

DIN EN 12167:2011-08 (E)

Copper and copper alloys - Profiles and bars for general purposes

Contents	Page
Foreword	4
Introduction	6
1 Scope	7
2 Normative references	7
3 Terms and definitions	7
4 Designations	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	11
6.1 Composition	11
6.2 Mechanical properties	11
6.2.1 Profiles	11
6.2.2 Bar	11
6.3 Resistance to dezincification	11
6.4 Residual stress level	12
6.5 Dimensions and tolerances	12
6.5.1 Cross-sectional dimensions	12
6.5.2 Length	12
6.5.3 Flatness	12
6.5.4 Straightness	13
6.5.5 Twist	13
6.5.6 Corner radii of bar	14
7 Sampling	14
7.1 General	14
7.2 Analysis	14
7.3 Tensile and hardness tests	15
7.4 Dezincification resistance and stress corrosion resistance tests	15
8 Test methods	15
8.1 Analysis	15
8.2 Tensile test	15
8.2.1 General	15
8.2.2 Location of test pieces	15
8.2.3 Shape and size of test pieces	16
8.2.4 Procedure for testing	16
8.2.5 Expression of results	16
8.3 Hardness test	16
8.4 Dezincification resistance test	16
8.5 Stress corrosion resistance test	16

8.6	Retests	17
8.6.1	Analysis, tensile, hardness and dezincification resistance tests	17
8.6.2	Stress corrosion resistance test	17
8.7	Rounding of results	17
9	Declaration of conformity and inspection documentation	17
9.1	Declaration of conformity	17
9.2	Inspection documentation	17
10	Marking, packaging, labelling	18
Annex A (normative) Determination of mean depth of dezincification		40
A.1	Introduction	40
A.2	Procedure	40
A.3	Expression of results	40
Bibliography		42
Tables Table 1 -- Composition of low alloyed copper alloys		19
Table 2 -- Composition of copper-aluminium alloys		20
Table 3 -- Composition of copper-nickel-zinc alloys		20
Table 4 -- Composition of copper-tin alloys		21
Table 5 -- Composition of copper-zinc alloys		21
Table 6 -- Composition of copper-zinc-lead alloys		22
Table 7 -- Composition of complex copper-zinc alloys		24
Table 8 -- Mechanical properties of low alloyed copper alloys		25
Table 9 -- Mechanical properties of copper-aluminium alloys		27
Table 10 -- Mechanical properties of copper-nickel-zinc alloys		28
Table 11 -- Mechanical properties of copper-tin alloys		29
Table 12 -- Mechanical properties of copper-zinc alloys		30
Table 13 -- Mechanical properties of copper-zinc-lead alloys		31
Table 14 -- Mechanical properties of complex copper-zinc alloys		33
Table 15 -- Tolerances on width (b) and height of a leg (h) for profiles with L-, T- and U-cross-sections		35
Table 16 -- Tolerances on thickness for profiles with L-, T- and U-cross-sections		36
Table 17 -- Tolerances on width and thickness of bar		37
Table 18 -- Tolerances on length of bar		37
Table 19 -- Tolerances on straightness of bar, for widths 10 mm and over		38
Table 20 -- Maximum twist of bar		38
Table 21 -- Corner radii of bar		38

Table 22 -- Sampling rate	39
Figures Figure 1 -- Measurement of flatness of bar	13
Figure 2 -- Measurement of twist of bar	14
Figure A.1 -- Example of contiguous fields	41