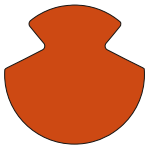
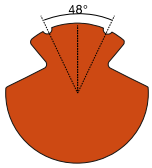
CuMg0.2 according to EN 50149

Contact wires

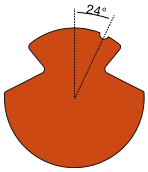
Identification marks according to EN 50149



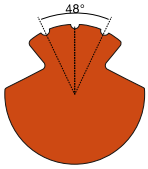
Contact wires made of pure copper (Cu-ETP) do not have identification grooves. Speciality in UK: Contact wires made of copper-cadmium alloy are not allowed to have identification grooves.



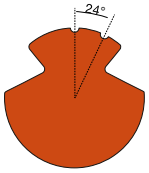
Contact wires made of copper-silver alloy have two identical identification grooves on the top of the wire.



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	nominal wire-Ø construction			nominal weight
	AC	BC	BF	
mm²	mm	mm	mm	kg/km
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	min. tensile strength	min. breaking load
	max. km/h	m/Ω*mm²	N/mm²	kN
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 mm² according to EN 50149

CuMg0.2 according to EN 50149

Values for CuMg0.2 alloy (normal conductivity)

technical data		nominal cross section				
		80	**100**	**107**	**120**	**150**
min. tensile strength R_m [2]	N/mm²	460	450	440	430	420
min. breaking load [1] F_m	kN	35.7	43.7	45.7	50.1	61.1
Percentage Elongation after fracture A_{200}	%	3 – 10	3 – 10	3 – 10	3 – 10	3 – 10
Modulus of elasticity *E*	kN/mm²	120	120	120	120	120
Half-hard point	°C	≥ 370	≥ 370	≥ 370	≥ 370	≥ 370
Electrical conductivity χ at 20 °C	m/(Ohm*mm²)	≥ 44.6	≥ 44.6	≥ 44.6	≥ 44.6	≥ 44.6
Electrical conductivity χ at 20 °C	% IACS	≥ 77	≥ 77	≥ 77	≥ 77	≥ 77
Specific electrical resistance ρ_{el} at 20 °C	10^{-8}Ohm*m	≤ 2.240	≤ 2.240	≤ 2.240	≤ 2.240	≤ 2.240
Electrical resistance R	Ohm/km	≤ 0.289	≤ 0.231	≤ 0.216	≤ 0.192	≤ 0.154
Temperature coefficient α_{el} of electrical resistance	10^{-3}/K	3.1	3.1	3.1	3.1	3.1
Linear coefficient of thermal expansion α	10^{-5}/K	1.7	1.7	1.7	1.7	1.7
Specific mass ρ	10^3 kg/m³	8.89	8.89	8.89	8.89	8.89

[1] calculation based on the minimum cross section
[2] different tensile strengths on request

Values for CuMg0.2 alloy (high conductivity)

technical data		nominal cross section				
		80	**100**	**107**	**120**	**150**
min. tensile strength R_m [2]	N/mm²	460	450	440	430	420
min. breaking load [1] F_m	kN	35.7	43.7	45.7	50.1	61.1
Percentage Elongation after fracture A_{200}	%	3 – 10	3 – 10	3 – 10	3 – 10	3 – 10
Modulus of elasticity *E*	kN/mm²	120	120	120	120	120
Half-hard point	°C	≥ 370	≥ 370	≥ 370	≥ 370	≥ 370
Electrical conductivity χ at 20 °C	m/(Ohm*mm²)	≥ 46.4	≥ 46.4	≥ 46.4	≥ 46.4	≥ 46.4
Electrical conductivity χ at 20 °C	% IACS	≥ 80	≥ 80	≥ 80	≥ 80	≥ 80
Specific electrical resistance ρ_{el} at 20 °C	10^{-8}Ohm*m	≤ 2.155	≤ 2.155	≤ 2.155	≤ 2.155	≤ 2.155
Electrical resistance R	Ohm/km	≤ 0.278	≤ 0.222	≤ 0.208	≤ 0.185	≤ 0.148
Temperature coefficient α_{el} of electrical resistance	10^{-3}/K	3.1	3.1	3.1	3.1	3.1
Linear coefficient of thermal expansion α	10^{-5}/K	1.7	1.7	1.7	1.7	1.7
Specific mass ρ	10^3 kg/m³	8.89	8.89	8.89	8.89	8.89

[1] calculation based on the minimum cross section
[2] different tensile strengths on request