

SINGAPORE STANDARD

# Specification for steel wire ropes for hoisting



**SS 297 : 1996**  
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## SINGAPORE STANDARD

## SPECIFICATION FOR STEEL WIRE ROPES FOR HOISTING

## FOREWORD

This Singapore Standard for steel rope for hoisting was first established in 1985 and was revised in 1996 by the Technical Committee on Lifting and Hoisting Systems under the direction of the Mechanical Standards Committee. The revision has been prepared to bring the standard up-to-date by incorporating recommendations made in foreign and international reference standards.

Steel wire ropes are important components in most mechanical handling and hoisting equipment. As the majority of the steel wire ropes used for hoisting are imported from overseas manufacturers, this Singapore Standard serves to give guidance to users on the specification of appropriate type and grade of wire ropes for hoisting and winching operations.

This Singapore Standard is complemented by and should be read together with CP 35 -'Code of practice for the selection, care and maintenance of steel wire ropes for hoisting' to maintain a good service-life of wire ropes and to enhance safety of hoisting and winching operations.

Where the use of wire ropes is controlled by bye-laws or regulations, reference should be made to the appropriate sections of the bye-laws or regulations.

The major changes from the 1985 edition of the standard are as follows:

- (a) A new section on 'Rope construction and characteristics' was included to improve clarity and completeness of the specification;
- (b) 'Appendix A' was added to show the calculation procedure in determining the appropriate diameter and minimum breaking load of a wire rope;
- (c) The numerical designations of wire ropes are now in-line with the current industry practice;
- (d) The acceptance of wire ropes are now based on absolute values of oversizes, if any, instead of being expressed in percentages of their nominal diameters;
- (e) 'Wrap test' has been deleted as this requirement is no longer specified in foreign and ISO standards; and
- (f) Because this requirement was not mentioned in the 1985 edition. If a batch/consignment of wire rope conforms to this Singapore Standard, the SS number and its 'year' should be indicated on the test certificate and packing. The date of manufacture should also be indicated to facilitate traceability

In revising this standard, reference was made to the following publications:

- (a) BS 302 : -                      Stranded steel wire ropes  
Part 1 : 1987    Specification for general requirements
- (b) BS 443 : 1982 (1990)        Specification for testing zinc coatings on steel wire and for  
quality requirements

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- (c) BS 4545 : 1970 (1982) Methods for mechanical testing of steel wire
- (d) BS 6570 : 1986 The selection, care and maintenance of steel wire ropes
- (e) ISO 3178 : 1988 Steel wire ropes for general purposes - Terms of acceptance
- (f) ISO 4308-1 : 1986 Cranes and lifting appliances - Selection of wire ropes  
Part 1 : General
- (g) ISO 8369 : 1986 Large diameter steel wire ropes
- (h) SS ISO 1000 : 1992 SI units and recommendations for the use of their multiples  
and of certain other units.
- (i) 'Wire rope users manual (3rd edition, 1993)' published by the Wire Rope Technical  
Board, USA.

Acknowledgement is made for the use of information from the above overseas references.

**NOTE.**

1. Singapore Standards are subject to periodic review to keep abreast of technological changes and new technical developments. The revisions of Singapore Standards are announced through the issue of either amendment slips or revised editions.
2. Compliance with a Singapore Standard does not exempt users from legal obligations.

## 1. SCOPE

1.1 This standard specifies requirements for the most commonly used steel wire ropes in hoisting.

1.2 It excludes the following types of wire ropes:

- (a) Ropes for mining purposes;
- (b) Ropes for aircraft controls;
- (c) Ropes for deep drilling equipment;
- (d) Ropes for aerial rope ways and funiculars;
- (e) Ropes for lifting equipment or appliances used to carry people; and
- (f) Ropes for prestressed concrete.

1.3 This standard also incorporates the procedures for the testing of rope wires. These can be found in the appendices.

## 2. DEFINITIONS

For the purpose of this standard, the following definitions apply:

2.1 **Abbreviations.** The following abbreviations are used in this Singapore Standard:

d	Nominal diameter of rope wire
D	Nominal diameter or wire rope
FC	Fibre core
IWRC	Independent wire rope core
WS	Warrington-Seale
'S' Lay	Left-hand lay
'Z' Lay	Right-hand lay

2.2 **Actual Breaking Load.** The maximum load obtained by testing a sample of the rope to destruction in the prescribed manner.

2.3 **Bright Wires.** Non-zinc coated (i.e. ungalvanised) wires, sometimes known as black wires.

2.4 **Coil.** Circular bundle or package of wire rope that is not affixed to a reel.

2.5 **Core.** The axial member of a wire rope about which the strands are laid.

2.6 **Core Of Strand.** The core of a strand may be of fibre, a single wire or a number of wires.