Australian Standard®

Battery chargers for lead-acid traction batteries

Part 1: Battery chargers for vented cells

This Australian Standard was prepared by Committee EL/5, Secondary Batteries. It was approved on behalf of the Council of Standards Australia on 29 October 1997 and published on 5 January 1998.

The following interests are represented on Committee EL/5:

Australian Automobile Association

Australian Automotive Aftermarket Association

Australian Chamber of Commerce and Industry

Australian Electrical and Electronic Manufacturers Association

Electricity Supply Association of Australia

Federal Chamber of Automotive Industries, Australia

Telstra Corporation

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL/5, Secondary Batteries to supersede AS 2548—1982, *Battery chargers for lead-acid traction batteries—Performance requirements*. It applies to a.c. mains-operated charging equipment for charging vented lead-acid batteries specifically designed for traction applications.

This Standard is the result of a consensus among representatives on the Joint Committee to produce it as an Australian Standard.

The electrical safety requirements for traction battery chargers are not covered by this Standard but are specified in AS/NZS 3100, *Approval and test specification—General requirements for electrical equipment.*

The objective of this Standard is to provide users and manufacturers of battery chargers for vented lead-acid traction batteries with definitions of terms, minimum performance requirements, and test methods to simplify their specification.

This Standard was revised with the objective of including requirements for regulated chargers that will maintain the charging profile despite variations in the input voltage. Regulated chargers are better able to charge batteries with the required capacity under varying conditions of electrolyte temperature, a.c. input voltage and battery state of charge.

In this Standard, charger performance requirements have been included because the eventual life of a traction battery is dependent on the characteristics of the charger. Output characteristics of single taper, two-stage taper, and regulated chargers are covered.

Consideration has been given to the charging conditions that influence battery service life. The requirements stipulated are intended to ensure optimum battery life. Because the ripple content of the d.c. output of a battery charger is an important factor in battery service life, a ripple requirement has been stipulated.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the appendix to which they apply. A ‘normative’ appendix is an integral part of a Standard, whereas an ‘informative’ appendix is only for information and guidance.

This Standard is Part one of a two-part series arranged as follows:

(a) AS 2548, *Battery chargers for lead-acid traction batteries*, Part 1: *Battery chargers for vented cells*. (this Standard).

(b) A proposed Part 2 to cover battery chargers for valve-regulated cells.

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1 SCOPE This Standard specifies the requirements for both regulated and unregulated battery chargers designed for charging vented lead-acid traction batteries.

NOTES:

1 Throughout this Standard battery charger(s) are referred to as 'charger(s)'.

2 It is recommended that a purchaser of a battery charger furnish the information given in Appendix C when placing an order.

2 REFERENCED DOCUMENTS The following Standards are referred to in this Standard:

AS
1104 Informative symbols for use on electrical and electronic equipment

2402 Traction batteries—Lead-acid

AS/NZS
3100 Approval and test specification—General requirements for electrical equipment

IEC
51 Direct acting indicating analogue electrical measuring instruments and their accessories
51-2 Part 2: Special requirements for ammeters and voltmeters

3 DEFINITIONS For this Standard, the definitions below apply.

3.1 Capacity (C)—the quantity of electricity that a fully charged battery can deliver under specified conditions.

NOTES:

1 Capacity is measured in ampere hours (A.h).

2 The specified conditions are rate of discharge, final voltage and temperature. AS 2402 requires batteries to be rated at C_5 and 30°C to a final voltage of 1.7 V per cell.

The capacity of a cell or battery is denoted by the symbol C. As the capacity varies with rate of discharge, the symbol C is followed by a numerical suffix giving the rate of discharge. Thus C_5 is the capacity in ampere hours (A.h) at the 5 h rate of discharge. The specified temperature is usually 30°C. The final voltage depends on battery type and conditions of service.

Capacity may be specified as follows:

(a) *Actual capacity*—the quantity of electricity in ampere hours (A.h) that can be withdrawn from a cell or battery for a specific set of operating conditions including discharge rate, temperature, initial state of charge, age, and final voltage.

(b) *Rated capacity*—the quantity of electricity in ampere hours (A.h), declared by the manufacturer, which a battery can deliver after a full charge under specified conditions.