
एरियल रोपवे के लिए इस्पात के तारों की
रस्मियाँ — विशिष्टि

भाग 1 ढुलाई एवं वहन ढुलाई रस्सी
(दूसरा पुनरीक्षण)

**Steel Wire Ropes for Aerial
Ropeways — Specification**
Part 1 Hauling and Carrying Hauling Rope
(Second Revision)

ICS 45.100; 77.140.65

© BIS 2025



भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
मानक भवन, 9 बहादुर शाह ज़फर मार्ग, नई दिल्ली - 110002
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI - 110002
www.bis.gov.in www.standardsbis.in

July 2025

Price Group 8

FOREWORD

This Indian Standard (Part 1) (Second Revision) was adopted by the Bureau of Indian Standards after the draft finalized by the Wire Ropes and Wire Products Sectional Committee had been approved by the Mechanical Engineering Division Council.

This standard was first published in 1984 and subsequently revised in 2001. This standard is being revised again to keep pace with the latest technological developments and international practices. Also, in this revision, the standard has been brought into latest style and format of Indian Standard, and references to Indian Standard wherever applicable has been updated.

The following major modifications have been incorporated to the revision of the standard:

- a) Symbolic representation of various constructions of wire ropes has been modified;
- b) Size ranges has been modified as 13 mm to 44 mm diameter in place of 13 mm to 40 mm diameter for 6×17 S and 6×19 S construction;
- c) Cross lay construction 6×19 M (12/6-1) has been deleted since the same is not recommended to haulage system;
- d) Requirement for lubrication has been added;
- e) Requirement of mass and breaking force have been modified as per the mass factor 'K' and breaking force factor 'K' given in IS 6594; and
- f) [Table 7](#) added for 6×31 SW and 6×36 SW constructions for comparatively better fatigue properties.

The composition of the Committee responsible for revision of this standard is given in [Annex B](#).

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2: 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

STEEL WIRE ROPES FOR AERIAL ROPEWAYS — SPECIFICATION

PART 1 HAULING AND CARRYING HAULING ROPE

(Second Revision)

1 SCOPE

This standard (Part 1) covers general requirements for steel wire ropes for hauling and carrying-hauling purpose in aerial ropeways.

Most common rope constructions and rope types are given in [Table 1](#) to [Table 7](#). Common rope grades, cores and size ranges are identified by ‘x’ mark however, other sizes, intermediate grades (up to including 1 960 grade) and core may be supplied as agreed between manufacturer and purchaser.

Specially developed constructions may be supplied to fulfil specific requirement of purchaser table given below.

2 REFERENCES

The standards given below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the edition indicated were valid. All standards are subject to revision, and parties to

agreement based on this standard are encouraged to investigate the possibility of applying the most recent edition of these standards:

IS No.	Title
IS 1804 : 2004	Steel wire ropes — Fibre main cores — Specification (<i>fourth revision</i>)
IS 2363 : 2022	Glossary of terms relating to wire ropes (<i>second revision</i>)
IS 6594 : 2024	Technical supply conditions for steel wire ropes and strands (<i>fourth revision</i>)
IS/ISO 2408 : 2017	Steel wire ropes — Requirements

3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 2363 shall apply.

Sl No.	Construction	Rope Grade				Core		Size Range mm	Ref to Table Nos.
		1 420	1 570	1 770	1 960	Fibre	Steel		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
i)	6 × 7 (6-1)	×	×	×	×	×	—	8 to 40	1
ii)	V 6 × 8 (7-Δ)	×	×	×	×	×	—	8 to 40	2
iii)	6 × 17 S (8-8-1)	×	×	×	×	×	×	13 to 44	3
iv)	6 × 19 S (9-9-1)	×	×	×	×	×	×	13 to 44	3
v)	6 × 25 F (12-6F-6-1)	×	×	×	×	×	×	8 to 40	4
vi)	V 6 × 22 (9/12-Δ)	×	×	×	×	×	×	16 to 40	5
vii)	V 6 × 25 (12/12-Δ)	×	×	×	×	×	×	22 to 40	6

To access Indian Standards click on the link below:

https://www.services.bis.gov.in/php/BIS_2.0/bisconnect/knowyourstandards/Indian_standards/isdetails/

4 ROPE DIAMETER

4.1 Rope Size

Purchaser shall specify the size of the rope designated as 'Nominal diameter'. The most common rope sizes are given in [Table 1](#) to [Table 7](#), however other sizes may be supplied as agreed between manufacturer and purchaser.

4.2 Tolerance

The actual diameter of the rope as supplied shall be within following percent of the nominal diameter within +1 percent and +5 percent of the nominal diameter.

4.3 Difference between Diameter Measurements

The difference between minimum and maximum values of the four measurements taken in accordance with Annex B of IS 2365, and expressed as a percentage of nominal diameter shall not exceed 4 percent.

5 CONSTRUCTION AND MINIMUM BREAKING FORCE

5.1 Construction

The construction shall be either as covered in [Table 1](#) to [Table 7](#) or another single layer rope construction as specified by manufacturer and covered in IS 6594.

5.2 Minimum Breaking Force

5.2.1 The values of minimum breaking force shall not be less than as specified in [Table 1](#) to [Table 7](#), given for more common construction and sizes and grades. For other rope diameters, the values shall not be less than those obtained using formula in **6.6** of IS 6594.

5.2.2 Minimum breaking force for wire ropes with 'solid polymer' core shall be same as of the wire ropes with 'fibre core'. Minimum breaking force of wire ropes with core as 'steel covered with solid polymer' and wire ropes with core as 'non-magnetic metallic covered with solid polymer' shall be same as the minimum breaking force of wire ropes with steel core.

5.2.3 Minimum breaking force for compacted ropes shall be as agreed between manufacturer and purchaser.

6 GENERAL REQUIREMENTS

The wire ropes shall conform to IS 6594 and shall meet the requirements of **6.1** to **6.6**.

6.1 Core

The core shall be one of the following types:

- Fibre core;
- Solid polymer;
- Non-magnetic metallic covered with solid polymer;
- Steel covered with solid polymer; and
- Steel, as independent wire rope (CWR) or wire strand (WSC).

6.2 Joints

Tucked joints may be used for wires of 0.5 mm diameter and smaller. For other wires joints shall be made as specified in IS 6594.

6.3 Lay

The wire ropes shall be of right hand lang's lay unless otherwise specified.

6.4 Preforming and Pre-stretching

The haulage ropes shall be preformed and pre-stretching may be done as agreed between purchaser and manufacturer.

6.5 Rope Grade

Rope grade shall be 1 420, 1 570, 1 770 and 1 960 although intermediate grades can also be specified.

6.6 Wire

Wire before rope making shall confirm to IS 1835. The tensile strength grades of wire shall be subject to the limits given in following Table 'A';

Sl No.	Rope Grade	Wire Tensile Strength Grade (N/mm ²)	
		Minimum	Maximum
(1)	(2)	(3)	(4)
i)	1 420	1 370	1 570
ii)	1 570	1 370	1 770
iii)	1 770	1 570	1 960
iv)	1 960	1 770	2 160

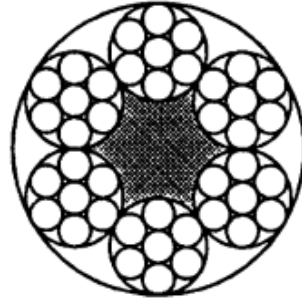
NOTE — Wire tensile grade 1370 shall be as per IS/ISO 2408.

7 GALVANIZING

The wire ropes shall normally be supplied in ungalvanized condition. However, when specifically required, these may be galvanized class B or class AB only, using zinc or zinc-aluminum alloy conforming to IS 1835.

8 WAVINESS

When the rope is measured for waviness over a length of rope equivalent to not less than three rope lay lengths shall not be more than $0.01 d + 0.2$ mm. The waviness shall be measured as per [Annex A](#).

Table 1 Mass and Breaking Force for 6×7 (6-1) Construction(Clauses [1](#), [4](#) and [5](#)) 6×7 (6-1)-CF

Sl No.	Nominal Diameter	Approximate Mass	Minimum Breaking Force Corresponding to Rope Grade of			
			1 420	1 570	1 770	1 960
	mm	Fibre Core (CF) kg/100 m	kN	kN	kN	kN
(1)	(2)	(3)	(4)	(5)	(6)	(7)
i)	8	22.9	30	33	38	40
ii)	9	28.9	38	42	48	51
iii)	10	35.7	47	52	59	63
iv)	11	43.2	57	63	71	76
v)	12	51.5	68	75	85	91
vi)	13	60.4	80	88	99	107
vii)	14	70.1	92	102	115	124
viii)	16	91.5	121	134	151	162
ix)	18	116	153	169	191	205
x)	20	143	189	209	235	253
xi)	22	173	228	252	285	306
xii)	24	206	272	300	339	364
xiii)	25	223	295	326	367	395
xiv)	26	242	319	353	397	427
xv)	28	280	370	409	461	495
xvi)	29	301	397	439	495	531
xvii)	32	366	483	534	602	647

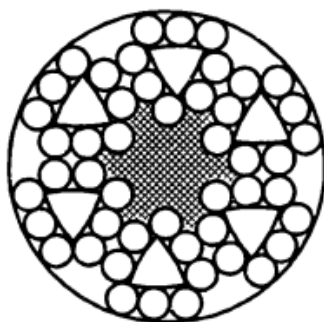
Table 1 (Concluded)

Sl No.	Nominal Diameter	Approximate Mass	Minimum Breaking Force Corresponding to Rope Grade of			
			1 420	1 570	1 770	1 960
		Fibre Core (CF)			Fibre Core (CF)	
	mm	kg/100 m	kN	kN	kN	kN
(1)	(2)	(3)	(4)	(5)	(6)	(7)
xviii)	33	389	514	568	640	688
xix)	35	438	578	639	720	774
xx)	36	463	611	676	762	818
xxi)	37	489	646	714	805	865
xxii)	38	516	681	753	849	912
xxiii)	40	572	755	834	941	1010

NOTE — To calculate aggregate breaking forces, multiply the figures given in col (3), col (4), col (5) and col (6) by 1.111.

Table 2 Mass and Breaking Force for V 6 × 8 (7-Δ) Construction

(Clauses 1, 4 and 5)



V 6 × 8 (7-Δ)-CF

Sl No.	Nominal Diameter	Approximate Mass	Minimum Breaking Force Corresponding to Rope Grade of		
			1 420	1 570	1 770
		Fibre Core (CF)		Fibre Core (CF)	
	mm	kg/100 m	kN	kN	kN
(1)	(2)	(3)	(4)	(5)	(6)
i)	8	26.2	33	36	41
ii)	9	33.2	42	46	52
iii)	10	41.0	51	57	64
iv)	11	49.6	62	69	78
v)	12	59.0	74	82	92
vi)	13	69.3	87	96	108
vii)	14	80.4	101	111	126
viii)	16	105	132	145	164
ix)	18	133	167	184	208

Table 2 (Concluded)

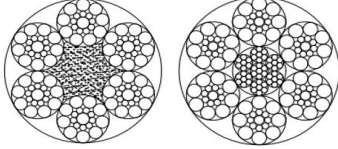
Sl No.	Nominal Diameter	Approximate Mass	Minimum Breaking Force Corresponding to Rope Grade of		
			1 420	1 570	1 770
		Fibre Core (CF)		Fibre Core (CF)	
	mm	kg/100 m	kN	kN	kN
(1)	(2)	(3)	(4)	(5)	(6)
x)	19	148	186	205	231
xi)	20	164	206	227	256
xii)	22	198	249	275	310
xiii)	24	236	296	327	369
xiv)	25	256	321	355	400
xv)	26	277	347	384	433
xvi)	28	321	403	446	502
xvii)	29	345	432	478	539
xviii)	32	420	526	582	656
xix)	33	446	560	619	698
xx)	35	502	630	696	785
xxi)	36	531	666	737	830
xxii)	37	561	704	778	877
xxiii)	38	592	742	821	925
xxiv)	40	656	822	909	1 025

NOTES

1 In case of a Δ wire, 3 or more round wires forming a triangle may also be used.

2 To obtain the calculated aggregate breaking forces, multiply the figures given in col (3), col (4) and col (5) by 1.137.

Table 3 Mass and Breaking Force for 6×17 S (8-8-1) and 6×19 S (9-9-1) Constructions(Clauses [1](#), [4](#) and [5](#))

Typical Cross Section		Typical Construction	
 WITH FIBRE CORE (CF) WITH STEEL CORE (CWR)		Rope Construction	Strand Construction
		6×17 S	8-8-1
		6×19 S	9-9-1

Sl No.	Nominal Diameter	Approximate Mass		Minimum Breaking Force Corresponding to Rope Grade of							
				1 420		1 570		1 770		1 960	
				Fibre Core (CF)	Steel Core (CWR)	Fibre Core (CF)	Steel Core (CWR)	Fibre Core (CF)	Steel Core (CWR)	Fibre Core (CF)	Steel Core (CWR)
	mm	kg/100 m	kg/100 m	kN	kN	kN	kN	kN	kN	kN	kN
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
i)	13	63.0	69.3	79	86	88	95	99	107	110	118
ii)	14	73.0	80.3	92	99	102	110	115	124	127	137
iii)	16	95.4	105	120	130	133	144	150	162	166	179
iv)	17	107	118	136	147	150	162	169	183	187	202
v)	18	121	133	152	164	168	182	190	205	210	227
vi)	20	149	164	188	203	208	224	234	253	260	280
vii)	22	180	198	227	246	252	272	284	306	314	339
viii)	24	215	236	271	292	299	323	337	364	374	403
ix)	25	233	256	294	317	325	351	366	395	405	438

Table 3 (Concluded)

Sl No.	Nominal Diameter	Approximate Mass		Minimum Breaking Force Corresponding to Rope Grade of							
				1 420		1 570		1 770		1 960	
				Fibre Core (CF) kN	Steel Core (CWR) kN	Fibre Core (CF) kN	Steel Core (CWR) kN	Fibre Core (CF) kN	Steel Core (CWR) kN	Fibre Core (CF) kN	Steel Core (CWR) kN
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
x)	26	252	277	318	343	351	379	396	428	439	474
xi)	28	292	321	368	398	407	440	459	496	509	549
xii)	29	313	345	395	427	437	472	493	532	546	589
xiii)	32	382	420	481	520	532	575	600	648	664	717
xiv)	33	406	446	512	553	566	611	638	689	706	763
xv)	36	483	531	609	658	673	727	759	820	841	908
xvi)	37	510	561	643	695	711	768	802	866	888	959
xvii)	38	538	592	679	733	750	810	846	913	937	1 012
xviii)	40	596	656	752	812	831	898	937	1 012	1 038	1 121
xix)	42	657	723	829	895	917	990	1 033	1 116	1 144	1 236
xx)	44	721	794	910	983	1006	1 086	1 134	1 225	1 256	1 356

NOTE — To calculate aggregate breaking forces, multiply the figures given in col (4), col (6), col (8) and col (10) by 1.163 and col (5), col (7), col (9) and col (11) by 1.25.

Table 4 Mass and Breaking Force for 6 × 25 F (12-6 F-6-1) Construction

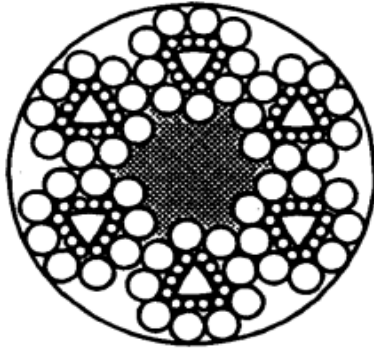
(Clauses 1, 4 and 5)

Sl No.	Nominal Diameter	Approximate Mass		Minimum Breaking Force Corresponding to Rope Grade of							
				1 420		1 570		1 770		1 960	
		Fibre Core (CF)	Steel Core (CWR)	Fibre Core (CF)	Steel Core (CWR)	Fibre Core (CF)	Steel Core (CWR)	Fibre Core (CF)	Steel Core (CWR)	Fibre Core (CF)	Steel Core (CWR)
(1)	mm (2)	kg/100 m (3)	kg/100 m (4)	kN (5)	kN (6)	kN (7)	kN (8)	kN (9)	kN (10)	kN (11)	kN (12)
i)	8	24.3	26.8	31	33	34	37	38	41	42	46
ii)	9	30.8	33.9	39	42	43	46	48	52	54	58
iii)	10	38.0	41.8	48	52	53	57	60	65	66	71
iv)	11	46.0	50.6	58	63	64	69	72	78	80	86
v)	12	54.7	60.2	69	75	76	82	86	93	95	103
vi)	13	64.3	70.7	81	88	90	97	101	109	112	121
vii)	14	74.5	82.0	94	102	104	112	117	127	130	140
viii)	16	97.3	107	123	133	136	147	153	165	169	183
ix)	18	123	135	155	168	172	186	194	209	214	232
x)	20	152	167	192	207	212	229	239	258	265	286
xi)	22	184	202	232	251	257	277	289	312	320	346
xii)	24	219	241	276	298	305	330	344	372	381	412
xiii)	25	238	261	300	324	331	358	374	403	414	447
xiv)	26	257	283	324	350	358	387	404	436	447	483
xv)	28	298	328	376	406	416	449	469	506	519	560
xvi)	32	389	428	491	530	543	586	612	661	678	732
xvii)	36	493	542	621	671	687	742	775	837	858	926
xviii)	40	608	669	767	829	848	916	956	1 033	1 059	1 144

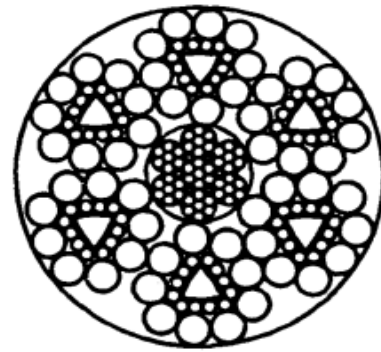
NOTE — To calculate aggregate breaking forces, multiply the figures given in col (4), col (6), col (8) and col (10) by 1.163 and col (5), col (7), col (9) and col (11) by 1.25.

Table 5 Mass and Breaking Force for V 6 × 22(9/12-Δ) Construction

(Clauses 1, 4 and 5)



V 6 × 22 (9/12-Δ)-CF



V 6 × 22 (9/12-Δ)-CWR

Sl No.	Nominal Diameter	Approximate Mass		Minimum Breaking Force Corresponding to Rope Grade of					
				1 420		1 570		1 770	
		Fibre Core (CF)	Steel Core (CWR)	Fibre Core (CF)	Steel Core (CWR)	Fibre Core (CF)	Steel Core (CWR)	Fibre Core (CF)	Steel Core (CWR)
	mm	kg/100 m	kg/100 m	kN	kN	kN	kN	kN	kN
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
i)	16	105	114	128	135	141	150	159	169
ii)	18	133	145	161	171	179	189	201	213
iii)	20	164	179	199	211	220	234	249	263
iv)	22	198	216	241	256	267	283	301	319
v)	24	236	257	287	304	317	336	358	379
vi)	25	256	279	312	330	344	365	388	412
vii)	26	277	302	337	357	373	395	420	445
viii)	28	321	350	391	414	432	458	487	516
ix)	29	345	376	419	444	463	491	522	554
x)	32	420	458	510	541	564	598	636	674
xi)	33	446	487	543	575	600	636	677	717
xii)	35	502	548	611	647	675	715	761	807
xiii)	36	531	579	646	685	714	757	805	853
xiv)	37	561	612	682	723	754	800	851	901
xv)	38	592	645	720	763	796	843	897	951
xvi)	40	656	715	797	845	882	934	994	1 054

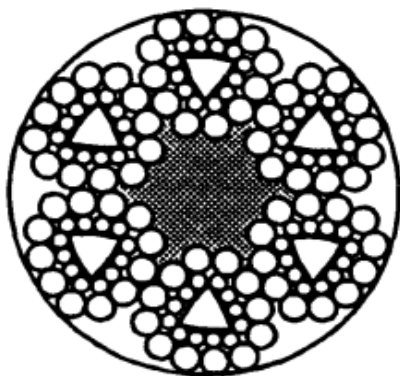
NOTES

1 In case of Δ wire, 3 or more round wires forming a triangle may also be used.

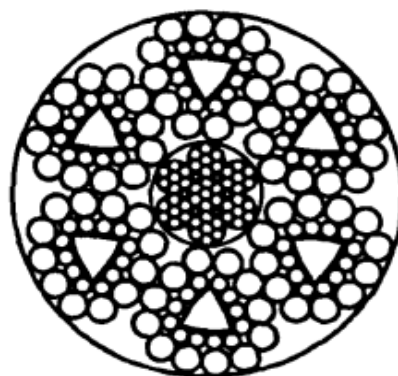
2 To obtain the calculated aggregate breaking forces multiply the figures given in col (4), col (6) and col (8) by 1.177 and col (5), col (7) and col (9) by 1.25.

Table 6 Mass and Breaking Force for V 6 × 25 (12 112-A) Construction

(Clauses 1, 4 and 5)



V 6 × 25 (12/12-Δ)-CF



V 6 × 25 (12/12-Δ)-CWR

Sl No.	Nominal Diameter	Approximate Mass		Minimum Breaking Force Corresponding to Rope Grade of					
				1 420		1 570		1 770	
		Fibre Core (CF)	Steel Core (CWR)	Fibre Core (CF)	Steel Core (CWR)	Fibre Core (CF)	Steel Core (CWR)	Fibre Core (CF)	Steel Core (CWR)
	mm	kg/100 m	kg/100 m	kN	kN	kN	kN	kN	kN
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
i)	22	198	216	241	256	267	283	301	319
ii)	24	236	257	287	304	317	336	358	379
iii)	25	256	279	312	330	344	365	388	412
iv)	26	277	302	337	357	373	395	420	445
v)	28	321	350	391	414	432	458	487	516
vi)	29	245	376	419	444	463	491	522	554
vii)	32	420	458	510	541	564	598	636	674
viii)	33	446	487	543	575	600	636	677	717
ix)	35	502	548	611	647	675	715	761	807
x)	36	531	579	646	685	714	757	805	853
xi)	37	561	612	682	723	754	800	851	901
xii)	38	592	645	720	763	796	843	897	951
xiii)	40	656	715	797	845	882	934	994	1 054

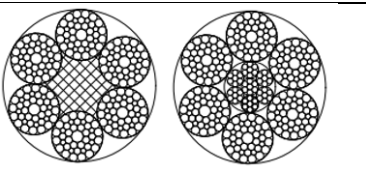
NOTES

1 In case of Δ wire, 3 or more round wires forming a triangle may also be used.

2 To obtain the calculated aggregate breaking forces multiply the figures given in col (4), col (6) and col (8) by 1.177 and col (5), col (7) and col (9) by 1.25.

Table 7 Mass and Breaking Force for 6 × 31 SW (12-6 + 6-6-1) and 6 × 36 (14-7 + 7-7-1) Constructions

(Clauses 1, 4 and 5)

Typical Cross Section	Typical Construction	
	Rope Construction	Strand Construction
	6 × 31 SW	12-6 + 6-6-1
	6 × 36 SW	14-7 + 7-7-1

Sl No.	Nominal Diameter	Approximate Mass		Minimum Breaking Force Corresponding to Rope Grade of							
				1 420		1 570		1 770		1 960	
				Fibre Core (CF)	Steel Core (CWR)	Fibre Core (CF)	Steel Core (CWR)	Fibre Core (CF)	Steel Core (CWR)	Fibre Core (CF)	Steel Core (CWR)
(1)	mm (2)	kg/100 m (3)	kg/100 m (4)	kN (5)	kN (6)	kN (7)	kN (8)	kN (9)	kN (10)	kN (11)	kN (12)
i)	28	298	328	367	397	406	439	458	494	507	548
ii)	29	320	352	394	426	436	470	491	530	544	587
iii)	30	342	376	422	455	466	503	526	568	582	629
iv)	32	389	428	480	518	530	573	598	646	662	715
v)	34	440	483	542	585	599	647	675	729	747	807
vi)	35	466	512	574	620	634	685	715	773	792	855
vii)	36	493	542	607	656	671	725	757	817	838	905
viii)	38	549	604	676	731	748	808	843	911	934	1 008
ix)	40	608	669	750	810	829	895	934	1 009	1 035	1 117
x)	42	671	738	826	892	914	987	1 030	1 112	1 141	1 232
xi)	44	736	810	907	980	1 003	1 083	1 130	1 221	1 252	1 352
xii)	45	770	847	949	1 025	1 049	1 133	1 182	1 277	1 309	1 414
xiii)	46	805	885	991	1 071	1 096	1 184	1 236	1 334	1 368	1 478
xiv)	48	876	964	1 079	1 166	1 193	1 289	1 345	1 453	1 490	1 609
xv)	50	951	1 046	1 171	1 265	1 295	1 398	1 460	1 577	1 617	1 746
xvi)	51	989	1 088	1 218	1 316	1 347	1 455	1 519	1 640	1 682	1 816
xvii)	52	1 028	1 131	1 267	1 368	1 401	1 513	1 579	1 705	1 748	1 888
xviii)	54	1 109	1 219	1 366	1 475	1 510	1 631	1 703	1 839	1 885	2 036
xix)	55	1 150	1 265	1 417	1 530	1 567	1 692	1 766	1 908	1 956	2 113
xx)	56	1 192	1 311	1 469	1 587	1 624	1 754	1 831	1 978	2 028	2 190
xxi)	58	1 279	1 407	1 576	1 702	1 742	1 882	1 964	2 122	2 175	2 349
xxii)	60	1 369	1 506	1 686	1 821	1 865	2 014	2 102	2 270	2 328	2 514

NOTE — To calculate aggregate breaking forces, multiply the figures given in col (4), col (6), col (8) and col (10) by 1.19 and col (5), col (7), col (9) and (11) by 1.28.

8 LUBRICATION

All wire ropes shall be thoroughly lubricated with a suitable compound during manufacturing process.

9 TEST

The haulage ropes shall meet the test requirements laid down in IS 6594.

10 MARKING

10.1 The size, construction, rope grade, lay, core, coating and length of wire rope, reel/coil number along with the order number of purchaser and any other marking which may be specified by the purchaser shall be legibly mentioned on a suitable

tag securely attached, when wire ropes are supplied in coils. In case wire ropes are supplied in reels, the information may be stenciled on both sides of the reels or stenciled on one side of the reel and a suitable tag giving the same information may be attached on the other side of the reel.

10.2 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

ANNEX A(Clause [8](#))**METHOD OF TEST FOR DETERMINATION OF WAVINESS****A-1 Tools**

Straight edge with a straightness of 0.05 mm and a length exceeding at least three rope lay length and feeler type gauge (or equivalent instrument) having increments of at least 0.05 mm and an accuracy of 0.01 mm.

A-2 Method

A-2.1 At the starting and finishing end of the rope in the closing machine, set the straight edge against the tensioned rope in such a way that the rope weight

will not have any influence on the results.

A-2.2 Without pressure on the straight edge, determine where the edge makes contact with the rope and secure the edge to the rope at two or more of these positions without affecting the straightness of the straight edge.

A-2.3 With a feeler type of gauge, measure the clearance (gap) between each strand and the straight edge over three rope lay lengths and record the results. The rope waviness shall be the maximum recorded value of the clearance (gap).

ANNEX B

(Foreword)

COMMITTEE COMPOSITION

Wire Ropes and Wire Products Sectional Committee, MED 10

<i>Organization</i>	<i>Representative(s)</i>
Directorate General of Mines Safety, Dhanbad	SHRI D. B. NAIK (Chairperson) SHRI SUNKI RATNAKER (<i>Alternate</i>)
Bharat Heavy Electrical Limited, New Delhi	SHRI BHASKARJIT BARUA SHRI RAMAN BHARIHOKE (<i>Alternate</i>)
Bharat Wire Ropes Limited, Mumbai	SHRI MAHENDER SINGH ARORA SHRI MAYANK MITTAL (<i>Alternate</i>)
Central Institute of Mining and Fuel Research, Dhanbad	SHRI B. AHIRWAL DR MOUSUMI MALLICK (<i>Alternate</i>)
Directorate General Factory Advice Service and Labour Institutes, Mumbai	SHRI SAMIR PANDEY SHRI N. VARADHARAJAN (<i>Alternate</i>)
Hindustan Zinc Limited, Udaipur	SHRI SUFAL MEHROTRA
Maccaferri Environment Solutions Pvt Limited, Navi Mumbai	MS MINIMOL KORULLA SHRI RUDRA BUDDHABHATTI (<i>Alternate</i>)
Ministry of Ports, Shipping and Waterways, New Delhi	SHRI ANIL PRUTHI SHRI RAMJI SINGH (<i>Alternate</i>)
Nanda and Miller Co, Kolkata	SHRI J. P. GOENKA
National Institute of Technology, Kurukshetra	SHRI MANOJ KUMAR GUPTA
National Test House, Kolkata	SHRI SURESH PARWAL SHRI ANGAD VERMA (<i>Alternate</i>)
Oil and Natural Gas Corporation Limited, New Delhi	SHRI RITUJIT HAZARIKA SHRI RAKESH KUMAR SRIVASTAVA (<i>Alternate</i>)
Orient Wire Ropes, Indore	SHRI RUSHIKESH AKARTE
Otis Elevator Company (India) Limited, Bengaluru	SHRI SHRIHARI VISPUTE SHRI PRAVEENA SIDDARAMANNA
Schindler India Private Limited, Mumbai	SHRI NITIN VITHAL KADAM SHRI KETAN KSHIRSAGAR
TK Elevator India Private Limited, Navi Mumbai	SHRI VISHNU PARASHAR SHRI DEEPAK BALANI
Usha Martin Industries Limited, Ranchi	SHRI SANDEEP JAISWAL
BIS Directorate General	SHRI KUMAR ANIMESH, SCIENTIST 'E'/DIRECTOR AND HEAD (MECHANICAL ENGINEERING) [REPRESENTING DIRECTOR GENERAL (<i>Ex-officio</i>)]

Member Secretary
SHRI SANDEEP KESHAV
SCIENTIST 'D'/JOINT DIRECTOR
(MECHANICAL ENGINEERING), BIS

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act, 2016* to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Copyright

BIS has the copyright of all its publications. No part of these publications may be reproduced in any form without the prior permission in writing of BIS. This does not preclude the free use, in the course of implementing the standard, of necessary details, such as symbols and sizes, type or grade designations. Enquiries relating to copyright be addressed to the Head (Publication & Sales), BIS.

Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the website- www.bis.gov.in or www.standardsbis.in.

This Indian Standard has been developed from Doc No.: MED 10 (27071).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002

Telephones: 2323 0131, 2323 3375, 2323 9402

Website: www.bis.gov.in

Regional Offices:

	Telephones
Central : 601/A, Konnectus Tower -1, 6 th Floor, DMRC Building, Bhavbhuti Marg, New Delhi 110002	{ 2323 7617
Eastern : 8 th Floor, Plot No 7/7 & 7/8, CP Block, Sector V, Salt Lake, Kolkata, West Bengal 700091	{ 2367 0012 2320 9474
Northern : Plot No. 4-A, Sector 27-B, Madhya Marg, Chandigarh 160019	{ 265 9930
Southern : C.I.T. Campus, IV Cross Road, Taramani, Chennai 600113	{ 2254 1442 2254 1216
Western : 5 th Floor/MTNL CETTM, Technology Street, Hiranandani Gardens, Powai, Mumbai 400076	{ 2570 0030 2570 2715

Branches : AHMEDABAD, BENGALURU, BHOPAL, BHUBANESHWAR, CHANDIGARH, CHENNAI, COIMBATORE, DEHRADUN, DELHI, FARIDABAD, GHAZIABAD, GUWAHATI, HARYANA (CHANDIGARH), HUBLI, HYDERABAD, JAIPUR, JAMMU, JAMSHEDPUR, KOCHI, KOLKATA, LUCKNOW, MUMBAI, NAGPUR, NOIDA, PARWANOO, PATNA, PUNE, RAIPUR, RAJKOT, SURAT, VIJAYAWADA.