

Stranded steel wire ropes —

Part 1: Specification for general requirements

UDC 677.721

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- Association of Supervisory and Executive Engineers
- British Coal
- British Ports Association and the National Association of Ports Employers
- British Railways Board
- British Steel Industry (Wire Section)
- Bureau Veritas
- Chain Testers Association of Great Britain
- 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
- Institution of Mining and Metallurgy
- 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of a combined revision of BS 302:1968, BS 236:1968, BS 329:1968, BS 330:1968, BS 365:1968 and BS 3530:1968, which are withdrawn.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 1) specifies general requirements for all steel wire ropes covered by this standard. The other Parts specify additional requirements for 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;*
- *Part 6: Specification for ropes for mine hoisting.*

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 are in accordance 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 general requirements for the steel wire ropes whose particular requirements are specified in other Parts of this standard.

NOTE 1 Information on the methods of calculating minimum breaking strength and mass of rope is given in Appendix C. Information on the designation of rope constructions is given in Appendix D.

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

2 Definitions

For the purposes of BS 302 the following definitions apply.

2.1

wire

a single continuous length of steel, cold drawn from rod

2.2

strand

an assembly of wires spun helically in one or more layers around a core

2.3

rope

an assembly of strands spun helically, in one or more layers around a core

2.4

rope group

a grouping of ropes of similar characteristics on the basis of the number of strands in the rope, the number of outer wires in the strand and the shape of the strands

2.5

bright wire

non-zinc coated wire, sometimes known as black wire

2.6

zinc coated wire

wire which has been zinc coated (galvanized) by one of the permissible processes

2.7

king wire

a single wire forming the core of a strand

2.8

core

the central member of a strand or rope

2.9

core of a round strand

a core which consists of fibre or a single wire (king wire)

2.10

core of a triangular strand

a core which consists of a solid triangular wire, three round wires formed into a triangle, or a built-up core (BUC)

2.11

built-up core (BUC) of a triangular strand

a core which consists of more than three round wires, formed into a triangle, which are spun and not laid parallel

2.12

main core

the core of the rope around which the strands are spun. A fibre core is designated FC

2.13

independent wire rope core (IWRC)

a main core which is itself a wire rope

2.14

wire strand core (WSC)

a main core which is itself an independent wire strand, normally of the same construction as the outer strands

2.15

tensile grade (of wire)

the minimum value of tensile strength used to designate the tensile strength range of the wire. The unit of measure is N/mm^2 ($1 \text{ N/mm}^2 = 1 \text{ MPa}$)

2.16

minimum breaking force

the force, in kilonewtons, below which the rope shall not break when tested to destruction according to Appendix B

2.17

minimum breaking load

the load, in tonnes, corresponding to the minimum breaking force

2.18

calculated aggregate breaking load

the value calculated from the product of the sum of the cross-sectional metallic areas of all the individual wires in the rope and the tensile grade(s) of the wire. The total metallic area is directly proportional to the square of the nominal diameter of the rope

NOTE This calculated aggregate breaking load is available to assist designers in making a comparison between British Standards and certain other current standards in Europe. It is emphasized that the basis of acceptance of rope in accordance with British Standards is the minimum breaking load.