ICS 29.220.30 SLOVENSKÁ TECHNICKÁ NORMA Október 2021

STN	**Akumulátorové lítiové batérie na používanie v ľahkých elektrických vozidlách (EV) Časť 1: Všeobecné bezpečnostné požiadavky a skúšobné metódy Zmena A1**	**STN EN 50604-1/A1** 36 4360

Secondary lithium batteries for light EV (electric vehicle) applications - Part 1: General safety requirements and test methods

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 09/21

STN EN 50604-1 z júna 2017 sa bez tejto zmeny A1 môže používať do 21. 6. 2024.

Obsahuje: EN 50604-1:2016/A1:2021

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EUROPEAN STANDARD

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EN 50604-1:2016/A1

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English Version

Secondary lithium batteries for light EV (electric vehicle) applications - Part 1: General safety requirements and test methods

Batteries d'accumulateurs au lithium pour applications liées aux véhicules électriques légers - Partie 1 : Exigences générales de sécurité et méthodes d'essai

Lithium-Sekundärbatterien für Anwendungen in leichten Elektrofahrzeugen - Teil 1: Allgemeine Sicherheitsanforderungen und Prüfverfahren

This amendment A1 modifies the European Standard EN 50604-1:2016; it was approved by CENELEC on 2021-06-21. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This amendment exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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EN 50604-1:2016/A1:2021 (E)

Contents

Page

European foreword

This document (EN 50604-1:2016/A1:2021) has been prepared by CLC/TC 21X “Secondary cells and batteries”.

The following dates are fixed:

• latest date by which the existence of this document has to be announced at national level	(doa)	2021-12-21
• latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2022-06-21
• latest date by which the national standards conflicting with this document have to be withdrawn	(dow)	2024-06-21

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

This part is read in conjunction with the appropriate part of the withdrawn ISO 12405-1, ISO 12405-2 and ISO 12405-3 and novel ISO 6469-1:2019. Remark: the 1st Ed of EN 50604-1 is referencing to ISO 12405-3.

NOTE 1 The following print types are used:

— requirements: in roman type;

— test specifications: *in italic type*;

— notes: in small roman type.

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association.

Any feedback and questions on this document should be directed to the users’ national committee. A complete listing of these bodies can be found on the CENELEC website.

EN 50604-1:2016/A1:2021 (E)

Introduction

Lithium-ion battery systems are efficient rechargeable energy storage systems for electrically propelled road vehicles. The requirements for lithium-ion battery systems to be used as power source for the propulsion of electric road vehicles are significantly different to those batteries used for consumer electronics or for stationary applications.

Lithium-ion batteries can store electricity at relatively high-energy density compared to other battery chemistries currently available. Under current state of art, most lithium-ion batteries use organic electrolytes classified as Class 3 “flammable liquid” under “UN Recommendations on the Transport of Dangerous Goods – Model Regulations”. Therefore, mitigating potential hazards associated with fire or explosion of lithium-ion batteries are considered as an important issue.

The EN 50604-1 series is read in conjunction with ISO 12405-3:2014 (withdrawn) and ISO 6469-1:2019 (for this amendment). The clauses of the particular requirements in EN 50604-1 supplement or modify the corresponding clauses in ISO 12405-3:2014 (withdrawn) and ISO 6469-1:2019 (for this amendment). Where the text indicates an “addition” to or a “replacement” of the relevant requirement, test specification or explanation of ISO 12405-3:2014 (withdrawn) and ISO 6469-1:2019 (for this amendment), these changes are made to the relevant text of ISO 12405-3:2014 (withdrawn) and ISO 6469-1:2019 (for this amendment), which then becomes part of the standard. Where no change is necessary, the words “This clause of ISO 12405-3:2014 is applicable” are used.

Test items were selected to simulate conditions likely to occur during handling (e.g. removal or replacement) or during operation. They cover conditions of normal operation, rough handling and as well likely conditions of misuse or negligent handling. For electric vehicles operating under extreme conditions (e.g. off-road, extreme climate etc.) additional requirements could be necessary which are not covered by this document.

NOTE Additional requirements might also apply to battery system after the integration into the vehicle resulting from national or regional regulations and are not dealt with in this document. Same applies to hazards from electric shock.

This document provides specific test procedures and related requirements to ensure an appropriate and acceptable level of safety of lithium-ion (Li-ion) battery systems specifically developed for propulsion of road vehicles. Propositions for other chemistries are given in informative Annex HH.

This document indicates references to the UN Recommendations on the Transport of Dangerous Goods – Manual of Tests and Criteria: Section 38.3 which are performed independently from this testing program. Test reports issued by an ILAC, APLAC or similar accredited party are acceptable for the battery system complying with all aspects of Section 38.3 of Manual of Tests and Criteria of UN Recommendations on the Transport of Dangerous Goods for this test option. Test reports issued and verified by in house testing according to UN 38.3 are also accepted.

1 Modification to Clause 1, “Scope”

Replace the 3rd paragraph by the following:

“Light EV includes all electrically propelled vehicles of category L1 up to category L7 according to the definition of ECE-TRANS-WP29-78r6e and all electrically propelled or assisted cycles including plug-in hybrid road vehicles (PHEV), that derive all or part of their energy from on-board rechargeable energy storage systems (RESS).“

Delete the 5th paragraph.

Add after NOTE and renumber it NOTE 1:

“This document also applies to:

— built-in battery packs/systems in EVs.

NOTE 2 Informative Annex HH gives information on possible tests for other chemistries.“

Replace the first and second point of the last paragraph by:

“

— individual cells;

— non-removable battery systems;“

2 Modification to Clause 2, “Normative references”

Add the following new references:

"

EN IEC 60812:2018, *Failure modes and effects analysis (FMEA and FMECA) (IEC 60812:2018)*

EN 60529:1991[1], *Degrees of protection provided by enclosures (IP Code)*

EN 61000-6-7:2015, *Electromagnetic compatibility (EMC) - Part 6-7: Generic standards - Immunity requirements for equipment intended to perform functions in a safety-related system (functional safety) in industrial locations (IEC 61000-6-7:2014)*

EN 61326-3-1:2017, *Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 3-1: Immunity requirements for safety-related systems and for equipment intended to perform safety-related functions (functional safety) - General industrial applications (IEC 61326-3-1:2017)*

EN 61508 (series), *Functional safety of electrical/electronic/programmable electronic safety-related systems (IEC 61508 series)*

EN 62133-2, *Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications - Part 2: Lithium systems (IEC 62133-2:2017)*

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[1] As impacted by EN 60529:1991/A1:2000, EN 60529:1991/A2:2013, EN 60529:1991/A2:2013/AC:2019-02, EN 60529:1991/AC:2016-12, and EN 60529:1991/corrigendum May 1993.

EN ISO 178:2010[2], *Plastics – Determination of flexural properties (ISO 178:2010)*

EN ISO 179 (series), *Plastics – Determination of Charpy impact properties (ISO 179 series)*

EN ISO 2409:2013[3], *Paints and varnishes – Cross-cut test (ISO 2409:2013)*

EN ISO 4892-2:2013, *Plastics - Methods of exposure to laboratory light sources - Part 2: Xenon-arc lamps (ISO 4892-2:2013)*

EN ISO 13849 (all parts), *Safety of machinery – Safety-related parts of control systems*

ISO 6469-1:2019, *Electrically propelled road vehicles — Safety specifications — Part 1: Rechargeable energy storage system (RESS)*

IEC 60695-11-10, *Fire hazard testing - Part 11-10: Test flames - 50 W horizontal and vertical flame test methods*

SAE J 1739:2009, *Potential Failure Mode and Effects Analysis in Design (Design FMEA), Potential Failure Mode and Effects Analysis in Manufacturing and Assembly Processes (Process FMEA)*"

[2] A newer edition exists: EN ISO 178:2019.

[3] A newer edition exists: EN ISO 2409:2020.