

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Secondary lithium-ion cells for the propulsion of electric road vehicles –
Part 1: Performance testing**

**Éléments d'accumulateurs lithium-ion pour la propulsion des véhicules routiers
électriques –
Partie 1: Essais de performance**



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CONTENTS

FOREWORD.....	4
INTRODUCTION	6
1 Scope.....	7
2 Normative references.....	7
3 Terms and definitions.....	7
4 Test conditions.....	8
4.1 General.....	8
4.2 Measuring instruments.....	8
4.2.1 Range of measuring devices	8
4.2.2 Voltage measurement.....	9
4.2.3 Current measurement.....	9
4.2.4 Temperature measurements.....	9
4.2.5 Other measurements	9
4.3 Tolerance.....	10
4.4 Test temperature.....	10
5 Dimension measurement.....	10
6 Mass measurement.....	11
7 Electrical measurement.....	11
7.1 General charge conditions	11
7.2 Capacity.....	12
7.3 SOC adjustment.....	12
7.4 Power	12
7.4.1 Test method	12
7.4.2 Calculation of power density.....	15
7.4.3 Calculation of regenerative power density.....	16
7.5 Energy.....	17
7.5.1 Test method	17
7.5.2 Calculation of energy density.....	17
7.6 Storage test.....	18
7.6.1 Charge retention test.....	18
7.6.2 Storage life test	19
7.7 Cycle life test.....	19
7.7.1 BEV cycle test	19
7.7.2 HEV cycle test	23
7.8 Energy efficiency test	27
7.8.1 Common tests.....	27
7.8.2 Test for cells of BEV application	29
7.8.3 Energy efficiency calculation for cells of HEV application	30
Annex A (informative) Selective test conditions.....	32
Annex B (informative) Cycle life test sequence	34
Bibliography.....	37
Figure 1 – Example of temperature measurement of cell.....	9
Figure 2 – Examples of maximum dimension of cell	11
Figure 3 – Test order of the current-voltage characteristic test.....	15

Figure 4 – Dynamic discharge profile A for BEV cycle test	21
Figure 5 – Dynamic discharge profile B for BEV cycle test	22
Figure 6 – Discharge-rich profile for HEV cycle test	25
Figure 7 – Charge-rich profile for HEV cycle test	26
Figure 8 – Typical SOC swing by combination of two profiles for HEV cycle test	27
Figure B.1 – Test sequence of BEV cycle test	35
Figure B.2 – Concept of BEV cycle test.....	36
Table 1 – Discharge conditions	12
Table 2 – Examples of charge and discharge current	13
Table 3 – Dynamic discharge profile A for BEV cycle test	21
Table 4 – Dynamic discharge profile B for BEV cycle test	22
Table 5 – Discharge-rich profile for HEV cycle test.....	25
Table 6 – Charge-rich profile for HEV cycle test.....	26
Table A.1 – Capacity test conditions.....	32
Table A.2 – Power test conditions.....	32
Table A.3 – Cycle life test conditions	32
Table A.4 – Conditions for energy efficiency test for BEV application.....	33
Table B.1 – Test sequence of HEV cycle test	36

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

Part 1: Performance testing

FOREWORD

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International Standard IEC 62660-1 has been prepared by IEC technical committee 21: Secondary cells and batteries.

The text of this standard is based on the following documents:

FDIS	Report on voting
21/728/FDIS	21/732/RVD

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

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

A list of all the 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 amendment and the base publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

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

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INTRODUCTION

The commercialisation of electric road vehicles including battery, hybrid and plug-in hybrid electric vehicles has been accelerated in the global market, responding to the global concerns on CO₂ reduction and energy security. This, in turn, has led to rapidly increasing demand for high-power and high-energy density traction batteries. Lithium-ion batteries are estimated to be one of the most promising secondary batteries for the propulsion of electric vehicles. In the light of rapidly diffusing hybrid electric vehicles and emerging battery and plug-in hybrid electric vehicles, a standard method for testing performance requirements of lithium-ion batteries is indispensable for securing a basic level of performance and obtaining essential data for the design of vehicle systems and battery packs.

This standard is to specify performance testing for automobile traction lithium-ion cells that basically differ from the other cells including those for portable and stationary applications specified by the other IEC standards. For automobile application, it is important to note the usage specificity; i.e. the designing diversity of automobile battery packs and systems, and specific requirements for cells and batteries corresponding to each of such designs. Based on these facts, the purpose of this standard is to provide a basic test methodology with general versatility, which serves a function in common primary testing of lithium ion cells to be used in a variety of battery systems.

This standard is associated with ISO 12405-1-and ISO 12405-2¹.

IEC 62660-2 specifies the reliability and abuse testing for lithium-ion cells for electric vehicle application.

¹ Under consideration.

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

Part 1: Performance testing

1 Scope

This part of IEC 62660 specifies performance and life testing of secondary lithium-ion cells used for propulsion of electric vehicles including battery electric vehicles (BEV) and hybrid electric vehicles (HEV).

The objective of this standard is to specify the test procedures to obtain the essential characteristics of lithium-ion cells for vehicle propulsion applications regarding capacity, power density, energy density, storage life and cycle life.

This standard provides the standard test procedures and conditions for testing basic performance characteristics of lithium-ion cells for vehicle propulsion applications, which are indispensable for securing a basic level of performance and obtaining essential data on cells for various designs of battery systems and battery packs.

NOTE 1 Based on the agreement between the manufacturer and the customer, specific test conditions may be selected in addition to the conditions specified in this standard. Selective test conditions are described in Annex A.

NOTE 2 The performance tests for the electrically connected lithium-ion cells may be performed with reference to this standard.

NOTE 3 The test specification for lithium-ion battery packs and systems is defined in ISO 12405-1 and ISO 12405-2 (under consideration).

2 Normative references

The following referenced documents are indispensable for the application 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 60050-482, *International Electrotechnical Vocabulary – Part 482: Primary and secondary cells and batteries*

IEC 61434, *Secondary cells and batteries containing alkaline or other non-acid electrolytes – Guide to the designation of current in alkaline secondary cell and battery standards*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050-482 and the following apply.

3.1

battery electric vehicle

BEV

electric vehicle with only a traction battery as power source for vehicle propulsion