

INTERNATIONAL STANDARD



1181

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Three- or four-strand manila and sisal ropes

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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO Member Bodies). The work of developing International Standards is carried out through ISO Technical Committees. Every Member Body interested in a subject for which a Technical Committee has been set up 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.

Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

Prior to 1972, the results of the work of the Technical Committees were published as ISO Recommendations; these documents are now in the process of being transformed into International Standards. As part of this process, International Standard ISO 1181 replaces ISO Recommendation R 1181-1970 drawn up by Technical Committee ISO/TC 38, *Textiles*.

The Member Bodies of the following countries approved the Recommendation :

Australia	Ireland	South Africa, Rep. of
Belgium	Italy	Spain
Czechoslovakia	Netherlands	Sweden
Denmark	New Zealand	Switzerland
Egypt, Arab Rep. of	Norway	Turkey
France	Philippines	United Kingdom
Germany	Poland	U.S.S.R.
Hungary	Portugal	
Iran	Romania	

The Member Body of the following country expressed disapproval of the Recommendation on technical grounds :

Brazil

Three- or four-strand manila and sisal ropes

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies the essential characteristics of three- or four-strand manila and sisal ropes whose net mass per metre is between 50 and 6 500 g and whose diameters are from 8 to 96 mm inclusive.

2 REFERENCES

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

3 CLASSIFICATION

Three- or four-strand manila ropes are classified in three qualities designated as follows in decreasing order of quality :

- Quality SP
- Quality 1
- Quality 2

Sisal ropes are manufactured in a single quality only, identical with Quality 2 of manila ropes

4 MANUFACTURE

Manila and sisal ropes, unless otherwise specified, shall be made of strands twisted together with a Z lay, these strands themselves being made of spun yarn assembled with an S lay.

Manila ropes shall be made solely from new manila (*Musa textilis née*) and sisal ropes from new sisal (*Agavé sisalana* Perrine), East African or an equivalent.

The minimum number of yarns in each strand is fixed for each nominal rope diameter. This number is calculated on the basis of single yarns having a linear density of 4 600 tex. If finer yarns are used, their number shall be increased proportionately.

NOTE — The amount of lubricant used for dressing the fibres and for preserving the rope is usually less than 15 % of the mass of the treated rope.

5 REQUIRED CHARACTERISTICS AND TOLERANCES

5.1 The characteristics of three-strand ropes shall be as given in Table 1.

5.2 The characteristics of four-strand ropes shall be as given in Table 1 amended as follows :

- a) reduction of 10 % of the minimum breaking forces;
- b) the minimum number of yarns per strand shall be

$$\frac{3N \times 0,9}{4}$$

where N is the minimum number of yarns per strand in the three-strand ropes.

5.3 The pitch of manila or sisal ropes shall be between $2,5D$ and $3,3D$ for the three-strand ropes and between $2,7D$ and $3,5D$ for the four-strand ropes (D being the diameter of the rope concerned).

5.4 Four-strand ropes usually include a central core.

6 METHODS OF TEST

The characteristics given in section 5 shall be measured in accordance with the procedures given in ISO 2307.

7 MARKING AND PACKING

7.1 Marking

For identification of the quality, the ropes shall include a black yarn in one or more strands depending on the quality concerned.

Manila	{	Quality SP — a black yarn in each of three strands of the rope.
		Quality 1 — a black yarn in each of two strands of the rope.
		Quality 2 — a black yarn in one strand.
Sisal		No marker yarn.

Other identification marking may be included by arrangement between the purchaser and supplier.

7.2 Packing

As manila and sisal ropes are invoiced on the gross mass basis, including packing, the mass of the packing shall not be more than 1,5 % of the gross mass of the ropes.

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TABLE 1 — Main characteristics of three- or four-strand¹⁾ manila and sisal ropes

Linear density in kilotex (or net mass ²⁾ per metre in grams)	Tensile force applied for the measurement of the net mass		Minimum breaking force						Minimum number of yarns per strand	Approximate circumference ³⁾	Approximate diameter ³⁾
			Quality SP manila		Quality 1 manila		Quality 2 manila and sisal				
	daN	kgf (approx)	daN	kgf	daN	kgf	daN	kgf		in	mm
54	11	11	588	600	534	545	473	483	3	1	8
68	14	14	760	775	691	705	622	635	4	1 1/4	10
105	20	20	1 150	1 170	1 050	1 065	936	955	6	1 1/2	12
140	29	30	1 570	1 600	1 430	1 450	1 260	1 285	8	1 3/4	14
190	39	40	2 210	2 250	1 990	2 030	1 770	1 805	11	2	16
220	49	50	2 650	2 700	2 400	2 440	2 100	2 135	13	2 1/4	18
275	69	70	3 480	3 550	3 190	3 250	2 790	2 845	16	2 1/2	20
330	78	80	4 170	4 250	3 790	3 660	3 340	3 405	19	2 3/4	22
400	88	90	4 950	5 050	4 480	4 570	3 990	4 065	23	3	24
470	108	110	5 790	5 900	5 230	5 335	4 640	4 725	27	3 1/4	26
532	118	120	6 620	6 750	5 980	6 095	5 220	5 325	31	3 1/2	28
625	137	140	7 550	7 700	6 730	6 860	5 980	6 095	36	3 3/4	30
700	157	160	8 480	8 650	7 720	7 875	6 730	6 860	40	4	32
890	196	200	10 600	10 800	9 460	9 650	8 470	8 695	51	4 1/2	36
1 100	235	240	12 800	13 000	11 800	11 940	10 300	10 415	63	5	40
1 340	285	290	16 500	16 800	14 000	14 225	12 500	12 700	77	5 1/2	44
1 585	330	340	18 300	18 600	16 500	16 765	14 500	14 735	91	6	48
1 870	390	400	21 100	21 500	19 200	19 560	17 000	17 275	107	6 1/2	52
2 150	440	450	24 500	25 000	22 000	22 355	19 500	19 815	124	7	56
2 480	500	510	27 600	28 100	24 900	25 400	22 200	22 605	142	7 1/2	60
2 880	570	580	31 600	32 200	28 500	29 000	25 200	25 700	163	8	64
3 180	630	640	34 500	35 200	31 400	32 000	28 000	28 500	183	8 1/2	68
3 620	700	710	38 700	39 400	35 100	35 800	32 100	32 700	205	9	72
4 000	750	770	42 700	43 500	38 800	39 500	34 300	35 000	228	9 1/2	76
4 400	820	840	46 900	47 800	42 700	43 500	38 000	38 700	253	10	80
5 350	980	1 000	55 500	56 600	50 500	51 500	45 900	46 800	306	11	88
6 400	1 080	1 100	64 700	66 000	58 800	60 000	52 500	53 500	364	12	96

1) For four-strand ropes, see 5.2.

2) The net mass is measured under the tensile force indicated in the second column.

3) Circumferences and diameters are given for information only.

ANNEX

As it is known that contracts are occasionally placed for ropes of a lower quality than the three grades detailed in Table 1, details of such ropes are given for information in this Annex. It is strongly recommended that the use of these ropes be deprecated, with the aim of focusing attention on the standard grades.

TABLE 2 – Main characteristics of fourth-quality ropes

Linear density in kilotex (or net mass ¹⁾ per metre in grams)	Tensile force applied for the measurement of the net mass		Minimum breaking force		Minimum number of yarns per strand	Approximate circumference ²⁾	Approximate diameter ²⁾
	daN	kgf (approx)	daN	kgf		in	mm
54	11	11	411	419	3	1	8
68	14	14	548	559	4	1 1/4	10
105	20	20	821	838	6	1 1/2	12
140	29	30	1 096	1 118	8	1 3/4	14
190	39	40	1 543	1 575	10	2	16
220	49	50	1 842	1 880	13	2 1/4	18
275	69	70	2 171	2 215	16	2 1/2	20
330	78	80	2 913	2 972	19	2 3/4	22
400	88	90	3 485	3 556	23	3	24
470	108	110	4 057	4 140	27	3 1/4	26
532	118	120	4 631	4 725	34	3 1/2	28
625	137	140	5 277	5 385	36	3 3/4	30
700	157	160	5 950	6 071	41	4	32
890	196	200	7 419	7 570	52	4 1/2	36
1 100	235	240	9 509	9 703	64	5	40
1 340	285	290	10 804	11 024	77	5 1/2	44
1 585	330	340	12 696	12 955	92	6	48
1 870	390	400	14 786	15 088	108	6 1/2	52
2 150	440	450	17 077	17 425	125	7	56
2 480	500	510	19 417	19 813	144	7 1/2	60
2 880	570	580	22 148	22 600	164	8	64
3 180	630	640	24 206	24 700	185	8 1/2	68
3 620	700	710	27 048	27 600	207	9	72
4 000	750	770	29 400	30 000	231	9 1/2	76
4 400	820	840	31 948	32 600	253	10	80
5 350	980	1 000	38 416	39 200	306	11	88
6 400	1 080	1 100	42 140	43 000	364	12	96

1) The net mass should be measured under the tensile force indicated in the second column of the table.

2) Circumferences and diameters are given for information only.