



BSI Standards Publication

# Secondary lithium-ion cells for the propulsion of electric road vehicles

Part 4: Candidate alternative test methods for  
the internal short circuit test of IEC 62660-3

**National foreword**

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A list of organizations represented on this committee can be obtained on request to its secretary.

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# TECHNICAL REPORT



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**Secondary lithium-ion cells for the propulsion of electric road vehicles –  
Part 4: Candidate alternative test methods for the internal short circuit test of  
IEC 62660-3**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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CONTENTS

FOREWORD..... 4

INTRODUCTION..... 6

1 Scope..... 7

2 Normative references ..... 7

3 Terms and definitions ..... 7

4 General provisions for alternative test ..... 7

5 Alternative test method..... 8

    5.1 Alternative test method description ..... 8

        5.1.1 General ..... 8

        5.1.2 Test preparation and test set-up ..... 8

        5.1.3 Test execution ..... 10

        5.1.4 Acceptance criteria ..... 11

Annex A (informative) Test data..... 12

    A.1 General..... 12

    A.2 Test data ..... 12

        A.2.1 Test results ..... 12

        A.2.2 Data of each test ..... 18

Figure 1 – Example of test setup 1..... 9

Figure 2 – Example of test setup 2..... 9

Figure 3 – Example of ceramic nail with Ni tip..... 10

Figure 4 – Example of ceramic nail with Ni tip test..... 10

Figure A.1 – Voltage and temperature of test 1-1..... 18

Figure A.2 – Voltage and temperature of test 1-2..... 18

Figure A.3 – Voltage and temperature of test 1-3..... 19

Figure A.4 – Voltage and temperature of test 2-1..... 19

Figure A.5 – Voltage and temperature of test 2-2..... 20

Figure A.6 – Voltage and temperature of test 2-3..... 20

Figure A.7 – Voltage and temperature of test 3-1..... 21

Figure A.8 – Voltage and temperature of test 3-2..... 21

Figure A.9 – 0.5 mm ceramic nail with Ni tip..... 22

Figure A.10 – Voltage and temperature of test 4..... 22

Figure A.11 – Voltage and temperature of test 5-1..... 23

Figure A.12 – Voltage and temperature of test 5-2..... 23

Figure A.13 – Voltage data of tests 6..... 24

Figure A.14 – Voltage data of tests 7..... 24

Figure A.15 – Voltage data of tests 8..... 25

Figure A.16 – Voltage data of tests 9..... 25

Figure A.17 – Voltage data of tests 10-1..... 26

Figure A.18 – Voltage data of tests 10-2..... 26

Figure A.19 – Voltage data of test 11-1..... 27

Figure A.20 – Voltage data of test 11-2..... 27

Figure A.21 – Voltage data of test 12-1 .....	28
Figure A.22 – Voltage data of test 12-2 .....	28
Figure A.23 – Voltage data of test 12-3 .....	28
Figure A.24 – Voltage data of test 12-4 .....	29
Figure A.25 – Voltage data of test 12-5 .....	29
Figure A.26 – Voltage data of test 12-6 .....	29
Figure A.27 – Voltage data of test 12-7 .....	30
Figure A.28 – Voltage data of test 13 .....	30
Figure A.29 – Voltage data of test 14-1 .....	31
Figure A.30 – Voltage data of test 14-2 .....	31
Figure A.31 – Voltage data of test 14-3 .....	31
Figure A.32 – Voltage data of test 14-4 .....	32
Figure A.33 – Voltage data of test 14-5 .....	32
Figure A.34 – Voltage data of tests 15 .....	33
Figure A.35 – Voltage data of tests 16 .....	34
Table 1 – Recommended test specifications .....	8
Table A.1 – Internal short circuit test results .....	13

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**SECONDARY LITHIUM-ION CELLS FOR THE PROPULSION  
OF ELECTRIC ROAD VEHICLES –****Part 4: Candidate alternative test methods  
for the internal short circuit test of IEC 62660-3**

## FOREWORD

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IEC TR 62660-4, which is a Technical Report, has been prepared by IEC technical committee 21: Secondary cells and batteries.

The text of this Technical Report is based on the following documents:

Enquiry draft	Report on voting
21/891/DTR	21/899/RVC

Full information on the voting for the approval of this Technical Report can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 62660 series, published under the general title *Secondary lithium-ion cells for the propulsion of electric road vehicles*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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## INTRODUCTION

IEC 62660-3 provides the test procedures and acceptance criteria for safety performance of secondary lithium-ion cells and cell blocks used for propulsion of electric vehicles (EV) including battery electric vehicles (BEV) and hybrid electric vehicles (HEV). IEC 62660-3 specifies the internal short circuit test to simulate an internal short circuit of a cell caused by the contamination of conductive particle, based on IEC 62619. Because the test method based on IEC 62619 requires opening of the cell and care to be taken, the industry needs alternative test methods that could also be applied under certain conditions. This document provides candidates of alternative test procedures.

**NOTE** This test is to be conducted in a facility suitable to contain the potential for hazardous reactions up to and including an explosion and with staff trained to manage the risks.

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## SECONDARY LITHIUM-ION CELLS FOR THE PROPULSION OF ELECTRIC ROAD VEHICLES –

### Part 4: Candidate alternative test methods for the internal short circuit test of IEC 62660-3

#### 1 Scope

This Part of IEC 62660 provides the test data on the candidate alternative test methods for the internal short circuit test according to 6.4.4.2.2 of IEC 62660-3:2016. The internal short circuit test in this document is intended to simulate an internal short circuit of a cell caused by the contamination of conductive particle, and to verify the safety performance of the cell under such conditions.

This document is applicable to the secondary lithium-ion cells and cell blocks used for propulsion of electric vehicles (EV) including battery electric vehicles (BEV) and hybrid electric vehicles (HEV).

NOTE This document does not cover cylindrical cells.

#### 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 62619:2017, *Secondary cells and batteries containing alkaline or other non-acid electrolytes – Safety requirements for secondary lithium cells and batteries, for use in industrial applications*

IEC 62660-3:2016, *Secondary lithium-ion cells for the propulsion of electric road vehicles – Part 3: Safety requirements*

#### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62660-3 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

– IEC Electropedia: available at <http://www.electropedia.org/>

– ISO Online browsing platform: available at <http://www.iso.org/obp>.

#### 4 General provisions for alternative test

The internal short circuit test is specified in 6.4.4.2.1 of IEC 62660-3:2016. The other test methods to simulate the internal short circuit of cell caused by the contamination of conductive particle may be selected if the following criteria are satisfied, and agreed between the customer and the supplier: