STRAND MAKE-UP
According to DIN VDE 0295, IEC 60228 and HD 383

Cross Section mm²	Stranded wires Class 2 DIN VDE 0295 Column 1 n° of wires[3] x single wire mm	Multi-stranded wires Column 2 n° of wires x single wire mm	Fine wires Class 5 DIN VDE 0295 Column 3 n° of wires[1] x single wire[2] mm	Extra fine wires Class 6 DIN VDE 0296 Column 4 n° of wires[1] x single wire[2] mm	Column 5 n° of wires[1] x single wire mm	Column 6 n° of wires[1] x single wire mm	Column 7 n° of wires[1] x single wire mm
0,14			18 x 0,1	18 x 0,1	18 x 0,1	36 x 0,7	72 x 0,05
0,25			14 x 0,15	32 x 0,1	32 x 0,1	65 x 0,7	128 x 0,05
0,34		7 x 0,25	19 x 0,15	42 x 0,1	42 x 0,1	88 x 0,7	174 x 0,05
0,38		7 x 0,27	12 x 0,2	21 x 0,15	48 x 0,1	100 x 0,7	194 x 0,05
0,50	7 x 0,30	7 x 0,3	16 x 0,2	28 x 0,15	64 x 0,1	131 x 0,7	256 x 0,05
0,75	7 x 0,37	7 x 0,37	24 x 0,2	42 x 0,15	96 x 0,1	195 x 0,7	384 x 0,05
1,00	7 x 0,43	7 x 0,43	32 x 0,2	56 x 0,15	128 x 0,1	260 x 0,7	512 x 0,05
1,50	7 x 0,52	7 x 0,52	30 x 0,25	84 x 0,15	192 x 0,1	392 x 0,7	768 x 0,05
2,50	7 x 0,67	19 x 0,14	50 x 0,25	140 x 0,15	320 x 0,1	651 x 0,7	1280 x 0,05
4,00	7 x 0,85	19 x 0,52	56 x 0,3	224 x 0,15	512 x 0,1	1040 x 0,7	
6,00	7 x 1,05	19 x 0,64	84 x 0,3	192 x 0,2	768 x 0,1	1560 x 0,7	
10,00	7 x 1,35	49 x 0,51	80 x 0,4	320 x 0,2	1280 x 0,1	2600 x 0,7	
16,00	7 x 1,70	49 x 0,65	128 x 0,4	512 x 0,2	2048 x 0,1		
25,00	7 x 2,13	84 x 0,62	200 x 0,4	800 x 0,2	3200 x 0,1		
35,00	7 x 2,52	133 x 0,58	280 x 0,4	1120 x 0,2			
50,00	7 x 3,02 / 19 x 1,83	133 x 0,69	400 x 0,4	705 x 0,3			
70,00	19 x 2,17	189 x 0,69	356 x 0,5	990 x 0,3			
95,00	19 x 2,52	259 x 0,69	485 x 0,5	1340 x 0,3			
120,00	37 x 2,03	336 x 0,67	614 x 0,5	1690 x 0,3			
150,00	37 x 2,27	392 x 0,69	765 x 0,5	2123 x 0,3			
185,00	37 x 2,52	49 x 0,69	944 x 0,5	1470 x 0,4			
240,00	61 x 2,24	627 x 0,7	1225 x 0,5	1905 x 0,4			
300,00	61 x 2,50	790 x 0,7	1530 x 0,5	2385 x 0,4			
400,00	61 x 2,89		2035 x 0,5				
500,00	61 x 3,23		1768 x 0,6				

1. The n° of individual wires are without obligation. **2.** The diameters of the single wires for each conductor are not allowed to exceed the values stated to DIN VDE 0295 the singles wires of a stranded conductors must have all the same nominal diameters. **3.** Minimum number of single wires of stranded conductor. the singles wires of a stranded conductors must have all the same nominal diameters.

AMERICAN STRANDINGS

Size AWG	Section mm²	Stranding (n x mm) 150° E.U. (n x mm)	150° U.S.A.(n/awg)	200° E.U. (n x mm)	200° U.S.A.(n/awg)	Solid mm
24	0,205	7 x 0,20	7/32	1 x 0,50	1/24	1 x 0,5
23	0,259	8 x 0,20		1 x 0,60		1 x 0,6
22	0,325	11 x 0,20	7/30	1 x 0,70	1/22	1 x 0,7
21	0,412	13 x 0,20		1 x 0,72		1 x 0,72
20	0,519	16 x 0,20	10/30	5 x 0,40	1/20	1 x 0,81
18	0,832	26 x 0,20	16/30	7 x 0,40	7/26	1 x 1,02
16	1,31	42 x 0,20	26/30	11 x 0,40	7/24	1 x 1,3
15	1,65	33 x 0,25		13 x 0,40		1 x 1,45
14	2,08	42 x 0,25	41/30	17 x 0,40	7/22	1 x 1,62
13	2,63	53 x 0,25		21 x 0,40		1 x 1,82
12	3,31	67 x 0,25	65/30	27 x 0,40	19/0,0185"	1 x 2,04
11	4,17	59 x 0,30		33 x 0,40		1 x 2,3
10	5,26	74 x 0,30	105/30	42 x 0,40	19/0,0234"	1 x 2,6
9	6,63	93 x 0,30		52 x 0,40		1 x 2,9
8	8,36	118 x 0,30	133/29	66 x 0,40	54/25	1 x 3,3
7	10,55	148 x 0,30		84 x 0,40		
6	13,3	106 x 0,40	133/27	106 x 0,40	84/25	
5	16,77	133 x 0,40		133 x 0,40		
4	21,15	168 x 0,40	133/25	168 x 0,40	133/25	
3	26,67	212 x 0,40		212 x 0,40		
2	33,62	267 x 0,40	259/26	267 x 0,40	259/26	
1	42,41	337 x 0,40	259/25	337 x 0,40	259/25	
1/0	53,49	425 x 0,40	259/24	425 x 0,40	259/24	
2/0	67,43	536 x 0,40	259/23	536 x 0,40	259/23	
3/0	85,01	676 x 0,40	259/22	676 x 0,40	259/22	
4/0	107,2	853 x 0,40	259/21	853 x 0,40	259/21	
250 MCM	127	1011 x 0,40	427/22	1011 x 0,40	427/22	
300 MCM	152	1210 x 0,40		1210 x 0,40		
350 MCM	177	1409 x 0,40	427/21	1409 x 0,40	427/21	
400 MCM	203	1616 x 0,40		1616 x 0,40		
450 MCM	228	1815 x 0,40	427/20	1815 x 0,40	427/20	
500 MCM	253	2014 x 0,40	427/0,0341"	2014 x 0,40	427/0,0341"	

AWG/MCM TABLE WIRE GAUGE CONVERSION

based on solid conductors						based on solid conductors						based on solid conductors					
SIZE AWG/MCM	SECTION mm²	NORMAL DIAMETER inches	NORMAL DIAMETER mm	LBS per m	KGS per m	SIZE AWG/MCM	SECTION mm²	NORMAL DIAMETER inches	NORMAL DIAMETER mm	LBS per m	KGS per m	SIZE AWG/MCM	SECTION mm²	NORMAL DIAMETER inches	NORMAL DIAMETER mm	LBS per m	KGS per m
36	0,012	0,0050	0,127	0,0757	0,0343	23	0,259	0,02257	0,573	1,542	0,6995	3	26,70	0,2294	5,830	162	73,50
35	0,016	0,00561	0,143	0,0954	0,0433	22	0,325	0,02535	0,644	1,945	0,8823	2	33,6	0,2576	6,54	205	93
34	0,020	0,00630	0,160	0,1203	0,0546	21	0,412	0,02846	0,723	2,452	1,112	1	42,4	0,2893	7,35	259	117
33	0,025	0,00708	0,180	0,1517	0,0688	20	0,519	0,03196	0,812	3,154	1,431	1/0	53,4	0,3249	8,25	326	148
32	0,032	0,00795	0,202	0,1913	0,0868	18	0,832	0,04030	1,024	5,015	2,275	2/0	67,5	0,3648	9,27	411	186
31	0,040	0,00893	0,227	0,2413	0,1095	16	1,310	0,0508	1,290	7,974	3,617	3/0	85,0	0,4096	10,40	518	235
30	0,050	0,01003	0,255	0,3042	0,1380	14	2,080	0,0641	1,630	12,68	5,752	4/0	107,2	0,4600	11,68	653	296
29	0,065	0,01126	0,286	0,3836	0,1740	12	3,310	0,0808	2,050	20,16	9,145	250 MCM	136,0	0,4999	12,70	772	350
28	0,080	0,01264	0,321	0,4837	0,2194	10	5,270	0,1019	2,590	32,06	14,54	300 MCM	161,0	0,5476	13,70	925	420
27	0,102	0,01420	0,361	0,6100	0,2767	9	6,620	0,1144	2,910	40,42	18,33	350 MCM	193,0	0,5917	15,'03	1080	490
26	0,128	0,01594	0,405	0,7692	0,3489	8	8,350	0,1285	3,260	51,00	23,13	400 MCM	225,0	0,6322	16,06	1236	561
25	0,163	0,01790	0,455	0,9699	0,4399	6	13,30	0,1620	4,110	80,90	36,70	450 MCM	257,0	0,7070	17,96	1542	699
24	0,205	0,02010	0,511	1,223	0,5548	4	21,20	0,2043	5,190	129	58,50	500 MCM	322,0	0,7744	19,67	1850	839

TABLE METRIC CONVERSIONS

to convert from	*to*	*multiply by*
AREA		
circular mils	square inches	0,0000007854
circular mils	square mils	0,7854
circular mils	square millimeters	0,0005066
square centimeters	square inches	0,155
square feets	square meters	0,0929
square inches	circular mils	1273240
square inches	square centimeters	6,4516
square inches	square millimeters	645,16
square inches	square mils	1000000
square meters	square feets	10764
square millimeters	square inches	0,00155
square millimeters	circular mils	1973510
square mils	circular mils	1273
square mils	square inches	0,0000001
LENGHT		
centimeters	inches	0,3937
centimeters	feet	0,03281
feet	centimeters	30,48
feet	meters	0,3048
inches	centimeters	2,54
inches	meters	0,0254
inches	millimeters	25,4
inches	mils	1000
kilometers	miles	0,6214
meters	feet	3,2808
meters	inches	39,3701
meters	yards	1,0936

to convert from	*to*	*multiply by*
LENGHT		
miles	kilometers	1,6093
millimeters	inches	0,03937
millimeters	mils	39,3701
mils	inches	0,001
mils	millimeters	0,0254
yards	meters	0,9144
MISCELLANEUS		
kilograms	pounds	2,205
kilograms per kilometer	pounds per 1000 feet	0,6719
ohms per kilometers	ohms per 1000 feet	0,3048
ohms per 1000 feet	ohms per kilometers	3,2808
ohms per 1000 yard	ohms per kilometers	1,0936
picofarads per foot	picofarads per meter	3,285
pounds	kilograms	0,4536
pounds per 1000 feet	kilograms per kilometer	1,488
pounds per 1000 yards	kilograms per kilometer	0,496
pounds per 1000 yards	pounds per kilometers	1,0936
diam. circle	circumference circle	3,1416
diam. circle	side of equal sphere	0,8862
diam. sphere-cubed	volume of sphere	0,5236
u.s. gallons	imperial gallons (british)	0,8327
u.s. gallons	cubic feet	0,1337
u.s. gallons	pounds of water (20°C)	8,33
cubic feet	pounds of water (4°C)	32,427
feet of water (4°C)	pound per square inch	0,4336
inches of mercury (0°C)	pound per square inch	0,4912
knots	miles per hour	1,1516

GENERAL INFORMATION - DEFINITIONS OF TERMS

FLAME-RETARDANT
To be flame-retardant, the cable must withstand the test specified in IEC standard 60332-3 or IEC 60332-1. Flame retardant cables do not propagate fire and are self-extinguishing. The requirement for passing the test is that after the burner has been removed the cables must extinguish themselves.

IEC 60332-1
Is the flame test for single insulated wire and cable.

IEC 60332-3
Is the flame test for bunched wires and cables. The burner is directed towards the bunch of cables.

FIRE-RESISTANT
To be classified as fire-resistant the cables must withstand the test specified in standard **IEC 60331-21**. The cables must operate for a minimum of 90 minutes while the burner is directed towards the cable.

SMOKE EMISSION
Smoke emission refers to visibility in a fire. The greater the light transmittance, the better the visibility. When tested in accordance with **IEC 61034-1** (test method) and **IEC 61034-2** (test requirements) the smoke emission of a cable during fire must not exceed the relative values.

HALOGEN-FREE
Halogen-free refers to the absence of halogens, such as chlorine and fluorine and is determined on the basis of halogen content and the acidity of gases of a cable.

IEC 60754-1
Determines the halogen content of the material. To meet the requirements as halogen-free the halogen content of the material may not exceed 0,5% or 5 mg/g.

IEC 60754-2
Determines the degree of acidity of gases evolved during combustion. The limit values are 4,3 for pH and 10 mikroS for conductivity.

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