
Svinčeno-kislinske zaganjalne baterije - 7. del: Splošne zahteve, preskusne metode in mere baterij za motorna kolesa

Lead-acid starter batteries - Part 7: General requirements, methods of tests and dimensions for motorcycle batteries

Blei-Akkumulatoren-Starterbatterien - Teil 7: Allgemeine Anforderungen und Prüfungen von Motorradbatterien

Batteries d'accumulateurs de démarrage au plomb -- Partie 7: Exigences générales, méthodes d'essais et dimensions pour les batteries d'accumulateurs pour motocycles

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Lead acid starter batteries - Part 7: General requirements and methods of tests for motorcycle batteries

Batteries d'accumulateurs de démarrage au plomb - Partie
7: Exigences générales, méthodes d'essais pour les
batteries d'accumulateurs pour motocycles

Blei-Akkumulatoren-Starterbatterien - Teil 7: Allgemeine
Anforderungen und Prüfungen von Motorradbatterien

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

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Contents

| | Page |
|---|------|
| European foreword | 3 |
| 1 Scope | 4 |
| 2 Normative references | 4 |
| 3 Terms and definitions | 4 |
| 4 General requirements | 5 |
| 4.1 Identification and labelling | 5 |
| 4.2 Marking of the polarity | 5 |
| 5 General test condition | 5 |
| 5.1 Characteristics and abbreviations | 5 |
| 5.2 Sampling of batteries | 6 |
| 5.3 Measuring instruments | 6 |
| 6 Test sequence | 6 |
| 7 Inspections and test procedures | 7 |
| 7.1 Charging of batteries | 7 |
| 7.2 C _{10e} capacity check | 8 |
| 7.3 Cranking performance test | 8 |
| 7.4 Endurance test | 9 |
| 7.5 Charge retention test | 9 |
| 7.6 Water consumption test | 10 |
| 7.7 Vibration resistance test | 10 |
| Annex A (normative) Correlation between C10 and C20 | 11 |

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European foreword

This document (EN 50342-7:2015) has been prepared by CLC/TC 21X "Secondary cells and batteries".

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2016-06-30
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2018-06-30

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

It is due to Commission Regulation (EU) No 1103/2010 of 29 November 2010 establishing, pursuant to Directive 2006/66/EC of the European Parliament and of the Council, rules as regards capacity labelling of portable secondary (rechargeable) and automotive batteries and accumulators (OJ L 313, 30.11.2010, p. 3–7).

It provides precise definitions of the values of accuracy for capacity and cold cranking. For this purpose, the definition of the labelled capacity is clearly identified, and a method of sampling the batteries as well as the degree of compliance is defined. Additionally, the needed marking is described precisely.

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EN 50342-7:2015 (E)

1 Scope

This European Standard is applicable to lead-acid batteries used primarily as a power source for the starting of internal combustion engines, lighting and ignition of motorcycles, power sport vehicles and all-terrain vehicles up to a maximum capacity of 35 Ah (C₁₀) (further on referred as batteries). The nominal voltage is 12 V or 6 V.

Test definitions and criteria in this document are written for batteries with a nominal voltage of 12 V only. For batteries with a nominal voltage of 6 V all voltages have to be divided by two.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 50342-1, *Lead-acid starter batteries – Part 1: General requirements and methods of test*

EN 61429:1996+A11:1998, *Marking of secondary cells and batteries with the international recycling symbol ISO 7000-1135 and indications regarding directives 93/86/EEC and 91/157/EEC*

IEC 60417, *Graphical Symbols for Use on Equipment*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 flooded or vented batteries
secondary battery having a cover provided with one or more openings through which gaseous products may escape

[SOURCE: EN 50342-1]

**3.2 Valve Regulated Lead Acid batteries
VRLA**

valve regulated lead-acid batteries are secondary batteries which are closed under normal conditions but which has an arrangement that allows the escape of gas if the internal pressure exceeds a predetermined value

Note 1 to entry: The battery cannot receive addition to the electrolyte. In VRLA batteries the electrolyte is immobilized.

[SOURCE: EN 50342-1]

3.3 activation of dry charged batteries
batteries for motorcycle application are in many cases delivered as dry charged batteries. They have to be filled with a defined amount of electrolyte before usage. If no electrolyte is delivered with the battery and no advice is given by the manufacturer, batteries shall be filled with diluted sulfuric acid of density 1,28 kg/l ± 0,01 kg/l at 25°C for flooded batteries and 1,32 kg/l ± 0,01 kg/l at 25 °C for valve regulated batteries

Note 1 to entry: Any other manufacturer instruction for handling after filling and before first usage shall be considered.

4 General requirements

4.1 Identification and labelling

Batteries according to this standard shall bear the following characteristics on at least one of their sides or on the top surface:

- a) identification of manufacturer or supplier;
- b) nominal voltage (12 V or 6 V);
- c) nominal capacity C_{10} (Ah) (see 5.1);
- d) nominal cranking current I_{cc} (A) at -18°C (see 5.1);
- e) six colored symbols as specified in EN 50342-1 Annex A (Safety labelling);
- f) marking for the separate collection and recycling according to EN 61429; and
- g) valve regulated batteries shall be marked using the term "VRLA".

Label size: The capacity C_{10} (Ah) and the cold cranking current I_{cc} (A) shall be displayed on a separate label or as text on a combined label (e.g. together with additional information of the producer or type mark). The size of the label shall be at least 3 % of the largest side of the battery. The character size high should be at least 3 mm. The label must be fixed on one of the four sides or on the lid. A multiple labelling is allowed.

Instead of labels silk printing or similar methods for marking can be used as well. Designated marking areas with corresponding sizes should be realized.

NOTE Batteries may be marked with other information such as the filling and charging date.

4.2 Marking of the polarity

The batteries shall be marked with signs for both polarities that have to be positioned near to the terminals.

The marking of the positive terminals shall take the form of the symbol "+". It shall be in accordance with IEC 60417, Symbol 5005.

The negative terminal shall take the form of the symbol "-". It shall be in accordance with IEC 60417, Symbol 5006.

5 General test condition

5.1 Characteristics and abbreviations

5.1.1 Capacity

The 10 h capacity C_{10} is the electrical charge measured in Ah that a battery can supply with a discharge current of

$$I_{10} [A] = \frac{C_{10n} [Ah]}{10 [h]}$$

at $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$.

C_{10n} is the nominal capacity of a battery indicated by the manufacturer.

C_{10e} is the effective capacity of the battery determined by discharge with constant current I_{10} to $U = 10.5 \text{ V}$ (see 7.2)

EN 50342-7:2015 (E)**5.1.2 Cold cranking current**

The cranking current is the discharge current I_{cc} measured in A to be indicated by the manufacturer which a battery can supply at $-18\text{ }^{\circ}\text{C}$ according to 7.3.

5.1.3 Charge retention

The charge retention is the ability of a battery to maintain the cold cranking performance after open circuit storage for a certain time under increased temperature conditions (see 7.5).

5.1.4 Endurance

The endurance reflects the ability of a battery to perform repeated discharge/recharge cycles under specific test conditions (see 7.4).

5.1.5 Water consumption

The water consumption is the loss in weight of a battery measured in g / (Ah C_{10e}) during overcharge conditions (see 7.6).

5.1.6 Water basin

If a test needs to be carried out in a water basin, the following conditions shall be fulfilled. The terminal base of the battery shall be at least 15 mm, but not more than 25 mm, above the level of the water. If several batteries are in the same water bath, the distance between them and the distance to the walls of the bath shall be at least 25 mm.

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5.2 Sampling of batteries

All tests shall be carried out on new battery samples. Samples shall be considered as new no longer than [SIST EN 50342-7:2015](https://standards.iteh.ai/catalog/standards/sist/e8b4a6c2-0070-4328-867c-17d83f126653/sist-en-50342-7-2015)

- 30 days after the acid filling and formation date in the case of filled and charged batteries,
- 60 days after shipment date of the manufacturer in the case of dry-charged batteries.

Out of different production or sampling lots, five batteries shall be selected for testing. Four of these batteries shall be used for the tests. In case of equipment failures or technical deviations, one battery can be replaced to repeat the complete sequence for this battery.

5.3 Measuring instruments

Refer to EN 50342-1.

6 Test sequence

The test sequence for the four required samples is shown in Table 1.

First the batteries have to pass the test steps 1 to 7. The requirements of C_{10} capacity check and cranking performance test have to be fulfilled at least once for each sample. If the requirements are fulfilled in the first or second capacity check / cranking performance test the following capacity checks / cold cranking tests don't have to be completed.

Only if the C_{10} capacity check and the cold cranking test are successful, the test sequence shall be continued with steps 8 to 11. These tests shall commence no later than one week after completion of steps 1 to 7.

Table 1 - Test sequence

| Step | Battery | Reference | 1 | 2 | 3 | 4 |
|------|-------------------------------------|-----------|-----|-----|-----|-----|
| 1 | Initial charge prior to test | 7.1 | X | X | X | X |
| 2 | 1st C _{10e} capacity check | 7.2 | X | X | X | X |
| 3 | 1st cranking performance test | 7.3 | X | X | X | X |
| 4 | 2nd C _{10e} capacity check | 7.2 | (X) | (X) | (X) | (X) |
| 5 | 2nd cranking performance test | 7.3 | (X) | (X) | (X) | (X) |
| 6 | 3rd C _{10e} capacity check | 7.2 | (X) | (X) | (X) | (X) |
| 7 | 3rd cranking performance test | 7.3 | (X) | (X) | (X) | (X) |
| 8 | Endurance | 7.4 | X | | | |
| 9 | Charge retention | 7.5 | | X | | |
| 10 | Water consumption | 7.6 | | | X | |
| 11 | Vibration resistance | 7.7 | | | | X |

(X) denotes that this test needs to be carried out if the previous same test did not achieve the requirement level. One of the batteries 1 to 4 can be replaced by battery 5 for testing starting from step 1 in case of unexpected deviations below 90 % C_n or test equipment failures during test.

7 Inspections and test procedures

7.1 Charging of batteries

7.1.1 General

All tests shall commence with fully-charged batteries unless stated differently. Batteries shall be considered as fully-charged if they have undergone the following charging procedures.

Prior to start of the complete test sequence (according to Clause 6) the charging time shall be limited to 16h.

In case of recharging after a test for cold cranking performance (according to 7.3) the charging time may be limited to 16 h.

If not specified differently by the manufacturer, the following charging methods shall be used.

7.1.2 Flooded batteries

The battery shall be charged at a voltage of 16,00 V ± 0,10 V for 24 h with the maximum current limited to 2,5 times I₁₀. The battery temperature shall be maintained in the range of 25°C to 35°C. If necessary an appropriate environmental control system like a water bath shall be used.

7.1.3 Valve regulated batteries (VRLA)

The battery shall be charged at a voltage of 14,80 V ± 0,10 V for 24 h with the maximum current limited to 2,5 times I₁₀. The battery temperature shall be maintained in the range of 25°C to 35°C. If necessary an appropriate environmental control system like a water bath shall be used.