

Applicant: **GP Battery Marketing (HK) LTD.**
7/F Building 16W, 16 Science Park West Avenue, Hong Kong Science Park, New Territories, Hong Kong

Manufacturer: **Same as applicant**

Model: **CR1616, CR1620, CR1632, CR2016, CR2025, CR2032, CR2430, CR2450**

Test object: **Button cell multipack**

Test specifications / Test standard: **Commission test according to applicant's requirement
Test refer to IEC 60086-4: 2019 Primary batteries - Part 4: Safety of lithium batteries E.3 Packaging tests**

Purpose of examination: **Test according to the test specification and client's requirement.**

Test result: **See below pages.**
Remark: **Test results reported relate only to the items being tested.**

Sunny Guan
Project Reviewer
Safety Laboratory

Locs Lai
Project Engineer



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Shenzhen Branch Laboratory

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1. General product description:

Button cell multipack

2. Test description:

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)

Test laboratory: SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch
Test location: No.2, Jianghao Industrial Factory Area, No.430, Jihua Road, Bantian Street, Longgang District, Shenzhen, Guangdong, China

Test item was received on 2021-11-18
Tests were performed from 2021-11-18 to 2021-11-24
Ambient: (20±2)°C

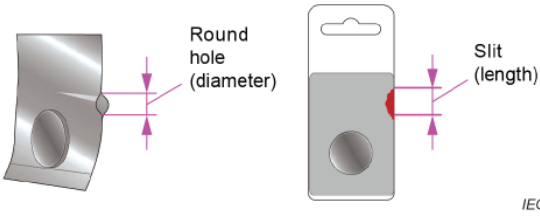
3. Test procedure and result:

| Refer to IEC 60086-4: 2019 | | | |
|----------------------------|---|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| E.3 | Packaging tests | | P |
| E.3.1 | 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 coin cell packagings within a limited time. The tests shall be conducted by an instructed person or, alternatively, if necessary, using suitable equipment. | | P |
| E.3.2 | Test items | | P |
| a) | Bending test Hold the packaging with the fingers of one hand and hold the cell with the fingers of the other hand. Bend the packaging close to the battery until one hand touches the other hand as shown in Figure E.1. This is a guide for the bending angle: 150° ± 5° or more. | | P |
| b) | Torsion test Hold the packaging with the fingers of one hand on each of its shorter sides and twist it diagonally with a torsion angle of 45° ± 5° in opposite directions as shown in Figure E.2, three times in both directions. | | P |



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| c) | <p>Tearing test Try to tear the cell compartment with your fingers as shown in Figure E.3. Alternatively use suitable equipment and apply a force of at least 25 N.</p> | | P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------|--|---|-----------------|--|-----------------|-----|----|--------------|----|-----|----|--------------|----|-----|----|--------------|---|-----|----|--------------|----|-----|----|--------------|----|-----|----|--------------|---|-----|----|--------------|---|--|---|
| d) | <p>Pushing test Try to push the cell out of the compartment with your fingers. Alternatively pull with a mass of at least 5 kg for 30 s; as shown in Figure E.4.</p> | | P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| E.3.3 | <p>Test procedure Sample packagings shall be tested in the condition of the packaging as sold to the consumer. The number of test samples shall be 10 packagings. Each sample shall be subjected to a series of tests in the order and frequency outlined in Table E.1.</p> <p style="text-align: center;">Table E.1 – Test procedure</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Order</th> <th colspan="2">Test item</th> <th>Number of times</th> </tr> </thead> <tbody> <tr> <td>(1)</td> <td>a)</td> <td>Bending test</td> <td>50</td> </tr> <tr> <td>(2)</td> <td>b)</td> <td>Torsion test</td> <td>25</td> </tr> <tr> <td>(3)</td> <td>c)</td> <td>Tearing test</td> <td>1</td> </tr> <tr> <td>(4)</td> <td>b)</td> <td>Torsion test</td> <td>25</td> </tr> <tr> <td>(5)</td> <td>a)</td> <td>Bending test</td> <td>50</td> </tr> <tr> <td>(6)</td> <td>c)</td> <td>Tearing test</td> <td>1</td> </tr> <tr> <td>(7)</td> <td>d)</td> <td>Pushing test</td> <td>1</td> </tr> </tbody> </table> | Order | Test item | | Number of times | (1) | a) | Bending test | 50 | (2) | b) | Torsion test | 25 | (3) | c) | Tearing test | 1 | (4) | b) | Torsion test | 25 | (5) | a) | Bending test | 50 | (6) | c) | Tearing test | 1 | (7) | d) | Pushing test | 1 | <p>Each package for each model was tested this test procedure respectively</p> | P |
| Order | Test item | | Number of times | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (1) | a) | Bending test | 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (2) | b) | Torsion test | 25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (3) | c) | Tearing test | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (4) | b) | Torsion test | 25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (5) | a) | Bending test | 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (6) | c) | Tearing test | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (7) | d) | Pushing test | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| E.3.4 | Criteria | | P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Each test sample shall meet the following criteria. | | P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| a) | Each cell shall be kept in its packaging until the end of the test series, and | | P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b) | <p>In order to prevent a child from pulling the cell out from its compartment, the packaging shall 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.</p> <div style="text-align: center;">  <p>IEC</p> </div> <p style="text-align: center;">Figure E.5 – Maximum packaging opening</p> | <p>No gaps for the test packaging after testing</p> | P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



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Attachment: Photo

Package (CR2032, CR2450, CR2430, CR2025)



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Package (CR2016, CR1616, CR1620, CR1632)



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NOTES TO THIS TEST REPORT

1. The following language(s) of marking(s) and instruction sheets were submitted during the test application:
 - English
 - Throughout this report a comma is used as the decimal separator.

According to the standard, instruction sheets and other texts required by the standard should be written in the official language(s) of the country in which the product is to be sold. The applicant should ensure that the product in future production fulfils the receptive standard requirements.

--- End of Report ---



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