
- No explosion						

6.4.2.4	TABLE: Test G – Free fall test				P
Model, Sample number	Ambient (20 ± 5 °C)	OCV at start of test (Vdc)	Results		
Cell (#66)	21.2	1.697	Pass		
Cell (#67)	21.2	1.695	Pass		
Cell (#68)	21.2	1.695	Pass		
Cell (#69)	21.2	1.697	Pass		
Cell (#70)	21.2	1.694	Pass		
Supplementary information:					
- No fire					
- No explosion					

Photo documentation



--- End of Report ---