

DIN EN 12420:2024-12 (E)

Copper and copper alloys - Forgings

Contents		Page
European 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	9
5	Ordering information	10
6	Requirements	11
6.1	Composition	11
6.2	Mechanical properties	11
6.2.1	Hardness properties	11
6.2.2	Tensile properties	11
6.3	Electrical properties	11
6.4	Resistance to dezincification	11
6.5	Residual stress level	11
6.6	Tolerances for die forgings	12
6.6.1	General	12
6.6.2	Tolerances for dimensions within the die cavity and for dimensions across the die parting line	13
6.6.3	Mismatch	13
6.6.4	Flash projection	14
6.6.5	Ejector marks	15
6.6.6	Flatness tolerances	15
6.6.7	Angular tolerances	16
6.7	Tolerances for cored forgings	16
6.8	Tolerances for hand forgings	18
6.8.1	General	18
6.8.2	Tolerances on dimensions	18
6.8.3	Flatness tolerance	19
6.8.4	Surface quality	19
6.8.5	Drawings	19
7	Sampling	19
7.1	General	19
7.2	Analysis	19
7.3	Hardness, stress corrosion resistance, dezincification resistance and electrical property tests	20
8	Test methods	20

8.1	Analysis	20
8.2	Hardness test	20
8.3	Electrical conductivity test	20
8.4	Dezincification resistance test	20
8.5	Stress corrosion resistance test	20
8.6	Retests	21
8.6.1	Analysis, hardness, electrical conductivity and dezincification resistance tests	21
8.6.2	Stress corrosion resistance test	21
8.7	Rounding of results	21
9	Certificate of compliance and inspection documentation	21
9.1	Certificate of compliance	21
9.2	Inspection documentation	21
10	Marking, labelling, packaging	22
Annex A (informative) Recommended guidelines for design		41
A.1	Introduction	41
A.2	General information	41
A.3	Guidelines for die forgings	42
A.3.1	Drafts	42
A.3.2	Web thicknesses	42
A.3.3	Side wall thicknesses	43
A.3.4	Rib design	44
A.3.5	Cores	45
A.3.6	Flash	46
A.3.7	Transition radii	47
A.3.8	Clamping lengths and clamping areas for finish machining	49
A.3.9	Design for cross-sectional shapes	49
A.3.10	Recommended machining allowances and total allowances	50
A.4	Guidelines for hand forgings	52
A.4.1	General	52
A.4.2	General information	52
A.4.3	Section changes and transitions	53
A.4.4	Recommended machining allowances	53
A.4.5	Total allowances per side of forging	54
A.5	Guidelines for marking	55
Annex B (informative) Tensile properties		56
Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2014/68/EU (Pressure equipment Directive) aimed to be covered		60
Bibliography		61