INTERNATIONAL STANDARD

ISO 1181

Third edition
2004-11-01

Fibre ropes — Manila and sisal — 3-, 4- and 8-strand ropes

Cordages en fibres — Abaca (manille) et sisal — Cordages à 3, 4 et 8 torons

Reference number
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Contents

Page

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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 1181 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 1181:1990), which has been technically revised.

Fibre ropes — Manila and sisal — 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 manila and sisal 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 following:

— 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.

EXAMPLE Designation of a 3-strand hawser-laid rope, reference number 52 (type A) corresponding to a linear density of 1 870 ktex made of manila (MA):

Fibre rope ISO 1181 - A - 52 - MA.

1) To be published.

5 General requirements

5.1 Manila ropes and sisal 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 be in accordance with ISO 9554.

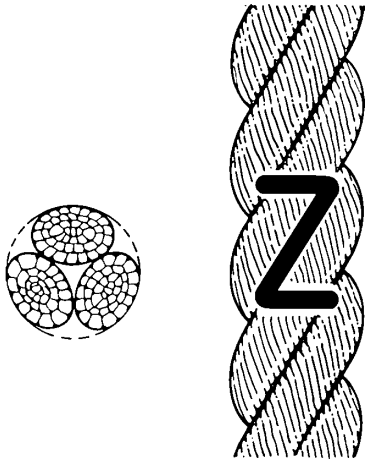

Figure 1 — Shape of a 3-strand hawser-laid rope (type A)

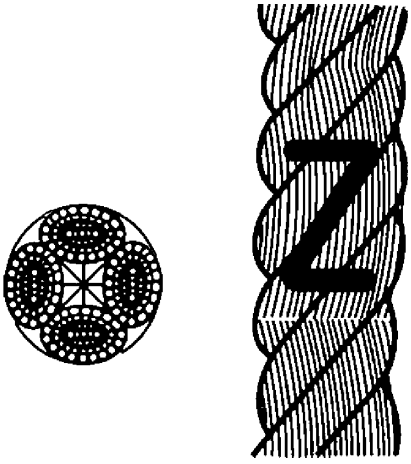

Figure 2 — Shape of a 4-strand shroud-laid rope (type B)

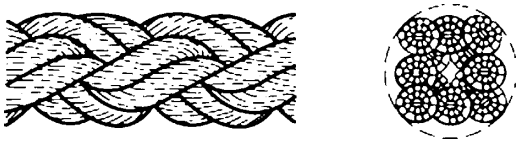

Figure 3 — Shape of an 8-strand braided rope (type L)

6 Lubrication and finish

6.1 Lubrication

For the purpose of dressing the fibre, and for the preservation of the rope, a lubricant may be added to manila and sisal ropes. The quantity of dressing applied to the fibre shall, when determined as described in ISO 2307, Clause 12, be not more than 15 % as calculated on the dry mass of the finished rope.

6.2 Finish

No colouring matter, except that of the rot-proofing agent, water-repellent medium or other materials used to protect against mould growth, shall be used.

When a water repellency treatment is required, the medium shall not be soluble in water and shall be of such a nature that it lubricates the rope. The processing shall not reduce the strength of the yarns or the rope.

The quantity of dressing applied to the fibre, when determined by extraction with petroleum ether or other dissolving solvent in accordance with ISO 2307, Clause 12, shall be not less than 7 % for emulsion-type water-proofing media or not more than 13 % for direct oil- and wax-based types, calculated on the mass of the finished rope.

The maximum increase in mass, when tested for water repellency, shall be as follows:

a) for 3-strand and 4-strand ropes with a diameter of 18 mm and greater:

   1) treated by immersion for 1 h: 7 % of the original mass,

   2) treated by immersion for 6 h: 15 % of the original mass;

b) for 3-strand and 4-strand ropes with a diameter less than 18 mm and for 8-strand cable-laid rope:

   1) treated by immersion for 1 h: 12 % of the original mass,

   2) treated by immersion for 6 h: 25 % of the original mass.

After drying out and retesting, the percentages shall remain the same.

7 Physical properties

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

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

Reference number [a]	Linear density[b, c]		Minimum breaking force[d, e, f]	
	Nominal	Tolerance	Manila	Sisal
	ktex	%	kN	kN
4,5	14,0		1,66	1,48
5	17,3		2,03	1,82
6	24,9	± 10	2,89	2,58
8	44,4		5,05	4,50
9	56,1		6,34	5,66
10	69,3		7,78	6,93
12	99,8	± 8	11,1	9,86
14	136		14,9	13,3
16	177		19,3	17,2
18	225		24,3	21,6
20	277		29,8	26,5
22	335		35,9	31,9
24	399		42,5	37,8
26	468		49,6	44,2
28	543		57,2	51,0
30	624		65,4	58,3
32	710		74,1	66,0
36	898		93,1	82,9
40	1 110		114	102
44	1 340	± 5	137	122
48	1 600		162	145
52	1 870		189	169
56	2 170		219	195
60	2 490		250	223
64	2 840		283	253
68	3 200		318	284
72	3 590		355	317
76	4 000		395	352
80	4 440		436	389
88	5 370		525	468
96	6 390		622	553

[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 and wet ropes.

[e] Minimum values stated in individual standards 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 hawser-laid manila and sisal ropes (type B)

Reference number [a]	Linear density[b, c]		Minimum breaking force[d, e, f]	
	Nominal	Tolerance	Manila	Sisal
	ktex	%	kN	kN
10	69,3	± 8	7,00	6,24
12	99,8		9,99	8,87
14	136		13,4	12,0
16	177	± 5	17,4	15,5
18	225		21,9	19,4
20	277		26,8	23,9
22	335		32,3	28,7
24	399		38,3	34,0
26	468		44,6	39,8
28	543		51,5	45,9
30	624		58,9	52,5
32	710		66,7	59,4
36	898		83,8	74,6
40	1 110		103	91,8
44	1 340		123	110
48	1 600		146	131
52	1 870		170	152
56	2 170		197	176
60	2 490		225	201
64	2 840		255	228
68	3 200		286	256
72	3 590		320	285
76	4 000		356	317
80	4 440		392	350
88	5 370		473	421
96	6 390		560	498

[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 and wet ropes.

[e] Minimum values stated in individual standards 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 3 — Linear density and minimum breaking force of 8-strand braided manila and sisal ropes (type L)

Reference number [a]	Linear density[b, c]		Minimum breaking force[d, e, f]	
	Nominal	Tolerance	Manila	Sisal
	ktex	%	kN	kN
16	177		19,3	17,2
18	225		24,3	21,6
20	277		29,8	26,5
22	335		35,9	31,9
24	399		42,5	37,8
26	468		49,6	44,2
28	543		57,2	51,0
30	624		65,4	58,3
32	710		74,1	66,0
36	898		93,1	82,9
40	1 110		114	102
44	1 340	± 5	137	122
48	1 600		162	145
52	1 870		189	169
56	2 170		219	195
60	2 490		250	223
64	2 840		283	253
68	3 200		318	284
72	3 590		355	317
76	4 000		395	352
80	4 440		436	389
88	5 370		525	468
96	6 390		622	553

[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 and wet ropes.

[e] Minimum values stated in individual standards 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.

8 Marking

The marking shall be carried out in accordance with Clause 6 of ISO 9554—[1)].

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