INTERNATIONAL STANDARD

ISO 1346

Fifth edition
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Fibre ropes — Polypropylene split film, monofilament and multifilament (PP2) and polypropylene high-tenacity multifilament (PP3) — 3-, 4-, 8- and 12-strand ropes

Cordages en fibres — Film fibrillé, monofilament et multifilament de polypropylène (PP2) et multifilament de polypropylène haute ténacité (PP3) — Cordages à 3, 4, 8 et 12 torons

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Contents

Page

Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 38, *Textiles*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 248, *Textiles and textile products*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This fifth edition cancels and replaces the fourth edition (ISO 1346:2012), which has been technically revised.

The main changes compared to the previous edition are as follows:

— in the Scope, a statement specifying that the document does not cover all variations in strength or product performance has been added;

— in Clause 3, the term "minimum breaking strength" has been added;

— in Table 1, Table 2 and Table 3, the tolerances in linear density have been modified.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Fibre ropes — Polypropylene split film, monofilament and multifilament (PP2) and polypropylene high-tenacity multifilament (PP3) — 3-, 4-, 8- and 12-strand ropes

1 Scope

This document specifies requirements for 3-strand hawser-laid and 4-strand shroud-laid ropes, 8-strand braided ropes and 12-strand braided ropes for general service made of polypropylene, and gives rules for their designation.

This document does not cover all variations in strength or product performance. The rope manufacturer is consulted to ensure the intended design meets the requirements of the application

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 1968, *Fibre ropes and cordage — Vocabulary*

ISO 2307, *Fibre ropes — Determination of certain physical and mechanical properties*

ISO 9554, *Fibre ropes — General specifications*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 1968 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
minimum breaking strength
MBS
force a fibre rope shall at least achieve when tested following a recognized procedure/test method

Note 1 to entry: The MBS is set by each manufacturer, as per their own internal statistical methods based on breaking tests. In ISO 9554:2019, Annex D, two statistical methods are given that can be used to determine the MBS.

[SOURCE: ISO 9554:2019, 3.2]

4 Designation

Fibre ropes shall be designated by

— the words “fibre rope”,

— the number of this document, i.e. ISO 1346,

— the construction or type of rope (see Clause 5),

— the reference number of the rope,

— the material from which the rope is made:

1) PP2: polypropylene split film, monofilament and multifilament,

2) PP3: polypropylene high-tenacity multifilament.

— The rope fibres shall be protected against deterioration due to sunlight (UV). See ISO 9554

EXAMPLE

Designation of an 8-strand braided rope (type L) with a linear density of 1 630 ktex, corresponding to the reference number 60 and made of polypropylene monofilament (PP2):

Fibre rope ISO 1346 – L – 60 – PP2 protected (UV)

5 General requirements

5.1 Polypropylene ropes shall be made in one of the following constructions:

— type A: 3-strand hawser-laid rope (see Figure 1);

— type B: 4-strand shroud-laid rope (see Figure 2);

— type L: 8-strand braided rope (see Figure 3);

— type T: 12-strand braided rope (see Figure 4).

Figure 1 — Shape of a 3-strand hawser-laid rope (type A)

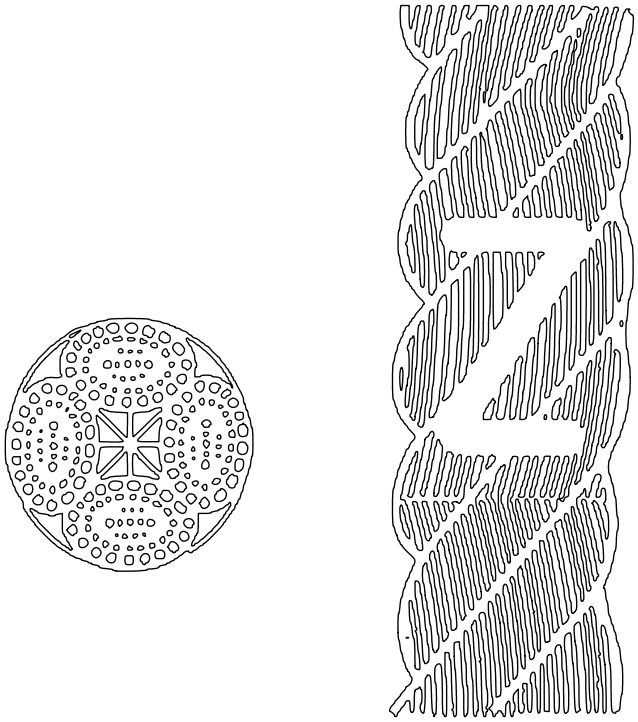

Figure 2 — Shape of a 4-strand shroud-laid rope (type B)

Figure 3 — Shape of an 8-strand braided rope (type L)

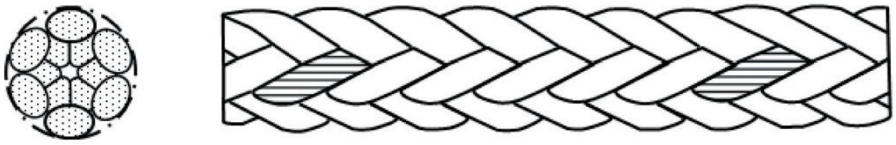

Figure 4 — Shape of a 12-strand braided rope (type T)

5.2 Construction, manufacture, lay, labelling, packaging, invoicing and delivery lengths shall be in accordance with ISO 9554.

6 Physical properties

Linear density and minimum breaking strength shall be in accordance with Table 1, Table 2 and Table 3.

Regarding Table 1, Table 2 and Table 3, the following applies.

— The reference number corresponds to the approximate diameter, in millimetres.

— The linear density, in kilotex, corresponds to the net mass per length of rope, expressed in grams per metre or in kilograms per thousand metres.

— The linear density is under reference tension and is measured as specified in ISO 2307

— The breaking strengths quoted in these tables relate to new dry and wet ropes.

— A force determined by the test methods specified in ISO 2307 is not necessarily an accurate indication of the force at which that rope might break in other circumstances and situations. The type and quality of the termination rate of force application, prior conditioning and previous force applications to the rope can significantly influence the breaking strength. A rope bent around a post, capstan, pulley or sheave could break a significantly lower force. A knot or other distortion in a rope will significantly reduce the breaking strength.

Table 1 — Linear density and minimum breaking strength (MBS) of 3-strand hawser-laid polypropylene ropes, type A

Reference Number	Linear density		Minimum breaking strength kN			
	Nominal ktex	Tolerance %	Split/Mono/Multi PP2 Multi PP2		High-tenacity Multi PP3 Multi PP3	
			Unspliced ropes	Ropes with eye-spliced terminations	Unspliced ropes	Ropes with eye-spliced terminations
4	7,23	±10	2,80	2,52	3,15	2,84
4,5	9,15		3,55	3,20	4,00	3,60
5	11,3		4,25	3,83	4,75	4,28
6	16,3		6,00	5,40	6,70	6,03
8	28,9		10,0	9,00	11,8	10,6
9	36,6		12,5	11,3	14,0	12,6
10	45,2		15,0	13,5	17,0	15,3
12	65,1	±8	21,2	19,1	25,0	22,5
14	88,6		28,0	25,2	33,5	30,2
16	116		37,5	33,8	42,5	38,3
18	146		45,0	40,5	53,0	47,8
20	181		56,0	50,4	63,0	56,7
22	219		67,0	60,3	75,0	67,5
24	260		80,0	72,0	90,0	81,0
26	306		90,0	81,0	106	95,4
28	354		106	95,4	118	106
30	407		118	106	132	119
32	463		132	119	150	135
36	586		170	153	190	171

Table 1 *(continued)*

Reference Number	Linear density		Minimum breaking strength kN			
	Nominal ktex	Tolerance %	Split/Mono/Multi PP2 Multi PP2		High-tenacity Multi PP3 Multi PP3	
			Unspliced ropes	Ropes with eye-spliced terminations	Unspliced ropes	Ropes with eye-spliced terminations
40	723	±5	200	180	236	212
44	875		250	225	280	252
48	1 040		280	252	335	302
52	1 220		335	302	375	338
56	1 420		375	338	425	383
60	1 630		425	383	500	450
64	1 850		500	450	560	504
72	2 340		600	540	710	639
80	2 890		750	675	850	765
88	3 500		900	810	1 000	900
96	4 170		1 060	954	1 180	1 062
104	4 890		1 250	1 125	1 400	1 260
112	5 670		1 400	1 260	1 600	1 440
120	6 510		1 600	1 440	1 800	1 620
128	7 410		1 800	1 620	2 000	1 800
136	8 360		2 000	1 800	2 240	2 016
144	9 370		2 240	2 016	2 500	2 250
160	11 600		2 800	2 520	3 000	2 700

Table 2 — Linear density and minimum breaking strength (MBS) of 4-strand shroud-laid polypropylene ropes, type B

Reference Number	Linear density		Minimum breaking strength kN			
			Split/Mono/Multi PP2 Multi PP2		High-tenacity Multi PP3 Multi PP3	
	Nominal ktex	Tolerance %	Unspliced ropes	Ropes with eye-spliced terminations	Unspliced ropes	Ropes with eye-spliced terminations
10	45,2	±10	14,0	12,6	16,0	14,4
12	65,1	±8	19,0	17,1	22,4	20,2
14	88,6		26,5	23,9	30,0	27,0
16	116		33,5	30,2	37,5	33,8
18	146		45,0	40,5	47,5	42,8
20	181		53,0	47,7	60,0	54,0
22	219		60,0	54,0	71,0	63,9
24	260		71,0	63,9	80,0	72,0
26	306		80,0	72,0	95,0	85,6
28	354		95,0	85,5	106,0	95,4
30	407		106	95,4	125	113
32	463		125	113	140	126
36	586		150	135	170	153
40	723	±5	180	162	212	191
44	875		224	202	250	225
48	1 040		250	225	300	270
52	1 220		300	270	335	302
56	1 420		335	302	400	360
60	1 630		400	360	450	405
64	1 850		450	405	500	450
72	2 340		560	504	630	567
80	2 890		670	603	750	675
88	3 500		800	720	900	810
96	4 170		950	855	1 060	954
104	4 890		1 120	1 008	1 250	1 125
112	5 670		1 250	1 125	1 400	1 260
120	6 510		1 400	1 260	1 600	1 440
128	7 410		1 600	1 440	1 800	1 620
136	8 360		1 800	1 620	2 000	1 800
144	9 370		2 000	1 800	2 240	2 016
160	11 600		2 500	2 250	2 800	2 520