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TECHNICAL REPORT

colour inside

Secondary cells and batteries containing alkaline or other non-acid electrolytes – Experimental procedure for the forced internal short-circuit test of IEC 62133:2012

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IEC/TR 62914, which is a technical report, 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 technical report is based on the following documents:

Enquiry draft	Report on voting
21A/537/DTR	21A/549/RVC

Full information on the voting for the approval of this technical report 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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

The second edition of IEC 62133 was published on December, 2012. This technical report provides supplemental information to perform the forced internal short-circuit test of IEC 62133:2012.

SECONDARY CELLS AND BATTERIES CONTAINING ALKALINE OR OTHER NON-ACID ELECTROLYTES – EXPERIMENTAL PROCEDURE FOR THE FORCED INTERNAL SHORT-CIRCUIT TEST OF IEC 62133:2012

1 Scope

This Technical Report identifies experimental procedures for the forced internal short-circuit tests in terms of designation, dimensions, tests and requirements. It supplements 8.3.9 of IEC 62133:2012.

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 62133:2012, *Secondary cells and batteries containing alkaline or other non-acid electrolytes – Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications*

3 Experimental procedure of the forced internal short-circuit test

3.1 Example of preparation of nickel particle

3.1.1 Material and tools

The necessary material and tools required for this preparation are listed below.

a) a nickel piece: Prepare nickel plate (soft temper; ISO 6208, NW2200 (Ni 99.0) or NW2201 (Ni 99.0 -LC) 0,10 ± 0,01 mm thick made into a piece 0,20 $^{+0,05}_{-0,03}$ mm wide and 2,00 ± 0,30 mm long by slit processing or using a punching press;

b) a stereomicroscope;

c) a cutter knife;

d) glass slides (2 slides: 1 mm or thicker with square corners);

e) a graph paper (1 mm square);

f) a storage container for nickel particles.

3.1.2 Example of a nickel particle preparation procedure

The following steps are to be undertaken:

a) place graph paper on the stage of the stereomicroscope and focus the microscope on the lines of the graph paper;

b) while looking through the microscope, place the nickel piece parallel to a line of the graph paper. The nickel piece should be placed horizontally, with its 0,20 mm sides extending downward perpendicularly from and its 2,0 mm sides running parallel to the line on the graph paper;

c) place a glass slide vertically over the left half (1,0 mm) of the nickel piece. Use a line of the graph paper as a guide to position the edge of the glass slide;

d) while holding the glass slide in place with your fingers, fold and raise the right half (1,0 mm) of the nickel piece using a cutter;

e) place the other glass slide to the right of the nickel piece to sandwich the raised part. Slightly press the right slide against the raised part so that the nickel piece is bent to an angle of 90°;

f) Store the completed nickel particles in a storage container to prevent it from being deformed before the test.

NOTE The completed nickel particles can also be obtained in using a press machine.

Figure 1 shows the nickel material after folding to a nickel particle.

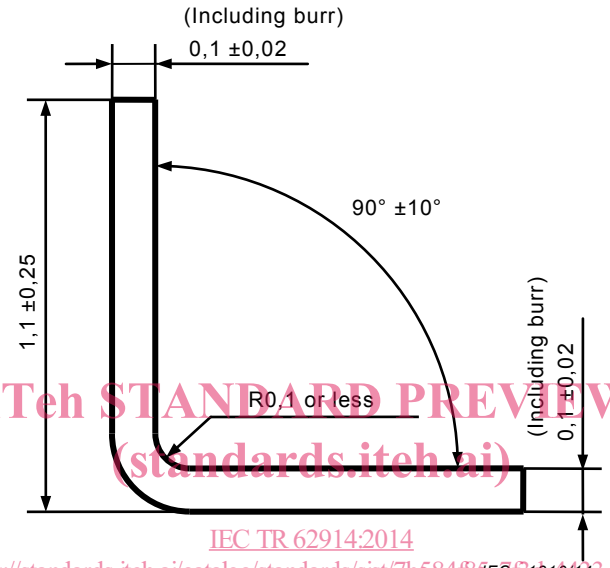

Figure 1 – Dimensions of a completed nickel particle

3.2 Positioning (or placement) of a nickel particle

The following represents some recommendations on the way to place nickel particule:

a) In the case that nickel particle cannot be placed in the position as described in draft IEC 62133, the position can be changed.

b) For a prismatic cell, you may place a nickel particle in a flat area. However, it shall be positioned in the center of the pressurized surface. If it is difficult to place a nickel particle under the most outside layer, it may be placed under an inside layer as shown in Figure 2.

c) A nickel particle shall not be placed in an area where the positive active material has come off from the aluminum foil. If the material has come off in the specified area, place the nickel particle in another area where the positive active material exists, where the position can be pressed with the centre of the pressuring jig.

d) The position of nickel particle may be determined by the cell manufacturer and the test agent.