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Australian Standard 1034–1978

HIGH VOLTAGE CURRENT-LIMITING FUSES

W/S BT ASS. 1033.2-1988

WITHDRAWN TAS FEB. 1988

1033 High voltage fuses (for rated voltages exceeding 1000 V)
Part 2—1988 Current-limiting (powder-filled) type A4 36pp *F*

Applies to all types of powder-filled high voltage current limiting fuses designed for service indoors and outdoors on a.c. systems of rated voltages exceeding 1000 V and in high voltage a.c. equipment. Includes service conditions, definitions ratings, standard conditions of use and behaviour, and the specification of characteristics.

Committee EL/7. Supersedes AS 1034—1978. Draft for comment DR 86109. Publication date 1988-02-05. ISBN 0 7262 4862 2.

STANDARDS ASSOCIATION OF AUSTRALIA
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THE FOLLOWING SCIENTIFIC, INDUSTRIAL AND GOVERNMENTAL ORGANIZATIONS were officially represented on the committee entrusted with the preparation of this standard:

Associated Chambers of Manufactures of Australia

Australian-British Trade Association

Australian Electrical Manufacturers Association

Electricity Supply Association of Australia

Railways of Australia Committee

Testing Authorities

The Institution of Engineers, Australia

This standard, prepared by Committee EL/7, Power Switchgear, was approved on behalf of the Council of the Standards Association of Australia on 23 December 1977, and was published on 1 May 1978.

To keep abreast of progress in industry, Australian standards are regularly reviewed. Suggestions for improvement to published standards, addressed to the head office of the Association, are welcomed.

This standard was issued in draft form for public review as DR 75028.

August 1978

STANDARDS ASSOCIATION OF AUSTRALIA

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CORRIGENDUM

to

AS 1034—1978

HIGH-VOLTAGE CURRENT-LIMITING FUSES

SUMMARY: The following section of the standard is covered by this correction slip: Appendix A.

Page 48. Paragraph A2.

6th line—*insert* 'not' between 'is' and 'properly.

Published on 1 September 1978.

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AUSTRALIAN STANDARD

HIGH VOLTAGE CURRENT-LIMITING FUSES

AS 1034–1978

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PREFACE

This standard was prepared by the Association's Committee on Power Switchgear as a revision of AS 1034 — 1971.

The main difference between this standard and the 1971 edition is the addition of requirements for thermal shock tests for outdoor type fuses, power dissipation tests for fuses to be used under restricted cooling conditions, tests of strikers, temperature-rise limits of contact surfaces other than silver, characteristics of transient recovery voltage, extension of the principle of homogeneous series to fuses of different current ratings, voltage ratings and lengths. Appendix A has been expanded to give additional information to be taken into consideration in the selection of fuse-links for particular applications.

In the preparation of this standard, IEC 282–1(1974) and subsequent IEC draft amendments to that publication were taken into consideration, and acknowledgement is made of the assistance received therefrom. However, this standard differs in various degrees from IEC 282–1 with respect to terminology, the normal service conditions which apply, ratings and tests. The previously used term 'rated current of a fuse-link' has been replaced by the term 'reference current of a fuse-link' and the reasons for this change are given in the Foreword.

In the application of this standard reference may be necessary to the following standards:

AS 1824 Insulation Coordination
Part 1 — Basic Principles, Standard Insulation Levels and Test Procedures

AS 1931 High Voltage Testing Techniques
Part 1 — General Definitions, Test Requirements, Test Procedures and Measuring Devices

AS 2006 High Voltage Alternating Current Circuit-breakers

AS 2024 High Voltage Fuse/Switch Combinations and Fuse/Circuit-breaker Combinations

AS B188 Methods for Notched Bar Tests
Part 4 — Verification of Pendulum Impact Testing Machines for Metals

AS C1 Standard Voltages and Frequency for A.C. Transmission and Distribution Systems

AS C320 Classification of Insulating Materials for Electrical Machinery and Apparatus on the Basis of Thermal Stability in Service

SAA MP19 Report on Preferred Numbers and Their Use

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard Specification for HIGH VOLTAGE CURRENT-LIMITING FUSES

FOREWORD

In this standard the previously used term 'rated current of a fuse-link' has been replaced by the term 'reference current of a fuse-link'. This change has been made to put the user on guard when considering the maximum service current which may be used with a fuse-link so that he may not be led into a possible error of accepting the rated current as an acceptable service current in many normal applications.

The general concept of rating as a characteristic which defines normal working conditions needs some modification when referring to the rated current of a fuse-link. Basically this is taken to mean the value of current which the link can carry continuously without exceeding the specified temperature rise. Of necessity, a fuse-link is a heat-generating device and the temperature rise depends equally on both the heat generated and the heat loss facility of the fuse-base or fuse-holder. There are considerable differences in the heat dissipating ability of available fuse-bases and fuse-holders. For example, some fuse-links may be mounted on an open base in freely convecting air whereas others may be mounted within an encapsulating shroud of epoxy or rubber or under oil. To allow for these varying installation conditions, the normal service current which the fuse-link may carry without excessive temperature rise may vary by perhaps 50 percent from one installation to another. Full details of this performance are not necessarily readily available to the purchaser of an off-the-shelf item such as a fuse-link.

Appendix A gives guidance on the factors to be taken into consideration when determining the service current rating for particular applications.

SECTION 1. SCOPE AND GENERAL

1.1 SCOPE. This standard applies to all types of high voltage current-limiting fuses, including oil-immersed fuses, designed for use indoors or outdoors, primarily on three-phase alternating current systems of 50 Hz and 60 Hz, and of rated voltage exceeding 1 kV.

NOTE: For applications to single-phase systems see Appendix A, Paragraph A3.3.

The standard applies to all types of fuse mounting arrangements, including fuse isolators, fuse/switch combinations and fuse/circuit-breaker combinations.

Some fuses are provided with fuse-links equipped with an indicating device or a striker. These fuses are within the scope of this standard, but the correct operation of the striker in combination with the tripping device of any switching devices is outside the scope of this standard (see AS 2024*.)

1.2 NORMAL SERVICE CONDITIONS. This standard applies to fuses which have been designed for use under the following conditions:

(a) *Temperature.* Temperature conditions as follows:

(i) Maximum ambient air temperature . . . not exceeding 40°C.

(ii) Mean ambient air temperature, measured over a period of 24 h . . . not exceeding 35°C.

(iii) Minimum ambient air temperature . . . not lower than −25°C.

(iv) For outdoor installations, maximum temperature due to sunlight . . . not exceeding an equivalent black body temperature of 80°C. (For practical purposes this is equivalent to 1·1 kW/m^2).

NOTES:

1. The time/current characteristics of a fuse are based on a definite value of temperature (usually 20°C), and deviation from this temperature, even if it is between the above limits, may appreciably alter these characteristics.
2. Similarly the current-carrying capacity may be affected by temperature conditions outside (i) to (iv) above.

(b) *Altitude.* For an altitude not exceeding 1000 m, the rated voltage, the insulation level, the reference and rated current or the temperature rise given in this standard shall apply.

For fuses for use at altitudes above 1000 m, the correction factors specified in Clause 1.3.1 or 1.3.2 shall apply, as appropriate.

(c) *Pollution.* The ambient air is not excessively (or abnormally) polluted by dust, smoke, corrosive or flammable gases and vapour or salt.

(d) *Condensation.* For indoor installations, only normal condensation is present.

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* AS 2024, High Voltage Fuse/Switch Combinations and Fuse/Circuit-breaker Combinations.