

**Wrought and Unwrought Coppers—Product Standards
For Electrical Purposes**

Description	EN Number (Wrought)	EN Number (Unwrought)	EN Symbol	1977 Copper Drawing Stock (Wire Rod)	13599 Copper Plate, Sheet, Strip	13600 Seamless Copper Tubes	13601 Copper Rod, Bar, Wire	13602 Drawn Round Copper Wire	13604 Semi- Conductor	13605 Copper Profiles
Coppers ex Cu-CATH-1	CW003A	CR003A	Cu-ETP1	SV				ARV		DHR
Coppers ex Cu-CATH-1	CW007A	CR007A	Cu-OF1	EV				ARV		DEHR
Coppers ex Cu-CATH-1	CW009A	CR009A	Cu-OFE	EV		DHR	DHRV		DEHR	DHR
Coppers ex Cu-CATH-1	CW022A	CR022A	Cu-PHCE	EV		DHR	DHRV		DEHR	DHR
Other Unalloyed Coppers	CW004A	CR004A	Cu-ETP	V	HMR	DHR	DHR	ARV		DHR
Other Unalloyed Coppers	CW005A	CR005A	Cu-FRHC	V	HMR	DHR	DHR	ARV		DHR
Other Unalloyed Coppers	CW008A	CR008A	Cu-OF	EV	EHMR	DEHR	DEHR	ARV		DEHR
Phosphorus-containing Coppers	CW020A	CR020A	Cu-PHC	EV	EHMR	DEHR	DEHR			DEHR
Phosphorus-containing Coppers	CW021A	CR021A	Cu-HCP	EV	EHMR	DEHR	DEHR			DEHR
Silver-bearing Coppers	CW011A	CR011A	CuAg0.04	EV			DHR			DHR
Silver-bearing Coppers	CW012A	CR012A	CuAg0.07	EV			DHR			DHR
Silver-bearing Coppers	CW013A	CR013A	CuAg0.10	EV	HMR	DRH	DHR			DHR
Silver-bearing Coppers	CW014A	CR014A	CuAg0.04P	EV			DEHR			DEHR
Silver-bearing Coppers	CW015A	CR015A	CuAg0.07P	EV			DEHR			DEHR
Silver-bearing Coppers	CW016A	CR016A	CuAg0.10P	EV	EHMR	DEHR	DEHR			DEHR
Silver-bearing Coppers	CW017A	CR017A	CuAg0.04(OF)	EV			DEHR			DEHR
Silver-bearing Coppers	CW018A	CR018A	CuAg0.07(OF)	EV			DEHR			DEHR
Silver-bearing Coppers	CW019A	CR019A	CuAg0.10(OF)	EV	EHMR	DEHR	DEHR			DEHR

Table Notes

- A – mandatory elongation
- D – cold worked
- E – mandatory hydrogen embrittlement test
- H – mandatory hardness
- M – as manufactured
- R – mandatory tensile strength
- S – spiral elongation test
- V – volume resistivity test

**Wrought and Unwrought Coppers—Product Standards
For Non-electrical Purposes**

Description	EN Number (Wrought)	EN Number (Unwrought)	EN Symbol	1652 Plate, Strip, Sheet, Circles	1653 Plate, Sheet, Circles	1758 Strip for Lead Frames	12165 Forging Stock	12449 Tubes	12451 Tubes for Heat Exchangers	12452 Finned Tubes for Heat Exchangers
Other Unalloyed Coppers	CW004A	CR004A	Cu-ETP	HR			HM	HMR		
Other Unalloyed Coppers	CW005A	CR005A	Cu-FRHC					HMR		
Other Unalloyed Coppers	CW008A	CR008A	Cu-OF	HR			HM	HMR		
Other Unalloyed Coppers	CW006A	CR006A	Cu-FRTP	HR						
Phosphorus-containing Coppers	CW020A	CR020A	Cu-PHC					HMR		
Phosphorus-containing Coppers	CW021A	CR021A	Cu-HCP				HM	HMR		
Phosphorus-containing Coppers	CW023A	CR023A	Cu-DLP	HR	R	HR				
Phosphorus-containing Coppers	CW024A	CR024A	Cu-DHP	HR	R		HM	HMR	HR	HR

About this these tables

Wrought and unwrought coppers product standards cover the available grades of copper materials, with different properties, to suit different applications. These European Standards (EN) cover different product forms (e.g. tube, wire, rod) and define compositions, property requirements, tolerances, sampling procedures, conformity verification test methods and delivery conditions. The applicable standards for wrought and unwrought coppers are given here for non-electrical applications.

The materials are ordered by description and EN number. The material conditions defined by the standards are given and—where mandatory—this is indicated. The appropriate product standard should be consulted for detailed information on properties and ordering.

Table notes

Unwrought coppers in EN 1976 Cast Unwrought Copper Products and EN 1978 Copper Cathodes
1652 and 12449 Tubes are for general purposes.
1653 is for boilers, pressure vessels, and hot water storage units.
H – mandatory hardness
M – as manufactured
R – mandatory tensile strength

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