AS 1531.3—1984
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Australian Standard 1531.3—1984

Amdt 1.

ALUMINIUM CONDUCTORS FOR OVERHEAD POWER TRANSMISSION PURPOSES

Part 3—ALL-ALUMINIUM ALLOY (AAAC/1120)

[Title allocated by Defence Cataloguing Authority: WIRE, ELECTRICAL (Aluminium, Overhead Power Transmission, All-Aluminium Alloy (AAAC/1120)]

STANDARDS ASSOCIATION OF AUSTRALIA
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This Australian standard was prepared by Committee EL/10, Overhead Line Material. It was approved on behalf of the Council of the Standards Association of Australia on 6 August 1984 and published on 5 October 1984.

The following interests are represented on Committee EL/10:

Australian Electrical and Electronic Manufacturers Association Ltd

Australian Porcelain Insulators and Technical Ceramic Manufacturers Association

Confederation of Australian Industry

Electrical and Radio Federation of Victoria

Electricity Supply Association of Australia

Energy Authority of New South Wales

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This standard was issued in draft form for comment as DR 83135.

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AMENDMENT No 1
to
AS 1531.3—1984
ALUMINIUM CONDUCTORS FOR OVERHEAD POWER TRANSMISSION PURPOSES
PART 3—ALL-ALUMINIUM ALLOY (AAAC/1120)

CORRECTION

SUMMARY: The following sections of this standard are covered by this amendment: Clause 1.4.1, Table 3.3, Note 3 Page 10.

Published on 4 March 1985.

Page 4. Clause 1.4.1.

Third line, *delete* value '0.293' and *substitute* '0.0293'.

AMDT No 1 MARCH 1985

Page 7. Table 3.3.

Column 7, Heading to follow '20°C', *add* a superscript asterisk (*).

AMDT No 1 MARCH 1985

Page 10. Note 3.

Paragraph 4 second line, *correct* spelling of word 'scheme'.

AMDT No 1 MARCH 1985

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AUSTRALIAN STANDARD

ALUMINIUM CONDUCTORS FOR OVERHEAD POWER TRANSMISSION PURPOSES

Part 3 ALL-ALUMINIUM ALLOY (AAAC/1120)

AS 1531.3—1984

First published 1984

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PREFACE

This standard was prepared by the Association's Committee on Overhead Line Material. It deals with all-aluminium alloy conductors (AAAC), Aluminium Development Council of Australia alloy designation 1120, for overhead electrical power transmission purposes.

It provides for aluminium alloy wires of diameter 1.75 mm to 4.75 mm, stranded to form 7, 19, 37, 61 and 91 wire conductors.

This standard becomes Part 3 of AS 1531, Aluminium Conductors for Overhead Power Transmission Purposes. Part 1 applies to all-aluminium conductors designation (AAC/1350) and Part 2 to all-aluminium alloy conductors designation (AAAC/6201). Aluminium conductors, steel reinforced, are covered by AS 1220, Aluminium Conductors Steel Reinforced for Overhead Power Transmission Purposes.

In the preparation of this standard, reference was made to Swedish standards SS 424 08 13, Aluminium Alloy Wire for Stranded Conductors for Overhead Lines, and SS 424 08 14, Aluminium Alloy Stranded Conductors for Overhead Lines, and acknowledgement is made of the assistance received therefrom.

Material and constructional details and tests for mechanical strength and resistance are included in this standard.

Practical values of moduli of elasticity, are given in Appendix B.

In determining conductor sizes, the committee decided to provide a range of conductor sizes identical to the existing range of conductors as specified in AS 1531, Parts 1 and 2. The calculated equivalent aluminium area for various strandings is given to assist users in selecting the most suitable conductor for a particular application.

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PART 3—ALL-ALUMINIUM ALLOY (AAAC/1120)

SECTION 1. SCOPE AND GENERAL

1.1 SCOPE. This standard specifies requirements for all-aluminium alloy conductors (AAAC/1120) for overhead power transmission purposes, manufactured from an alloy complying with the international registered designation Alloy 1120, the composition of which is specified in the Aluminium Development Council of Australia Limited publication—Aluminium Standards and Data.

1.2 REFERENCED DOCUMENTS. The following documents are referred to in this standard:

AS 1391	Methods for Tensile Testing of Metals
AS 1852	International Electrotechnical Vocabulary
AS C365	Drums for Bare Stranded Conductors Part I Wooden Drums* Part II Metal Drums*
ASTM D 566	Dropping Point of Lubricating Grease
IEC 207	Aluminium Stranded Conductors
IEC 208	Aluminium Alloy Stranded Conductors (Aluminium-magnesium-silicon Type).

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

1.3.1 Stranded conductor—a circular conductor consisting of seven or more circular wires laid up together. In this standard the word 'conductor' shall be taken to mean 'stranded conductor'.

1.3.2 Diameter—the mean of two measurements at right angles taken at any one cross-section.

1.3.3 Direction of lay—the direction of lay is defined as right-hand or left-hand. With right-hand lay, the slope of the wires is in the direction of the central part of the letter Z when the conductor is held vertically. With left-hand lay, the slope of the wires is in the direction of the central part of the letter S when the conductor is held vertically.

1.3.4 Lay ratio—the ratio of the axial length of a complete turn of the helix formed by an individual wire in a stranded conductor, to the external diameter of the helix.

1.3.5 Breaking load—the maximum load obtained on the testing machine.

1.3.6 Ultimate tensile stress—the breaking load divided by the original cross-sectional area of the test wire.

1.3.7 Ungreased conductor—a conductor which is dry and free from grease, other than a light residue of wire drawing lubricant that may be on the wire.

1.3.8 Partially greased conductor—a conductor in which grease is applied to the centre wire only for seven-wire conductors, or the centre wire plus the first layer for other conductors.

1.3.9 Wholly greased conductor—a conductor in which grease is applied to all wires with the exception of the outermost layer.

1.4 STANDARDS ADOPTED FOR HARD-DRAWN ALUMINIUM ALLOY WIRE.

1.4.1 Resistivity. For the purposes of this standard, the maximum value of resistivity of the aluminium alloy is ~~0.293~~ 0·0293 $\mu\Omega$.m at a temperature of 20°C. AMDT 1

1.4.2 Density. The density of aluminium alloy wire is taken as 2700 kg/m^3 at 20°C.

1.4.3 Constant-mass temperature coefficient of resistance. The constant-mass temperature coefficient of resistance of the aluminium alloy wire, measured between two potential points rigidly fixed to the wire, is taken as 0.003 90/°C at 20°C.

*In course of revision.