

Glossary of

Terms relating to fibre ropes and cordage

Committees responsible for this British Standard

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- Associated Offices Technical Committee
- Association of Metropolitan Authorities
- British Tugowners' Association
- Chief and Assistant Chief Fire Officers' Association
- Cordage Manufacturers' Institute
- Department of Trade and Industry (National Engineering Laboratory)
- Federation of Wire Rope Manufacturers of Great Britain
- GMC County Fire Service
- Health and Safety Executive
- Institution of Fire Engineers
- Made-up Textiles Association
- Ministry of Defence
- National Caving Association
- National Federation of Master Steeplejacks and Lightning Conductor Engineers
- Scottish Office (Agriculture and Fisheries Department)
- Textile Institute

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

- British Railways Board
- Department of Transport (Marine Directorate)
- Lloyds Register of Shipping

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Contents

	Page
Committees responsible	Inside front cover
Foreword	ii
1 Scope	1
Section 1. Fibres and fibre sources	
11 General	2
12 Natural fibres	2
13 Man-made fibres	2
14 Types of fibre	3
Section 2. Construction, strength, performance and measurement	
21 Construction	4
22 Strength	6
23 Measurement	7
24 Condition	7
Section 3. Usage	
31 Slings and slinging	11
32 Agriculture	12
33 Fishing	13
34 Marine	13
35 Various uses	14
36 Personal safety	15
Appendix A Abbreviations for man-made fibres	20
Figure 1 — Plait pitch	9
Figure 2 — “Z” lay	10
Figure 3 — “S” lay	10
Figure 4 — Cut splice	16
Figure 5 — Dogging (3-strand rope)	16
Figure 6 — Endless sling	16
Figure 7 — Flemish eye	16
Figure 8 — Grommet (C)	17
Figure 9 — Long splice (prior to final tying and tucking of strands)	17
Figure 10 — Marrying (3-strand rope)	17
Figure 11 — Single sling	17
Figure 12 — Soft eye	18
Figure 13 — Thimble (heart-shaped)	18
Figure 14 — Parcelling, serving and worming	19
Table 1 — Common abbreviations for forms of man-made fibres	3
Table 2 — Common abbreviations for man-made fibres	20
Index	21
Publication(s) referred to	Inside back cover

Foreword

This revision of this British Standard, prepared under the direction of the Textiles and Clothing Standards Policy Committee, supersedes BS 3724:1964, which is withdrawn.

It is based on the glossary drawn up by the Cordage Manufacturers' Institute, which details terms and definitions currently in use in the cordage industry.

Terms are listed alphabetically within each section. Each term has an individual number consisting of four digits in two parts. The first digit represents the number of the section. The second digit represents the number of the subsection and the last two digits represent the place that the term occupies within the section or subsection.

Alternative terms are given below the preferred term. These terms are not individually numbered, but are included in the index with a reference to the preferred term. Terms of more than one word, e.g. "plait pitch", are written in a direct style, not as "pitch, plait".

Italicized words indicate terms that are defined elsewhere in this British Standard. Scientific terms in Latin are printed in small capitals.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 24, 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 British Standard glossary defines terms used to describe fibre ropes and cordage product forms and the processes by which they are made.

NOTE 1 Terms and definitions may differ from those accepted in the textile industry in general.

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

Section 1. Fibres and fibre sources

No.	Term	Definition
11 General		
11 01	fibre	Unit of matter characterized by flexibility, fineness, and high ratio of length to thickness.
11 02	hard fibres	<i>Fibres</i> from the leaves or leaf stalks of various monocotyledonous plants, e.g. <i>sisal</i> and <i>abaca</i> .
11 03	man-made fibres	<i>Fibres</i> obtained by a manufacturing process, as distinct from materials which occur naturally in fibrous form.
11 04	natural fibres	<i>Fibres</i> which occur in nature, e.g. from the husk, leaves, stems, or seed hairs of plants.
11 05	soft fibres	<i>Fibres</i> from the outer part of the stems of various dicotyledonous plants, e.g. <i>jute</i> , <i>flax</i> and <i>hemp</i> .
11 06	synthetic fibres	<i>Fibres</i> made from molecules which do not occur in nature.
12 Natural fibres		
12 01	abaca	See <i>manila</i> .
12 02	coir	<i>Fibre</i> from the husk of the coconut <i>COCOS NUCIFERA</i> .
12 03	cotton	Single-cell <i>fibre</i> from the seed of plants of the <i>GOSSYPIMUM</i> .
12 04	flax	<i>Fibre</i> from the stems of flax <i>LINUM USITATISSIMUM</i> .
12 05	hemp	<i>Fibre</i> from the stems of hemp <i>CANNABIS SATIVA</i> . NOTE Indian <i>hemp</i> is generally a coarser <i>fibre</i> than Italian <i>hemp</i> .
12 06	jute	<i>Fibre</i> from the stems of jute <i>CORCHORUS CAPSULARIS</i> and <i>CORCHORUS OLITORIUS</i> .
12 07	manila	<i>Fibre</i> from the leaves of <i>MUSA TEXTILIS</i> .
12 08	New Zealand flax	See <i>phormium</i> .
12 09	New Zealand hemp	See <i>phormium</i> .
12 10	phormium	<i>Fibre</i> from the leaves of <i>PHORMIUM TENAX</i> .
12 11	sisal	<i>Fibre</i> from the leaves of the sisal plant <i>AGAVE SISALANA PERRINE</i> .
12 12	St Helena hemp	See <i>phormium</i> .
13 Man-made fibres		
NOTE There are no universally accepted abbreviations currently in existence: those recommended are given in Appendix A.		
13 01	aramid	<i>Fibre</i> composed of linear macromolecules made up of aromatic groups joined by amide or imide linkages, at least 85 % of the amide or imide linkages being joined directly to two aromatic rings and the number of imide linkages, if the latter are present, not exceeding the number of amide linkages.
13 02	polyamide nylon	<i>Fibre</i> composed of linear macromolecules having in the chain recurring amide linkages, at least 85 % of which are joined to aliphatic or cycloaliphatic units.
13 03	polyester	<i>Fibre</i> composed of linear macromolecules having in the chain at least 85 % by mass of an ester of a diol and terephthalic acid.
13 04	polyethylene	<i>Fibre</i> composed of linear macromolecules of unsubstituted saturated aliphatic hydrocarbons.
13 05	high modulus polyethylene	Parallel molecular orientated gel spun <i>polyethylene fibre</i> with high modulus and high tenacity.
13 06	polypropylene	<i>Fibre</i> composed of linear macromolecules made up of saturated aliphatic hydrocarbon units in which one carbon atom in two carries a methyl side group, generally in an isotactic configuration and without further substitution.

No.	Term	Definition
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14 Types of fibre

NOTE Abbreviations in common use are given in Table 1.

14 01	bicomponent fibre	<i>Fibre</i> incorporating more than one polymer which polymers have been extruded together to form the final <i>fibre</i> .
14 02	continuous filament	<i>Fibre</i> of indefinite length and sensibly uniform cross section.
14 03	corespun yarn	<i>Yarn(1)</i> consisting of a central thread surrounded by staple <i>fibres</i> . The <i>yarn(1)</i> has the strength and elongation of the central thread whilst exhibiting most of the other characteristics of the surface staple <i>fibres</i> .
14 04	copolymer	Polymer in which the repeating units are not all the same. Usually, but not always, copolymers are formed from two or more differing monomers brought together during the polymerization stage.
14 05	fibrillation	The process of splitting a longitudinally oriented textile film or tape into a network of interconnected <i>fibres</i> .
14 06	filament	<i>Fibre</i> of indefinite length.
14 07	homopolymer	Polymer in which the repeating units are all the same.
14 08	mechanically fibrillated fibre	Film <i>yarn</i> in which the <i>fibrillation</i> has been produced artificially by an external object which penetrates the film and initiates the <i>fibrillation</i> from the sites of such penetrations.
14 09	monofilament	Continuous <i>filament</i> of approximately circular section having a <i>diameter</i> greater than 40 μm . NOTE This definition varies from that used in the textile industry in general, and is specific to <i>cordage</i> .
14 10	multifilament	Continuous <i>filament</i> of approximately circular section having a <i>diameter</i> of 40 μm or less. NOTE This definition varies from that used in the textile industry in general, and is specific to <i>cordage</i> .
14 11	staple fibre	<i>Fibre</i> which has a naturally occurring random length, or one which has been produced by cutting continuous <i>filaments</i> into discrete lengths.
14 12	staple length	Nominal length of a <i>staple fibre</i> .
14 13	twist fibrillated fibre	<i>Yarn (1)</i> formed by oriented film being fibrillated by the torsion caused by twisting it under tension.
14 14	yarn(1)	Twisted entity composed of <i>filaments</i> , <i>staple fibres</i> , or fibrillated film held together by twist. (See also 21 45.)

Table 1 — Common abbreviations for forms of man-made fibres

Term	Abbreviation
Twist fibrillated fibre	FM
Mechanically fibrillated fibre	MF
Monofilament	MO
Multifilament	MU
Staple fibre	ST

Section 2. Construction, strength, performance and measurement

No.	Term	Definition
21 Construction		
21 01	angle of lay	Angle at which <i>strands</i> lie in relation to the axis of the <i>cordage</i> .
21 02	base yarn	<i>Yarn</i> (2), obtained from the manufacturer, consisting of a wound package of parallel <i>filaments</i> on which subsequent twisting operations are performed.
21 03	braided cord	<i>Cord</i> of braided construction.
21 04	braided rope	<i>Rope</i> formed by braiding or plaiting the <i>strands</i> together as opposed to twisting them. NOTE The terms “braiding” and “plaiting” are considered to be synonymous.
21 05	cable laid rope	<i>Rope</i> formed by three or more <i>ropes</i> twisted to form a helix around a central axis, where the <i>ropes</i> forming the secondary <i>strands</i> are “S” lay, and the finished <i>cable</i> is “Z” lay, or vice versa.
21 06	carrier	Platform on which a bobbin is mounted on the platform of a braiding machine, and which transports the bobbin during the generation of the braid.
21 07	combined rope	<i>Rope</i> in which the <i>strand</i> centres are made of steel, and in which the outer portions of each <i>strand</i> are made from a fibrous material.
21 08	combination rope	See <i>spring lay rope</i> .
21 09	cord	Laid or plaited item of <i>cordage</i> , usually, but not necessarily, less than 4 mm in <i>diameter</i> .
21 10	cordage	Product independent of size, in which twisting, plaiting or braiding of any fibrous material produces a finished article, sensibly round in cross section, which is capable of sustaining loads.
21 11	core	Central portion of any <i>cord</i> , <i>strand</i> or <i>rope</i> which is integral, and not combined by twisting or plaiting with any other component of that <i>cord</i> , <i>strand</i> or <i>rope</i> .
21 12	diameter	Diameter of the circle circumscribed about the cross section of the <i>rope</i> . It is usually measured under a given tension and method (e.g. BS 5053). It does not apply to <i>8-strand plaited ropes</i> . The nominal diameter of the <i>rope</i> is usually used as the reference value for a given product.
21 13	double braided rope	<i>Rope</i> in which a number of <i>strands</i> are plaited to form a <i>core</i> , and around which are plaited further <i>strands</i> to form a sheath. The <i>core</i> lies coaxially within the sheath.
21 14	8-strand plaited rope	<i>Rope</i> normally composed of four pairs of <i>strands</i> plaited in a double 4-strand coreless round <i>sennit</i> (sometimes spelt <i>sinnet</i>). (See Figure 1 for cross-section.)
21 15	end	Single base <i>yarn</i> or <i>roping yarn</i> which is wound parallel to similar <i>yarns</i> onto a bobbin prior to braiding.
21 16	hard laid rope	<i>Rope</i> in which the <i>length of lay</i> of the <i>strands</i> and/or of the <i>rope</i> is shorter than usual, resulting in a stiffer and less flexible <i>rope</i> .
21 17	hawser laid rope	<i>Rope</i> of three <i>strands</i> where the <i>strands</i> are twisted to form helices around the central axis.
21 18	kernmantel	Braided <i>polyamide</i> climbing <i>rope</i> comprising a braided sheath enclosing either a braided <i>core</i> , or a <i>core</i> composed of parallel <i>yarns</i> . The <i>core</i> is made from a medium <i>tenacity</i> material, whilst the sheath is produced from high <i>tenacity fibre</i> . The resulting <i>rope</i> has a very high <i>extension</i> and energy absorption under load, so that the falling climber is arrested at as low a deceleration as is possible, thus minimizing injury. NOTE The name is derived from the German “kern” meaning “core”, and “mantel” meaning “sheath”.

No.	Term	Definition
21 19	laid rope	<i>Rope</i> in which three or more <i>strands</i> are twisted to form helices around the central axis.
21 20	length of lay	Pitch of one complete turn of a <i>yarn</i> in a <i>strand</i> , or a <i>strand</i> in a <i>rope</i> , measured in a straight line parallel to the axis of the <i>strand</i> or <i>rope</i> . See Figure 2.
21 21	line	Laid, cabled, twisted, or <i>plaited cord</i> having a <i>diameter</i> of less than 4 mm.
21 22	main core	<i>Hard laid rope</i> used in the centre of steel wire <i>ropes</i> to support the <i>strands</i> .
21 23	ordinary lay	<i>Laid rope</i> in which the direction of twist in the <i>roping yarn</i> , and the finished <i>rope</i> are the same, and where the direction of lay of the <i>strand</i> is in the opposite direction.
21 24	plait pitch	Longitudinal distance along the axis of the <i>rope</i> from a point on the crown of one plait to the corresponding point one plait along, as shown in Figure 1.
21 25	plaited cord	<i>Cord</i> of plaited construction.
21 26	ply	NOTE The terms "braiding" and "plaiting" are considered to be synonymous. Twisted fibrous entity which may be complete in itself (e.g. single-ply) or which may be a component in a more complex <i>cordage</i> item (e.g. 3-ply yarn).
21 27	primary strand	<i>Strand</i> which forms part of any of the <i>ropes</i> used as the secondary <i>strands</i> of a <i>cable laid rope</i> .
21 28	primary yarn	Two or more <i>base yarns</i> twisted together, and on which subsequent twisting operations have to be performed.
21 29	right-hand lay	See " <i>Z</i> " <i>lay</i> .
21 30	rope	Product obtained when three or more <i>strands</i> are laid or plaited together to provide a composite <i>cordage</i> article larger than 4 mm in <i>diameter</i> .
21 31	roping yarn	<i>Yarn</i> from which a <i>strand</i> is produced.
21 32	"S" lay left-hand lay	Lay in which the material is twisted in a direction such that it is in line with the central portion of the letter "S", as shown in Figure 3.
21 33	secondary strand	<i>Rope</i> forming one of the <i>strands</i> of a <i>cable laid rope</i> .
21 34	sennit sinnet	<i>Braided rope</i> of various kinds.
21 35	shroud laid rope	4-strand <i>rope</i> with or without a <i>core</i> , with the <i>strands</i> twisted to form a helix around the central axis.
21 36	sinnet	See <i>sennit</i> .
21 37	soft laid rope	<i>Rope</i> in which the <i>length of lay</i> of the <i>strands</i> and/or of the <i>rope</i> is longer than usual, resulting in a more flexible <i>rope</i> which is more easily deformed.
21 38	spring lay rope	<i>Rope</i> made with six <i>strands</i> over a <i>main core</i> , each <i>strand</i> of which has alternating wire and <i>fibre</i> components laid over a <i>fibre core</i> .
21 39	strand	Product obtained by twisting together two or more <i>yarns</i> (2) prior to laying into a <i>rope</i> .
21 40	strand core	<i>Core</i> used in the centre of <i>strands</i> in the manufacture of steel wire <i>ropes</i> .
21 41	thread	Slender <i>cord</i> made from two or more <i>yarn</i> (2) twisted together.
21 42	to lay	To twist two or more components about each other to form a helix around the axis of the resulting laid item, which may be a <i>strand</i> or a <i>rope</i> .
21 43	twine	Twisted <i>cord</i> of less than 4 mm in <i>diameter</i> .