

October 2nd, 2024

Amend 4.1.1. Paragraph 2 & 3

Current Wording

The methods of test for wires of tensile strength grades 1370 N/mm², 1570 N/mm², 1770 N/mm², 1960 N/mm², and 2160 N/mm² shall be in accordance with those given in ISO 2232.

The methods of test for wires of tensile strength grades Levels 2, 3, 4, and 5 shall be in accordance with Annex B.

Proposed Wording

The methods of test for wires of tensile strength grades 1370 N/mm², 1570 N/mm², 1770 N/mm², 1960 N/mm², 2160 N/mm², 2260 N/mm², and 2360 N/mm² shall be in accordance with those given in ISO 2232.

The methods of test for wires of tensile strength grades Levels 2, 3, 4, and 5 shall be in accordance with Annex B.

Amend Table 1

Table 1 – Range of Wire Tensile Strength Grades

Current Wording

Rope Grade	Wire Tensile Strength Grades
1770	1570 or Level 2 to 1960 or Level 4
1960	1770 or Level 3 to 2160 or Level 5
2160	1960 or Level 4 to 2160 or Level 5
IPS	Level 2 or 1570 to Level 4 or 1960
EIP	Level 3 or 1770 to Level 5 or 2160
EEIP	Level 4 or 1960 to Level 5 or 2160

Proposed Wording

Rope Grade	Wire Tensile Strength Grades
1770	1570 or Level 2 to 1960 or Level 4
1960	1770 or Level 3 to 2160 or Level 5
2160	1960 or Level 4 to 2160 or Level 5
2260	2160 or Level 5 to 2360
2360	2160 or Level 5 to 2360
IPS	Level 2 or 1570 to Level 4 or 1960

EIP	Level 3 or 1770 to Level 5 or 2160
EEIP	Level 4 or 1960 to Level 5 or 2160

Amend Title A.1

Current Wording:

A.1 Tensile Strength Grades 1370 N/mm², 1570 N/mm², 1770 N/mm², 1960 N/mm², and 2160 N/mm².

Proposed Wording:

A.1 Tensile Strength Grades 1370 N/mm², 1570 N/mm², 1770 N/mm², 1960 N/mm², 2160 N/mm², 2260 N/mm², 2360 N/mm².

Amend Table A.2

Current Table:

The diameter tolerances of bright and drawn galvanized wires shall be in accordance with Table A.3.

The diameter tolerances of final galvanized wires shall be in accordance with Table A.4.

The individual minimum breaking loads of bright and drawn galvanized wires and minimum number of torsions shall be in accordance with Table A.5.

The individual minimum breaking loads and torsions of final galvanized wires shall be in accordance with those given in Table A.5—subject to a reduction of 10 %.

The maximum values of tensile strength shall be no more than 207 N/mm² (30,000 lb/in.²) greater than the minimum values.

The minimum masses of zinc for drawn galvanized and final galvanized wires shall be in accordance with Table A.6 and Table A.7, respectively.

Proposed Wording

A.2 Tensile Strength Grades Levels 2, 3, 4, and 5

The diameter tolerances of bright and drawn galvanized wires shall be in accordance with Table A.3.

The diameter tolerances of final galvanized wires shall be in accordance with Table A.4.

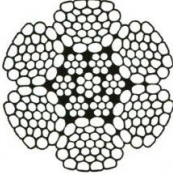
The individual minimum breaking loads of bright and drawn galvanized wires and minimum number of torsions shall be in accordance with Table A.5.

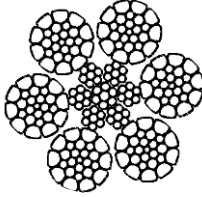
The individual minimum breaking loads and torsions of final galvanized wires shall be in accordance with those given in Table A.5—subject to a reduction of 10 %.

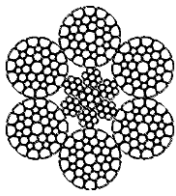
The maximum values of tensile strength shall be no more than 207 N/mm² (30,000 lb/in.²) greater than the minimum values.

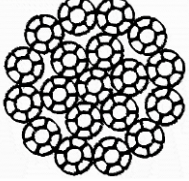
The minimum masses of zinc for drawn galvanized and final galvanized wires shall be in accordance with Table A.6 and Table A.7, respectively.

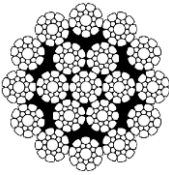
Additional Tables for Annex C:

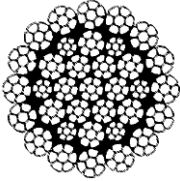
Classification K6X36 Swaged Rope (SW) Steel Core												
Typical Cross Section				Rope Construction		Strand Construction		Outer Wires				
				Rope Construction		Strand Construction		Total	Per Strand			
				6X31WS		1/9/2009		54	9			
				6X36WS		1-5-5F-10		60	10			
				6X41WS		1-5-5+5-10		60	10			
				6X41SF		1-6-6+6		72	12			
				6X49SWS		1-6-6F-12		72	12			
Nominal Wire Rope Diameter		Approx Nominal Length Mass										
Diameter		Approx Mass		Grade 1770	Grade 1960	Grade 2160	Grade IPS		Grade EIP		Grade EEIP	
mm	(inches)	kg/100 m	lb/ft	kn	kn	kn	Short Tons	kN	Short Tons	kN	Short Tons	kN
9.50	3/8	41.97	0.28						8.3	73.8	9.13	81.2
10.00		46.13	0.31		85.3	91.5						
11.00		55.95	0.38		98.1	113						
11.10	7/16	57.00	0.38						11.2	99.6	12.3	109.4
12.00		66.52	0.45		114	127						
12.70	1/2	74.56	0.50						14.6	129.9	16.1	143.2
13.00		78.13	0.53		147	157						
14.00		90.63	0.61		169	183						
14.30	9/16	94.35	0.63						18.5	164.6	20.4	181.5
15.90	5/8	116.37	0.78						22.7	201.9	25	222.4
16.00		118.31	0.80		217	228						
18.00		149.71	1.01		275	298						
19.00		166.82	1.12		302	323						
19.10	3/4	167.72	1.13						32.4	288.2	35.6	316.7
20.00		184.83	1.24		333	355						
22.00		223.67	1.50		398	423						
22.20	7/8	228.28	1.53						43.8	389.7	48.2	428.8
24.00		266.08	1.79		487	518						
25.40	1	298.08	2.00						56.9	506.2	62.6	556.9
26.00		312.36	2.10		576	610						
28.00		362.22	2.43		655	700						
28.60	1 1/8	381.71	2.57						71.5	636.1	78.7	700.1
31.80	1 1/4	465.79	3.13						87.9	782	96.7	860.3
32.00		473.09	3.18		844	914						
34.90	1 3/8	563.57	3.79						106	943	117	1041
36.00		598.84	4.02		1060	1120						
38.10	1 1/2	670.71	4.51						125	1112	138	1228
40.00		739.17	4.97		1290	1320						
41.30	1 5/8	787.09	5.29						146	1299	161	1432
44.00		894.53	6.01		1500	1590						
44.50	1 3/4	912.84	6.13						169	1503	186	1655
47.60	1 7/8	1047.96	7.04						192	1708	211	1877
48.00		1064.48	7.15		1780	1890						
50.80	2	1192.31	8.01						217	1931	239	2126
52.00		1249.31	8.40		2130	2220						
54.00	2 1/8	1346.04	9.05						243	2162	267	2375
56.00		1448.87	9.74		2470	2574						
57.20	2 1/4	1508.99	10.14						272	2420	299	2660

Classification 6XK19 Compacted Strand (CS) Steel Core													
Typical Cross Section				Rope Construction		Strand Construction		Outer Wires					
				6X19S		1/9/2009		Total	Per Strand				
				6X21F		1-5-5F-10		60	10				
				6X26WS		1-5-5+5-10		60	10				
				6X19W		1-6-6+6		72	12				
				6X25F		1-6-6F-12		72	12				
Nominal Wire Rope Diameter		Approx Nominal Length Mass											
Diameter		Approx Mass		Grade 1770	Grade 1960	Grade 2160	Grade IPS		Grade EIP		Grade EEIP		
mm	(inches)	kg/100 m	lb/ft	kn	kn	kn	Short Tons	kN	Short Tons	kN	Short Tons	kN	
9.50	3/8	41.97	0.28						8.3	73.8	9.13	81.2	
10.00		46.13	0.31		85.3	91.5							
11.00		55.95	0.38		98.1	113							
11.10	7/16	57.00	0.38						11.2	99.6	12.3	109.4	
12.00		66.52	0.45		114	127							
12.70	1/2	74.56	0.50						14.6	129.9	16.1	143.2	
13.00		78.13	0.53		147	157							
14.00		90.63	0.61		169	183							
14.30	9/16	94.35	0.63						18.5	164.6	20.4	181.5	
15.90	5/8	116.37	0.78						22.7	201.9	25	222.4	
16.00		118.31	0.80		217	228							
18.00		149.71	1.01		275	298							
19.00		166.82	1.12		302	323							
19.10	3/4	167.72	1.13						32.4	288.2	35.6	316.7	
20.00		184.83	1.24		333	355							
22.00		223.67	1.50		398	423							
22.20	7/8	228.28	1.53						43.8	389.7	48.2	428.8	
24.00		266.08	1.79		487	518							
25.40	1	298.08	2.00						56.9	506.2	62.6	556.9	
26.00		312.36	2.10		576	610							
28.00		362.22	2.43		655	700							
28.60	1 1/8	381.71	2.57						71.5	636.1	78.7	700.1	
31.80	1 1/4	465.79	3.13						87.9	782	96.7	860.3	
32.00		473.09	3.18		844	914							
34.90	1 3/8	563.57	3.79						106	943	117	1041	
36.00		598.84	4.02		1060	1120							
38.10	1 1/2	670.71	4.51						125	1112	138	1228	
40.00		739.17	4.97		1290	1320							
41.30	1 5/8	787.09	5.29						146	1299	161	1432	
44.00		894.53	6.01		1500	1590							
44.50	1 3/4	912.84	6.13						169	1503	186	1655	
47.60	1 7/8	1047.96	7.04						192	1708	211	1877	
48.00		1064.48	7.15		1780	1890							
50.80	2	1192.31	8.01						217	1931	239	2126	
52.00		1249.31	8.40		2130	2220							
54.00	2 1/8	1346.04	9.05						243	2162	267	2375	
56.00		1448.87	9.74		2470	2574							
57.20	2 1/4	1508.99	10.14						272	2420	299	2660	

Classification 6XK36 Compacted Strand (CS) Steel Core													
Typical Cross Section				Rope Construction		Strand Construction		Outer Wires					
				6X31WS		1-6-6+6-12		Total	Per Strand				
				6X36WS		1-7-7+7-14		72	12				
				6X41WS		1-8-8+8-16		84	14				
				6X41SF		1-8-8-8F-16		96	16				
				6X49SWS		1-8-8-8+8-16		96	16				
				6X46WS		1-9-9+9-18		108	18				
Nominal Wire Rope Diameter		Approx Nominal Length Mass											
Diameter		Approx Mass		Grade 1770	Grade 1960	Grade 2160	Grade IPS		Grade EIP		Grade EEIP		
mm	(inches)	kg/100 m	lb/ft	kn	kn	kn	Short Tons	kN	Short Tons	kN	Short Tons	kN	
9.50	3/8	41.97	0.28						8.3	73.8	9.13	81.2	
10.00		46.13	0.31		85.3	91.5							
11.00		55.95	0.38		98.1	113							
11.10	7/16	57.00	0.38						11.2	99.6	12.3	109.4	
12.00		66.52	0.45		114	127							
12.70	1/2	74.56	0.50						14.6	129.9	16.1	143.2	
13.00		78.13	0.53		147	157							
14.00		90.63	0.61		169	183							
14.30	9/16	94.35	0.63						18.5	164.6	20.4	181.5	
15.90	5/8	116.37	0.78						22.7	201.9	25	222.4	
16.00		118.31	0.80		217	228							
18.00		149.71	1.01		275	298							
19.00		166.82	1.12		302	323							
19.10	3/4	167.72	1.13						32.4	288.2	35.6	316.7	
20.00		184.83	1.24		333	355							
22.00		223.67	1.50		398	423							
22.20	7/8	228.28	1.53						43.8	389.7	48.2	428.8	
24.00		266.08	1.79		487	518							
25.40	1	298.08	2.00						56.9	506.2	62.6	556.9	
26.00		312.36	2.10		576	610							
28.00		362.22	2.43		655	700							
28.60	1 1/8	381.71	2.57						71.5	636.1	78.7	700.1	
31.80	1 1/4	465.79	3.13						87.9	782	96.7	860.3	
32.00		473.09	3.18		844	914							
34.90	1 3/8	563.57	3.79						106	943	117	1041	
36.00		598.84	4.02		1060	1120							
38.10	1 1/2	670.71	4.51						125	1112	138	1228	
40.00		739.17	4.97		1290	1320							
41.30	1 5/8	787.09	5.29						146	1299	161	1432	
44.00		894.53	6.01		1500	1590							
44.50	1 3/4	912.84	6.13						169	1503	186	1655	
47.60	1 7/8	1047.96	7.04						192	1708	211	1877	
48.00		1064.48	7.15		1780	1890							
50.80	2	1192.31	8.01						217	1931	239	2126	
52.00		1249.31	8.40		2130	2220							
54.00	2 1/8	1346.04	9.05						243	2162	267	2375	
56.00		1448.87	9.74		2470	2574							
57.20	2 1/4	1508.99	10.14						272	2420	299	2660	

Classification 19XK7 Compacted Strand (CS) Steel Core Rotation Resistant													
Typical Cross Section				Rope Construction		Strand Construction		Outer Wires					
				18XK7		1-6		Total	Per Strand				
				19XK7		1-6		72	6				
Nominal Wire Rope Diameter		Approx Nominal Length Mass											
Diameter		Approx Mass		Grade 1770	Grade 1960	Grade 2160	Grade IPS		Grade EIP		Grade EEIP		
mm	(inches)	kg/100 m	lb/ft	kn	kn	kn	Short Tons	kN	Short Tons	kN	Short Tons	kN	
9.50	3/8	46.13	0.31						7.55	67.2	8.3	73.8	
10.00		50.60	0.34		72.5	79.9							
11.00		61.01	0.41		87.7	96.7							
11.10	7/16	62.50	0.42						10.2	90.7	11.2	99.6	
12.00		72.92	0.49		104	115							
12.70	1/2	81.85	0.55						13.3	118.3	14.6	129.9	
13.00		84.83	0.57		123	135							
14.00		98.22	0.66		142	157							
14.30	9/16	102.68	0.69						16.8	149.5	18.5	164.6	
15.90	5/8	126.49	0.85						20.6	183.3	22.7	201.9	
16.00		129.47	0.87		186	205							
18.00		163.70	1.10		235	259							
19.00		181.56	1.22		262	289							
19.10	3/4	183.04	1.23						29.4	261.6	32.4	288.2	
20.00		200.90	1.35		290	320							
22.00		244.06	1.64		351	387							
22.20	7/8	248.52	1.67						39.8	354.1	43.8	389.7	
24.00		290.19	1.95		418	460							
25.40	1	325.91	2.19						51.7	459.9	56.9	506.2	

Classification 19XK19 Compacted Strand (CS) Steel Core Rotation Resistant													
Typical Cross Section				Rope Construction		Strand Construction		Outer Wires					
				18XK19S		1-9-9		Total	Per Strand				
				18XK26WS		1-5-5+5-10		108	9				
				19XK19S		1-9-9		120	10				
				19XK26WS		1-5-5+5-10		108	9				
								120	10				
Nominal Wire Rope Diameter		Approx Nominal Length Mass											
Diameter		Approx Mass		Grade 1770	Grade 1960	Grade 2160	Grade IPS		Grade EIP		Grade EEIP		
mm	(inches)	kg/100 m	lb/ft	kn	kn	kn	Short Tons	kN	Short Tons	kN	Short Tons	kN	
9.50	3/8	46.13	0.31						7.55	67.2	8.3	73.8	
10.00		50.60	0.34		72.5	79.9							
11.00		61.01	0.41		87.7	96.7							
11.10	7/16	62.50	0.42						10.2	90.7	11.2	99.6	
12.00		72.92	0.49		104	115							
12.70	1/2	81.85	0.55						13.3	118.3	14.6	129.9	
13.00		86.31	0.58		123	135							
14.00		99.71	0.67		142	157							
14.30	9/16	104.17	0.70						16.8	149.5	18.5	164.6	
15.90	5/8	127.98	0.86						20.6	183.3	22.7	201.9	
16.00		130.96	0.88		186	205							
18.00		165.19	1.11		235	259							
19.00		183.04	1.23		262	289							
19.10	3/4	184.53	1.24						29.4	261.6	32.4	288.2	
20.00		203.88	1.37		290	320							
22.00		247.03	1.66		351	387							
22.20	7/8	251.50	1.69						39.8	354.1	43.8	389.7	
24.00		293.17	1.97		418	460							
25.40	1	328.88	2.21						51.7	459.9	56.9	506.2	
26.00		343.76	2.31		290	540							
28.00		398.83	2.68		569	627							
	1 1/8	415.20	2.79						65	578.3	71.5	636.1	
	1 1/4	513.42	3.45						79.9	710.8	87.9	782	
32.00		520.86	3.50		743	818							
	1 3/8	620.56	4.17						96	854.1	106	943	
36.00		659.25	4.43		940	1040							
	1 1/2	739.62	4.97						114	1014	125	1112	
40.00		814.02	5.47		1160	1280							
	1 5/8	867.60	5.83						132	1174	145	1290	

Classification 35XK7 Compacted Strand (CS) Steel Core											
Typical Cross Section							Outer Wires				
				Rope Construction		Strand Construction		Total	Per Strand		
				34XK7		1-6		96	6		
				35XK7		1-6		96	6		
Nominal Wire Rope Diameter		Approx Nominal Length Mass									
Diameter		Approx Mass		Grade 1770	Grade 1960	Grade 2160					
mm	(inches)	kg/100 m	lb/ft	kn	kn	kn					
10.00		49.11	0.33		87.6	98.3					
11.00		59.53	0.40		105	118					
11.10	7/16	61.01	0.41								
12.00		71.43	0.48		124	140					
12.70	1/2	80.36	0.54								
13.00		83.34	0.56		144	162					
14.00		96.73	0.65		168	188					
14.30	9/16	101.19	0.68								
15.90	5/8	125.01	0.84								
16.00		126.49	0.85		224	251					
18.00		160.72	1.08		274	308					
19.00		180.07	1.21		307	344					
19.10	3/4	180.07	1.21								
20.00		199.41	1.34		341	382					
22.00		241.08	1.62		415	466					
22.20	7/8	245.55	1.65								
24.00		285.73	1.92		491	555					
25.40	1	319.95	2.15								
26.00		336.32	2.26		588	660					
28.00		389.90	2.62		676	758					
28.60	1 1/8	406.27	2.73								
31.80	1 1/4	501.51	3.37								
32.00		508.95	3.42		873	980					
34.90	1 3/8	605.68	4.07								
36.00		644.37	4.33		1110	1232					
38.10	1 1/2	721.76	4.85								
40.00		794.68	5.34		1390	1521					
41.30	1 5/8	846.76	5.69								

Amend Section 4.5.3.1

Current Wording:

4.5.3.1 The Minimum Breaking Force, F_{min} , for a given wire rope diameter and construction shall be either of the following:

- a) As given in Annex C for stranded ropes, or
- b) As stated by the manufacturer

Annex C: Higher Values of minimum breaking force than those given in the tables may be guaranteed by the manufacturer

Proposed Wording:

4.5.3.1 The Minimum Breaking Force, F_{min} , for a given wire rope diameter and construction shall be one of the following;

- a) As given in Annex C for stranded ropes,
- b) For constructions listed in Annex C, higher Minimum Breaking Force values by grade as guaranteed by the manufacturer
- c) For other constructions not listed in Annex C, the minimum breaking force shall be guaranteed by the manufacturer.

Amend Annex C:

Current Wording:

Tables of Breaking Forces for the More Common Classes, Sizes, and Grades of Stranded Ropes Up to and Including 60 mm Diameter

Table C.1 to Table C.16 give the breaking forces of the more common classes, sizes, and grades of stranded ropes up to and including 60 mm diameter.

Higher values of minimum breaking force than those given in the tables may be guaranteed by the manufacturer.

NOTE 1 The equivalent minimum breaking force values in kilonewtons for wire rope grades IPS, EIP, and EEIP are given for comparison with the minimum breaking force values for grades 1770, 1960, and 2160.

NOTE 2 The conversion factor from short tons to kilonewtons is 8.896.

NOTE 3 The values of nominal length mass are approximate and are given for information.

Proposed Wording:

Tables of Breaking Forces for the More Common Classes, Sizes, and Grades of Stranded Ropes Up to and Including 60 mm Diameter

Table C.1 to Table C.16 give the breaking forces of the more common classes, sizes, and grades of stranded ropes up to and including 60 mm diameter.

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NOTE 3 The values of nominal length mass are approximate and are given for information.