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Lead-acid starter batteries -- Part 2: Dimensions of batteries and marking of terminals

Blei-Akkumulatoren-Starterbatterien -- Teil 2: Maße von Batterien und Kennzeichnung von Anschlüssen

Batteries d'accumulateurs de démarrage au plomb -- Partie 2: Dimensions des batteries et marquage des bornes

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English version

Lead-acid starter batteries - Part 2: Dimensions of batteries and marking of terminals

Batteries d'accumulateurs de démarrage au plomb - Partie 2: Dimensions des batteries et marquage des bornes

Blei-Akkumulatoren-Starterbatterien - Teil 2: Maße von Batterien und Kennzeichnung von Anschlüssen

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CENELEC
European Committee for Electrotechnical Standardization
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Foreword

This European Standard 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 (as prEN + prAA) and was approved by CENELEC as EN 50342-2 on 2007-07-01.

This European Standard supersedes EN 60095-2:1993 + A11:1994.

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)	2008-07-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2010-07-01

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1 Scope

This European Standard is applicable to lead-acid batteries used for starting, lighting and ignition of passenger automobiles and light commercial vehicles with a nominal voltage of 12 V.

All batteries in accordance with this European Standard can be fastened to the vehicle either by means of the ledges around the case or by means of a hold-down device engaging with the lid.

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.

EN 50342-1	Lead-acid starter batteries – Part 1: General requirements and methods of test
EN 61429	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 61429)
IEC 60050-482	International Electrotechnical Vocabulary – Part 482: Primary and secondary cells and batteries
IEC 60417	Graphical Symbols for use on Equipment
EN ISO 1043-1	Plastics – Symbols and abbreviated terms - Part 1: Basic polymers and their special characteristics (ISO 1043-1)

3 Definitions

For the purpose of this document, the definitions of IEC 60050-482, International Electrotechnical Vocabulary, are applicable.

4 General requirements

The following specifications are common to all vehicle batteries, not only for the batteries of this standard.

4.1 Marking

4.1.1 Safety labelling

The batteries shall bear the six coloured safety symbols in accordance with EN 50342-1.

4.1.2 Marking of the polarity of terminals

The batteries shall be marked with signs for both polarities that have to be positioned near to or on the top face of the terminals.

4.1.2.1 Marking of positive terminals

This marking shall take the form of the symbol '**+**' either on the upper surface of the positive terminal or on the lid adjacent to the positive terminal.

4.1.2.2 Marking of negative terminals

This marking shall take the form of the symbol "–" either on the upper surface of the negative terminal or on the lid adjacent to the negative terminal.

4.1.2.3 Design and dimensions of marking of terminals

The symbols used for marking the terminals shall be in accordance with the IEC 60417, symbol 5005 a for the positive and symbol 5006 a for the negative polarity.

Figure 1 – Marking of polarity

The polarity symbols may be either indented or embossed by (0,4 ± 0,1) mm.

4.2 Recycling

4.2.1 Recycling of lead

The batteries shall be marked with the recycling symbol and the EC-Symbol of a crossed through roll out container, both in accordance with EN 61429.

4.2.2 Recycling of plastic material

The marking of plastic moulded parts has to be fixed in the tooling of the battery container e.g. on the bottom or on one short wall side near the ledge.

For the polypropylene-polyethylene copolymer the marking > PP < or > PP/PE < in accordance with EN ISO 1043-1 is the minimum requirement.

As supplementation is permissible

– the recycling symbol (ISO 7000-1135),

– the number 7 or 07 for PP/PE and

– the addition of “other" in case of additives to PP.

Figure 2 – Marking of polypropylene

The marking shall be achieved by moulding in relief. The recommended thickness is (0,3 ± 0,1) mm. The height of the marking characters shall be between 5 mm and 7 mm.

4.3 Dimensions and design

All dimensions are in millimetres.

Details of the design that are not indicated in the generic drawings have to be chosen appropriately.

The illustrations in this standard, especially those of the design of the lid, handles, ribs, ledges, vent caps and their locations are not mandatory.

5 Recommended types

The object of this clause is clearly to update the previous edition of this standard and to introduce an updated version of LS and LBS models. Those updated versions LN and LBN are designed so that they may replace the earlier models LS and LBS. Therefore, for new battery developments, only the recommended series LN and LBN shall be used.

This clause specifies

– the main dimensions of starter batteries of the two preferred series LN and LBN;

– the location of the positive and negative terminals with respect to the fastening system;

– the dimensions of tapered terminals of starter batteries;

– the main dimensions and design of the 'Semi Lid' (SL);

– the top clamping area (M) for fastening on the upper part.

The preferred series LN replaces LS and series LBN replaces LBS of 6.1.

5.1 Recommended types LN and LBN

Starter batteries in accordance with this part of the standard are marked with LN and LBN (N = new). Both battery series have the same width (L = large) but different height:

LN = standard height (H = 190 mm)

LBN = low height (H = 175 mm)

Of the two series, the model LN (large, standard height, new) shall be considered as the most preferred series.

5.2 Main dimensions of batteries

The main dimensions of the batteries are represented by symbols as indicated on the drawings. These schematic drawings do not represent any design details of the top of the battery.

The dimensions corresponding to the symbols below shall be in accordance with Figure 3, Figure 4, Figure 5, Table 2 and Table 3.

Symbols used:

a_1 = Overall length at the battery base with ledges

a_2 = Length at the battery base without ledges

a_3 = Length at battery lid

H = Overall height including lid, plugs and terminals

h = Height of the upper surface M, supporting the hold-down device

a_4 = Distance of the inside notches

a_5 = Distance between terminal and the edges of the lid at the short side (see Figures 4 and 5)

a_6 = Distance of the robotic-grips-segments (see Figure 13 and Table 4)

5.3 Handles

5.3.1 General

Batteries with a weight less than or equal to 20 kg can be designed with or without handles. Batteries with a weight of more than 20 kg must have handles.

5.3.2 Handles, if any

If the batteries have handles, the handles must be integrated in the lid (see Figure 3).

NOTE The handle design shown in all the pages of this standard is for information only. It is left to the battery manufacturer to propose a design in accordance with this standard with respect to overall dimensions.

5.4 Standard fastening on the bottom

All batteries in accordance with this clause shall have ledges for fastening over the length of all sides as an integral part of the battery container and allowing the battery to be fixed by means of the bottom of the container.

5.4.1 Design of ledges

The profile of the ledges must be in accordance with Figure 6. The length of the ledges on the rear side of the battery shall be reduced (see Figure 3); 20 mm from both ends compared to the one on the front side.

5.4.2 Notches

The hold-down clamps of the support shall match with the ledges and the notches to provide secure fastening in either direction.

To allow a symmetrical rotation for fastening the opposite ledges contain a equal number of notches and to secure correct positioning of the battery on the support the ledges shall have 5 notches on the long sides and 3 notches on the short sides.

5.4.3 Arrangement and dimensions of ledges and notches

The shape and dimensions of ledges and notches shall be in accordance with Figure 3, Figure 4, Figure 5 and Figure 6 (details ‘X’, ‘Y’ and ‘Z’).

5.4.4 General concerning permissible alternative fastening

Starter batteries in accordance with this part of the standard may be fixed to the vehicles either:

– by a bottom hold-down device of the long side,

– by a bottom hold-down device of the short side or

– by means of a hold-down device engaging with the upper part of the battery (for example, a metal frame), connected to the top clamping area 'M' (see 5.4.4.2).

In either case, such batteries shall have on the long sides top clamping areas 'M'.

5.4.4.1 Fastening by ledges at the short side

For fastening at the short sides only batteries of this standard series are recommended to be used because of the reduced tolerances of the length. The shape and dimensions of the ledges and notches shall correspond to Figure 6.

Safety note: The hold-down clamps of support shall match with the ledges and notches to provide secure fastening in both direction and height.

5.4.4.2 Fastening by upper part of the battery

Batteries for fastening by the upper part (top clamping area 'M') shall be designed so that the lid provides appropriate support for the hold-down device, for instance a metal frame.

5.4.5 Terminals

5.4.5.1 Position of terminals

The position of positive and negative terminals 'P' (see Figure 4 or Figure 5) with respect to the shortened ledge shall be in accordance with Figure 3.

5.4.5.2 Dimensions of battery terminals ('P')

5.4.5.2.1 Dimensions of the positive terminal

The tapered positive terminal shall be in accordance with Figure 7 a).

5.4.5.2.2 Dimensions of the negative terminal

The tapered negative terminal shall be in accordance with Figure 7 b).

5.4.6 Marking of polarity and dimensions of corresponding symbols

Batteries in accordance with this part of the standard shall be marked twice in the area of the terminals as indicated (Figure 3 or Figure 12), when applied on the lid (see 4.1.2).

The symbol of the polarity and the dimension of the symbols shall be in accordance with 4.1.2.

5.5 Special features of lid

The properties of the battery lid are:

5.5.1 Semi bloc lid

That means a block lid which includes the terminals and the vent plugs so that they are not higher than the lid surface. The special feature of the semi bloc lid is the top clamping area 'M' (Figures 3 to 5).

5.5.2 Spray water proof

That means a flat surface and water sealed maintenance openings, if any.

5.5.3 Central degassing

That means a central degassing system with gas outlets 'E' at right angles to the faces of one or both of the short sides (Figure 10).

5.5.4 Recessed holes

That means recessed holes 'K' for optional terminal protection covers on both sides (Figure 11).

5.5.5 Removable cell plugs

That means, if removable cell plugs 'V' are present, they are relevant to the safety of the degassing systems (Figure 12).

5.5.6 Information for tooling the lid

For further developments of lid tooling the design should take into account the possible future need for sensor-holes 'S' of 28 mm maximum diameter (Figure 12).

– Position of alternatives is demonstrated in Figure 12 in conjunction with the dimensions of Table 1.

– Details will be given by the battery makers.

Table 1 – Position of sensor holes 'S' (see Figure 12)

Lid size	A ± 2	B ± 2
LN 0 / LBN 0	13	40
LN 1 / LBN 1	18	48
LN 2 / LBN 2	19	57
LN 3 / LBN 3	27	65
LN 4 / LBN 4	27	74
LN 5 / LBN 5	28	84
LN 6 / LBN 6	31	94

5.6 Welded lid

The welded lid shall project beyond the sides of all four of the container walls by 2,5 mm or more.