



**AUSTRALIAN RAIL TRACK CORPORATION LTD**

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**Engineering Standard - NSW**

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**Title**  
**Specification - Fuses for Railway Signalling Applications**

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## **About This Standard**

This Specification describes the general requirements for Fuses to be supplied to Australian Rail Track Corporation and Contractors to Australian Rail Track Corporation for Signalling applications.

## Document History

**Primary Source** – RIC Standard SC 09 10 09 00 SP Version 2.0

### List of Amendments –

<b>ISSUE</b>	<b>DATE</b>	<b>CLAUSE</b>	<b>DESCRIPTION</b>
1.1	14/03/2005	Disclaimer	Minor editorial change
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## 1. Introduction

This Specification describes the general requirements for Fuses to be supplied to Australian Rail Track Corporation and Contractors to Australian Rail Track Corporation for Signalling applications.

The Fuses used for Signalling circuits shall be as specified in Table-1 and shall be categorised as:

1. Cartridge fuses ( Large - 50x14 Dia) for Signalling Circuits
2. Indicator fuses for rail mounted terminals to DIN standard

## 2. Applicable Documents

### 2.1 International Standards

This Specification relates to the following international specifications and Standards:

IEC 269-1	Low voltage Fuses - General Requirements
IEC 269-2	Supplementary requirements for Fuses used by authorized persons (Fuses mainly for industrial applications)
DIN 41576	part 1, Miniature Fuses - indicating cartridges (Fuse-links 250V, medium time lag.) part 2, Miniature Fuses indicating cartridges (Fuse-links 250V, interchangeable quick)
DIN 49522	D type Fuse-links D01, D02, D03 380V.
DEF 59-96	Fuse links electrical (part 1 & 2)

### 2.2 Australian Standards

This Specification refers to the following Australian Standards:

AS 2005, Part 1-1981 Fuses with enclosed Fuse-links up and including 1000V AC and 1500V DC General Requirements.

## 3. Definitions

The following definitions apply to terms used under this specification:

<u>Cartridge fuse</u>	Fuse-link wholly enclosed in an insulating tube, the contacts being in the form of metallic caps at both ends of the tube.
<u>Indicating Fuse</u>	Cartridge fuse fitted with spring-loaded indicator in one end, released when the fuse is blown.
<u>Fuse-link</u>	Part of the cartridge fuse which is designed to melt and thus open the circuit.
<u>Rated carrying current</u>	The current assigned by the maker as the maximum which the fuse is capable of carrying continuously under

prescribed conditions.

Blowing current The actual current at which rupture of the fuse link occurs.

Breaking capacity The maximum current at which the fuse is capable of rupturing under prescribed conditions.

## 4. Technical Requirements

### 4.1 Fuse Ratings

The ratings of Fuses shall be as detailed in Table-1.

### 4.2 Dimensions

The dimensions shall be in accordance with Table-1.

### 4.3 Manufacture

Any material used in the manufacture of the complete fuse shall have no deleterious action on any other part during the life of the fuse.

The joints between the fuse link and the caps shall be such that they shall not form a disconnection before the fuse-link melts. All soldered joints must be made with a non-corrosive flux. The fuse case must be filled with an approved non-hygroscopic, non-conducting material in granular form such as French TALC.

### 4.4 Caps

The Fuses shall be capped at both ends with cylindrical brass caps smoothly finished and securely attached to the insulated casing. The ends of the fuse caps shall be reasonably flat.

### 4.5 Marking

Each Fuse shall be plainly marked with the manufacturer's name or Identity.

Each Fuse shall be plainly marked with the Ampere capacity, rated voltage on the label, and also by means of a stamped figure on the brass cap.

#### 4.5.1 Colour Coding

In addition to the markings as in 4.5 the (Large) Cartridge Fuses shall have a visible colour band with a minimum of 8mm width (as specified in Table-1), which shall not fade or deteriorate due to ageing.

### 4.6 Performance

The fuse shall carry 110% of the rated current continuously at a maximum ambient temperature of 50 ° C without undue heating, and shall comply with the requirements of Clause 6.2.

Cartridge fuse shall be able to withstand a momentary short circuit current of up to 500A in accordance with tests on Breaking Capacity in AS 2005.

## 5. Packaging and Labelling

Fuses shall be packed securely to avoid mechanical damage.

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Each pack shall contain 100 Fuses for (Large) Cartridge Fuses and 10 Fuses in each pack for "Klippon" Fuses.

The packaging shall be labelled with the following information:

- Item Name (Example: Cartridge Fuse 250V, 10A (Red))
- Part/Catalogue No
- Supplier Name, Address and Telephone number
- Date:



**Appendix 1 : Table 1 - Fuses for Railway Signalling applications**

RCA Identity	Ratings		Manufacturer's part	Applicable Standards	Dimensions	Remarks
	Voltage	Current				
Cartridge Fuses (Large )						
	250V	4A		IEC269-2	50+2x14+0.5 Dia	To be colour coded - Orange
	250V	10A		IEC269-2	50+2x14+0.5 Dia	To be colour coded - Red
	250V	16A		IEC269-2	50+2x14+0.5 Dia	To be colour coded - Grey
	250V	20A		IEC269-2	50+2x14+0.5 Dia	To be colour coded - Blue
	250V	32A		IEC269-2	50+2x14+0.5 Dia	To be colour coded - Black
Fuses for "Fluke" Multimeters						
	250V	2A	AGX2		25 x 5.5mm Dia	"Fluke" 8020,8060,8026 fast blow (standard)
	250V	630mA			20 x 4mm Dia	"Fluke" 27, 77, fast blow
	600V	3A	AGX3 ("Fluke"-BBS-3) ("Fluke"-BLS-3)		35 x 9.5mm Dia	"Fluke" 27, 8020, 8026, 77
	600V	20A	("Fluke" KTK-20)		38 x 10mm Dia	"Fluke" 27, 77
Fuses for Rail Mounted Terminals						
	250V	2A		DIN 41576	25 x 5mm	Indicator Cartridge
	250V	4A		DIN 41576	25 x 5mm	Indicator Cartridge
	250V	6.3A		DIN 41576	25 x 5mm	Indicator Cartridge
	440V	10A		DEF 59-96	32 x 6.35	
	250V	16A		UTE 93435	32 x 6.35	special approval required
	440V	20A		DIN 49522		Neozed Fuse DO2
	440V	25A		DIN 49522		Neozed Fuse DO2
	440V	35A		DIN 49522		Neozed Fuse D)2