

Stranded steel wire ropes —

Part 6: Specification for ropes for mine hoisting

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- British Coal
- British Ports Association and the National Association of Ports Employers
- British Railways Board
- British Steel Industry (Wire Section)
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- Department of the Environment (Property Services Agency)
- Federation of Manufacturers of Construction Equipment and Cranes
- Federation of Wire Rope Manufacturers of Great Britain
- Health and Safety Executive
- Institution of Mechanical Engineers
- Institution of Mining Engineers
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- Ministry of Defence
- National Association of Lift Makers
- Zinc Development Association

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Foreword

This Part of BS 302 has been prepared under the direction of the Mechanical Handling Standards Committee. It is one Part of a combined revision of BS 302:1968, BS 236:1968, BS 329:1968, BS 330:1968, BS 365:1968 and BS 3530:1968, which are withdrawn. BS 302 is now published in six Parts and takes account of both national and international developments since 1968.

This Part (Part 6) specifies requirements for mine hoisting ropes additional to the general requirements in Part 1. Other Parts specify the additional requirements for other particular uses of ropes:

- *Part 2: Specification for ropes for general purposes;*
- *Part 3: Specification for zinc coated ropes for ships;*
- *Part 4: Specification for ropes for lifts;*
- *Part 5: Specification for ropes for hauling purposes.*

Two further Parts are in preparation, covering larger diameter ropes (64 mm to 205 mm diameter) and higher strength ropes and will be Parts 7 and 8 respectively.

In line with the principles of international standard ISO 2408, published by the International Organization for Standardization (ISO), the constructions are grouped according to the number of outer wires in the strands. The general requirements of BS 302-1 and the methods used for calculating breaking loads and approximate masses comply with ISO 2408. In respect of individual usages the ropes in Parts 2 and 3 are fully in accordance with ISO 2408 and those in section 2 of Part 4 are in accordance with ISO 4344. In each of these Parts however, certain additional ropes still in common use in the UK have been included.

In line with current international practice, the term “zinc coated” has been adopted in this standard in place of “galvanized”. The terms are synonymous.

Purchasers ordering to BS 302 are advised to specify in their purchasing contract that the manufacturer operate a quality system in compliance with the appropriate Part of BS 5750, or suitable equivalent, to ensure themselves that products claimed to comply with BS 302 consistently achieve the required level of quality.

Wire rope users will find valuable information in the companion publication BS 6570 “*Code of practice for the selection, care and maintenance of steel wire ropes*”.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 10, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope

This Part of BS 302 specifies the requirements for round and triangular strand steel wire ropes for mine hoisting (winding) purposes and is for use in conjunction with BS 302-1.

NOTE 1 Information to be given by the purchaser on the enquiry and order is given in Appendix A.

NOTE 2 The titles of the publications referred to in this standard are listed on the inside back cover.

2 Definitions

For the purposes of this Part of BS 302, the definitions given in BS 302-1 apply.

3 Compliance

Ropes in accordance with BS 302-6 shall comply with this Part and with BS 302-1.

4 Wire rope constructions and sizes

Constructions and size ranges shall be as given in Table 1.

NOTE In the absence of a precise indication by the purchaser on the enquiry and order, the choice of construction within a group is at the discretion of the supplier.

5 Material

5.1 Wire

5.1.1 General. The wire used for the manufacture of wire ropes in accordance with this standard, excluding the wire used in triangular strand cores (see **5.1.3**), shall comply with sections 1 and 3 (high duty wire) of BS 2763:1982. The mechanical tests shall include reverse bend requirements.

5.1.2 Wire finish. The wire shall be class Z zinc coated or bright. The zinc coating shall comply with BS 2763.

5.1.3 Tensile grades of wire. All wires except filler wires, wires comprising the triangular strand core, and king wires shall be of 1 570 N/mm²¹⁾ or 1 770 N/mm² tensile grade.

For round strand ropes the king wires shall all be of one tensile grade selected from BS 2763. The filler wires shall all be one of the tensile grades specified in BS 2763.

For triangular strand ropes the strand core wires shall have a minimum tensile strength of 770 N/mm² in cores comprised of solid triangular wires or three round wires, and a minimum tensile strength of 1 270 N/mm² in cores built up from more than three round wires.

NOTE In order to achieve a required triangular shape, some low carbon steel wires may be added.

5.2 Rope main core

The rope main core shall be of hard or man-made fibre and shall comply with 3.2 of BS 302-1:1987.

Table 1 — Wire rope constructions and sizes

Rope group	Description	Size range (diameter)	Typical construction
6 × 7	Up to seven outer wires in a strand, one layer of wire over a king wire.	mm 19 to 32	6 × 7 (6/1) FC
6 × 19	7 to 12 outer wires in a strand two or three layers over a king wire. Wires equal laid.	20 to 48	6 × 15 (7/7/1) FC 6 × 17 (8/8/1) FC 6 × 19 (9/9/1) FC 6 × 19 (12/6 + 6F/1) FC 6 × 16 (10/5 + 5F/1) FC
6 × 8 TS	7 to 8 outer wires in a strand. One layer of wire over a single triangular wire or a multi-wire triangular core.	19 to 32	6 × 8 (7/V) FC 6 × 9 (8/V) FC
6 × 22 TS 6 × 25 TS	9 to 18 outer wires in a strand. Two layers of wire over a single triangular wire or a multi-wire triangular core.	26 to 35 26 to 41 26 to 48 32 to 54 38 to 64	6 × 22 (9/12/V) 6 × 23 (10/12/V) 6 × 25 (12/12/V) 6 × 28 (15/12/V) 6 × 31 (18/12/V)

¹⁾ 1 N/mm² = 1 MPa.