



SLOVENSKI STANDARD
SIST EN 60254-1:2001
01-februar-2001

Lead-acid traction batteries - Part 1: General requirements and methods of test

Lead-acid traction batteries -- Part 1: General requirements and methods of test

Blei-Antriebsbatterien -- Teil 1: Allgemeine Anforderungen und Prüfungen

Batteries de traction au plomb -- Partie 1: Prescriptions générales et méthodes d'essai

Ta slovenski standard je istoveten z: EN 60254-1:1997

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ICS:

29.220.20 Sä | ä • \ ä ^ \ ~ } å æ } ä | ^ } ä å Acid secondary cells and
à æ ^ i å batteries

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 60254-1

April 1997

ICS 29.220.20

Supersedes HD 465.1 S1:1986

Descriptors: Lead-acid traction batteries, general requirements, methods of test

English version

Lead-acid traction batteries
Part 1: General requirements and methods of test
(IEC 60254-1:1997)

Batteries de traction au plomb
Partie 1: Prescriptions générales
et méthodes d'essai
(CEI 60254-1:1997)

Blei-Antriebsbatterien
Teil 1: Allgemeine Anforderungen
und Prüfungen
(IEC 60254-1:1997)

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

This European Standard 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 Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of document 21/405/FDIS, future edition 3 of IEC 60254-1, prepared by IEC TC 21, Secondary cells and batteries, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60254-1 on 1997-03-11.

This European Standard supersedes HD 465.1 S1:1986.

The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 1997-12-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 1997-12-01

Annexes designated "normative" are part of the body of the standard.
In this standard, annex ZA is normative.
Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60254-1:1997 was approved by CENELEC as a European Standard without any modification.

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Annex ZA (normative)**Normative references to international publications
with their corresponding European publications**

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

NOTE: When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

| <u>Publication</u> | <u>Year</u> | <u>Title</u> | <u>EN/HD</u> | <u>Year</u> |
|--------------------|-------------|---|--------------|-------------|
| IEC 60051 | series | Direct acting indicating analogue electrical-measuring instruments and their accessories | EN 60051 | series |
| IEC 60254-2 | 1997 | Lead-acid traction batteries Part 2: Dimensions of cells and terminals and marking of polarity on cells | EN 60254-2 | 1997 |

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**NORME
INTERNATIONALE
INTERNATIONAL
STANDARD**

**CEI
IEC**

60254-1

Troisième édition
Third edition
1997-03

Batteries de traction au plomb –

**Partie 1:
Prescriptions générales et méthodes d'essai**

Lead-acid traction batteries –
(standards.iteh.ai)

**Part 1:
General requirements and methods of test**

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Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

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For price, see current catalogue*

CONTENTS

| | Page |
|--|------|
| FOREWORD | 5 |
| Clause | |
| 1 General | 7 |
| 1.1 Scope and object | 7 |
| 1.2 Normative references | 7 |
| 2 Functional characteristics | 7 |
| 2.1 Capacity | 7 |
| 2.2 Charge retention | 9 |
| 2.3 High-rate discharge performance | 9 |
| 2.4 Cyclic endurance | 9 |
| 3 General test conditions | 9 |
| 3.1 Accuracy of measuring instruments | 9 |
| 3.2 Preparation and maintenance of the test cells or batteries | 11 |
| 3.3 Definition of a fully charged cell or battery | 13 |
| 4 Testing procedures | 13 |
| 4.1 Sequence of performance of the tests | 13 |
| 4.2 Capacity test | 13 |
| 4.3 Charge retention test | 15 |
| 4.4 High-rate discharge performance test | 15 |
| 4.5 Cyclic endurance test | 17 |
| 5 Specific values | 19 |
| 5.1 Energy density | 19 |
| 6 Testing procedures for light road vehicle traction batteries | 21 |
| 6.1 1 h capacity | 21 |
| 6.2 Dynamic discharge performance | 23 |
| 6.3 Dynamic endurance | 25 |
| Figure 1 – Dynamic capacity test – Current/battery voltage versus discharge time | 27 |

INTERNATIONAL ELECTROTECHNICAL COMMISSION

LEAD-ACID TRACTION BATTERIES –

Part 1: General requirements and methods of test

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of the IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.
- 3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
- 5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
- 6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60254-1 has been prepared by IEC technical committee 21: Secondary cells and batteries.

This third edition cancels and replaces the second edition published in 1983 and constitutes a technical revision.

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

| FDIS | Report on voting |
|-------------|------------------|
| 21/405/FDIS | 21/421/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.

LEAD-ACID TRACTION BATTERIES –

Part 1: General requirements and methods of test

1 General

1.1 Scope and object

This part of IEC 60254 is applicable to lead-acid traction batteries used as power sources for electric propulsion.

Clauses 1 to 5 are applicable to all traction battery applications which include road vehicles, locomotives, industrial trucks and mechanical handling equipments. Clause 6 offers a series of tests which may be used specifically to test batteries developed for use in vehicles such as light passenger vehicles, motor cycles, light commercial vehicles, etc.

The object of this standard is to specify certain essential characteristics of traction batteries or cells, together with the relevant test methods of those characteristics.

1.2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 60254. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of IEC 60254 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60051, *Direct acting indicating analogue electrical-measuring instruments and their accessories*

IEC 60254-2: 1997, *Lead-acid traction batteries – Part 2: Dimensions of cells and terminals and marking of polarity on cells*

2 Functional characteristics

2.1 Capacity (for the test, see 4.2)

2.1.1 The most essential characteristic of a traction battery is its ability to store electric energy. This is expressed as capacity C , measured in ampere hours (Ah), which varies with the conditions of use.

2.1.2 The nominal capacity C_N is a reference value, declared by the manufacturer, which is valid for the cell/battery temperature of 30 °C, a discharge time of 5 h, and a cut-off voltage $U_f = 1,70$ V per cell. The corresponding discharge current is

$$I_N \text{ (A)} = \frac{C_N \text{ (Ah)}}{5 \text{ (h)}}$$

2.1.3 The actual capacity C_a shall be determined by discharging a fully-charged battery according to 4.2. The resultant value is used for the verification of the nominal capacity C_N .

2.2 Charge retention (for the test, see 4.3)

Batteries lose charge on open circuit as a result of self-discharge.

The charge retention is defined as the residual dischargeable capacity C_r after storage on open circuit under defined conditions of temperature and time.

2.3 High-rate discharge performance (for the test, see 4.4)

In some applications, traction batteries shall be capable of supplying high-rate discharge currents:

$$I \geq I_N \text{ (A)}$$

for instance for acceleration and/or lifting of loads.

Since not all traction batteries are required to supply high current rates, this characteristic is only applied when appropriate.

The high-rate performance of a traction battery is represented by the 0,5 h discharge current $I_{0,5}$, i.e. the current to discharge a battery at 30 °C to a cut-off voltage $U_f = 1,5$ V per cell within 0,5 h. If required, the value of the current $I_{0,5}$ shall be indicated by the manufacturer.

2.4 Cyclic endurance (for the test, see 4.5)

The service provided by a traction battery consists of discharges followed by recharges, each discharge generally using a large part of the stored energy.

The endurance of a battery is defined by the number of discharge/recharge cycles it can perform under specified conditions until its capacity has just reached the limit of 0,8 C_N .

3 General test conditions

3.1 Accuracy of measuring instruments (see IEC 60051)

3.1.1 Electrical measuring instruments

3.1.1.1 Range of measuring devices

The instruments used shall enable the values of voltage and current to be measured. The range of these instruments and measuring methods shall be chosen so as to ensure the accuracy specified for each test.

For analogue instruments, this implies that the readings shall be taken in the last third of the graduated scale.

Any other measuring instruments may be used provided they give an equivalent accuracy.