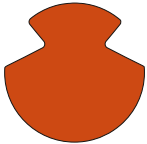
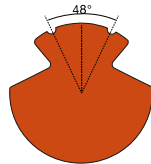


## Contact wires

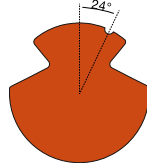
### Identification marks according to EN 50149



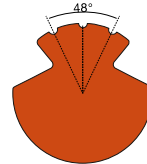
Contact wires made of pure copper (Cu-ETP) do not have identification grooves. Speciality in UK: Contact wires made of copper-cadmium alloy are not allowed to have identification grooves.



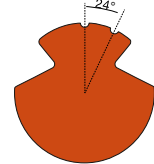
Contact wires made of copper-silver alloy have two identical identification grooves on the top of the wire.



Contact wires made of copper-tin alloy have one identification groove on the top of the wire at an angle of 24° from the vertical.



Contact wires made of copper-magnesium alloy have three identification grooves on the top of the wire.



VALTHERMO® contact wires have two identification grooves, one offset at an angle of 24° and one in the middle of the curve at the top of the wire.

### Areas of Application:

Contact wire for all ranges of speed on main and side lines, for all electrical systems AC or DC as well as for Metros, Trolley buses and Mining.

### Packaging:

Different drums according to the specific application

### Construction and weights

nominal cross section mm <sup>2</sup>	nominal wire-Ø construction			nominal weight kg/km
	AC mm	BC mm	BF mm	
80	10.60	–	–	710
100	12.00	12.00	11.04	890
107	12.30	12.24	11.35	952
120	13.20	12.85	12.27	1070
150	14.80	14.50	13.60	1335

Other constructions:

e. g. international standards or customer specification can be manufactured according to customers request

### Survey of materials (selection) and speed

material	speed typical	conductivity m/Ω*mm <sup>2</sup>	min. tensile strength N/mm <sup>2</sup>	min. breaking load kN
	max. km/h			
Cu-ETP (normal tensile strength)	160	≥ 56.3	330	38.4
CuAg0.1 (high tensile strength)	250	≥ 56.3	360	41.9
CuSn0.2 (normal conductivity)	350	≥ 41.8	420	48.9
CuMg0.2 (normal conductivity)	350	≥ 44.6	430	50.1
CuMg0.5	400	≥ 36.0	490	57.0
VALTHERMO® (high tensile strength)	250	≥ 56.3	360	41.9

Values are based on a cross section of 120 mm<sup>2</sup> according to EN 50149

## Values for CuMg0.5 alloy

technical data		nominal cross section				
		80	100	107	120	150
min. tensile strength $R_m^{2)}$	N/mm <sup>2</sup>	520	510	500	490	470
min. breaking load <sup>1)</sup> $F_m$	kN	40.4	49.5	51.9	57.0	68.4
Percentage Elongation after fracture $A_{200}$	%	3 – 10	3 – 10	3 – 10	3 – 10	3 – 10
Modulus of elasticity $E$	kN/mm <sup>2</sup>	120	120	120	120	120
Half-hard point	°C	≥ 375	≥ 375	≥ 375	≥ 375	≥ 375
Electrical conductivity $\chi$ at 20 °C	m/(Ohm*mm <sup>2</sup> )	≥ 36.0	≥ 36.0	≥ 36.0	≥ 36.0	≥ 36.0
Electrical conductivity $\chi$ at 20 °C	% IACS	≥ 62	≥ 62	≥ 62	≥ 62	≥ 62
Specific electrical resistance $\rho_{el}$ at 20 °C	10 <sup>-8</sup> Ohm*m	≤ 2.778	≤ 2.778	≤ 2.778	≤ 2.778	≤ 2.778
Electrical resistance R	Ohm/km	≤ 0.358	≤ 0.286	≤ 0.268	≤ 0.239	≤ 0.191
Temperature coefficient $\alpha_{el}$ of electrical resistance	10 <sup>-3</sup> /K	2.7	2.7	2.7	2.7	2.7
Linear coefficient of thermal expansion $\alpha$	10 <sup>-5</sup> /K	1.7	1.7	1.7	1.7	1.7
Specific mass $\rho$	10 <sup>3</sup> kg/m <sup>3</sup>	8.89	8.89	8.89	8.89	8.89

<sup>1)</sup> calculation based on the minimum cross section

<sup>2)</sup> different tensile strengths on request

