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**Electrolyte for vented nickel-cadmium cells**

Electrolyte for vented nickel-cadmium cells

Elektrolyt für geschlossene wiederaufladbare Nickel-Cadmium-Zellen

Electrolyte pour éléments ouverts au nickel-cadmium

**Ta slovenski standard je istoveten z: HD 585 S1:1991**[SIST HD 585 S1:1997](https://standards.iteh.ai/catalog/standards/sist/1a2cd56c-6837-45c7-8744-6f107b19a6ff/sist-hd-585-s1-1997)<https://standards.iteh.ai/catalog/standards/sist/1a2cd56c-6837-45c7-8744-6f107b19a6ff/sist-hd-585-s1-1997>**ICS:**

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**SIST HD 585 S1:1997****en**

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HARMONIZATION DOCUMENT

HD 585 S1

DOCUMENT D'HARMONISATION

HARMONISIERUNGSDOKUMENT

July 1991

UDC 621.355.82-213.4:621.3.035.4

Descriptors: Storage batteries, nickel-cadmium batteries, electrolyte,  
composition, purity, specifications, characteristics

## ENGLISH VERSION

ELECTROLYTE FOR VENTED NICKEL-CADMIUM CELLS  
(IEC 993:1989)

Electrolyte pour éléments  
ouverts au nickel-cadmium  
(CEI 993:1989)

Elektrolyt für geschlossene  
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(IEC 993:1989)

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This Harmonization Document was approved by CENELEC on 1991-02-01.

CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for implementation of this Harmonization Document on a national level.

Up-to-date lists and bibliographical references concerning national implementation may be obtained on application to the Central Secretariat or to any CENELEC member.

This Harmonization Document exists in three official versions (English, French, German).

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, 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

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Ref. No. HD 585 S1:1991 E

### FOREWORD

The CENELEC questionnaire procedure, performed for finding out whether or not the International Standard IEC 993:1989 could be accepted without textual changes, has shown that no CENELEC common modifications were necessary for the acceptance as Harmonization Document.

The reference document was submitted to the CENELEC members for formal vote and was approved by CENELEC as HD 585 S1 on 1 February 1991 (confirmed by 67 BT).

The following dates were fixed:

- latest date of announcement  
of the HD at national level (doa) 1991-09-01
- latest date of publication of  
a harmonized national standard (dop) 1992-03-01
- latest date of withdrawal of  
conflicting national standards (dow) 1992-03-01

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For products which have complied with the relevant national standard before 1992-03-01, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 1997-03-01.

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[6f107b19a6ff/sist-hd-585-s1-1997](https://standards.iteh.ai/catalog/standards/sist/1a2cd56c-6837-45c7-8744-6f107b19a6ff/sist-hd-585-s1-1997)

ENDORSEMENT NOTICE

The text of the International Standard IEC 993:1989 was approved by CENELEC as a Harmonization Document without any modification.

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NORME  
INTERNATIONALE  
INTERNATIONAL  
STANDARD

CEI  
IEC  
993

Première édition  
First edition  
1989-07

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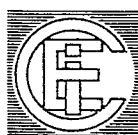
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Numéro de référence  
Reference number  
CEI/IEC 993: 1989

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## ELECTROLYTE FOR VENTED NICKEL-CADMIUM CELLS

## FOREWORD

- 1) The formal decisions or agreements of the IEC on technical matters, prepared by Technical Committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.
- 2) They have the form of recommendations for international use and they are accepted by the National Committees in that sense.
- 3) In order to promote international unification, the IEC expresses the wish that all National Committees should adopt the text of the IEC recommendation for their national rules in so far as national conditions will permit. Any divergence between the IEC recommendation and the corresponding national rules should, as far as possible, be clearly indicated in the latter.

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PREFACE

This standard has been prepared by Sub-Committee 21A: Alkaline secondary cells and batteries, of IEC Technical Committee No. 21: Secondary cells and batteries.

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

Six Months' Rule	Report on Voting
21A(C0)58	21A(C0)64

Full information on the voting for the approval of this standard can be found in the Voting Report indicated in the above table.

## ELECTROLYTE FOR VENTED NICKEL-CADMIUM CELLS

## 1. Scope

This standard applies to electrolytes and their components when used in vented nickel-cadmium cells.

These electrolytes are used:

- for filling cells supplied without filling electrolyte, and/or
- for refilling cells if change of electrolyte is required, and/or
- if the operating electrolyte needs to be topped up with water

provided no specific recommendations from the manufacturer are available.

## 2. Object

The object of this standard is to define the composition, purity and properties of electrolytes and their components for use in vented nickel-cadmium cells and requirements for them in the absence of specific recommendations from the manufacturer.

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## 3. Definitions

For the purpose of this standard, the following definitions apply.

3.1 *Classification of Impurities*

Impurities are classified according to their effect on cell life and performance as far as the values given in the following tables are exceeded.

- Critical: impurities which have a detrimental effect on cell operation and performance characteristics and which result in an irreversible degradation of the cell;
- Major: impurities which reduce either performance characteristics and/or life of the cell;
- Minor: impurities which have no effect on cell life and/or performance characteristics.



### 3.2 *Filling electrolyte*

Electrolyte used for the filling of new vented nickel-cadmium cells prior to service.

### 3.3 *Operating electrolyte*

Electrolyte in use in vented nickel-cadmium cells. It will differ in composition from the filling and replacement electrolyte by the addition of water, absorption of carbon dioxide from the air and the transfer of impurities from the internal components of the cell.

### 3.4 *Replacement electrolyte*

Electrolyte used to refill vented nickel-cadmium cells when the operating electrolyte exceeds the impurity limits.

## 4. Preparation of the electrolyte

The electrolyte is prepared by dilution of a commercially available potassium hydroxide solution of a higher concentration with purified water or by dissolving solid potassium hydroxide in purified water.

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If required; additives, for instance lithium hydroxide, should be added according to the manufacturer's instructions.

*Note.*— Extreme caution should be exercised when dissolving solid potassium hydroxide in water: considerable heat is generated during the solution process.

It is essential that solid potassium hydroxide should always be added to water; never add water to solid potassium hydroxide. The instructions of the battery manufacturers should be followed exactly.

For the preparation of electrolyte by dissolving potassium hydroxide in water, only vessels made of steel or plastic material, preferably polyethylene, should be used. Vessels shall be resistant to potassium hydroxide solution and shall withstand temperatures of up to 100 °C.

### 4.1 *Requirements of potassium hydroxide (KOH), solid and liquid, supplied for preparation of electrolytes*

Total potassium hydroxide content expressed as KOH shall be not less than 85% by mass in the solid state and 45% by mass in the liquid state.