BRITISH STANDARD

BS EN
1503-4:2002

Valves — Materials for bodies, bonnets and covers —

Part 4: Copper alloys specified in European Standards

The European Standard EN 1503-4:2002 has the status of a British Standard

ICS 23.060.01; 73.120.30

BSI
British Standards

National foreword

This British Standard is the official English language version of EN 1503-4:2002.

The UK participation in its preparation was entrusted by Technical Committee PSE/7, Industrial valves, to Subcommittee PSE/7/1, Basic standards, which has the responsibility to:

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This British Standard, having been prepared under the direction of the Engineering Sector Policy and Strategy Committee, was published under the authority of the Standards Policy and Strategy Committee on 19 December 2002

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English version

Valves - Materials for bodies, bonnets and covers - Part 4: Copper alloys specified in European Standards

Appareils de robinetterie - Matériaux pour les corps, chapeaux et couvercles - Partie 4: Alliages de cuivre spécifiés dans les normes européennes

Armaturen - Werkstoffe für Gehäuse, Oberteile und Deckel - Teil 4: Kupferlegierungen, die in Europäischen Normen festgelegt sind

This European Standard was approved by CEN on 15 August 2002.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

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Contents

Foreword

This document (EN 1503-4:2002) has been prepared by Technical Committee CEN /TC 69, "Industrial valves", the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2003, and conflicting national standards shall be withdrawn at the latest by June 2003.

EN 1503 "*Valves – Materials for bodies, bonnets and covers*" consists of four parts:

— *Part 1: Steels specified in European Standards.*

— *Part 2: Steels other than those specified in European Standards.*

— *Part 3: Cast Irons specified in European Standards.*

— *Part 4: Copper alloys specified in European Standards.*

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European Standard lists copper alloys for pressure containing valve bodies, bonnets and covers which are specified in European Standards.

2 Normative references

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies (including amendments).

EN 1982, *Copper and copper alloys — Ingots and castings.*

EN 12163, *Copper and copper alloys — Rod for general purposes.*

EN 12164, *Copper and copper alloys — Rod for free machining purposes.*

EN 12167, *Copper and copper alloys — Profiles and rectangular bar for general purposes.*

EN 12168, *Copper and copper alloys — Hollow rod for free machining purposes.*

EN 12420, *Copper and copper alloys — Forgings.*

EN 12449, *Copper and copper alloys — Seamless, round tubes for general purposes.*

3 Materials

3.1 General

The materials shall be as given in Tables 1 and 2.

The selection of materials should take account of the intended use and all reasonably foreseeable operation conditions. Selecting materials from Group 1 will provide some assurance of their suitability for valve bodies, bonnets and covers, whereas selecting from Group 2 will not provide the same assurance.

Due consideration should be given to all reasonably foreseeable degradation mechanism (e.g. corrosion, creep, fatigue) that may occur in some applications.

3.2 Group 1 materials

Table 1 lists copper alloys specified in European material standards which have been in regular use for valve bodies, bonnets and covers.

Table 1 - Group 1 materials

Type of alloy	Material designation		Material standard number	Allowable temperature range [b] °C
	Symbol	Number		
Copper-aluminium alloys	CuAl10Fe2-C	CC331G	EN 1982	– 10 to 260
	CuAl10Fe5Ni5-C	CC333G		– 10 to 350
Copper-tin alloys	CuSn6	CW452K	EN 12449	– 10 to 200
	CuSn5Zn5Pb5-C	CC491K	EN 1982	– 10 to 260
	CuSn7Zn2Pb3-C	CC492K		
	CuSn7Zn4Pb7-C	CC493K		
	CuSn6Zn4Pb2-C	CC498K		
Copper-zinc-lead alloys	CuZn36Pb2As	CW602N	EN 12420 [a]	– 10 to 200
	CuZn39Pb3	CW614N		
	CuZn40Pb2	CW617N		
Complex copper-zinc alloys	CuZn32Pb2AsFeSi	CW709R	EN 12163	
	CuZn33Pb2Si-C	CC751S	EN 1982	– 10 to 200
	CuZn39Pb1Al-C	CC754S		

NOTE In this table, only alloy numbers CC331G, CC333G, CC491K, CC492K and CC498K are specified in prEN 1092-3 and prEN 1759-3 as being suitable for use with valve bodies having integral flanges.

[a] Forging material is indicated but other material forms selected from EN 12164, EN 12167 or EN 12449 are permitted.

[b] When used at temperatures below – 10 °C, the user should refer to the material manufacturer.

3.3 Group 2 materials

Table 2 lists copper alloys specified in European material standards which may be used for valve bodies, bonnets and covers.

Table 2 - Group 2 materials

Type of alloy	Material designation		Material/form to be selected from:						
	Symbol	Number	EN 1982	EN 12163	EN 12164	EN 12167	EN 12168	EN 12420	EN 12449
Copper-aluminium alloys	CuAl6Si2Fe	CW301G		X		X		X	
	CuAl7Si2	CW302G		X		X		X	
	CuAl8Fe3	CW303G						X	
	CuAl10Fe3Mn2	CW306G		X		X		X	
	CuAl10Ni5Fe4	CW307G		X		X		X	
	CuAl10Ni3Fe2-C	CC332G	X						
Copper-nickel alloys	CuNi10Fe1Mn	CW352H		X				X	X
	CuNi30Mn1Fe	CW354H		X				X	X
	CuNi10Fe1Mn1-C	CC380H	X						
	CuNi30Fe1Mn1-C	CC381H	X						
Copper-tin alloys	CuSn10-C	CC480K	X						
	CuSn12-C	CC483K	X						
	CuSn12Ni2-C	CC484K	X						
Copper-zinc alloys	CuZn37	CW508L		X		X		X	X
	CuZn40	CW509L		X		X		X	X
Copper-zinc-lead alloys	CuZn35Pb2	CW601N			X	X	X		X
	CuZn36Pb3	CW603N			X	X	X		X
	CuZn38Pb2	CW608N			X	X	X	X	X
	CuZn38Pb4	CW609N			X	X	X		
	CuZn39Pb0,5	CW610N			X	X		X	
	CuZn39Pb2	CW612N			X	X	X	X	
	CuZn39Pb2Sn	CW613N				X		X	
	CuZn39Pb3Sn	CW615N						X	
	CuZn40Pb2Sn	CW619N				X		X	
Complex copper-zinc alloys	CuZn37Mn3Al2PbSi	CW713R			X	X	X	X	X
	CuZn39Sn1	CW719R		X		X		X	
	CuZn40Mn1Pb1AlFeSn	CW721R			X	X	X	X	
	CuZn40Mn1Pb1FeSn	CW722R			X	X	X	X	
	CuZn35Pb2Al-C	CC752S	X						
	CuZn37Pb2Ni1AlFe-C	CC753S	X						
	CuZn34Mn3Al2Fe1-C	CC764S	X						
	CuZn35Mn2Al1Fe1-C	CC765S	X						
	CuZn37Al1-C	CC766S	X						
	CuZn38Al-C	CC767S	X						

Bibliography

The following standards or draft standards are referenced in this standard for information purposes:

[1] prEN 1092-3, Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated — Part 3: Copper alloy flanges.

[2] prEN 1759-3, Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, Class designated — Part 3: Copper alloy flanges.

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