INTERNATIONAL STANDARD

ISO 1140

Third edition
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Fibre ropes — Polyamide — 3-, 4- and 8-strand ropes

Cordages en fibres — Polyamide — Cordages à 3, 4 et 8 torons

Reference number
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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 1140 was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 248, *Textiles and textile products*, in collaboration with Technical Committee ISO/TC 38, *Textiles*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 1140:1990), which has been technically revised.

Fibre ropes — Polyamide — 3-, 4- and 8-strand ropes

1 Scope

This International Standard specifies requirements for 3-strand hawser-laid and 4-strand shroud-laid ropes and 8-strand braided ropes for general service made of polyamide and gives rules for their designation.

2 Normative references

The following referenced documents are indispensable for the application 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 — Terms and definitions*

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

ISO 9554:—[1)] , *Fibre ropes — General specification*

3 Terms and definitions

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

4 Designation

Fibre ropes shall be designated by:

— the words “fibre rope”;

— the number of this International Standard;

— the construction type of rope (see Clause 5);

— the reference number of the rope;

— the material from which the rope is made; the mixing of polyamide fibre types and grades shall not be permitted;

— the type of stabilisation (1 or 2 in accordance with ISO 9554:—[1)]).

Polyamide laid ropes that are required to have a heat setting on the rope to ensure lay and dimensional stability are designated type 1 ropes; in other cases, polyamide laid ropes that are not required to have a heat setting on the rope are designated type 2 ropes.

1) To be published. (Revision of ISO 9554:1991)

EXAMPLE Designation of a 3-strand hawser-laid rope heat set (type 1), reference number 20 (type A) corresponding to a linear density of 247 ktex made of polyamide (PA):

Fibre rope ISO 1140 - A - 20 – PA – 1.

5 General requirements

5.1 Polyamide 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).

5.2 Construction, manufacture, lay labelling, packaging, invoicing and delivery lengths shall conform to ISO 9554.

6 Physical properties

Linear density and minimum breaking force shall conform to Tables 1, 2 and 3.

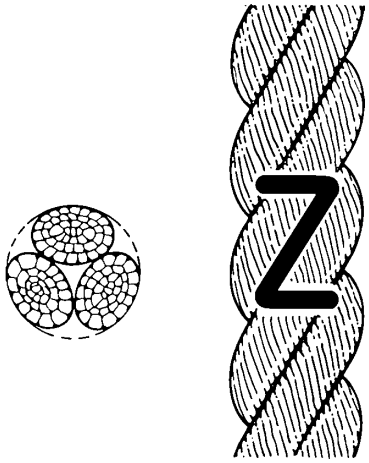

Figure 1 — Shape of a 3-strand hawser-laid rope (type A)

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

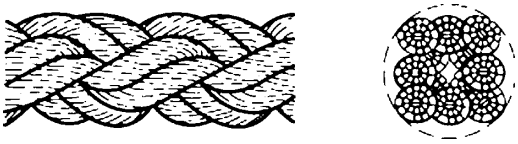

Figure 3 — Shape of an 8-strand braided rope (type L)

Table 1 — Linear density and minimum breaking force of 3-strand hawser-laid polyamide ropes (type A)

Reference number [a]	Linear density [b, c]		Minimum breaking force [d, e, f]
	Nominal	Tolerance	
	ktex	%	kN
4	9,87	± 10	3,70
4,5	12,5		4,63
5	15,4		5,64
6	22,2		7,93
8	39,5		13,8
9	50,0		17,4
10	61,7	± 8	21,2
12	88,8		30,1
14	121		40,0
16	158	± 5	51,9
18	200		64,3
20	247		79,2
22	299		94,0
24	355		112
26	417		129
28	484		149
30	555		169
32	632		192
36	800		240
40	987		294
44	1 190		351
48	1 420		412
52	1 670		479
56	1 930		550
60	2 220		627
64	2 530		709
72	3 200		887
80	3 950		1 080
88	4 780		1 300
96	5 690		1 530
104	6 670		1 780
112	7 740		2 050
120	8 880		2 340
128	10 100		2 650
136	11 400		2 980
144	12 800		3 320
160	15 800		4 060

[a] The reference number corresponds to the approximate diameter in millimetres.

[b] The linear density (in kilotex) corresponds to the net mass per length of the rope, expressed in grams per metre or in kilograms per thousand metres.

[c] The linear density is under reference tension and is measured as specified in ISO 2307.

[d] The breaking forces quoted above relate to new dry ropes. In wet conditions, the breaking force will be lower.

[e] Minimum values for the breaking force shall be reduced by 10 % in the case of a rope with eye-spliced terminations.

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

Table 2 — Linear density and minimum breaking force of 4-strand shroud-laid polyamide ropes (type B)

Reference number [a]	Linear density [b, c]		Minimum breaking force [d, e, f]
	Nominal	Tolerance	
	ktex	%	kN
10	61,7	± 8	19,1
12	88,8		27,1
14	121		36,0
16	158		46,7
18	200		57,9
20	247		71,3
22	299		84,6
24	355		101
26	417		116
28	484		134
30	555		152
32	632		173
36	800		216
40	987		265
44	1 190		316
48	1 420		371
52	1 670	± 5	431
56	1 930		495
60	2 220		564
64	2 530		638
72	3 200		798
80	3 950		972
88	4 780		1 170
96	5 690		1 380
104	6 670		1 600
112	7 740		1 850
120	8 880		2 110
128	10 100		2 390
136	11 400		2 680
144	12 800		2 990
160	15 800		3 650

[a] The reference number corresponds to the approximate diameter in millimetres.

[b] The linear density (in kilotex) corresponds to the net mass per length of the rope, expressed in grams per metre or in kilograms per thousand metres.

[c] The linear density is under reference tension and is measured as specified in ISO 2307.

[d] The breaking forces quoted above relate to new dry ropes. In wet conditions, the breaking force will be lower.

[e] Minimum values for the breaking force shall be reduced by 10 % in the case of a rope with eye-spliced terminations.

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