




Technical Report No. 70.520.18.067.08

Rev. 00

Dated 2018-09-06

Client: Titus Battery
Address: 291 N.Hubbards Lane,Suite 172-120,Louisville,KY 40207,USA
Contact person: Patrick

Manufacturing place: Manufacturer's name: Wuhan Voltec Energy Sources Co., Ltd.
Address: No.231, Xing San Road,Han Nan District, Wuhan, HuBei, PR China
Factory's name: same as the Manufacturer
Address: same as the Manufacturer

Test subject: Product: Battery (LI-SOCL2)
Type: ER26500M
Trade mark (if any): 

Test specification: EN 60079-0: 2012+A11:2013 (Partial)
EN 60079-11: 2012 (Partial)
The tests are based on harmonised standard of ATEX directive

Purpose of examination:

- inspection according to specified requirements to realize the conformity with the Produktsicherheitsgesetz –ProdSG, version Nov 08, 2011
- inspection according to specified requirements to realize the observance of the protection aims of the following EC directives:
 - LVD directive 2014/35/EU
 - EMC directive 2014/30/EU
- Test according to the test specification

Test result: The tested products comply with the European harmonised ATEX 2014/34/EU directive standards EN 60079-0:2012+A11:2013 (Partial), EN 60079-11:2012 (Partial)*
*see item 3 of this report for details.

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1 Description of the test subject

1.1 Function

Manufacturer's specification for intended use:
(According to the user manual)

Manufacturer's specification for predictive misuse:
(According to the user manual)
(combination with other products)

1.2 Consideration of the foreseeable misuse

- Not applicable
 Covered through the applied standard
 Covered by the following comment
 Covered by attached risk analysis

1.3 Technical Data

Type/Model	Product	Rated voltage (V)	Rated capacity (mAh)	Weight (g)	Dimension (mm)
ER26500M	Battery (Li-SOCL2)	3.6	6000	60	Max. (Φ26×53)

2 Order

2.1 Date of Purchase Order, Customer's Reference

2018-04-18

2.2 Receipt of Test Sample, Location

Samples were received on 2018-05-02, TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch, No.1999 Duhui Road 201108, Shanghai P.R. China

2.3 Date of Testing

2018-05-05 to 2018-05-28

2.4 Location of Testing

TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch
Shanghai Test Center
No.1999 Duhui Road 201108, Shanghai P.R. China

2.5 Points of Non-compliance or Exceptions of the Test Procedure

None.

3 Test Results

According to Clause 10.5 of EN 60079-11: 2012:

Ten test samples is subjected to the most onerous of the short-circuit test until discharged.

- The resistance of the short-circuit link, excluding connections to it, either shall not exceed 3mΩ or have a voltage drop across it not exceeding 200mV or 15% of the cell e.m.f.
- Before short-circuit, the open voltage of each batteries/cells is measured.
- During short-circuit, short-circuit current of each batteries/cells is measured.
- During short-circuit, the maximum surface temperature is recorded by a thermal couple.
- After short-circuit, the test samples are placed over a piece of blotting paper for a period of at least 12h to observe electrolyte leakage.
- Internal resistance is calculated by s-c voltage divided s-c current.
- Five samples are tested at (20±5) °C, five samples are tested at (60±5)°C.
- Resistance of the short-circuit link: less than 3mΩ.

The results are listed in below table 1:

Table 1:

Model	Max. Open-circuit voltage (V)	Max. Short-circuit current (A)	Max. Surface temperature (°C)		Min. Internal resistance (mΩ)
			Test at (20±5)°C	Test at (60±5)°C	
ER26500M	3.68	17.22	81.8	95.8	211.7
Remark: there is no visible sign of electrolyte on the blotting paper or on the external surfaces of the test samples.					

4 Remark

4.1 Remarks to Factory

The assembly of the product has to comply with the documentation (CDF). Before the implementation of safety relevant modifications to the product into the ongoing production the product must be retested for assessment. The results must be implemented to the documentation and if necessary the certificate must be updated.

The final inspections in the production are described in the IEC 62133: 2002.

- 4.2** The user manual has been examined according to the minimum requirements described in the product standard. The manufacturer is responsible for the accuracy of further particulars as well as of the composition and layout.
- 4.3** When the product is placed on the market, it must be accompanied with safety Instructions written in official language of the country. The instructions shall give information regarding safe operation, installation and maintenance.
- 4.4** According to the German product safety law (ProdSG), the name and address of manufacturer (an EU-based importer or authorized representative if the manufacturer is not based in EU) shall be affixed on the product or, where that is not possible, on its packaging or in a document accompanying the product before the product is placed on the EU market.

According to the EU directives which have been aligned with EU NLF (new legislative framework), both of manufacturer and importer's name and address shall be affixed on the product or, where that is not possible, on its packaging or in a document accompanying the product before the product is placed on the EU market.



4.5 The manufacturer/ Importer has to ensure the appliance placing on the EU market conforms to the applicable EU directives which provide the affixing of the CE marking, such as LVD, EMC, RoHS, ErP, and so on.

5 Documentation

- Specification of the batteries
- Photo documentation report 70.520.18.067.08

6 Summary

Clause 10.5 tests for batteries of EN 60079-11: 2012 were conducted on 10 samples. Test results including maximum surface temperature, maximum short circuit current, minimum internal resistance, were listed in Table 1 which can be used for determination of temperature class and assessing the spark ignition compliance in end product.

TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch
TÜV SÜD Group



Engineer: _____


Yuxi DENG
Project Handler

Technical Report checked: _____


Ing. Kristof De Gersem, MSc.
Designated Reviewer

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