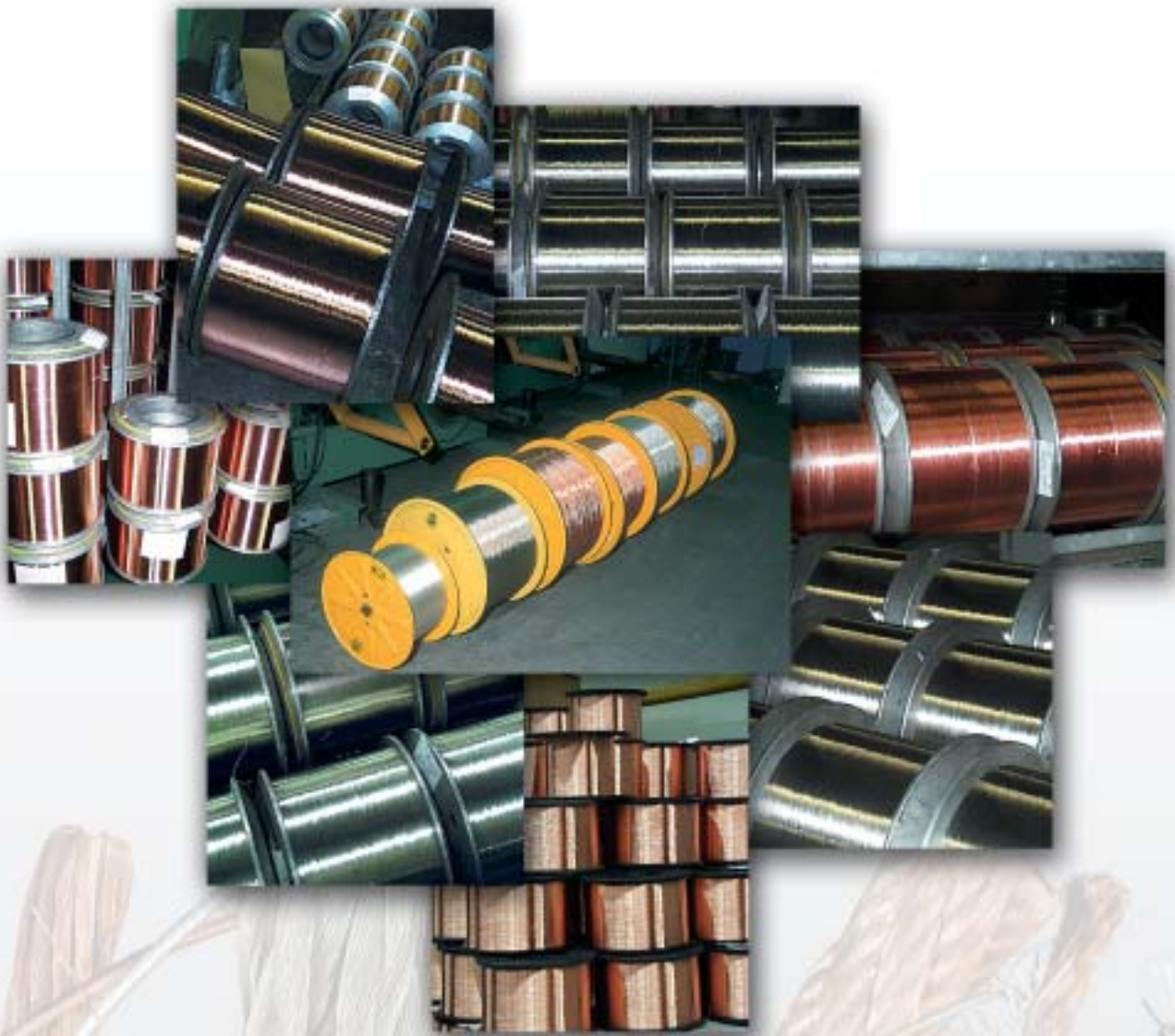


Product range





General

The list below is a selection from the product range of Drahtwerk Waidhaus, which is geared to supplying customized products.

Copper and copper-alloy wires

Bare, tinned, silver-coated, and nickel-coated

Diameter range:

0.05 mm (AWG 44) - 1.40 mm
(approx. AWG 15)

Ultra-flexible round stranded copper conductors and ropes

Bare, tinned, silver-coated and nickel-coated

Cross-section range:

0.06 mm²- 600.0 mm²

Copper and copper-alloy strands

Produced on the basis of the above-mentioned copper wires in the form of

- concentric stranded conductors
- unilay stranded conductors
- semi-concentric stranded conductors
- bunched stranded conductors

Cross-section range:

0.014 mm² - 10.0 mm²

Special-purpose products

that can be assigned to the above material groups

For detailed information, please refer to the subsequent pages.



Copper strands, tin-bound, MGZ type with precisely defined tin coating

7 and 19 wires

Cross-section range:

0.06 mm² (AWG 30) - 1.50 mm²
(AWG 16)





Wires

In the wire segment, the product range of Drahtwerk Waidhaus includes round copper wires according to DIN 46431 in the dimensional range indicated in the table below.

Drahtwerk Waidhaus can supply these wires in bare, tinned, silver-coated and nickel-coated versions. Besides E-Cu and OF-Cu, alloys can be used, too.

**Round wires,
according to
DIN 46431**

Dimensions according to DIN 46431 "Round copper wires, drawn exactly"

Nominal value d	Diameter			Nom. cross section mm ²	Weight approx. kg/km	DC resistance at 20°C Ω/m nom.v.	Length approx. km/kg
	Adm. deviation	Min. value	Max. value				
0,05		0,0470	0,053	0,00196	0,0175	8,80	57,1
0,063		0,0600	0,066	0,00312	0,0278	5,53	36,0
0,071		0,0680	0,074	0,00396	0,0353	4,35	28,3
0,08	± 0,003	0,0770	0,083	0,00503	0,0447	3,43	22,4
0,09		0,0870	0,093	0,00636	0,0566	2,71	17,67
0,1		0,0970	0,103	0,00785	0,0699	2,196	14,31
0,112		0,107	0,117	0,00985	0,0878	1,75	11,39
0,125		0,120	0,130	0,01227	0,109	1,402	9,17
0,14		0,135	0,145	0,01539	0,137	1,12	7,30
0,16	± 0,005	0,155	0,165	0,02011	0,179	0,8573	5,59
0,18		0,175	0,185	0,02545	0,226	0,6774	4,42
0,2		0,195	0,205	0,03142	0,280	0,5487	3,57
0,224		0,219	0,229	0,03941	0,351	0,4375	2,85
0,25		0,243	0,257	0,04909	0,437	0,3512	2,29
0,28		0,273	0,287	0,06158	0,548	0,2799	1,825
0,315	± 0,007	0,308	0,322	0,07793	0,694	0,2213	1,441
0,355		0,348	0,362	0,09898	0,882	0,1743	1,134
0,4		0,391	0,409	0,1257	1,12	0,1372	0,893
0,45		0,441	0,459	0,159	1,42	0,1084	0,704
0,5	± 0,009	0,491	0,509	0,1964	1,75	0,0878	0,571
0,56		0,551	0,569	0,2463	2,19	0,0700	0,457
0,63		0,621	0,639	0,3117	2,78	0,0553	0,360
0,71		0,698	0,722	0,3959	3,53	0,04354	0,283
0,75		0,738	0,762	0,4418	3,93	0,03902	0,254
0,8		0,788	0,812	0,5027	4,47	0,03429	0,224
0,85	± 0,012	0,838	0,862	0,5675	5,05	0,03038	0,198
0,9		0,888	0,912	0,6362	5,66	0,0271	0,177
0,95		0,938	0,962	0,7088	6,31	0,02432	0,158
1		0,988	1,012	0,7854	6,99	0,02195	0,143
1,06		1,044	1,076	0,8825	7,86	0,01954	0,127
1,12		1,104	1,136	0,9852	8,78	0,0175	0,114
1,18	± 0,016	1,164	1,196	1,094	9,75	0,01577	0,103
1,25		1,234	1,266	1,227	10,9	0,01405	0,0917
1,32		1,304	1,336	1,368	12,2	0,0126	0,0820
1,4		1,384	1,416	1,539	13,7	0,0112	0,0730

Delivery options

Individual wires, diameter range:
0.05 - 1.40 mm

Multiwires, diameter range:
0.05 - 0.30 mm

Multiwires on braider bobbins:
on request

Packaging

Spool dimensions and capacities are shown in the tables on page 11 of this catalogue.



Wires

Round wires according to ASTM B 258

The table below permits conversion of the most frequently used international measures for diameter, cross section and weight to the metric system.

Drahtwerk Waidhaus supplies these wires bare, tinned, silver-coated and nickel-coated on the basis of E-Cu or OF-Cu and as alloys.



AWG-No. Dimens.	Diameter			Cross section		Weight approx. kg/km	
	Inches	mils	mm	mm ²	Circular mils		Square inches
15	0,0571	57,1	1,45	1,652	3260	0,00256	14,7
16	0,0508	50,8	1,29	1,307	2580	0,00203	11,6
17	0,0453	45,3	1,151	1,039	2050	0,00161	9,24
18	0,0403	40,3	1,024	0,821	1620	0,00128	7,32
19	0,0359	35,9	0,912	0,654	1290	0,00101	5,81
20	0,0320	32	0,813	0,517	1020	0,000804	4,61
21	0,0285	28,5	0,724	0,411	812	0,000638	3,66
22	0,0253	25,3	0,643	0,324	640	0,000503	2,88
23	0,0226	22,6	0,574	0,259	511	0,000401	2,30
24	0,0201	20,1	0,51	0,205	404	0,000317	1,82
25	0,0179	17,9	0,455	0,162	320	0,000252	1,44
26	0,0159	15,9	0,404	0,128	253	0,000199	1,14
27	0,0142	14,2	0,361	0,102	202	0,000158	0,908
28	0,0126	12,6	0,32	0,0806	159	0,000125	0,715
29	0,0113	11,3	0,287	0,0648	128	0,000100	0,575
30	0,0100	10	0,254	0,0507	100	0,0000785	0,450
31	0,0089	8,9	0,226	0,0401	79,2	0,0000622	0,357
32	0,0088	8,0	0,203	0,0324	64	0,0000503	0,288
33	0,0071	7,1	0,18	0,0255	50,4	0,0000396	0,227
34	0,0063	6,3	0,16	0,0201	39,7	0,0000312	0,179
35	0,0056	5,6	0,142	0,0159	31,4	0,0000246	0,141
36	0,005	5,0	0,127	0,0127	25	0,0000196	0,113
37	0,0045	4,5	0,114	0,0102	20,2	0,0000159	0,0912
38	0,004	4,0	0,102	0,00811	16	0,0000126	0,0721
39	0,0035	3,5	0,0889	0,00618	12,2	0,00000962	0,0552
40	0,0031	3,1	0,0787	0,00487	9,61	0,00000755	0,0433
41	0,0028	2,8	0,0711	0,00397	7,84	0,00000616	0,0353
42	0,0025	2,5	0,0635	0,00317	6,25	0,00000491	0,0282
43	0,0022	2,2	0,0559	0,00245	4,84	0,00000380	0,0218
44	0,002	2,0	0,0508	0,00203	4	0,00000314	0,0180

Delivery options

Individual wires, diameter range:
AWG 44 - AWG 15

Multiwires, diameter range:
AWG 44 - AWG 28

Multiwires on braider bobbins:
on request

Packaging

Spool dimensions and capacities are shown
in the tables on page 11 of this catalogue.



Wires

Spool type	d 1 mm	d 2 mm	d 3 mm	Cone x°	L 1 mm	L 2 mm
K 125	125	80	16	30	125	100
K 160	160	100	22	30	160	128
K 200	200	125	22	30	200	160
K 250	250	160	22	30	200	160
K 250	250	160	102	30	200	160
A 250	250	160	127	30	190	150
A 350	350	224	127	20	316	280
B 400	400	200	36	-	220	200
K 400	400	250	127	20	240	200
B 500	500	250	127	-	300	255
B 560	560	240	127	-	350	310
B 630	630	360	127	-	-	-

Packaging



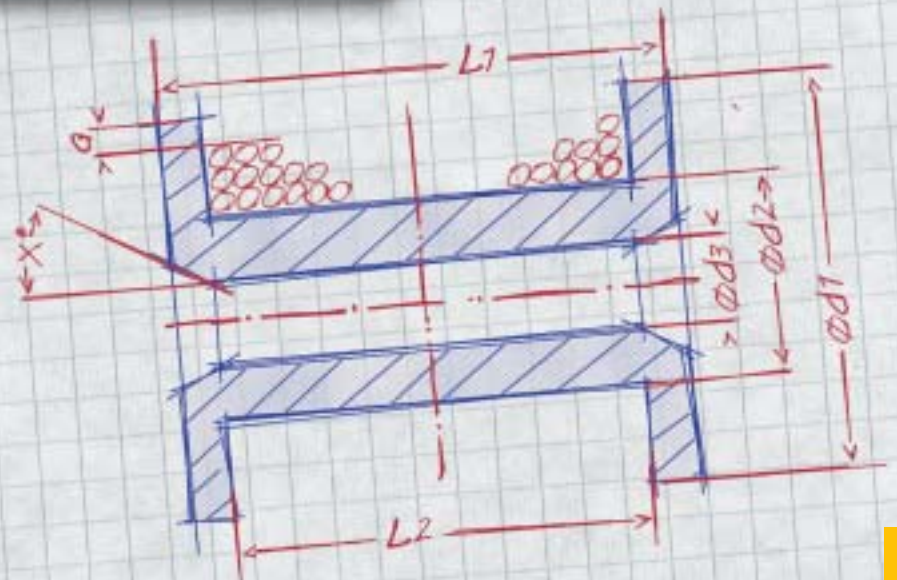
Spool type	Empty weight kg	Copper wire kg	bare mm	Tin-plated mm	Silver-plated mm	Nickel-plated mm
K 125	0,20	3,0	0,05 - 0,1	0,05 - 0,1	0,05 - 0,1	0,05 - 0,1
K 160	0,35	6,4	0,1 - 0,2	0,1 - 0,2	0,1 - 0,2	0,1 - 0,2
K 200	0,60	14	0,1 - 0,3	0,1 - 0,3	0,1 - 0,3	0,1 - 0,3
K 250	1,05	19	0,2 - 0,4	0,2 - 0,4	0,2 - 0,4	0,2 - 0,4
K 250	1,05	19	0,2 - 0,4	0,2 - 0,4	0,2 - 0,4	0,2 - 0,4
A 250	5,0	20	0,1 - 0,4	0,1 - 0,4	0,1 - 0,4	0,1 - 0,4
A 350	15,7	70	0,2 - 0,6	0,2 - 0,6	0,2 - 0,6	0,2 - 0,6
B 400	7,0	80	0,3 - 0,9	0,3 - 0,9	0,3 - 0,9	0,3 - 0,9
K 400	4,4	80	0,3 - 0,9	0,3 - 0,9	0,3 - 0,9	0,3 - 0,9
B 500	15,5	175	0,3 - 0,9	0,3 - 0,9	0,3 - 0,9	0,3 - 0,9
B 560	27,3	300	0,3 - 1,4	0,3 - 0,9	0,3 - 0,9	0,3 - 0,9
B 630	80,0	400	0,6 - 1,4	0,6 - 1,4	0,6 - 0,9	0,6 - 0,9

The filling weight of a spool can be calculated as follows:

$$W = 0.001 \frac{\pi}{4} [(d_1 - 2a)^2 - d_2^2] \times L_2 \times \gamma \times f$$

For copper wires with $\gamma = 8.9 \text{ kg / dm}^3$ and a filling factor $f = 0.72$, the filling weight is:

$$W = 0.005 L_2 [(d_1 - 2a)^2 - d_2^2]$$



Strands and ropes

Bunched wires for standard and special-purpose cables



This product group is mainly utilized for typical standard cables, with the stranded-conductor structure being based on DIN VDE 0295. In this product category, Drahtwerk Waidhaus supplies both bare and tinned wires:

The table below lists the most important items from Drahtwerk Waidhaus' product range.



Cross section in mm ²	Structure: No. of wires x wire diameter	Strand. cond. diameter in mm	Weight approx. kg / km	Run. length approx. km / kg
0,25	14 x 0,15	0,660	2,22	0,450
0,50	28 x 0,15	0,960	4,44	0,225
0,50	16 x 0,20	0,950	4,46	0,224
0,75	42 x 0,15	1,13	6,67	0,150
0,75	24 x 0,20	1,15	6,78	0,148
1,00	57 x 0,15	1,31	9,05	0,110
1,00	32 x 0,20	1,32	9,04	0,111
1,00	14 x 0,30	1,32	8,90	0,112
1,50	30 x 0,25	1,60	13,23	0,0760
1,50	21 x 0,30	1,59	13,34	0,0750
2,50	50 x 0,25	2,07	22,06	0,0453
4,00	56 x 0,30	2,61	35,58	0,0281
6,00	84 x 0,30	3,19	53,37	0,0187

Delivery options

Spools B 400, B 500, B 560 and Li 600.

Spool dimensions and capacities are shown in the table on page 22 of this catalogue.

In addition, Drahtwerk Waidhaus can supply bunched stranded conductors with bare and tinned wires for special-purpose applications in wire diameters from 0.05 to 0.40 mm, with the structure generally being designed in line with Class 5 and 6 fine and ultra-fine wire stranded conductors according to VDE 0295.

Since these material groups are, in most instances, made to order, customers need to enquire about the required minimum quantities.



Strands and ropes

For weight reduction and space-saving reasons, the automotive industry is increasingly demanding low-cost stranded-conductor designs with a high degree of roundness that permit a reduction in insulation wall thickness.

Drahtwerk Waidhaus has taken account of these requirements by offering a special product range for this purpose.

Bare bunched wires for the automotive industry

Cross section in mm ²	Structure: No. of wires x wire diameter	Strand. cond. diameter in mm	Weight approx. kg/km	Run. length approx. km/kg
0,50	19 x 0,182	0,910	4,42	0,226
0,80	19 x 0,23	1,15	7,14	0,140
1,00	19 x 0,254	1,27	8,70	0,115
1,50	19 x 0,315	1,58	13,33	0,075
2,50	19 x 0,41	2,05	23,00	0,043
4,00	19 x 0,52	2,60	37,00	0,027
1,50	37 x 0,23	1,61	13,70	0,073
2,50	37 x 0,29	2,03	22,00	0,045
3,00	37 x 0,32	2,24	26,70	0,037

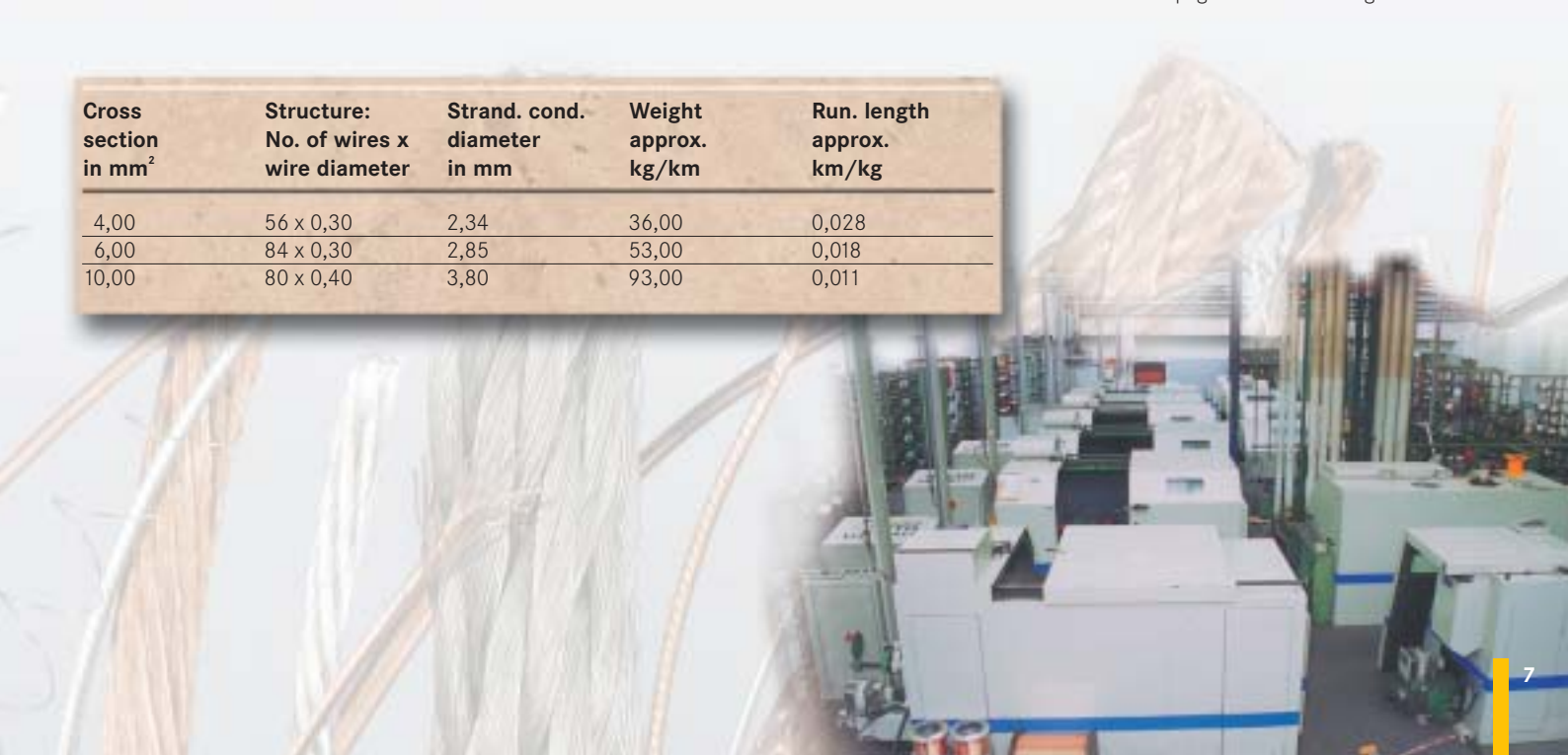
Bunched wires with a high degree of roundness are also available in a compacted, specially calibrated version:

Delivery options

B 500, B 560, Li 600, B 630 and Li 800

Spool dimensions and capacities are shown in the table on page 22 of this catalogue.

Cross section in mm ²	Structure: No. of wires x wire diameter	Strand. cond. diameter in mm	Weight approx. kg/km	Run. length approx. km/kg
4,00	56 x 0,30	2,34	36,00	0,028
6,00	84 x 0,30	2,85	53,00	0,018
10,00	80 x 0,40	3,80	93,00	0,011



Strands and ropes

Semi-concentric strands and SRC strands (special round conductors)

At customers' request, Drahtwerk Waidhaus supplies bare, tinned, silver-coated or nickel-coated semiconcentric and SRC copper conductors.

Due to its special design (excellent roundness), this group of materials is suitable for thin-walled insulations (see section on "General technical remarks").

The tables below show the standard product range offered by Drahtwerk Waidhaus in this category.

Semi-concentric strands

Cross section	Structure: No. of wires x wire diameter	Structural design	Strand. cond. diameter max.	Max. weight in kg / km
0,5	16 x 0,20	5 + 11	0,92	4,51
0,75	24 x 0,20	2 + 8 + 14	1,12	6,77
1,00	32 x 0,20	5 + 11 + 16	1,29	9,02
1,50	30 x 0,25	4 + 10 + 16	1,55	13,27
2,50	50 x 0,25	4 + 10 + 15 + 21	1,97	22,12
4,00	56 x 0,30	5 + 11 + 17 + 23	2,53	35,76
6,00	84 x 0,30	5 + 11 + 17 + 23 + 28	3,04	53,67
10,00	80 x 0,40	4 + 10 + 16 + 22 + 28	4,07	93,90

Delivery options

Spools B 400, B 500, B 560 and Li 600.

Spool dimensions and capacities are shown in the table on page 22 of this catalogue.

SRC strands (special round conductors)

Cross section	Structure: No. of wires x wire diameter	Strand. cond. diameter in mm max.	Max. weight in kg / km
0,5	16 x 0,20	0,92	4,51
0,75	24 x 0,20	1,08	6,77
1,00	32 x 0,20	1,29	9,02
1,50	30 x 0,25	1,57	13,27



Strands and ropes

Drahtwerk Waidhaus supplies the product range listed below on the basis of bare, tinned, silver-coated and nickel-coated wires. The lay direction, i.e. "S" or "Z", is produced in line with the customer's requirements.

In addition, 19- and 37-wire stranded conductors can be supplied in "true concentric design". However, such deliveries are subject to minimum order quantities. For further information, please do not hesitate to contact us.

Concentric stranded conductors without high wires and cross overs for type II hookup wires for electronic equipment according to ASTM B 286

Stranded conductors, 7 wires, without high wires and cross overs according to ASTM B 286 type II

AWG number	Cross section in mm ²	Structure: No. of wires x wire diameter	Strand. cond. diameter max. mm	Weight in kg / km	Running length in km / kg
32	0,035	7 x 0,079	0,28	0,315	3,175
30	0,06	7 x 0,102	0,33	0,52	1,923
28	0,09	7 x 0,127	0,41	0,81	1,235
26	0,14	7 x 0,16	0,51	1,29	0,775
24	0,23	7 x 0,203	0,63	2,10	0,481
22	0,35	7 x 0,254	0,78	3,26	0,307
20	0,56	7 x 0,32	0,99	5,18	0,193
18	0,90	7 x 0,404	1,27	8,20	0,122

Delivery options

K 250, B 400, K 400, B 500 or B 560

Spool dimensions and capacities are shown in the table on page 22 of this catalogue.

Unilay stranded conductors, 19 wires, without high wires and cross overs according to ASTM B 286 type II

AWG Number	Cross section in mm ²	Structure: No. of wires x wire diameter	Strand. cond. diameter max. mm	Weight in kg / km	Running length in km / kg
28	0,093	19 x 0,079	0,43	0,854	1,171
26	0,16	19 x 0,102	0,56	1,44	0,694
24	0,24	19 x 0,127	0,68	2,23	0,448
22	0,38	19 x 0,16	0,84	3,53	0,283
20	0,62	19 x 0,203	1,06	5,68	0,176
18	0,96	19 x 0,254	1,32	8,93	0,112
16	1,23	19 x 0,287	1,50	11,36	0,088
14	1,95	19 x 0,361	1,85	17,86	0,056
12	3,09	19 x 0,455	2,36	28,57	0,035

Unilay stranded conductors, 37 wires, without high wires and cross overs according to ASTM B 286 type II

AWG Number	Cross section in mm ²	Structure: No. of wires x wire diameter	Strand. cond. diameter max. mm	Weight in kg / km	Running length in km / kg
12	2,97	37 x 0,32	2,31	27,90	0,036
10	4,74	37 x 0,404	2,92	44,20	0,023

Strands and ropes

Concentric stranded conductors without high wires and cross overs in metric dimensions

The dimensions listed in the tables below are only a representative selection of the extensive product range offered by Drahtwerk Waidhaus. Constructions on the basis of other wire diameters can be supplied on request (subject to the required minimum ordering quantities).

This product group can be supplied in bare, tinned, silver-coated and nickel-coated versions. The lay direction can be "S" or "Z". 19- and 37-wire stranded conductors can also be supplied in the "true concentric design".

Stranded conductors, 7 wires, without high wires and cross overs in metric dimensions

Cross section in mm ²	Structure: No. of wires x wire diameter	Strand. cond. diameter in mm (nom. value)	Weight in kg / km	Running length in km / kg
0,027	7 x 0,07	0,21	0,245	4,09
0,035	7 x 0,08	0,24	0,319	3,13
0,055	7 x 0,10	0,30	0,449	2,00
0,093	7 x 0,13	0,39	0,84	1,18
0,12	7 x 0,15	0,45	1,12	0,89
0,22	7 x 0,20	0,60	2,00	0,50
0,34	7 x 0,25	0,75	3,12	0,32
0,50	7 x 0,30	0,90	4,49	0,223
0,75	7 x 0,37	1,11	6,83	0,146
1,00	7 x 0,43	1,29	9,23	0,108
1,50	7 x 0,52	1,56	13,49	0,074
2,50	7 x 0,68	2,04	23,08	0,0433
4,00	7 x 0,85	2,55	35,71	0,0280

Delivery options

K 250, B 400, K 400, B 500 or B 560

Spool dimensions and capacities are shown in the table on page 22 of this catalogue.

Unilay-Stranded conductors, 19 wires, without high wires and cross overs in metric dimensions

Cross section in mm ²	Structure: No. of wires x wire diameter	Strand. cond. diameter in mm (nom. value)	Weight in kg / km	Running length in km / kg
0,15	19 x 0,10	0,50	1,35	0,74
0,33	19 x 0,15	0,75	3,05	0,33
0,60	19 x 0,20	1,00	5,38	0,186
1,34	19 x 0,30	1,50	12,20	0,082
2,04	19 x 0,37	1,85	18,52	0,054
2,50	19 x 0,41	2,05	22,77	0,0439
4,00	19 x 0,52	2,60	36,63	0,0273
6,00	19 x 0,64	3,20	55,48	0,0180

Unilay-Stranded conductors, 37 wires, without high wires and cross overs in metric dimensions

Cross section in mm ²	Structure: No. of wires x wire diameter	Strand. cond. diameter in mm (nom. value)	Weight in kg / km	Running length in km / kg
2,50	37 x 0,30	2,10	23,74	0,0421



Strands and ropes

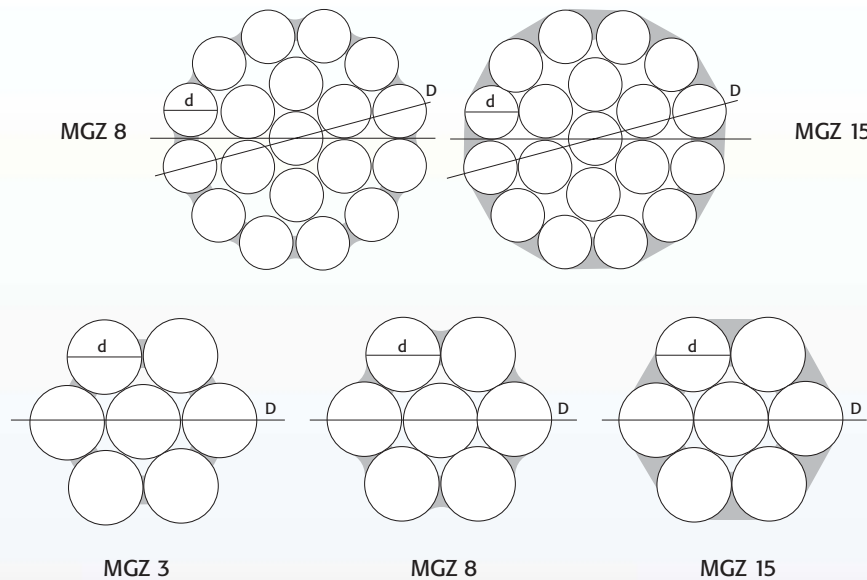
MGZ stranded conductors consist of individual wires that are tinned and subsequently stranded and additionally bound together by a special overcoat tinning process.

Drahtwerk Waidhaus supplies these specialty products in three main categories:

- **MGZ 3**
light binding and good flexibility
- **MGZ 8**
medium binding and moderate flexibility
- **MGZ 15**
strong binding and low flexibility

This standard range is particularly interesting for the assembly industry, since the danger of short circuits on account of loose individual wires in the stranded conductor is eliminated (important for clean crimp and insulation-displacement connections).

Bound 7- and 19-wire stranded conductors, tinned, with defined overcoat tinning, MGZ type



AWG	mm ²	Structure	Dia- meter max. mm	Lay length max. mm	Resist- ance Ω / km	Max. weight		
						MGZ 3 kg / km	MGZ 8 kg / km	MGZ 15 kg / km
30	0,06	7 x 0,102	0,330	7,6	354,3	0,60	0,63	0,67
28	0,09	7 x 0,127	0,406	7,6	223,7	0,91	0,96	1,02
26	0,14	7 x 0,160	0,508	7,6	139,7	1,42	1,49	1,58
24	0,23	7 x 0,203	0,635	8,9	85,95	2,24	2,35	2,50
22	0,35	7 x 0,254	0,787	10,9	54,79	3,45	3,62	3,85
20	0,56	7 x 0,320	0,990	15,0	34,12	5,50	5,75	6,10
	0,75	7 x 0,370	1,140	17,7	24,70	7,32	7,67	8,17
26	0,15	19 x 0,102	0,558	7,6	131,50		1,71	1,82
24	0,24	19 x 0,127	0,685	8,9	83,30		2,60	2,77
22	0,38	19 x 0,160	0,838	10,9	52,10		4,03	4,30
	0,50	19 x 0,185	0,955	14,0	38,20		5,32	5,66
20	0,60	19 x 0,203	1,060	14,0	32,00		6,36	6,77
	0,75	19 x 0,226	1,180	18,0	25,20		7,83	8,33
18	1,00	19 x 0,254	1,320	17,8	20,00		9,80	10,45
16	1,50	19 x 0,320	1,650	25,6	12,70		15,60	16,50

MGZ 3 is not available for 19-wire stranded conductors.

Delivery options

K 250, B 400, K 400, B 500, B 560

Spool dimensions and capacities are shown in the table on page 22 of this catalogue.

Strands and ropes

Class 5 and 6 fine-wire stranded conductors according to VDE 0295

The product group listed here comprises Class 5 and 6 stranded conductors with higher cross sections than conventional bunched wires for standard cables (see page 14).

Drahtwerk Waidhaus supplies these product groups in bare and tinned versions.



Class 5 fine-wire stranded conductors according to VDE 0295

Cross section	Structure: No. of wires x wire diameter	Structural design	Conductor diameter nom. in mm	Max. weight in kg / km
10,0	84 x 0,40	7 x 12	4,60	105,0
16,0	126 x 0,40	7 x 18	5,70	160,0
25,0	196 x 0,40	7 x 28	7,20	250,0
35,0	280 x 0,40	7 x 40	8,40	355,0
50,0	399 x 0,40	19 x 21	10,30	505,0
70,0	361 x 0,50	19 x 19	12,40	705,0
95,0	475 x 0,50	19 x 25	14,30	930,0
120,0	629 x 0,50	37 x 17	16,00	1230,0
150,0	777 x 0,50	37 x 21	18,00	1515,0
185,0	925 x 0,50	37 x 25	20,00	1805,0
240,0	1221 x 0,50	37 x 33	23,00	2385,0
300,0	1525 x 0,50	61 x 25	26,00	2980,0
400,0	2013 x 0,50	61 x 33	30,00	3930,0

Class 6 fine-wire stranded conductors according to VDE 0295

Cross section	Structure: No. of wires x wire diameter	Structural design	Conductor diameter nom. in mm	Max. weight in kg / km
1,00	56 x 0,15		1,24	10,5
1,50	85 x 0,15		1,53	16,0
2,50	140 x 0,15	7 x 20	2,40	27,0
4,00	231 x 0,15	7 x 33	2,90	44,5
6,00	189 x 0,20	7 x 27	3,60	62,5
10,00	323 x 0,20	19 x 17	4,55	107,0
16,00	513 x 0,20	19 x 27	5,50	170,0
25,00	777 x 0,20	37 x 21	7,30	257,0
35,00	1110 x 0,20	37 x 30	8,55	367,0
50,00	703 x 0,30	37 x 19	10,15	507,0
70,00	999 x 0,30	37 x 27	12,00	720,0
95,00	1332 x 0,30	37 x 36	14,05	960,0
120,00	1702 x 0,30	37 x 46	16,30	1225,0
150,00	2109 x 0,30	37 x 57	17,40	1520,0
185,00	2590 x 0,30	37 x 70	20,00	1865,0

Delivery options for Class 5 and 6

B 400, B 500, B 560, Li 600, Li 800, B 1000 or H 1000

Spool dimensions and capacities are shown in the table on page 22 of this catalogue.



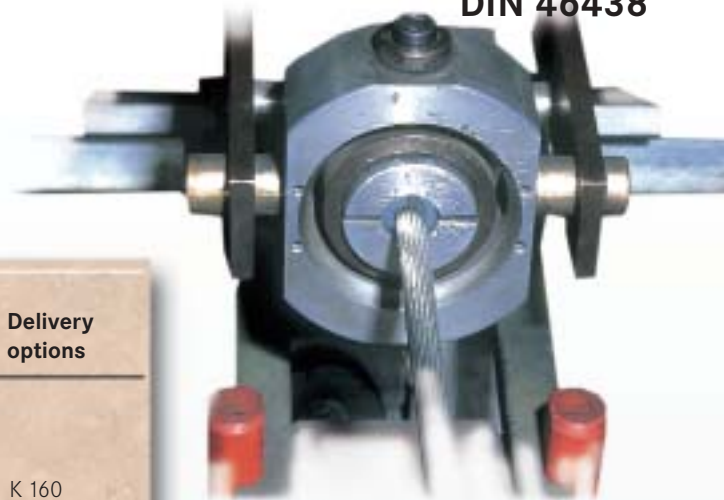


Strands and ropes

The stranded conductors listed below are available in bare, tinned and silver-coated versions, as well as nickel-coated for wire diameters of 0.071 mm and higher.

For design reasons, the number of wires may differ by $\pm 2\%$. Similarly, design modifications may lead to deviations in external diameters.

Ultra-flexible bunch-stranded and rope-lay bunch-stranded copper conductors according to DIN 46438



Nominal cross section mm ²	No. of wires x Diameter	Rope diameter (nom.) mm	Weight (nom.) kg / km	Delivery options
0,06	30 x 0,05	0,3	0,55	
0,10	51 x 0,05	0,4	0,93	
0,15	78 x 0,05	0,5	1,4	
0,2	105 x 0,05	0,6	1,9	K 160
0,25	130 x 0,05	0,7	2,4	K 200
0,35	180 x 0,05	0,8	3,3	K 250
0,5	266 x 0,05	1,0	4,7	
0,75	392 x 0,05	1,2	7,2	
1,0	525 x 0,05	1,5	9,7	
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1,5	385 x 0,071	1,9	14	
2,0	525 x 0,071	2,1	19	K 160
2,5	651 x 0,071	2,4	24	K 250
4,0	1036 x 0,071	3,1	38	K 400
5,25	1372 x 0,071	3,6	51	B 400
6,0	1575 x 0,071	4,0	58	
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8,0	2058 x 0,071	4,6	76	K 400
10	2562 x 0,071	5,0	95	B 400
16	4116 x 0,071	6,5	152	B 500, B 560
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25	3234 x 0,10	8,4	237	
35	4508 x 0,10	10	330	
50	6468 x 0,10	12	475	
70	8967 x 0,10	14	660	B 560
70	4557 x 0,14	14	660	Li 600
95	12201 x 0,10	17	900	B 1000
95	6174 x 0,14	17	900	H 1000
120	15435 x 0,10	19	1150	
120	7840 x 0,14	19	1150	
150	19110 x 0,10	22	1420	
150	9800 x 0,14	22	1420	

Spool dimensions and capacities are shown in the table on page 22 of this catalogue.

Strands and ropes

Ultra-flexible bunch-stranded and rope-lay bunch-stranded copper conductors similar to DIN 46438

The stranded conductors listed below are available in bare, tinned and silver-coated versions, as well as nickel-coated for wire diameters of 0.071 mm and higher.

For design reasons, the number of wires may differ by $\pm 2\%$. Similarly, design modifications may lead to deviations in external diameters.



Nominal cross section mm ²	No. of wires x Diameter	Rope diameter (nom.) mm	Weight (nom.) kg / km	Delivery options
0,02	10 x 0,05	0,18	0,18	
0,05	26 x 0,05	0,3	0,47	
0,08	40 x 0,05	0,38	0,73	
0,14	72 x 0,05	0,5	1,3	K 160
0,14	38 x 0,071	0,5	1,4	K 200
0,25	65 x 0,071	0,7	2,4	K 250
0,5	130 x 0,071	1,0	4,7	
0,6	315 x 0,05	1,1	5,7	
0,75	196 x 0,071	1,2	7,2	
1,0	266 x 0,071	1,5	9,7	
1,3	665 x 0,05	1,6	12	K 160
1,5	770 x 0,05	1,9	14	K 250
2,5	1281 x 0,05	2,4	24	B 400
4,0	2037 x 0,05	3,1	38	K 400
6,0	3055 x 0,05	4,0	58	
25	6496 x 0,071	8,4	237	K 400
35	9327 x 0,071	10	330	B 400
50	12996 x 0,071	12	475	B 500, B 560
185	23555 x 0,10	23	1800	
240	30557 x 0,10	25	2300	
300	38197 x 0,10	28	2900	H 1000
400	55930 x 0,10	35	3850	B 1000
500	63662 x 0,10	37	4800	
600	76394 x 0,10	40	5800	

Spool dimensions and capacities are shown in the table on page 22 of this catalogue.



Strands and ropes

The resistance values given apply to bare and silver-coated stranded conductors made of E-Cu or OF-Cu.

Fine-wire bunch-stranded and rope-lay bunch-stranded copper conductors according to ASTM B 738

Fine-wire rope-lay copper conductors, soft

AWG	No. wires/ wire size	No. wires x diameter	Diam. (nom.) mm	Lay length (min. - max.) mm	Resistance (max.) Ω/km	Resistance (max.) Ω/1000 ft
16	665/44	665 x 0,051	1,6	12,8 - 25,6	14,8	4,51
18	413/44	413 x 0,051	1,3	10,4 - 20,8	23,78	7,25
20	168/42	168 x 0,064	1,05	8,4 - 16,8	36,74	11,2
20	259/44	259 x 0,051	1,05	8,4 - 16,8	38,06	11,6
22	105/42	105 x 0,064	0,83	6,6 - 13,2	58,72	17,9
22	168/44	168 x 0,051	0,83	6,6 - 13,2	58,40	17,8
24	105/44	105 x 0,051	0,65	5,2 - 10,4	93,5	28,5

Fine-wire bunch-stranded copper conductors, soft

AWG	No. wires/ wire size	No. wires x diameter	Diam. (nom.) mm	Lay length (max.) mm	Resistance (max.) Ω/km	Resistance (max.) Ω/1000 ft
24	65/42	65 x 0,064	0,61	18,0	92,8	28,3
26	41/42	41 x 0,064	0,48	15,0	147,3	44,9
26	65/44	65 x 0,051	0,48	15,0	148,3	45,2
28	25/42	26 x 0,064	0,38	13,0	232,2	70,8
28	40/44	40 x 0,051	0,38	13,0	241,1	73,5
30	16/42	16 x 0,064	0,30	10,0	377	115,0
30	25/44	25 x 0,051	0,30	10,0	385	117,5
30	65/48	65 x 0,031	0,30	10,0	377	115,0
32	10/42	10 x 0,064	0,23	10,0	603	184,0
32	16/44	16 x 0,051	0,23	7,6	602	183,7
34	7/42	7 x 0,064	0,19	6,4	862	262,8
34	10/44	10 x 0,051	0,18	6,4	964	293,8
36	7/44	7 x 0,051	0,15	5,1	1377	419,8

Delivery options

Plastic spools K 160 and from outer diameters of 1.0 mm also K 200, K 250, K 400

Spool dimensions and capacities are shown in the table on page 22 of this catalogue.

Strands and ropes

Packaging



Spool type	d 1 mm	d 2 mm	d 3 mm	Cone x°	L 1 mm	L 2 mm	Empty weight kg	Filling weight app. kg
K 160	160	100	22	30	160	128	0,35	6
K 200	200	125	22	30	200	160	0,60	12
K 250	250	160	22	30	200	160	1,05	16
K 355	355	225	36	30	200	160	3,20	33
B 400	400	200	36	-	220	200	7,0	66
K 400	400	250	36	-	240	200	4,40	70
B 500	500	250	127	-	300	260	15,8	135
B 560	560	240	127	-	350	310	27,3	220
LI 560	560	320	127	22,5	400	300	23,5	170
LI 600	600	300	127	22,5	460	400	29,0	300
H 1000	1000	500	80	-	600	565	71,5	900
B 1000	1000	500	80	-	700	565	84,0	900

The filling weight of a spool can be calculated as follows:

$$W = 0.001 \frac{\pi}{4} [(d_1 - 2a)^2 - d_2^2] \times L_2 \times \gamma \times f$$

For copper wires with $\gamma = 8.9 \text{ kg / dm}^3$ and a filling factor $f = 0.72$, the filling weight is:

$$W = 0.005 L_2 [(d_1 - 2a)^2 - d_2^2]$$

