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Binding Wires for Electrical Machines
Non-magnetic Steel Wire
Drawn and Tinned

DIN
46406
Sheet 2

Bandagendrähte für elektrische Maschinen;
Stahldraht nicht magnetisierbar, gezogen und verzinkt

Dimensions in mm

N Non-magnetic steel wire

Designation of a non-magnetic binding wire (N) of 1.5 mm diameter:
Binding wire N 1.5 DIN 46406

Diameter	Cross-section mm ²	Weight per unit length kg/km	Inside diameter of coil ≈	Coil weight kg ≈	Tensile strength σ_B ²⁾ N/mm ²	Recess % minimum	Number of bends N_b minimum	Relative permeability ⁴⁾
								perm. var. ¹⁾
0,5	± 0,02	0,1963	1,54	300	25	1400 to 1650	3)	1,08
0,8	± 0,02	0,5027	3,95	300				
1	± 0,03	0,7854	6,17	300				
1,2	± 0,03	1,131	8,88	300				
1,5	± 0,04	1,767	13,9	300				
2	± 0,05	3,142	24,7	500	50	40	3)	1,08
2,5	± 0,05	4,909	38,5	500				
3	± 0,05	7,069	55,5	500				

1) Grade accuracy class B according to DIN 2076

2) Yield point at least 85 % of minimum tensile strength

3) When a 500 mm long specimen is wound in a single layer on a mandrel with a diameter of $3 \times d$ (d = wire diameter) the wire must not break.4) The permeability should be determined at magnetic field strength $H = 80$ A/cmMaterial:

X 15 CrNiMn 12 10 (material number 1.3962) according to Stahl-Eisen-Werkstoffblatt 390
(Steel-Iron Materials Sheet)

Finish:

hot tinned, weight per unit area of tin coating not less than 8 g/m^2 surface

Mode of delivery:

In coils, inside diameter of coil and coil weight according to Table. Up to 1.5 mm diameter also on reels. Each coil or reel shall contain only a continuous length of wire. Joints such as welds, brazing, twisted joints or other forms of fastening are not permissible.

Testing:Tensile strength σ_B : according to DIN 51210Yield point σ_S or 0.2 limit: according to DIN 51210 or according to DIN 50144Number of bends N_b : according to DIN 51211

Weight per unit area of tin coating: according to DIN 51213

For binding wires for electrical machines; magnetic steel wire, see DIN 46406 Sheet 1

Explanations on page 2

Explanations

So far there has not been a standard for non-magnetic binding wires for electrical machines. In the course of the revision of DIN 46406 "Binding wires" (November 1929 issue), which was withdrawn in 1971, the non-magnetic binding wires were included in this Standard. To prevent confusion, DIN 46406 has been altered to DIN 46406 Sheet 1 and enlarged by Sheet 2. Sheet 1 contains magnetic binding wires, whilst Sheet 2 covers the non-magnetic binding wires previously not standardized.

In the larger diameters of the X 15 CrNiMn 12 10 steel, the tensile strength of the diameters up to 2 mm cannot be maintained with adequate reliability and therefore the tensile strength ranges have been subdivided.

The permissible variations of wires have been specified according to DIN 2076, grade accuracy class B. The testing of tensile strength is performed according to DIN 51210 and the testing for specified number of bends according to DIN 51211. With regard to the tinning of the wire, the hot tinning method with a minimum tin coating is specified. A suitable testing is contained in DIN 51213.