International Standard 426/2

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Wrought copper-zinc alloys — Chemical composition and forms of wrought products — Part 2: Leaded copper-zinc alloys

Alliages cuivre-zinc corroyés — Composition chimique et formes des produits corroyés — Partie 2: Alliages de cuivre-zinc au plomb

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been authorized has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 426/2 was developed by Technical Committee ISO/TC 26, *Copper and copper alloys*, and was circulated to the member bodies in November 1981.

It has been approved by the member bodies of the following countries:

Austria	Germany, F.R.	South Africa, Rep. of
Belgium	Hungary	Spain
Brazil	Italy	Sweden
Bulgaria	Japan	Turkey
Canada	Korea, Dem. P. Rep. of	United Kingdom
China	Netherlands	USA
Czechoslovakia	Norway	USSR
Egypt, Arab Rep. of	Poland	
Finland	Romania	

The member bodies of the following countries expressed disapproval of the document on technical grounds:

France
Switzerland

This second edition cancels and replaces the first edition (i.e. ISO 426/2-1973).

Printed in Switzerland

Wrought copper-zinc alloys — Chemical composition and forms of wrought products — Part 2 : Leaded copper-zinc alloys

1 Scope and field of application

This part of ISO 426 specifies the chemical composition of leaded copper-zinc alloys and lists the forms of wrought products in which they are currently available in commercial quantities.

For non-leaded and special copper-zinc alloys, see ISO 426/1.

2 References

ISO 197, *Copper and copper alloys — Terms and definitions*
Part 1: Materials.
Part 3: Wrought products.

ISO 1190/1, *Copper and copper alloys — Code of designation — Part 1 : Designation of materials.*

ISO 1634, *Wrought copper and copper alloys — Mechanical properties*
Part 1: Plate, sheet and strip for general purposes. [1]
Part 2: Plate and sheet for boilers, pressure vessels and condensers. [1]

ISO 1635, *Wrought copper and copper alloys — Round tubes for general purposes — Mechanical properties.* [1]

ISO 1637, *Wrought copper and copper alloys — Rod and bar — Mechanical properties.* [2]

ISO 1638, *Wrought copper and copper alloys — Wire — Mechanical properties.* [2]

ISO 1639, *Wrought copper alloys — Extruded profiles — Mechanical properties.* [2]

ISO 1640, *Wrought copper alloys — Forgings — Mechanical properties.* [2]

3 Definitions

For the purpose of this International Standard, the definitions given in ISO 197/1 and ISO 197/3 apply.

4 Chemical composition

The chemical composition of the copper alloys is given in table 1. The composition limits do not preclude the possible presence of other elements not specified. If the purchaser's requirements necessitate limits for any other element not specified, these shall be agreed upon between the supplier and the purchaser. Percentage content of elements shown as "remainder" is usually calculated by difference from 100 %.

The designations used are in accordance with the principles laid down in ISO 1190/1.

5 Forms of wrought products and mechanical properties

The forms of wrought products in which these copper alloys are available are given in table 2. The mechanical properties for all forms of wrought products for which the symbol X is given, are defined in the following international Standards :

ISO 1634/1, ISO 1634/2, ISO 1635, ISO 1637, ISO 1638, ISO 1639, ISO 1640.

1) At present at the stage of draft.

2) Under revision.

Table 1 — Chemical composition

Designation	Element	Chemical composition by mass, %					Average density kg/dm³
		Cu	Zn	Al	Fe	Pb	
CuZn32Pb1	min.	65,0	Rem.	—	—	0,75	8,5
	max.	68,0		—	0,2	1,5	
CuZn36Pb	min.	62,0	Rem.	—	—	0,25	8,5
	max.	65,0		—	0,2	0,75	
CuZn35Pb1	min.			—	—	0,75	8,5
	max.			—	0,2	1,5	
CuZn34Pb2	min.			—	—	1,5	8,5
	max.			—	0,2	2,5	
CuZn37Pb1	min.	60,0	Rem.	—	—	0,75	8,5
	max.	63,0		—	0,2	1,5	
CuZn37Pb2	min.			—	—	1,5	8,5
	max.			—	0,2	2,5	
CuZn36Pb3	min.			—	—	2,5	8,5
	max.			—	0,35	3,7	
CuZn40Pb	min.	58,0	Rem.	—	—	0,25	8,4
	max.	61,0		—	0,2	0,75	
CuZn39Pb1	min.			—	—	0,75	8,4
	max.			—	0,2	1,5	
CuZn38Pb2	min.			—	—	1,5	8,4
	max.			—	0,2	2,5	
CuZn40Pb2	min.	56,0	Rem.	—	—	1,5	8,4
	max.	59,0		—	0,35	2,5	
CuZn39Pb3	min.			—	—	2,5	8,4
	max.			—	0,35	3,5	
CuZn38Pb4	min.			—	—	3,5	8,4
	max.			—	0,35	4,5	
CuZn43Pb2	min.	54,0	Rem.	—	—	1,0	8,4
	max.	57,5		0,5	0,5	3,0	

Table 2 — Forms of wrought products

KEY :

X — main manufactured forms.

(X) — forms manufactured in smaller quantities, for example in certain countries only or for special purposes.

NOTE — Where no symbol is given, the form is not considered of importance for that type of copper alloy, but it does not necessarily indicate that such a product cannot be manufactured.

Designation	Plate, sheet		Strip		Tubes		Rod, bar	Wire	Extruded profiles[2]	Forgings
	General purpose[1]	Boilers	General purpose[1]	Springs	General purpose	Condenser				
CuZn32Pb1	X		X		X					
CuZn36Pb	X		X		(X)		(X)	(X)		
CuZn35Pb1	X		X		(X)		(X)	(X)		
CuZn34Pb2	X		X		X		X	X		
CuZn37Pb1	(X)		(X)		(X)		(X)	(X)	(X)	(X)
CuZn37Pb2	X		X		(X)		(X)	X	X	
CuZn36Pb3	X		X		(X)		X	X	(X)	
CuZn40Pb	X	X	X				X	(X)	(X)	
CuZn39Pb1	X		X		(X)		X	X	(X)	(X)
CuZn38Pb2	X		X		X		X	X	X	X
CuZn40Pb2					X		X	(X)	X	X
CuZn39Pb3					X		X	X	X	X
CuZn38Pb4							X	X	X	
CuZn43Pb2									X	

1) Mechanical properties to be defined later, i.e. in course of revision of ISO 1634/1.

2) Made by extruding or by a combination of extruding and drawing.