DUP
Replacement Copy
Superseded by AS/NZS 2176.1:1996
AS/NZS 2176.2:1996

AS 2176—1986
UDC 621.352.1

Australian Standard®
2176—1986

PRIMARY BATTERIES

STANDARDS ASSOCIATION OF AUSTRALIA
Incorporated by Royal Charter

F

This Australian standard was prepared by Committee EL/22, Primary Cells and Batteries. It was approved on behalf of the Council of the Standards Association of Australia on 18 December 1985 and published on 3 February 1986.

The following interests are represented on Committee EL/22:

Australian Electrical and Electronic Manufacturers Association

Australian Federation of Consumer Organizations

Confederation of Australian Industry

Department of Health

Melbourne and Metropolitan Board of Works

Railways of Australia Committee

Telecom Australia

This standard was issued in draft form for comment as DR 85040.

STANDARDS ASSOCIATION OF AUSTRALIA
Incorporated by Royal Charter

AMENDMENT No 1
to
AS 2176—1986
PRIMARY BATTERIES

CORRECTION

The 1986 edition of AS 2176 is amended as follows; the amendment should be inserted in the appropriate place.

SUMMARY: This Amendment applies to Table 3.

Published on 15 July 1988.

AMDT
No 1
JULY
1988

Page 10. Table 3.

Replace Test No 20 as follows:

Test No	Simulated use	Daily discharge cycle pattern					Rest period between daily cycles	Total actual discharge time per day	End-point volts	Time measurement criteria (units)
		Load	On	Off	Duration	Number per day				
20	Electronic calculator	180 Ω	30 min	nil	30 min	1	23.5 h	0.5 h	4.8	h

AUSTRALIAN STANDARD

PRIMARY BATTERIES

AS 2176—1986

First published (as AS C387) 1967
Revised & published as AS 2176 1978
Second edition 1986

PUBLISHED BY THE STANDARDS ASSOCIATION OF AUSTRALIA
STANDARDS HOUSE, 80 ARTHUR ST, NORTH SYDNEY, N.S.W.
ISBN 0 7262 4059 1

PREFACE

This standard was prepared by the Association's Committee on Primary Cells and Batteries to supersede AS 2176—1978.

It covers those types of batteries which are at present in common use in Australia, specifies the principal requirements for design and construction, and nominates performance characteristics under a class classification system.

The cell designation system used in this standard is based upon that in IEC 86, Primary Batteries, but unlike the previous edition the electrochemical systems are now identified in the designation systems.

In the area of marking, consideration was given to marking on the battery, or on the package containing the battery, a use-by date, a put-into-service date, or a date of manufacture. However, during the public comment stage, there was support only for the 'Date of manufacture', this has been included as a standard marking requirement. The standard is closely aligned with IEC 86 and only the requirements for older batteries, for which there is a declining demand, have been left uncha ge.

Throughout the standard, major variations between the specified requirements nd IEC requirements have been explained in Notes.

Appendix A gives advice to traders and consumers on aspects of distribution, orage, use and disposal of batteries.

CONTENTS

STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard for PRIMARY BATTERIES

1 SCOPE. This standard specifies requirements for primary cells and batteries based on any electrochemical system.

This standard applies to batteries used in applications such as the following:

(a) Portable lighting and power.

(b) Electronic equipment (including hearing aids, calculators etc).

(c) Photographic equipment.

(d) Watches.

This standard does not apply to rechargeable, reserve type or water-activated batteries.

NOTES:

1. For the purpose of this standard, the term 'battery' means the finished product, ready for use, comprising one or more cells.
2. Advisory notes for traders and consumers of primary batteries are given in Appendix A.
3. Batteries for which detailed information is given in this standard are those in common use in Australia. Information on batteries not included may be obtained from IEC 86, ANSI C18.1 and BS 387.

2 OBJECT. The object of the standard is—

(a) to ensure the electrical and physical interchangeability of products from different manufacturers,

(b) to limit the number of battery types; and

(c) to define a standard of quality and provide guidance for its assessment.

Standard sizes and terminals are specified as well as some design and structural features. The data sheets forming a part of this standard contain dimensional details of batteries, recommended applications and performance levels. Capacity tests have been prescribed to simulate various common applications.

The performance levels and categories specified are intended primarily as a guide to consumers and equipment designers in the identification and selection of batteries to suit their requirements.

NOTE: It is recommended that for contractual purposes account be taken of the normal distribution of values around the nominal values quoted.

3 REFERENCED DOCUMENTS. The following standards are referred to in this standard:

AS 1199	Sampling Procedures and Tables for Inspection by Attributes
AS 1399	Guide to AS 1199, Sampling Procedures and Tables for Inspection by Attributes
AS 1852	International Electrotechnical Vocabulary
IEC 86	Primary Batteries
IEC 130-3	Connectors for Frequencies below 3 MHz, Battery Connectors
ANSI C18.1	Specifications for Dry Cells and Batteries
BS 397	Primary Batteries

4 DEFINITIONS. For the purpose of this standard, the definitions given in AS 1852 and the following apply:

4.1 Capacity—useful service of a cell or battery under specified conditions. In this standard this is usually expressed as a time duration.

4.2 Class—system of categorizing batteries within one particular size by their performance characteristics.

4.3 Closed-circuit voltage—difference of potential existing between the terminals of a cell or battery when it is delivering current.

4.4 Discharge—procedure by which a cell or battery delivers current to an external circuit. This discharge can be continuous or intermittent.

4.5 Dry primary cell or battery—primary cell or battery ready for use in which the electrolyte is made non-spillable.

4.6 End-point—specified closed-circuit voltage at which the discharge test is considered complete.

4.7 Nominal voltage—labelled open-circuit voltage of a cell or battery.

NOTE: This is a reference guide for identification purposes and not an exact value.

4.8 Open-circuit voltage—difference in potential existing between the terminals of a cell or battery when the circuit is open.

4.9 Primary cell or battery—non-rechargeable source of electrical energy obtained by direct conversion of chemical energy.

4.10 Terminals—parts to which the external circuit is connected.

5 DESIGNATION.

5.1 General. In this standard, the designation system for cells and batteries is based as far as practicable upon that given in IEC 86. In addition to identifying the electrochemical systems used (see Table 2), the performance characteristics of batteries within particular size and chemical systems are also classified. For details of this classification system, see Clause 5.3.

5.2 Cell designation system. Cells shall be designated by shape, size, electrochemical system and also performance characteristics, if applicable. For shape, the letter 'F' shall indicate flat and the letter 'R' shall indicate round or cylindrical. This shall be followed by a numeral indicating size variation for a given shape. Cell designations together with their associated nominal dimensions are given in Table 1.