
**Svinčeno-kislinske zagonske baterije - Splošne zahteve, metode preizkušanja
in številčenje**

Lead-acid starter batteries - General requirements, methods of test and numbering

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EUROPEAN STANDARD

EN 50342/A3

NORME EUROPÉENNE

EUROPÄISCHE NORM

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English version

Lead-acid starter batteries – General requirements, methods of test and numbering

Batteries d'accumulateurs de démarrage
au plomb –
Prescriptions générales,
méthodes d'essais et numérotation

Blei-Akkumulatoren-Starterbatterien -
Allgemeine Anforderungen, Prüfungen
und Kennzeichnung

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This amendment A3 modifies the European Standard EN 50342:2001; it was approved by CENELEC on 2004-02-01. 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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, 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

This amendment was prepared by the Technical Committee CENELEC TC 21X, Secondary cells and batteries.

The text of the draft was submitted to the Unique Acceptance Procedure and was approved by CENELEC as amendment A3 to EN 50342:2001 on 2004-02-01.

The following dates were fixed:

- latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2005-02-01
 - latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 2007-02-01
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5.6 Endurance test

Replace the title by “**5.6 Endurance tests for vented batteries**”.

5.6.3 Replace the entire subclause by the following:

5.6.3 Requirement 2

5.6.3.1 Charging conditions

Charging voltage depends on the battery technology and is, therefore, related to the battery water loss level (see Table 3). The water loss level used should be the value that is declared by the manufacturer. If this is not available, then it should be determined by tests according to 5.7.

Table 3

Water loss	Voltage
Very low (VL)	16 V ± 0,10 V
Low (L)	15,2 V ± 0,10 V
Normal (N)	14,8 V ± 0,10 V

The battery shall be charged at one of these voltages with the maximum current in amperes being limited to $I_{max} = 5 I_n$ (see 3.1.2). The charging time, which can change according to the test procedure, is defined in 4.2. The battery temperature shall be maintained in the range 25 °C to 35 °C. If necessary, an appropriate environmental control system shall be used, e.g. a water bath.

5.6.3.2 Corrosion test

[SIST EN 50342:2002/A3:2005](https://standards.iteh.ai/catalog/standards/sist/5b116f51-645b-48af-859d-bdba1fb8208b/sist-en-50342-2002-a3-2005)

5.6.3.2.1 The test shall be carried out on batteries which have been charged in accordance with 5.6.3.1 for 16 h.

5.6.3.2.2 The battery shall be placed in a water-bath maintained at a temperature of 60 °C ± 2 °C. The top of the battery case shall emerge not more than 25 mm above the level of the water. A minimum space of 25 mm shall be maintained around each battery.

5.6.3.2.3 The battery, maintained at 60 °C ± 2 °C, shall be charged at a constant voltage of 14,0 V ± 0,1 V for a period of 13 days.

5.6.3.2.4 The battery shall be stored on open circuit, still at 60 °C ± 2 °C, for a period of 13 days.

5.6.3.2.5 The battery shall be cooled to ambient temperature. Water shall be added if possible to maintain electrolyte level in accordance with the manufacturer's recommendations.

5.6.3.2.6 The battery shall then be recharged in accordance with 5.6.3.1 for 6 h.

5.6.3.2.7 The battery shall be stored for a rest period of 20 h.

5.6.3.2.8 The battery shall be discharged with a current of 0,6 I_{cc} at 25 °C ± 2 °C for 30 s. The 30 s voltage has to be recorded.

5.6.3.2.9 The sequence 5.6.3.2.1 to 5.6.3.2.8 constitutes one corrosion test unit.

5.6.3.2.10 The whole sequence 5.6.3.2.1 to 5.6.3.2.8 shall be repeated and the test shall be terminated when the battery reaches less than 7,2 V after 30 s of discharge with a current of $0,6 I_{cc}$ at $25\text{ °C} \pm 1\text{ °C}$.

5.6.3.2.11 The minimum number of corrosion test units before failure is 4.

5.6.3.3 Cycling test

5.6.3.3.1 The test shall be carried out on batteries which have been charged in accordance with 5.6.3.1 for 16 h.

5.6.3.3.2 Throughout the whole test period with the exception of the rapid discharge test at the temperature of $-18\text{ °C} \pm 1\text{ °C}$, the battery shall be placed in a water-bath at a temperature of $25\text{ °C} \pm 2\text{ °C}$. Water shall be added as necessary during the test to maintain electrolyte level in accordance with the manufacturer's recommendations except for very low water consumption batteries.

5.6.3.3.3 The batteries shall be connected to a device where they undergo a series of 18 cycles, each cycle comprising

a) a discharge for 2 h at a current in amperes of $I = 5 I_n$,

b) immediately followed:

- by a recharge for 4 h and 45 min at a voltage depending on the battery technology with its related water loss level (see Table 3) with a maximum current in amperes being limited to $I_{max} = 5 I_n$ (see 3.1.2), and

- for 15 min at a constant current in amperes of $I = 2,5 I_n$.

5.6.3.3.4 The battery, maintained at $25\text{ °C} \pm 2\text{ °C}$, shall be charged according to 5.6.3.1 for 5 h.

5.6.3.3.5 The battery shall be stored on open circuit, still at $25\text{ °C} \pm 2\text{ °C}$ for 5 h.

5.6.3.3.6 The battery shall then be discharged at $I = 5 I_n$ down to $10,0\text{ V} \pm 0,05\text{ V}$ (Capacity: C).

5.6.3.3.7 The battery shall then be recharged in accordance with 5.6.3.1 for 24 h.

5.6.3.3.8 The sequence 5.6.3.3.2 to 5.6.3.3.7 constitutes one cycling test unit.

5.6.3.3.9 The whole sequence 5.6.4.2.2 to 5.6.4.2.7 shall be repeated four times. The actual capacity at the end of the 5th unit shall be $C \geq 0,5 C_n$.

5.6.3.3.10 If the criteria $C \geq 0,5 C_n$ is reached, the battery shall be placed in a cooling chamber with (forced) air circulation at a temperature of $-18\text{ °C} \pm 1\text{ °C}$ for a minimum of 20 h or until the temperature in one of the middle cells has reached $-18\text{ °C} \pm 1\text{ °C}$.

5.6.3.3.11 The battery shall then be discharged after the end of cooling period with a current of $0,6 I_{cc}$.

5.6.3.3.12 After 30 s of discharge, the voltage across the battery terminals shall be measured. It shall not be less than 7,20 V. The discharge shall then be terminated.

5.6.4 Replace the entire subclause by the following:

5.6.4 Requirement 3

5.6.4.1 Corrosion test: see 5.6.3.2.

5.6.4.2 Cycling test: after step 5.6.3.3.12, the test is continued from 5.6.3.3.1 to 5.6.3.3.8, three times up to a total number of 8 units. If the criteria $C \geq 0,5 C_n$ is reached at the 8th unit, the test is continued from 5.6.3.3.10 to 5.6.3.3.12.

Add a new subclause.

5.6.5 Requirement 4

5.6.5.1 Corrosion test: see 5.6.3.2.

5.6.5.2 Cycling test: after step 5.6.4.2, the test is continued from 5.6.3.3.1 to 5.6.3.3.8, four times up to a total number of 12 units. If the criteria $C \geq 0,5 C_n$ is reached at the 12th unit, the test is continued from 5.6.3.3.10 to 5.6.3.3.12.

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