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Binding Wires for Electrical Machines
Magnetic Steel Wire
Drawn and Tinned

DIN
46406
Sheet 1

Bandagendrähte für elektrische Maschinen;
Stahldraht magnetisierbar, gezogen und verzinkt

Dimensions in mm

M Magnetic steel wire

Designation of a magnetic binding wire (M) of 1.5 mm diameter:
Binding wire M 1.5 DIN 46406

Diameter	perm. var. ¹⁾	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 minimum	Elongation $L_0 = 200$ mm % minimum	Number of bends N_B minimum
0,8	± 0,02	0,5027	3,95	300	25	1770	3)	10
1	± 0,03	0,7854	6,17	300			3)	6
1,2	± 0,03	1,131	8,88	300			3)	11
1,5	± 0,04	1,767	13,9	300			2	6
1,8	± 0,04	2,545	20,0	500			3	7
2	± 0,05	3,142	24,7	500	50	4	5	
2,5	± 0,05	4,909	38,5	500		4	8	
3	± 0,05	7,069	55,5	500		4	4	

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.

Material:

unalloyed steel wire (material number 1.0600) according to DIN 17223 Sheet 1 with 0.5 to 0.80 % C

P 0.04 % at the most; S 0.04 % at the most; Cu 0.25 % at the most

Finish:

hot tinned, weight per unit area of tin coating not less than 8 g/m² 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 51210

Yield point σ_S or C.2 limit: according to DIN 51210 or according to DIN 50144

Number 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; non-magnetic steel wire, see DIN 46406 Sheet 2.

Explanations on page 2

Explanations

The previous issue of DIN 46406 "Binding wires" (November 1929) had ceased to represent the present state of the art. This standard was withdrawn because bindings for electrical machines already consisted largely of glass fibre reinforced plastics. Objections by leading users, however, forced the re-issue of the standard in revised form.

In the case of binding wires for electrical machines, either magnetic or non-magnetic binding wire is used, according to requirements. In the revision, therefore, the non-magnetic binding wires were included in the 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.

DIN 46406 Sheet 1 contains the magnetic binding wires used at the present time. The 3 mm diameter has been newly included and the 0.5 mm diameter deleted. Hitherto there were four strength categories, but these have been limited to a single strength category with a minimum tensile strength of 1700 N/mm².

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. The numbers of bends themselves correspond to DIN 2078. 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.