

# STRAND CONSTRUCTION & CONDUCTOR RESISTANCE ACC. VDE 0295

## CONSTRUCTION OF STRANDED WIRES

	1	2	3	4	5	6	7
Cross-section	Stranded wires	Multi-stranded wires	Fine-stranded wires	Fine-stranded wires			
	VDE 0295		VDE 0295	VDE 0295			
mm <sup>2</sup>	class 2		class 5	class 6			
0.14				18 x 0.10	18 x 0.10	36 x 0.07	72 x 0.05
0.25			14 x 0.16	32 x 0.10	32 x 0.10	65 x 0.07	128 x 0.05
0.34		7 x 0.25	19 x 0.16	42 x 0.10	42 x 0.10	88 x 0.07	174 x 0.05
0.38		7 x 0.27	12 x 0.21	21 x 0.16	48 x 0.10	100 x 0.07	194 x 0.05
0.5	7 x 0.30	7 x 0.30	16 x 0.21	28 x 0.16	64 x 0.10	131 x 0.07	256 x 0.05
0.75	7 x 0.37	7 x 0.37	24 x 0.21	42 x 0.16	96 x 0.10	195 x 0.07	384 x 0.05
1.0	7 x 0.43	7 x 0.43	32 x 0.21	56 x 0.16	128 x 0.10	260 x 0.07	512 x 0.05
1.5	7 x 0.52	7 x 0.52	30 x 0.26	84 x 0.16	192 x 0.10	392 x 0.07	768 x 0.05
2.5	7 x 0.67	19 x 0.41	50 x 0.26	140 x 0.16	320 x 0.10	651 x 0.07	1290 x 0.05
4	7 x 0.85	19 x 0.52	56 x 0.31	224 x 0.16	512 x 0.10	1040 x 0.07	
6	7 x 1.05	19 x 0.64	84 x 0.31	192 x 0.21	768 x 0.10	1560 x 0.07	
10	7 x 1.35	49 x 0.51	80 x 0.41	320 x 0.21	1280 x 0.10	2600 x 0.07	
16	7 x 1.70	49 x 0.65	128 x 0.41	512 x 0.21	2048 x 0.10		
25	7 x 2.13	84 x 0.62	200 x 0.41	800 x 0.21	3200 x 0.10		
35	7 x 2.52	133 x 0.58	280 x 0.41	1120 x 0.21			
50	19 x 1.83	133 x 0.69	400 x 0.41	705 x 0.31			
70	19 x 2.17	189 x 0.69	356 x 0.51	990 x 0.31			
95	19 x 2.52	259 x 0.69	485 x 0.51	1340 x 0.31			
120	37 x 2.03	336 x 0.67	614 x 0.51	1690 x 0.31			
150	37 x 2.27	392 x 0.69	765 x 0.51	2123 x 0.31			
185	37 x 2.52	494 x 0.69	944 x 0.51	170 x 0.41			
240	61 x 2.24	627 x 0.70	1225 x 0.51	1905 x 0.41			
300	61 x 2.50	790 x 0.70	1530 x 0.51	2385 x 0.41			
400	61 x 2.89		2035 x 0.51				
500	61 x 3.23		1768 x 0.61				

The number of wires in columns 3 to 7 is free from obligation.

The VDE 0295 only lays down the maximum diameter of the single wire and the maximum resistance which is related to the cross-section.

## ELECTRIC RESISTANCE OF CONDUCTORS

Cross-section mm <sup>2</sup>	Tinned wires		Bare wires	
	Class 1/2	Class 5/6	Class 1/2	Class 5/6
0.14		142		138
0.25		82		79
0.34		59		57
0.38		46		44
0.5	36.7	40.1	36	39
0.75	24.8	26.7	24	26
1.0	18.2	20	18.1	19.5
1.5	12.2	13.7	12.1	13.3
2.5	7.56	8.21	7.41	7.98
4	4.7	5.09	4.61	4.95
6	3.11	3.39	3.08	3.3
10	1.84	1.95	1.83	1.91
16	1.16	1.24	1.15	1.21

Cross section mm <sup>2</sup>	Tinned wires		Bare wires	
	Class 1/2	Class 5/6	Class 1/2	Class 5/6
25	0.734	0.795	0.727	0.78
35	0.529	0.565	0.524	0.554
50	0.391	0.393	0.387	0.386
70	0.27	0.277	0.268	0.272
95	0.195	0.21	0.193	0.206
120	0.154	0.164	0.153	0.161
150	0.126	0.132	0.124	0.129
185	0.1	0.108	0.0991	0.106
240	0.0762	0.0817	0.0754	0.0801
300	0.0607	0.0654	0.0601	0.0641
400	0.0475	0.0495	0.047	0.0486
500	0.0369	0.0391	0.0366	0.0384



# STRAND CONVERSION AWG

AWG No.	Construction of strands acc. to AWG concentric	Construction of strands acc. to VDE bunched	Solid wire acc. to AWG or VDE mm	Conductor cross-section mm <sup>2</sup>	Conductor resistance Ω/km	Copper index
28				0.08	216	0.80
28	<b>7 x 0.127</b>		<b>0.321</b>	0.09		0.89
28		10 x 0.10		0.08		0.79
28		10 x 0.12		0.11		1.13
VDE			<b>0.40</b>	0.13		1.26
26			<b>0.405</b>	0.13	130	1.28
26	<b>7 x 0.160</b>			0.14		1.41
26		18 x 0.10		0.14		1.41
VDE			<b>0.50</b>	0.20		1.96
24			<b>0.511</b>	0.21	87	2.05
24	<b>7 x 0.203</b>			0.23		2.27
24	<b>19 x 0.127</b>			0.24		2.41
24		11 x 0.16		0.22		2.21
24		14 x 0.15		0.25		2.47
23			<b>0.574</b>	0.259	66.5	2.30

AWG No.	Construction of strands acc. to AWG concentric	Construction of strands acc. to VDE bunched	Solid wire acc. to AWG or VDE mm	Conductor cross-section mm <sup>2</sup>	Conductor resistance Ω/km	Copper index
VDE			<b>0.60</b>	0.28		2.83
22			<b>0.644</b>	0.33	53	3.25
22	<b>7 x 0.254</b>			0.35		3.55
22	<b>19 x 0.160</b>			0.38		3.82
22		7 x 0.25		0.34		3.44
20			<b>0.812</b>	0.52	33	5.03
20	<b>7 x 0.320</b>			0.56		5.63
20	<b>19 x 0.203</b>			0.61		6.15
20		7 x 0.32		0.56		5.63
18			<b>1.024</b>	0.82	20	8.23
18	<b>7 x 0.404</b>			0.90		8.97
18	<b>19 x 0.254</b>			0.96		9.63
18		19 x 0.26		1.00		10.09
16			<b>1.290</b>	1.31	13	13.07
16	<b>7 x 0.510</b>			1.43		14.30
16	<b>19 x 0.320</b>			1.53		15.28
16		30 x 0.25		1.47		14.73

Conversion AWG (28-16) into Metric Dim.: In US-American areas of influence and in the computer industry it is customary to define the dimensions of copper wires and strands in AWG(American Wire Gauge). The table shows bunched strands and wires acc. to VDE (regular typeface) in comparison with concentric AWG strands and AWG solid wires (boldface).

