

DIN EN 12166:2016-11 (E)

Copper and copper alloys - Wire for general purposes

Contents	Page
European foreword	4
Introduction	6
1 Scope	7
2 Normative references	7
3 Terms and definitions	7
4 Designation	8
4.1 Material	8
4.1.1 General	8
4.1.2 Symbol	8
4.1.3 Number	8
4.2 Material condition	8
4.3 Product	8
5 Ordering information	10
6 Requirements	13
6.1 Composition	13
6.2 Mechanical properties	13
6.3 Grain size	13
6.4 Dimensions and tolerances	13
6.4.1 Diameter or width across-flats	13
6.4.2 Shape tolerances for round wire	13
6.4.3 Corner and edge geometry (wire with square and rectangular cross-section only)	13
6.5 Joins	14
6.6 Surface quality	14
7 Sampling	14
7.1 General	14
7.2 Analysis	14
7.3 Tensile, hardness and grain size tests	15
8 Test methods	15
8.1 Analysis	15
8.2 Tensile test	15
8.3 Hardness test	15
8.4 Estimation of average grain size	16
8.5 Retests	16
8.6 Rounding of results	16
9 Declaration of conformity and inspection documentation	16
9.1 Declaration of conformity	16
9.2 Inspection documentation	17
10 Marking, packaging, labelling	17
Annex A (informative) Position of wire cross-section within a coil, reel, spool or drum	40

Bibliography	42
Figures	
Figure 1 -- Calculation of corner radii	14
Figure A.1 -- Illustration of position of wire cross-section within the coil (bunched wound or stagger/traverse wound)	40
Figure A.2 -- Illustration of position of wire cross-section within the reel/spool/drum (stagger/traverse wound)	40
Figure A.3 -- Illustration of position of wire cross-section within the coil (bunched wound or stagger/traverse wound)	41
Figure A.4 -- Illustration of position of wire cross-section within the reel/spool/drum (stagger/traverse wound)	41
Tables	
Table 1 -- Composition of low alloyed copper alloys	18
Table 2 -- Composition of copper-nickel-zinc alloys	21
Table 3 -- Composition of copper-tin alloys	21
Table 4 -- Composition of copper-zinc alloys	22
Table 5 -- Composition of copper-zinc-lead alloys	23
Table 6 -- Composition of complex copper-zinc alloys	24
Table 7 -- Mechanical properties of wire of low alloyed copper alloys	24
Table 8 -- Mechanical properties of wire of copper-nickel-zinc alloys	27
Table 9 -- Mechanical properties of wire of copper-tin alloys	29
Table 10 -- Mechanical properties of wire of copper-zinc alloys	31
Table 11 -- Mechanical properties of wire of copper-zinc-lead alloys	35
Table 12 -- Mechanical properties of wire of complex copper-zinc alloys	36
Table 13 -- Grain size designations	37
Table 14 -- Tolerances on diameter of round wire	37
Table 15 -- Tolerances on width across-flats of square or regular polygonal wire	38
Table 16 -- Tolerances on width and thickness of rectangular wire	38
Table 17 -- Corner radii for square or rectangular wire	39
Table 18 -- Sampling rate	39