AS 2676—1983
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[This is not the original printing of AS 2676-1983.
This is a later printing which has changes from the original on p. 15.
checked with TSO 861010. See attachment inside cover for changes]

Australian Standard 2676—1983

~~(Under revision see DR 89208 (Pt 2))~~

STILL CURRENT

INSTALLATION AND MAINTENANCE OF BATTERIES IN BUILDINGS

STANDARDS ASSOCIATION OF AUSTRALIA
Incorporated by Royal Charter

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This Australian standard was prepared by Committee EL/5, Accumulators. It was approved on behalf of the Council of the Standards Association of Australia on 19 October 1983 and published on 2 December 1983.

The following interests are represented on Committee EL/5:

Australian Lead Development Association

Confederation of Australian Industry

Department of Transport and Construction

Electricity Supply Association of Australia

Insurance Council of Australia

Telecom Australia

This standard was issued in draft form for comment as DR 82074.

for information. Rae
LATER PRINTING

A4.2 15 kW.h Battery.

A 240 V battery of 115 cells, 60 A.h capacity, and maximum charging current of 10 A:

(a) Exhaust ventilation rate—

= 0.006(115 × 10)

= 6.9 L/s.

As this is greater than 3 L/s, additional ventilation will be required. (See Clause 3.2.)

(b) Area of exhaust vent (see Clause 3.4)—

= 2(240 × 60)

= 28 800 mm²

= 0.0288 m²

The supply or make-up openings will require a minimum unrestricted area of 2 × 0.0288 = 0.0576m².

A4.3 50 kW.h Battery.

A 240 V battery of 115 cells, 200 A.h capacity, and maximum charging current of 25 A:

(a) Exhaust ventilation rate—

= 0.006(115 × 25)

= 17.25 L/s.

As this is greater than 3 L/s, additional ventilation will be required.

(b) Area of exhaust vent—

= 2(240 × 200)

= 96 000 mm²

= 0.096 m²

Supply or make-up openings will require a minimum unrestricted area of 2 × 0.096 = 0.192m².

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A4.2 15 kW.h Battery.

A 240 V battery of 115 cells, 60 A.h capacity, and maximum charging current of 10 A:

(a) Exhaust ventilation rate—

= 0.006(115 × 10)

= 6.9 L/s.

As this is greater than 3 L/s, additional ventilation will be required. (See Clause 3.2.)

(b) Area of exhaust vent (see Clause 3.4)—

= 2(240 × 60)

= 28 800 mm²

= 0.0288 m²

INCORRECT

The supply or make-up openings will require a minimum unrestricted area of 0.0288 m².

A4.3 50 kW.h Battery.

A 240 V battery of 115 cells, 200 A.h capacity, and maximum charging current of 25 A:

(a) Exhaust ventilation rate—

= 0.006(115 × 25)

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As this is greater than 3 L/s, additional ventilation will be required.

(b) Area of exhaust vent—

= 2(240 × 200)

= 96 000 mm²

= 0.096 m²

INCORRECT

Supply or make-up openings will require a minimum unrestricted area of 0.096 m².

ORIGINAL PRINTING

EARLIER PRINTINGS OF AS2676-1983 HAVE LOWER VALUE FOR area of supply OR make up volumes — THIS IS INCORRECT. See CL. 3.5b. LAST SENTENCE. (TECHNICAL OFFICER 86 10 10)

AUSTRALIAN STANDARD

INSTALLATION AND MAINTENANCE OF BATTERIES IN BUILDINGS

AS 2676—1983

First published 1983

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PREFACE

This standard was prepared by the Association's Committee on Accumulators in response to a developing requirement for large stationary battery assemblies such as uninterruptable power supplies. The standard covers the surface finish for battery assembly enclosures, ventilation, safety precautions and recommended regular inspection maintenance and test procedures.

Ventilation requirements have been established emphasizing the consideration of natural ventilation of hydrogen dispersal in the battery assembly enclosure.

In the preparation of this standard, reference was made to Telecom Australia Engineering Instructions I0010, M5020, SP1005 and SP1010, and acknowledgement is made of the assistance received therefrom.

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
for
INSTALLATION AND MAINTENANCE OF BATTERIES IN BUILDINGS

SECTION 1. SCOPE AND GENERAL

1.1 SCOPE. This standard sets out requirements for the installation and maintenance in buildings of stationary batteries and other vented secondary cells with a stored capacity exceeding 1 kW.h or a floating voltage which exceeds 115 V but does not exceed 650 V.

This standard does not apply to stationary batteries installed in mines and ships or wound electrode batteries of any chemistry.

1.2 OBJECT. The purpose of this standard is to specify the requirements for stationary battery applications in—

(a) battery rooms.

(b) locations other than battery rooms, e.g. battery cabinets.

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

AS 1319	Rules for the Design and Use of Safety Signs for the Occupational Environment
AS 1852	International Electrotechnical Vocabulary
AS 1981	Stationary Batteries of the Lead-acid Pasted Plate Type
AS 2121	SAA Earthquake Code
AS 2191	Stationary Batteries of the Lead-acid Plante Positive Plate Type
AS 2668	Water for Use in Secondary Batteries
AS 2669	Sulphuric Acid for Use in Lead-acid Batteries
AS 3000	SAA Wiring Rules
BS 6133	Code of Practice for Safe Operation of Lead-acid Stationary Cells and Batteries.

1.4 DEFINITIONS. For the purpose of this standard, the following definitions in addition to those in AS 1852, apply:

1.4.1 Accessories—items supplied with a battery to facilitate the continued operation of the battery.

NOTE: Such accessories include distilled water in containers, connectors, connecting bolts and nuts, hydrometers and other such items as agreed to by the purchaser and supplier.

1.4.2 Battery cabinet—a cabinet specifically intended for the installation of stationary batteries installed in buildings.

1.4.3 Battery room—a room specifically intended for the installation of stationary batteries that have no other protective enclosure.

1.4.4 Boost charge—a recharge which takes place at any voltage higher than the specified floating voltage.

1.4.5 Cell—the basic single unit consisting of electrolyte, positive and negative plates, and connecting terminals, used for storing electrical energy by electrolytic process.

1.4.6 Charging—the passage of a current through the battery so as to bring it to a condition capable of completing the duty cycle.

1.4.7 Constant current charge—a form of charge in which the charging current is maintained substantially constant for the duration of the charge irrespective of the battery voltage.

1.4.8 Constant voltage charge—a form of charge in which the battery voltage is maintained substantially constant for the duration of the charge irrespective of the charging current.

1.4.9 Container—a single unit containing one or more cells.

1.4.10 Discharging—the connection of a cell to an external circuit in such a way that a current flows through the cell in the reverse direction to that of the charging current.

1.4.11 Duty cycle—the specified output of voltage or current to be achieved by the battery for a given period followed by a charge current to restore the battery state to an acceptable level.

1.4.12 Electrolyte—a solution which will react with the electrodes and carry an electric current between them.

1.4.13 Equalizing charge—a form of boost charge which brings all cells of a battery to a fully charged state by correcting small irregularities in the state of charge of individual cells.

1.4.14 Float operation—a method in which the batteries are preserved in a fully charged state by maintaining all cell voltages above but close to the open circuit potential.

1.4.15 Gassing—the evolution of hydrogen and oxygen due to the electrolysis of water.

1.4.16 Nominal capacity—the quantity of electricity expressed in ampere hours which a cell or battery is capable of delivering under specified conditions of rate of discharge, end voltage, temperature, and initial density of electrolyte.

1.4.17 Pilot cell—a nominated and labelled cell used for regular readings as a typical sample of the battery.

1.4.18 Rate—the current, in amperes, at which a battery will be discharged in a specified time under specified conditions of temperature and final voltage.

1.4.19 Rated capacity (rating)—the capacity, in ampere hours, of a cell assigned to it by the manufacturer under specified conditions of discharge.