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Dimension of traction battery for electric vehicles

电动汽车用动力蓄电池产品规格尺寸

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This is the first edition of the standard: it does not replace an earlier document.

This standard was proposed by the Ministry of Industry and Information Technology of the People's Republic of China and is under the jurisdiction of the National Technical Committee of Auto Standardization (SAC/TC 114).

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1 Scope

This standard specifies the dimensions of the cells, the modules and the standard cases of traction batteries for electric vehicles (hereinafter referred to as batteries).

It applies to the lithium-ion batteries and the nickel-metal hydride batteries fitted to electric vehicles; other types of battery are to follow it by reference.

2 Normative references

The following documents are indispensable to the application of this document. For dated references, only the edition bearing the date applies; for undated references, the latest edition (including all amendments) applies.

GB/T 1804 General tolerances - Tolerances for linear and angular dimensions without individual tolerance indications · GB/T 2900.41 Electrotechnical terminology - Primary and secondary cells and batteries · GB/T 19596 Terminology of electric vehicles

3 Terms and definitions

The terms and definitions given in GB/T 2900.41 and GB/T 19596 and the following apply to this document.

3.1 Cylindrical cell - a battery having a cylindrical case and connecting elements (electrodes).

3.2 Prismatic cell - a battery having a cuboid case and connecting elements (electrodes).

3.3 Pouch cell - a battery having a case made of composite film and connecting elements (electrodes).

3.4 Secondary cell - the basic unit device that converts chemical energy into electrical energy, usually comprising electrodes, separator, electrolyte, case and terminals, and designed to be rechargeable. Also called a cell.

3.5 Battery module - an assembly of more than one secondary cell connected in series, in parallel or in series-parallel and used as a power source. Also called a battery pack.

3.6 Standard battery case - an energy storage device used on an electric vehicle, usually comprising battery modules, the battery management module (excluding the battery control unit), the battery box and the corresponding accessories, which can be applied to different vehicle models through different combinations.

4 General requirements for the dimensions of battery products

4.1 Dimensional tolerance requirements. The dimensions of the cells specified in this standard follow the provisions of GB/T 1804 for the limit deviations of linear dimensions, taking the precision class m.

4.2 Dimensional range requirements. In order to unify the battery dimensions, the dimensional ranges of Table 1 are agreed: a product dimension below 10 mm has a range of ± 0.5 mm; from 10 mm to below 100 mm, ± 2.0 mm; from 100 mm to below 500 mm, ± 5.0 mm; and 500 mm and above, ± 10.0 mm. Cells, battery modules and standard battery cases (see Annex A) that fall within the same dimensional range belong to the same specification of product.

5 Dimensions of battery cells

5.1 Dimensions of cylindrical cells. The structure of the cylindrical cell is shown in Figure 1, in three types, A, B and C, where N1 is the diameter of the cell and N3 the height of the cell excluding the terminals. Table 2 gives four dimensional series: 18 mm diameter by 65 mm high; 21 mm by 70 mm; 26 mm by 65 mm or 70 mm; and 32 mm by 70 mm or 134 mm. The ranges of the dimensions listed follow Table 1.

5.2 Dimensions of prismatic cells. The structure of the prismatic cell is shown in Figure 2, in three types, A, B and C, where N1 is the thickness, N2 the width and N3 the height of the cell excluding the terminals. Table 3 gives eight dimensional series, set out by width: 65 mm, 70 mm, 100 mm, 120 mm, 135 mm, 148 mm, 173 mm and 217 mm, each with its own set of thicknesses and heights. Note 2 to the table recommends, in view of the needs of vehicle packaging, that the terminal height of a prismatic cell should not exceed 10 mm.

5.3 Dimensions of pouch cells. The structure of the pouch cell is shown in Figure 3, in two types, A and B, where N1 is the thickness, N2 the width and N3 the height of the cell excluding the terminals. Table 4 gives seven dimensional series, set out by width: 100 mm, 118 mm, 148 mm, 161 mm, 190 mm, 217 mm and 228 mm, each with its own set of heights; the thickness is not fixed by the table.

6 Dimensions of battery modules

The structure of the battery module is shown in Figure 4, where N1 is the thickness, N2 the width and N3 the height of the module. Table 5 gives twelve dimensional series, set out by width: 141 mm, 151 mm, 159 mm, 178 mm, 190 mm, 220 mm, 226 mm, 234 mm, 325 mm, 367 mm, 402 mm and 439 mm, each with its own range of thicknesses - from a single value up to spans such as 285 mm to 793 mm - and its own set of heights. The ranges of the dimensions listed follow Table 1.

Annex A (Informative) Dimensions of standard battery cases

Annex A recommends the typical dimensions of the standard battery cases suitable for electric commercial vehicles. Figure A.1 shows the structure of the case, where N1 is the thickness or length, N2 the width and N3 the height, and Table A.1 lists five typical dimensional series of standard battery case, by width: 489 mm, 630 mm to 680 mm, 690 mm, 720 mm to 800 mm and 999 mm to 1 722 mm, with lengths from 820 mm to 2 190 mm and heights from 205 mm to 548 mm. The ranges of the dimensions listed follow Table 1.