



AUSTRALIAN RAIL TRACK CORPORATION LTD

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Discipline
Engineering Standard – NSW

Category
Signalling

Title
Cables for Railway Signalling Applications - Fire Safe High Frequency Screened Track Circuit Cable

Reference Number
SPS 46 - (RIC Standard: SC 11 11 11 00 SP)

Document Control

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Issue 1 Revision 3	May 05	Standards and Systems	Standards Engineer	GM Infrastructure Strategy & Performance	Safety Committee
		Refer to Reference Number	H Olsen	M Owens	Refer to minutes of meeting 12/08/04

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The technical content of this document has been approved by the relevant ARTC engineering authority and has also been endorsed by the ARTC Safety Committee.

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About This Standard

The cables specified in this document are for low smoke emission under fire conditions and halogen free cables. Fire extinguishing characteristics have already been specified for these cables.

The applications of the cables specified in this document are for cables that need to be installed in enclosed environments.

Document History

Primary Source – RIC Standard SC 11 11 11 00 SP Version 3.0

List of Amendments –

ISSUE	DATE	CLAUSE	DESCRIPTION
1.1	01/09/2004		Reformatting to ARTC Standard
1.2	14/03/2005	Disclaimer	Minor editorial change
1.3	06/05/2005	All	Document reformatted

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1. Introduction

This specification provides for the manufacture, supply and delivery of insulated/shethed (X-90/HFS-90-TP) single pair cable incorporating an aluminium “Mylar” tape shield with continuous drain wire, for audio frequency track circuit application in enclosed environments such in a railway tunnel.

The cable shall in general satisfy the following:

- Low flame propagation
- Good oil resistance
- No halogen emission in fire conditions
- Low smoke emission in fire conditions

2. Standard Specifications

This Specification shall be read in conjunction with Specification SPS 40 – Cables for Railway Signalling Applications – General Requirements.

The cable shall also be as per specification:

AS 1125 Conductors in Insulated Electric Cables and Flexible Cords

AS 5000 – 1999 Electric Cables – Polymeric insulated for working voltages up to and including 0.6/1KV.

3. Construction

3.1 Length

The nominal length shall be 1000 metres. The nominal tolerance shall be +/- 10 metres.

3.2 Conductor

The conductors shall be annealed, untinned, high conductivity copper consisting of 7 strands of 0.50mm wire, and shall be as per specification AS 1125.

3.3 Insulation

Each conductor shall be individually insulated with XLPE, with properties in compliance with Type X-90 (A compound of cross-linked polyethylene) of AS5000.

The radical thickness shall be as laid down in the specification AS 5000. The core colours shall be Black and White.

3.4 Winning

The two cores shall be uniformly twisted together to form a pair with a lay length of not greater than 150mm.

A halogen free, non-hygroscopic interstitial filler may be used by the manufacturer as a processing aid if necessary.

3.5 Screen

The laid up cores are to be covered with an Aluminium/Polyester composite foil of minimum thickness of 25/25 micron helically applied with an overlap maintaining a 100% coverage at the prescribed minimum bending radius. A drain wire of tinned annealed copper, size 7/0.25 shall be provided continuously throughout the cable so as to give intimate contact with the shield (in contact with the Aluminium side of the foil).

A helically applied barrier tape under and over the screen may be incorporated by the manufacturer if necessary.

3.6 Sheath

The sheath shall be a halogen free, flame retardant thermoplastic compound based on polyolefin copolymer with properties in compliance with type HFS-90-TP (A thermoplastic, halogen free polymeric based material, e.g. polyolefin co-polymer, having characteristics of low smoke emission and low flame propagation properties in fire conditions) of AS5000. The sheath shall be extruded firmly over the shield, but be removable from the shield for terminations.

The average wall thickness of the sheath shall be 1.8mm and shall not be less than 1.6mm at any point.

The sheath colour shall be red.

The sheath shall be applied in such a manner that no undue residual strain is left in the material and it shall be free from pinholes, joints, mended places and other defects. The external surface shall be regular and smooth.

4. Cable Voltage Rating

0.6/1kv

5. Identification

5.1 Cables

The inscription on the cable shall be "ARTC Signals-Fire Safe High Frequency Track Circuit Cable" In addition the size of the conductors shall be marked on the cables.

5.2 Reels

An additional legend "Fire Safe High Frequency Track Circuit Cable " shall be marked on the reels.

6. Tests

The cores shall be spark tested at 6KV before laying up.