

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

Secondary cells and batteries containing alkaline or other non-acid electrolytes – Sealed nickel-metal hydride prismatic rechargeable single cells

Accumulateurs alcalins et autres accumulateurs à électrolyte non acide –  
Éléments individuels parallélépipédiques rechargeables étanches au nickel-  
métal hydrure



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**Accumulateurs alcalins et autres accumulateurs à électrolyte non acide – Éléments individuels parallélépipédiques rechargeables étanches au nickel-métal hydrure**

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# INTERNATIONAL ELECTROTECHNICAL COMMISSION

## SECONDARY CELLS AND BATTERIES CONTAINING ALKALINE OR OTHER NON-ACID ELECTROLYTES – SEALED NICKEL-METAL HYDRIDE PRISMATIC RECHARGEABLE SINGLE CELLS

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International Standard IEC 62675 has been prepared by subcommittee 21A: Secondary cells and batteries containing alkaline or other non-acid electrolytes, of IEC technical committee 21: Secondary cells and batteries.

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

FDIS	Report on voting
21A/550/FDIS	21A/560/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.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

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# SECONDARY CELLS AND BATTERIES CONTAINING ALKALINE OR OTHER NON-ACID ELECTROLYTES – SEALED NICKEL-METAL HYDRIDE PRISMATIC RECHARGEABLE SINGLE CELLS

## 1 Scope

This International Standard specifies marking, designation, dimensions, tests and requirements for sealed nickel-metal hydride prismatic secondary single cells.

NOTE In this context, "prismatic" refers to cells having rectangular sides and base.

When there exists an IEC standard specifying test conditions and requirements for cells used in special applications and which is in conflict with this standard, the former takes precedence.

## 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.

IEC 60050-482:2004, *International Electrotechnical Vocabulary (IEV) – Part 482: Primary and secondary cells and batteries*

[IEC 62675:2014](https://standards.iteh.ai/catalog/standards/sist/702b8792-75f6-4c9c-a80c-38e3bb0b8aec/iec-62675-2014)

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## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in the IEC 60050-482, as well as the following apply.

### 3.1

#### **sealed cell**

cell which remains closed and does not release either gas or liquid when operated within the limits of charge and temperature specified by the manufacturer

Note 1 to entry: The cell is equipped with a safety device to prevent dangerously high internal pressure.

Note 2 to entry: The cell does not require addition to the electrolyte and is designed to operate during its life in its original sealed state.

Note 3 to entry: The nickel-metal hydride cell, however, may release gas towards the end of its life due to the accumulation of hydrogen in the cell.

[SOURCE: IEC 60050-482:2004, 482-05-17, modified – The existing note has been developed into Notes 1, 2 and 3 to entry.]

### 3.2

#### **nominal voltage**

suitable approximate value of voltage used to designate or identify the voltage of a cell or battery

Note 1 to entry: The nominal voltage of a sealed nickel-metal hydride rechargeable single cell: 1,2 V.

Note 2 to entry: The nominal voltage of a battery of  $n$  series connected cells is equal to  $n$  times the nominal voltage of a single cell.



[SOURCE: IEC 60050-482:2004, 482-03-31, modified – Addition of Notes 1 and 2 to entry.]

### 3.3

#### **rated capacity**

capacity value of a battery determined under specified conditions and declared by the manufacturer

Note 1 to entry: The rated capacity is the quantity of electricity  $C_5$  Ah (ampere-hours) declared by the manufacturer which a battery can deliver when discharged at the reference test current of  $0,2 I_t$  A to a final voltage of 1,0 V at +20 °C when charged, stored and discharged under the conditions specified in Clause 7.

[SOURCE: IEC 60050-482:2004, 482-03-15, modified – Addition of Note 1 to entry.]

## 4 Parameter measurement tolerances

The overall accuracy of controlled or measured values, relative to the specified or actual values, shall be within these tolerances:

- a)  $\pm 1$  % for voltage;
- b)  $\pm 1$  % for current;
- c)  $\pm 2$  °C for temperature;
- d)  $\pm 0,1$  % for time;
- e)  $\pm 1$  % for capacity.

These tolerances comprise the combined accuracy of the measuring instruments, the measurement techniques used, and all other sources of error in the test procedure.

The details of the instrumentation used shall be provided in any report of results.

## 5 Designation and marking

### 5.1 Cell designation

Sealed nickel-metal hydride prismatic secondary single cells shall be designated by the letter "HP" followed by a letter L, M, H or X which signifies:

- low rate of discharge (L);
- medium rate of discharge (M);
- high rate of discharge (H);
- very high rate of discharge (X).

NOTE These types of cells are typically but not exclusively used for the following discharge rates

- L up to  $0,5 I_t$  A,
- M up to  $3,5 I_t$  A,
- H up to  $7,0 I_t$  A,
- X up to and above  $7,0 I_t$  A.

This group of two letters shall be followed by a group of figures indicative of the rated capacity of the cell in ampere-hours.

Cells that have been tested at 20 °C and 5 °C but not at –18 °C shall carry an additional marking of T5.

For example: HPH 100 or HPH 100 T5.

Cells in cases of steel material shall be designated by the letter "S" after the figures.

For example: HPH 100 S or HPH 100 S T5.

## 5.2 Cell termination

This standard does not specify cell termination.

## 5.3 Marking

Each cell or monobloc shall carry durable markings giving the following minimum information:

- type of cell (designation as specified in 5.1; in addition, it is permissible for a manufacturer to use his own type designation);
- name or identification of manufacturer or supplier;
- positive terminal: either a red washer or an indented or raised symbol, (see graphical symbol 5005 of IEC 60417:2002).

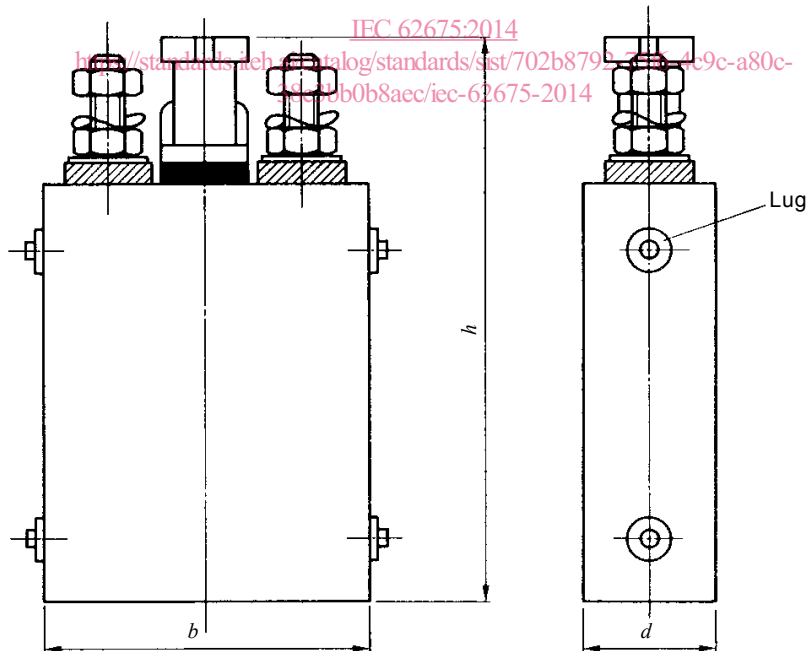
## 5.4 Safety recommendations

The manufacturer shall provide recommendations for the safe handling of the cell. See also IEC 61438.

## 6 Dimensions

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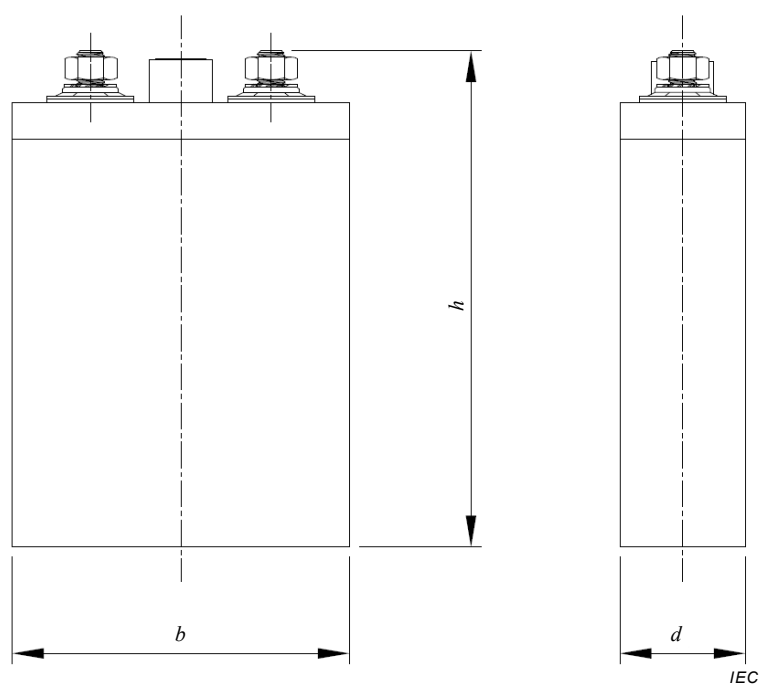
Dimensions of cells shown in Figure 1 and Figure 2 are given in Table 1 and Table 2.



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NOTE Cells in steel container can have two or more terminals and four or more lugs.

**Figure 1 – Example of a sealed prismatic cell in steel container with two terminals and four lugs**



NOTE Cells in plastic container can have two or more terminals.

**Figure 2 – Example of a sealed prismatic cell in plastic container with two terminals**

**Table 1 – Dimensions for sealed nickel-metal hydride prismatic cells in steel containers**

Maximum height, $h$ mm	Width, $b$ mm	Length, $d$ mm
210	155	55
320	230	61

**Table 2 – Dimensions for sealed nickel-metal hydride prismatic cells in plastic containers**

Maximum height, $h$ mm	Width, $b$ mm	Length, $d$ mm
125	83	36
146	98	41
168	83	34
178	116	37, 40
191	134	49
195	60	78
200	120	47
224	182	55
300	220	224

NOTE 1 The dimensions given in Table 1 and Table 2 represent preferred values.

NOTE 2 The widths relate to the overall width dimension of the cell excluding for cells in steel container the thickness of the lug flanges. The values for widths and lengths given in Table 1 and Table 2 are maximum values; their negative tolerances are given in Table 3.

NOTE 3 The values for height given in Table 1 and Table 2 relate to the maximum height over the terminals or the closed cell vent, whichever is the greater. No lower limits are stated.

NOTE 4 The dimensions shown in Table 1 and Table 2 are not associated to particular cell capacities. They apply to all kinds of sealed nickel-metal hydride prismatic cells, i.e. L, M, H and X types.

**Table 3 – Measurement tolerances in millimetres  
(valid for widths and lengths)**

Up to and including 60 mm	0 to –2
Above 60 mm, up to and including 120 mm	0 to –3
Above 120 mm	0 to –4

## 7 Electrical tests

### 7.1 General

Charge and discharge currents for the tests in accordance with 7.2 to 7.10 inclusive shall be based on the value of the rated capacity.

In all tests, except where noted, no leakage of electrolyte in liquid form shall be observed. A cooling device may be necessary, referring to manufacturer's instructions. When the temperature on the cell reaches a level of 70 °C, the charge or discharge should be discontinued.

In all electrical tests, safety pressure plate may be used at outside of the cell to prevent a deformation of cell case.

### 7.2 Charging procedure for test purposes

Prior to charging, the cells shall have been discharged in an ambient temperature of 20 °C ± 5 °C, at a constant current of 0,2  $I_t$  A, down to a final voltage of 1,0 V.

Unless otherwise specified in this standard, the charge preceding the various discharge tests scheduled, shall be carried out in an ambient temperature of 20 °C ± 5 °C and either

- at a constant current of 0,2  $I_t$  A for 4h, then at a constant current of 0,1  $I_t$  A for 3 h to 4 h. The duration of the charge shall therefore be 7 h to 8 h, or
- at a constant current of 0,2  $I_t$  A for 4 h 30 min, then at a constant current of 0,05  $I_t$  A for 3 h to 4 h. The duration of the charge shall therefore be 7 h 30 min to 8 h 30 min.

### 7.3 Discharge performance

#### 7.3.1 General

The following discharge tests shall be carried out in the sequence given.

All cells shall be tested at 20 °C as well as at +5 °C and/or –18 °C.

#### 7.3.2 Discharge performance at 20 °C

The cell shall have been charged in accordance with 7.2. After charging, the cell shall be stored, in an ambient temperature of 20 °C ± 5 °C, for not less than 1 h and not more than 4 h. It shall then be discharged in the same ambient temperature and as specified in Table 4. The duration of discharge shall be not less than the minimum specified in Table 4.