SLOVENSKI STANDARD

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Electrolyte for vented nickel-cadmium cells

ICS 29.220.30

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Electrolyte for vented nickel-cadmium cells
(IEC 60993:1989)

Electrolyte pour éléments ouverts au nickel-cadmium (CEI 60993:1989)

Elektrolyt für geschlossene wiederaufladbare Nickel-Cadmium-Zellen (IEC 60993:1989)

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

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

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CENELEC

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

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Foreword

The text of the International Standard IEC 60993:1989, prepared by SC 21A, Secondary cells and batteries containing alkaline or other non-acid electrolytes, of IEC TC 21, Secondary cells and batteries, was approved by CENELEC as HD 585 S1 on 1991-02-01.

This Harmonization Document was submitted to the formal vote for conversion into a European Standard and was approved by CENELEC as EN 60993 on 2002-07-01.

The following date was 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) 2003-07-01

Annexes designated "informative" are given for information only.
In this standard, annexes A and B are informative.

Endorsement notice

The text of the International Standard IEC 60993:1989 was approved by CENELEC as a European Standard without any modification.

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Electrolyte pour éléments ouverts au nickel-cadmium

Electrolyte for vented nickel-cadmium cells

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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.

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(CO)58	21A(CO)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.

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.

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.