

Walcownia Metali "DZIEDZICE" S.A.



MANUFACTURER OF COPPER ALLOYS PRODUCTS

Edition 2015



Walcownia Metali "DZIEDZICE" S.A.



Walcownia Metali "Dziedzice" S.A. is a world recognized producer of non-ferrous semi-finished products and in particular:

- brass rods
- brass tubes
- brass flat bars
- condenser tubes

All products are manufactured to our customers requirements in order to meet their expectations and provide the highest standards.

Trademark "Dziedzice" is a combination of tradition and modernity. A hundred-year tradition, experienced and highly competent personnel together with modern engineering and up-to-date technologies guarantee products of the highest quality.

In our company, we focus on modernity, innovation and professionalism. Our clients' trust is proof that it is worthwhile to work with us. A wide selection of products that we sell on the domestic market and export to many countries mean that customers all over the world appreciate our commitment and knowledge.

QUALITY POLICY WM DZIEDZICE S.A.



With the main objective of the wider customer satisfaction and meeting the expectations of the public, employees, owners and suppliers of Walcownia Metali "Dziedzice" SA, we would like first of all to deliver to the market products of high and stable quality which comply with the requirements and meet the needs of our Customers.

At the same time we are taking action to prevent any kind of job security threats, including potential accidents and accidents and occupational diseases, as well as to minimize the negative impact of manufacturing processes on the environment and promote economical use of its resources.

To this end, we set the following criteria and principles which will be followed our business activities:

- achieving the highest quality, technical and organizational standards in order to cooperate with the innovative and highly developed industries
- development and continuous improvement of the solutions and the effectiveness of the quality management system, overseeing the planning of all processes, including the product manufacturing processes and activities related to environmental protection and health and safety at work
- systematic introduction to the company's offer of new, profitable and technologically more advanced products that will increase the market share of recipients of non-ferrous metal products
- provision of adequate resources and means to implement the quality policy
- engaging all of the staff in the design, implementation and maintenance of all elements of the quality management system
- the use of processes and technologies that minimize impact on the environment, generation of waste and ensure their safe disposal
- creating and fostering a safe and friendly working environment and continuous improvement of health and safety
- upgrading skills and taking into account the role of employees and their commitment towards quality, health and safety and the environment

This policy is implemented within the quality management system in accordance with the requirements of ISO 9001, as required by law and our Customers.

All employees of the Company are familiar with the content and are responsible for the implementation of policy objectives.

CERTIFICATES





GA System acc. to AD3000-Markblutt W0 and EN 764-5, sec. 4.2

Details of the scope are meritioned in the armax of the certificate A22000-Mandsatt WIII.

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9120 P-899613 Seamless Copper Alloy Tubes

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Katowice, 31 10 2013

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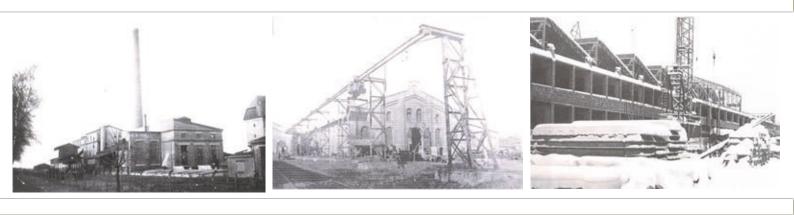
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AD 2000-Merkblatt W0 Certificate-No.: 07-203-9120-WP-0998/13 The scope of approval is available in the annex "scope of approval", file no.: 9120 P-0998113. Pacificas partitions accurate scientianth, quality assures to our woope of agen A quarter larred a

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HISTORY





In 1896 "Zinkwalzwerke Dziedzice" was established, employing 64 workers and producing only zinc rolled products.

In 1906, there was a thorough reconstruction and reorganization of production plant to aluminum products, with the possibility of extension of the production in later stages to products made of copper and its alloys.

From 1921 the plant was one of the joint stock company in Moravian Ostrava, which brings together zinc mills from Provoz in the Czech Republic, Dziedzice and Oswiecim in Poland and Vaczu in Hungary.

In August 1925 plants in Dziedzice and Oswiecim were districted from the Orava Joint Stock Company. Polish company was founded under the name "Walcownia Metali SA" based in Dziedzice.

With good management and a number of significant investments in the first half of 1939 the highest production rate of that time was achieved, with 458 tones/month of aluminum, copper and brass alloys and new silver and zinc.

After World War II Rolling Mills in Dziedzice were launched on June 16, 1945 as a state -owned enterprise.

In the years 1968 - 1976 a Copper Processing Plant was built, which started producing rods and tubes of copper and its alloys.

In 1996, Company's quality system has been certified according to ISO-9001.

In 1996 the ownership status was changed and the state enterprise was transformed into a joint stock company with a major shareholder – Impexmetal.

Continuous development and modernization led to a significant expansion of the range of products, achieving high quality and enabled Walcownia Metali "Dziedzice" SA entry with its products to foreign markets.

WE ARE A PART OF THE GROUP



QUALITY AND ENVIRONMENT



Walcownia Metali "Dziedzice" SA provides conducting and development of economic activities in compliance with national and supranational legal and ethical standards, focusing on selected issues that are seen as critical to ensure the proper conduct of its activities and maintained business relationships.

"Dziedzice" SA requires its employees and representatives to ensure that all actions taken by them are in accordance with:

- a) detailed rules laid down by Walcownia Metali "Dziedzice" SA, contained in the Code of Ethics and other regulations and internal procedures,
- b) national and international law in force in the country in which the company's operations are carried out, including:

- Undertakes to respect and promote the fundamental rights enshrined in the Universal Declaration of Human Rights, dignity and worth of the individual, the right to privacy of employees and equality between women and men. In particular, Walcownia Metali "Dziedzice" SA ensures compliance with the principles set out in the UN Global Compact on child and young persons labor, the employment of people with disabilities, discrimination, sexual harassment and mental health, health and safety at work,

- In accordance with the Dodd-Frank "Conflict Minerals" Act, Walcownia Metali "Dziedzice" S.A. monitors the origin of minerals used, so that they do not come from countries where their production is associated with the escalation of armed conflict and human rights violations,

- Environmental protection and actions in favor of its permanent increase the are one of the priorities of of Walcownia Metali "Dziedzice" SA. The main objectives pursued by our Company in the range of care for the environment, is:

- limiting the size of noise emission,
- limitation of pollutant emissions into the atmosphere,
- rational management of water, materials, waste and energy.

Walcownia Metali "Dziedzice" SA has for many years undertaken pro-ecological actions aimed at reducing the adverse impact on the natural environment. It has a regulated formal-legal situation for all elements of environmental protection, in accordance with decisions of integrated permits and a water permit. The Company realizes imposed obligations of environmental monitoring in the range of noise emission to the environment, the emission of pollutants into the air as well as monitoring the quality of discharged sewage in the manner provided the applicable Council on an ongoing basis.

- Walcownia Metali "Dziedzice" SA is a participant of REACH system in which is defined as a "downstream user". All alloying elements of manufactured products are pre-registered under REACH and are free of substances classified as CMR, PBT or vPvB and the substances classified as SVHC. As part of fulfilling their obligations under the REACH Regulation, our Company made a pre-registration and proper registration of following substances in marketed products: copper, zinc, lead, nickel, manganese, aluminum, tin, phosphorus, magnesium, silicon, iron and arsenic.

- In accordance with the RoHS II Directive No. 2011/65 / EC no product manufactured by Walcownia Metali "Dziedzice" S.A. contains: mercury (Hg), polybrominated biphenyl (PBB) and polybrominated biphenyl ether as (PBDE).

The content of other substances mentioned in the Directive and found in our products is as follows:

Pb - up to 4%, as an alloying element of copper alloy (in lead-brass rods) and homogeneous materials:

- Pb-0.1% Cd-0.01%
- Cr-0.1%

WMD PRODUCTION
RANGE



BRASS RODS	11
BRASS TUBES	30
UNLEADED BRASS TUBES	45
CONDENSER TUBES	51
BRASS WIRE	57
BRASS FLAT BARS	65
BRASS AND ALUMINIUM PROFILES	69
ADDITIONAL INFORMATION	73



Rod Production Division, Extrusion run out table



BRASS RODS



The offer for rods is very wide, both in respect to dimension, as well as alloy variety.

Drawn rods are manufactured in sizes ranging 2-65 mm, while the hot extruded rods in 15-180 mm size range. We offer both, drawn and extruded rods, depending on the size, in length up to 5000mm, packed in bundles of 500 kg or 1000 kg.

Rods are produced with round, hexagonal, octagonal and square crosssections. Other shapes of cross-sections require additional arrangements.

Leaded brass rods are destined for automatic machining or hot and cold forging.

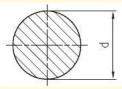
The usage of rods is very wide, mainly in the fittings industry as hardware components of water and gas installations.

They are also widely used in the automotive industry, electrotechnics and pieces of equipment for construction industry.

Certain rods are manufactured as special multi-component alloys with the possibility of usage as elements working in chemical and saltwater environments.

Dimensional charts shown further correspond to the EN standards. Brass rods are also produced according to other norms.





Drawn round rods acc to EN12164

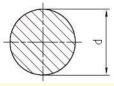
Gra	ade			Mechanica	l properties						
Symbol	Number	Temper	Dimension d (mm)	Tensile Strength Rm N/mm2 (MPa) min	Yield Strength Rp02 N/mm2 (MPa) min	Tolerances (mm)	Straightness	Length (mm)	Ends	Packing	
			2,0 - 3,0			-0,025			broken		
			3,1 - 6,0			-0,030	1 mm/m		chamfered /cut off	cases 500 kg	
		Z	6,1 - 10,0 10,1 - 18,0	Without specifi		-0,036 -0,043					
			18,1 - 30,0	prope	erties	-0,052	0,5 mm/m		chamfered /sharpened	hundloo 500 kg	
			30,1 - 50,0			-0,16	1 mm/m			bundles 500 kg	
ß			50,1 - 65,0 6,0 - 10,0			-0,19 -0,036	1 mm/m		cut off	cases 500 kg	
CuZn39Pb3; CuZn40Pb2	CW	ਸ	10,1 - 18,0			-0,043	0,5 mm/m		chamfered /sharpened	oucco coo kg	
9Pb	CW614N□ CW617N	R360	18,1 - 30,0	360	320*	-0,052	0,5 mm/m	300	chamered /sharpened	bundles 500 kg	
ů; C			30,1 - 50,0 50,1 - 65,0			-0,16 -0,19	1 mm/m	3000 +/-50	cut off	U U	
μZr	CW		2,0 - 3,0			-0,025		-50	broken		
140F	6171	-	3,1 - 6,0			-0,030	1 mm/m	chamfered /cut off		cases 500 kg	
b2	~	R430	6,1 - 10,0 10,1 - 18,0	430	220	-0,036 -0,043					
		0	18,1 - 30,0			-0,052	0,5 mm/m		chamfered /sharpened	bundles 500 kg	
			30,1 - 40,0			-0,16	1 mm/m				
		ਸ	2,0 - 3,0 3,1 - 6,0			-0,025 -0,030	1 mm/m		broken chamfered /cut off	cases 500 kg	
		R500	6,1 - 10,0	500	350	-0,036				eaces are ng	
			10,1 - 14,0			-0,043	0,5 mm/m		chamfered /sharpened	bundles 500 kg	
			6,0 - 10,0	-		-0,036 -0,043	1 mm/m			cases 500 kg	
		060H	10,1 - 18,0 18,1 - 30,0	90	120	-0,043	0,5 mm/m		chamfered /sharpened		
S	CW	00	30,1 - 50,0			-0,16	1 mm/m			bundles 500 kg	
IZn3			50,1 - 65,0			-0,19 -0,025		3000 +/-50	cut off broken		
CuZn39Pb3; CuZn40Pb2	CW614N; CW617N		2,0 - 3,0 3,1 - 6,0	110 16		-0,025	1 mm/m		chamfered /cut off	cases 500 kg	
3; 0	N; C	H110	6,1 - 10,0		160	-0,036					
) uZr	2W6	10	10,1 - 18,0		100	-0,043 -0,052	0,5 mm/m		chamfered /sharpened	bundles 500 kg	
140F	17N		18,1 - 30,0 30,1 - 40,0		-	-0,052					
b2			2,0 - 3,0			-0,025			broken		
		H135	3,1 - 6,0 6,1 - 10,0	135		-0,030 -0,036	1 mm/m		chamfered /cut off	cases 500 kg	
		Οī	10,1 - 14,0			-0,030	0,5 mm/m		chamfered /sharpened	bundles 500 kg	
Q			2,0 - 3,0			-0,025	,		broken		
JZn	_		3,1 - 6,0			-0,030	1 mm/m		chamfered /cut off	cases 500 kg	
35Pt	CW	M	6,1 - 10,0 10,1 - 18,0		ed mechanical	-0,036 -0,043					
o1; (1005		18,1 - 30,0	prope	erties	-0,052	0,5 mm/m		chamfered /sharpened	bundles 500 kg	
CuZi	4; C		30,1 - 50,0			-0,16	1 mm/m		aut aff	buildles 500 kg	
135F	W60		50,1 - 65,0 2,0 - 3,0			-0,19 -0,025		ω	cut off broken		
ob2;)1N;		3,1 - 6,0		250	-0,030	1 mm/m	000	chamfered /cut off	cases 500 kg	
Cu	СŴ	R370	6,1 - 10,0	270	200	-0,036		3000 +/-50			
Zn3(/603	70	<u>10,1 - 14,0</u> 14,1 - 18,0	370		-0,043	0,5 mm/m	Ö	chamfered /sharpened		
SPb	Ņ;		18,1 - 30,0		180	-0,052				bundles 500 kg	
3; C	SM6		30,1 - 40,0			-0,16	1 mm/m		brokon		
uZn;	CW600N; CW601N; CW603N; CW606N	Ŗ	2,0 - 3,0 3,1 - 6,0			-0,025 -0,030	1 mm/m		broken chamfered /cut off	cases 500 kg	
CuZn35Pb1; CuZn35Pb2; CuZn36Pb3; CuZn37Pb2		R440	6,1 - 10,0	440	340	-0,036			chamfered /sharpened		
62			10,1 - 14,0			-0,043	0,5 mm/m		shannereu /sharpeneu	bundles 500 kg	



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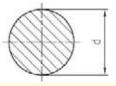
Gra	de			Mechanical	properties					
Symbol	Number	Temper	Dimension d (mm)	Tensile Strength Rm N/mm2 (MPa) min	Yield Strength Rp02 N/mm2 (MPa) min	Tolerances d (mm)	Straightness	Length (mm)	Ends	Packing
CuZn38			2,0 - 3,0 3,1 - 6,0 6,1 - 10,0	-		-0,025 -0,030 -0,036	1 mm/m		broken chamfered /cut off	cases 500 kg
CuZn38Pb1; CuZn38Pb2; CuZn39Pb0,5; CuZn39Pb1; CuZn39Pb2	CW607N; CW608N; CW610N; CW611N; CW612N	Μ	10,1 - 18,0 18,1 - 30,0	Without specifie prope		-0,043 -0,052	0,5 mm/m		chamfered /sharpened	bundles 500 kg
JZn3	N; C		30,1 - 50,0 50,1 - 65,0	-		-0,16 -0,19	1 mm/m		cut off	
8Pb	W6		6,0 - 10,0			-0,036	1 mm/m			cases 500 kg
į, O	08N	R360	10,1 - 18,0 18,1 - 30,0	360	300*	-0,043 -0,052	0,5 mm/m		chamfered /sharpened	
;uZn	CW6	60	30,1 - 50,0	000	000	-0,16	1 mm/m	3000 +/-50		bundles 500 kg
39P	/610		50,1 - 65,0			-0,19	1 11111/111	0 +/	cut off	
,0d)N;		2,0 - 3,0 3,1 - 6,0			-0,025 -0,030	1 mm/m	-50	broken chamfered /cut off	cases 500 kg
ູ; ດ	CW6	R	6,1 - 10,0	410	230	-0,036			onamered reat on	cubec coo ng
uZni	511N	R410	10,1 - 18,0	410		-0,043	0,5 mm/m		chamfered /sharpened	
39P	4; C		18,1 - 30,0 30,1 - 40,0	-		-0,052 -0,16	, 1 mm/m			bundles 500 kg
b1; (W6,		2,0 - 3,0	- 500		-0,025	1 11111/111		broken	
CuZ	12N	R	3,1 - 6,0		350	-0,020	1 mm/m		chamfered /cut off	cases 500 kg
n39		R500	6,1 - 10,0	500		-0,036				g
Pb2			10,1 - 14,0	-		-0,043	1 mm/m		chamfered /sharpened	bundles 500 kg
	Q		6,1 - 10,0			-0,036	1 mm/m			cases 500 kg
CuZn38Pb1; CuZn38Pb2; CuZn39Pb0,5 CuZn39Pb1; CuZn39Pb2	CW607N; CW608N; CW610N; CW611N; CW612N	Н	10,0 - 18,0		100	-0,043	0,5 mm/m		chamfered /sharpened	
138F		H070	18,1 - 30,0 30,1 - 50,0	70		-0,052 -0,16	,		·	bundles 500 kg
bb1;			50,1 - 65,0			-0,19	1 mm/m		cut off	
n39F	09N	CW60	2,0 - 3,0		145	-0,025		3000 +/-50	broken	
⊃b1;)8N; CW(т	3,1 - 6,0 6,1 - 10,0			-0,030 -0,036	1 mm/m		chamfered /cut off	cases 500 kg
iPb1; CuZn38Pb2; CuZn3 CuZn39Pb1; CuZn39Pb2	08N; CW6 CW612N	H100	10,01 - 18,0	100		-0,038		+		
2; C Zn3	/610 V	0	18,1 - 30,0	+		-0,052	0,5 mm/m	80	chamfered /sharpened	bundles 500 kg
9Pb)N;		30,1 - 40,0			-0,16	1 mm/m			
139F	CWG	Н	2,0 - 3,0 3,1 - 6,0			-0,025 -0,030	1 mm/m		broken chamfered /cut off	cases 500 kg
ър0,	611I	120	6,1 - 10,0	120		-0,036				cubbe coo kg
ָ <u></u> ָיִ	,		10,1 - 14,0			-0,043	0,5 mm/m		chamfered /sharpened	bundles 500 kg
			5,0 - 6,0 6,1 - 10,0	+		-0,030	2 mm/m		chamfered /cut off	cases 500 kg
Q			10,1 - 10,0	Without specifie	ed mechanical	-0,036 -0,043				
uZni		Ν	18,1 - 30,0	prope		-0,052	1 mm/m	ω	chamfered /sharpened	bundles 500 kg
CuZn37Mn3Al2PbSi	CW713R		30,1 - 50,0	-		-0,16	2 mm/m	3000 +/-50		bundles 500 kg
In3A	713		50,1 - 65,0 5,0 - 6,0			-0,19 -0,030		+	cut off chamfered /cut off	
vi2P	ת	т	6,1 - 10,0			-0,036	2 mm/m	50	chamered /edt on	cases 500 kg
bS:		R590	10,1 - 18,0	590	370	-0,043	1 mm/m		chamfered /sharpened	
		0	18,1 - 30,0			-0,052				bundles 500 kg
Q			<u>30,1 - 50,0</u> 5,0 - 6,0			-0,16 -0,030	2 mm/m		chamfered /cut off	
uZn:			6,1 - 10,0			-0,036	2 mm/m	ω		cases 500 kg
37M	CW	Ţ	10,1 - 18,0			-0,043		3000		
CuZn37Mn3Al2PbSi	CW713R	H150	18,1 - 30,0	150	220	-0,043	1 mm/m) +/-:	Chamfered /sharpened	ed
N2P	ת							50		bundles 500 kg
bSi			30,1 - 50,0			-0,16	2 mm/m			





Gra	ade			Mechanica	al properties					
Symbol	Number	Temper	Dimension d (mm)	Tensile Strength Rm N/mm2 (MPa) min	Yield Strength Rp02 N/mm2 (MPa) min	Tolerances d (mm)	Straightness	Length (mm)	Ends	Packing
			5,0- 6,0 6,1 - 10,0			-0,030 -0,036	2 mm/m		chamfered /cut off	cases 500 kg
C		Ζ	10,1 - 10,0 10,1 - 18,0 18,1 - 30,0 30,1 - 50,0		ied mechanical erties	-0,030 -0,043 -0,052 -0,16	1 mm/m		chamfered /sharpened	bundles 500 kg
CuZn40Mn1Pb	CW720R	R440	50,1 - 65,0 40, - 50,0 50,1 - 65,0	440	180	-0,19 -0,16 -0,19	2 mm/m 2 mm/m	3000 +/-50	cut off chamfered /sharpened cut off	bundles 500 kg
Pb	,-		5,0 - 6,0 6,1 - 10,0	_		-0,030 -0,036	2 mm/m	0	chamfered /cut off	cases 500 kg
		R500	10,1 - 18,0 18,1 - 30,0 30,1 - 40,0	500	270	-0,043 -0,052 -0,16	1 mm/m		chamfered /sharpened	bundles 500 kg
CuZ	0	H100	40, - 50,0 50,1 - 65,0	100	140	-0,16 -0,19	2 mm/m	3(chamfered /sharpened cut off	bundles 500 kg
CuZn40Mn1Pb	CW720R	т	5,0 - 6,0 6,1 - 10,0			-0,030 -0,036	2 mm/m	3000 +/-50		cases 500 kg
In1Pb	0R	H130	10,1 - 18,0 18,1 - 30,0 30,1 - 40,0	130		-0,043 -0,052 -0,16	1 mm/m	-50	chamfered /sharpened	bundles 500 kg
			5,0 - 6,0 6,1 - 10,0			-0,030 -0,036	2 mm/m		broken	cases 500 kg
	CW509L	Ζ	10,1 - 18,0 18,1 - 30,0		ied mechanical erties	-0,043 -0,052	1 mm/m	3	broken	bundles 500 kg
CuZn40		50,1 - 65 5,0 - 6,0 6,1 - 10, 10,1 - 18 8 18,1 - 30	30,1 - 50,0 50,1 - 65,0 5,0 - 6,0	5,0 0 	-0,16 -0,19 -0,030	2 mm/m 2 mm/m	3000 +/-50	cut off	cases 500 kg	
0			6,1 - 10,0 10,1 - 18,0 18 1 - 30 0		300*	-0,036 -0,043 -0,052	1 mm/m	50	broken	
		0	30,1 - 50,0 50,1 - 65,0	-		-0,16 -0,19	2 mm/m		cut off	bundles 500 kg
CuZn36Pb			2,0 - 3,0 3,1 - 6,0 6,1 - 10,0			-0,025 -0,030 -0,036	1 mm/m		broken chamfered /cut off	cases 500 kg
3Pb2AS;	CW602	Ζ	10,1 - 18,0 18,1 - 30,0 30,1 - 50,0	Without specified mechanical properties		-0,043 -0,052 -0,16	0,5 mm/m	-	chamfered /sharpened	bundles 500 kg
CuZn	2N; C/		50,1 - 65,0 6,0 - 10,0	-		-0,19 -0,036	1 mm/m 1 mm/m	30	cut off	cases 500 kg
in35Pb1, 5AIAs	W602N; CW625N; CW626N;	R280	10,1 - 18,0 18,1 - 30,0	280	200*	-0,043 -0,052	0,5 mm/m	3000 +/-50	chamfered /sharpened	bundles 500 kg
5AIAs	CW6	0	30,1 - 50,0 50,1 - 65,0			-0,16 -0,19	1 mm/m	0	cut off	
2AS; CuZn35Pb1,5AlAs; CuZn33Pb1, 5AlAs	26N;	R320	6,0 - 10,0 10,1 - 18,0 18,1 - 30,0	320	200	-0,036 -0,043 -0,052	1 mm/m 0,5 mm/m		chamfered /sharpened	cases 500 kg
3Pb1,		ö	30,1 - 50,0 50,1 - 60,0			-0,16 -0,19	1 mm/m		cut off	bundles 500 kg
			5,0 - 6,0 6,1 - 10,0 10,1 - 18,0		1	-0,030 -0,036 -0,043	2 mm/m	<u> </u>	broken	cases 500 kg
CuZn42	CW510L	Μ	18,1 - 30,0 30,1 - 50,0		ied mechanical erties	-0,052 -0,16	1 mm/m 2 mm/m	300	cut off	bundles 500 kg
n42	510L		50,1 - 65,0 5,0 - 6,0 6,1 - 10,0			-0,19 -0,030 -0,036	2 mm/m	3000 +/-50		cases 500 kg
		R360	10,1 - 18,0 18,1 - 30,0 30,1 - 50,0	360 3	320* 20	-0,043 -0,052 -0,16	1 mm/m			bundles 500 kg
			50,1 - 65,0			-0,19	2 mm/m		cut off	



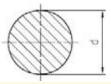


Gr	ade			Mechanica	l properties					
Symbol	Number	Temper	Dimension d (mm)	Tensile Strength Rm N/ mm2 (MPa) min	Yield Strength Rp02 N/mm2 (MPa) min	Tolerances d (mm)	Straightness	Length	Ends	Packing
			2,0 - 3,0			+/- 0,05				
			3,1 - 6,0			+/- 0,08	2 mm/m			cases 500 kg
			6,1 - 10,0			+/- 0,11			broken	
		Σ	10,1 - 18,0	Without specifi						
			18,1 - 30,0			+/- 0,17	1 mm/m			bundles 500 kg
			30,1 - 50,0			+/- 0,20			cut off	bundles 500 kg
	C		50,1 - 65,0			+/- 0,37	2 mm/m 2 mm/m		cuton	
			2,0 - 3,0	_	-	+/- 0,05			broken	
			3,1 - 6,0			+/- 0,08		3000 +/-50		cases 500 kg
CuZn37	W5(T	6,1 - 10,0			+/- 0,11				
n37	CW508L**	R290	10,1 - 18,0	290	230*	+/- 0,14		+/-5		
	*	0	18,1 - 30,0			+/- 0,17	1 mm/m	0		bundles 500 kg
			30,1 - 50,0			+/- 0,20			cut off	bundles 500 kg
			50,1 - 65,0			+/- 0,37	2 mm/m		cuton	
			2,0 - 3,0	_		+/- 0,05				
			3,1 - 6,0			+/- 0,08	2 mm/m			cases 500 kg
		R370	6,1 - 10,0	370	240	+/- 0,11			broken	
		70	10,1 - 18,0		270	+/- 0,14	4			
			18,1 - 30,0			+/- 0,17	1 mm/m			bundles 500 kg
			30,1 - 40,0			+/- 0,20			cut off	

* max value

** alloy offered acc to EN12163

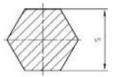




					-		ASTM B 16			
			515 - (5 (0360	00) acc 10		operties		
				S			Pro	perties		_
Dime	nsion d	Tolera		Straightness	Length	Ends	Temper	Rm min	A min	Packing
[cal]	[mm]	[cal]	[mm]	SS	[mm]			[Mpa]	[%]	
3/32	2,38			_						
7/64	2,77	+/-0,0013	+/-0 035			broken				
1/8	3,17	17-0,0013	17-0,000				_			
9/64	3,56					cha				
5/32	3,97					chamfered /cut off				0
3/16	4,76					fere				Cases 500 kg (1000 lbs)
13/64	5,16					o/ pé				es (
7/32	5,56			1 mm/m		out				500
15/64	5,95					off				kg
1/4	6,35			(0,04"/39")						Ĵ
17/64	6,75			· · /				395	7	100
9/32	7,14	_						395	1	9I 0
19/64	7,54	+/-0,0015	+/-0,04							(si
5/16	7,94	+/-0,0015	+/-0,04							
21/64	8,33	_								
11/32	8,73	-								
23/64	9,13	-								
3/8 13/32	9,52 10,32	-			-				-	
7/16	11,11									
29/64	11,51	-								
15/32	11,91									
1/2	12,70				36					
17/32	13,49				3660 +/-25					
9/16	14,29			0,5 mm/m	+/-2					
5/8	15,87			0,5 1111/11	G		H02			
21/32	16,67	_		(0,02"/39")	Ĺ.		HU2		10	
11/16	17,46	_		(0,02739)	(12ft +/-1")	chamfered /s				
23/32	18,26	+/-0,002	+/-0,05		+	amf		380		
3/4	19,05	_			1")	ere				
13/16	20,64	-				d /s				B
7/8	22,23	-				sha				pur
15/16	23,81					rpe				les
1 - 1/16	25,40 26,99					harpened				Bundles 500 kg
1 - 1/8	28,99	-				-				D Kc
1 - 3/16	30,16	-								
1 - 1/4	31,75									(10
1 - 5/16	33,34									(1000 lbs)
1 - 3/8	34,93									lbs
1 - 7/16	36,51			1 mm/m						÷
1 - 1/2	38,10	1								
1 - 9/16	39,69			(0,04"/39")						
1 - 5/8	41,28	+/-0,0025	+/-0,06					345	15	
1 - 11/16	42,86	1								
1 - 3/4	44,45	1								
1 - 13/16	46,04	1								
1 - 7/8	47,63	1								
2	50,80	1								
2 - 1/4	57,15	1		2 mm/m						
2 - 3/8	60,33	1		(0.000						
		1		(0,08"/39")						
2 - 1/2	63,50	1		(0,08"/39")						

Drawn round rods in Imperial Measurements

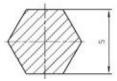




Drawn hexagonal rods acc to EN12164

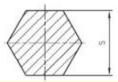
Gra	de			Mechanica	I properties					
Symbol	Number	Temper	Dimension s (mm)	Tensile Strength Rm N/mm2 (MPa) min	Yield Strength Rp02 N/mm2 (MPa) min	Tolerances s (mm)	Straightness	Length (mm)	Ends	Packing
			3,0 - 6,0			-0,06	2 mm/m		chamfered /cut off	cases 500 kg
			6,1 - 10,0			-0,09	2 11111/111			Cases 500 kg
		\leq	10,1 - 18,0 18,1 - 30,0		ied mechanical erties	-0,11 -0,13	1,5 mm/m		chamfered /sharpened	
			30,1 - 50,0			-0,16	.,			bundles 500 kg
Cuz	0		50,1 - 63,5			-0,19	2 mm/m		cut off	
CuZn39P3; CuZn40Pb2	W6		6,0 - 10,0			-0,09 -0,11	2 mm/m	۵		cases 500 kg
)P3;	14N	R360	10,1 - 18,0 18,1 - 30,0	360	320*	-0,11	1,5 mm/m	3000	chamfered /sharpened	
ß	CW614N; CW617N	00	30,1 - 50,0		020	-0,16	1,0 1111) +/-50		bundles 500 kg
Zn4	N61		50,1 - 63,5			-0,19	2 mm/m	50	cut off	
OPt	7N		3,0 - 6,0			-0,06	2 mm/m		chamfered /cut off	cases 500 kg
Ň		R430	6,1 - 10,0 10,1 - 18,0	430	220	-0,09 -0,11				
		30	18,1 - 30,0	100	220	-0,13	1,5 mm/m		chamfered /sharpened	bundles 500 kg
			30,1 - 35,0			-0,16				
		R500	3,0 - 6,0	500	350	-0,06	2 mm/m		chamfered /cut off	cases 500 kg
-	0	õ	6,1 - 10,0 3,0 - 6,0			-0,09 -0,080			chamfered /sharpened chamfered /cut off	
Cuz	W6		6,1 - 10,0			-0,090	2 mm/m		chamered /cdt on	cases 500 kg
n35	CW600N; CW601N; CW603N; CW606N	Σ	10,1 - 18,0		ied mechanical erties	-0,110	1,5 mm/m		chamfered /sharpened	
βPb			18,1 - 30,0	prop	erties	-0,130			chamered /sharpened	bundles 500 kg
0 0 1;			30,1 - 50,0 3,0 - 6,0			-0,16 -0,08	2 mm/m	ω	chamfered /cut off	
uZn		-	6,1 - 10,0	-	250	-0,08	2 mm/m	3000 +/-50		cases 500 kg
CuZn35Pb1; CuZn35Pb2; CuZn36Pb3; CuZn37Pb2	; 0	R370	10,1 - 14,0	370	180	-0,11			chamfered /sharpened	bundles 500 kg
b2; b2	V60	70	14,1 - 18,0	370			1,5 mm/m			
Cuz	3N;		18,1 - 30,0 30,1 - 35,0			-0,13 -0,16	2 mm/m			0
Zn3(СМ	-	2,0 - 3,0			-0,06	2 1111/111		broken	
SPb	/606	R440	3,1 - 6,0	440	340	-0,08	2 mm/m		chamfered /cut off	cases 500 kg
ų	ŰŽ	0	6,1 - 10,0			-0,09			chamfered /sharpened	
	СV		3,0 - 6,0 6,1 - 10,0			-0,06 -0,09	2 mm/m		chamfered /cut off	cases 500 kg
0	CW607N;		10,1 - 18,0	Without specif	ied mechanical	-0,09				
CuZn	7N;	\leq	18,1 - 30,0		erties	-0,13	1,5 mm/m		chamfered /sharpened	hundlog 500 kg
0 0 0	CW		30,1 - 50,0			-0,16				bundles 500 kg
ůZr	809,		50,1 - 63,5			-0,19	2 mm/m		cut off	
Cu:	ŝN;		6,0 - 10,0 10,1 - 18,0			-0,09 -0,11	2 mm/m	ω		cases 500 kg
⊃b1	CW		18,1 - 30,0			-0,13	1,5 mm/m	000	chamfered /sharpened	
CL 8Pb	310		30,1 - 50,0			-0,16		3000 +/-50		bundles 500 kg
38Pb1; CuZn38Pb2; CuZn39Pb0,5; CuZn39Pb1; CuZn39Pb2	CW608N; CW610N; CW611N; CW612N		50,1 - 60,0			-0,19	2 mm/m	50	cut off	5001
SuZ1	:W6		3,0 - 6,0 6,1 - 10,0			-0,06 -0,09	2 mm/m		chamfered /cut off	cases 500 kg
n39 02	51 1 N	R410	10,1 - 18,0	410	230	-0,03				
Pb0	4; C	10	18,1 - 30,0			-0,13	1,5 mm/m		chamfered /sharpened	d bundles 500 kg
),5;	W6	_	30,1 - 35,0			-0,16				
	12N	R500	3,0 - 6,0	500	350	-0,06	2 mm/m		chamfered /cut off	cases 500 kg
	-	õ	6,1 - 10,0			-0,09			chamfered /sharpened	~





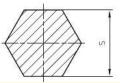
Gra	de			Mecha	anical	properties												
Symbol	Number	Temper	Dimension s (mm)	Tensil Strength N/mm (MPa) r	Rm 2	Yield Strength Rp02 N/mm2 (MPa) min	Tolerances s (mm)	Straightness	Length (mm)	Ends	Packing							
			5,0 - 6,0				-0,06	3 mm/m		chamfered /cut off	cases 500 kg							
0			6,1 - 10,0	14/11			-0,09		-		g							
μŽ		\leq	10,1 - 18,0 18,1 - 30,0			pecified properties	-0,11 -0,13	2 mm/m		chamfered /sharpened								
137	CV		30,1 - 50,0			F F	-0,16		3000 +/-50		bundles 500 kg							
Mna	CW713R		50,1 - 63,5				-0,19	3 mm/m	Õ +	cut off								
CuZn37Mn3Al2PbSi	3R		5,0 - 6,0				-0,06	3 mm/m	/-50	chamfered /cut off	cases 500 kg							
Pb		590	6,1 - 10,0	500		270	-0,09		-									
<u>נס</u>		00	10,1 - 18,0 18,1 - 30,0	590		370	-0,11 -0,13	2 mm/m		chamfered /sharpened	bundles 500 kg							
			30,1 - 40,0				-0,16	2										
			5,0 - 6,0				-0,06	3 mm/m		chamfered /cut off	cases 500 kg							
			6,1 - 10,0				-0,09	5 1111/111	-		Cases 500 kg							
		\leq	101 - 18,0			pecified	-0,11	0		chamfered /sharpened								
0			18,1 - 30,0 30,1 - 50,0	mecna	anicai	properties	-0,13 -0,16	2 mm/m		onamerea /enarpenea	bundles 500 kg							
CuZn40Mn1Pb	2		50,1 - 63,5				-0,19	3 mm/m	300	cut off								
401	CW720R	R440	40, - 50,0	440		180	-0,160		00 +	chamfered /sharpened	hundles EOO ka							
/In1	OR	40	50,1 - 60,0	440		160	-0,190	3 mm/m	3000 +/-50	cut off	bundles 500 kg							
Pb			5,0 - 6,0				-0,06	3 mm/m	0	chamfered /cut off								
		R500	6,1 - 10,0	500		270	-0,09				bundles 500 kg							
		00	10,1 - 18,0 18,1 - 30,0	500		270	-0,11 -0,13	2 mm/m		chamfered /sharpened								
			30,1 - 40,0				-0,16	2			cases 500 kg							
			5,0 - 6,0				-0,06	2 mm/m	_		cases 500 kg							
	2		6,1 - 10,0 ≤ 10,1 - 18,0 18,1 - 20,0	Without			-0,09	2		broken	cases ooo kg							
				Σ	Σ	Σ	Σ	Σ	Z	Σ					specified I properties	-0,11 -0,13	1,5 mm/m	
			30,1 - 50,0	mecha	anicai	properties	-0,13		ω		bundles 500 kg							
Cuz	CW		50,1 - 63,5				-0,19	2 mm/m	000	cut off								
CuZn40	CW509L		5,0 - 6,0				-0,06	2 mm/m	3000 +/-50		cases 500 kg							
0		-	6,1 - 10,0				-0,09	2 1111/111	50	broken	Cases 500 kg							
		R360	10,1 - 18,0 18,1 - 30,0	360		300*	-0,11 -0,13	1,5 mm/m										
		0	30,1 - 50,0				-0,13	1,5 mm/m			bundles 500 kg							
			50,1 - 60,0				-0,19	2 mm/m	-	cut off								
			3,0 - 6,0		·		-0,06	2 mm/m		chamfered /cut off	cases 500 kg							
			6,1 - 10,0				-0,09	2	-		oucco coo kg							
		\leq	10,0 - 18,0 18,1 - 30,0			pecified properties	-0,11 -0,13	1,5 mm/m		chamfered /sharpened								
			30,1 - 50,0	meene	annoar	properties	-0,15		-		bundles 500 kg							
			50,1 - 63,5				-0,19	2 mm/m		cut off								
Cu			5,0 - 6,0				-0,06	2 mm/m	ω	chamfered /cut off	cases 500 kg							
Zn3	2	Ŧ	6,1 - 10,0				-0,09	<u>د ۱۱۱۱/۱۱۱</u>	3000 +/-50		54555 500 Kg							
6Pt	CW511L	R280	10,1 - 18,0 18,1 - 30,0	280	200	0* 30	-0,11 -0,13	1,5 mm/m	+	chamfered /sharpened								
CuZn36Pb2As	11L	0	30,1 - 50,0				-0,13		50		bundles 500 kg							
s			50,1 - 60,0				-0,19	2 mm/m		cut off								
			5,0 - 6,0				-0,06	2 mm/m	chamfered /cut off		cases 500 kg							
		ק	6,1 - 10,0				-0,09	£	-									
		R320	10,1 - 18,0	320	20	200 30	-0,11	1,5 mm/m		chamfered /sharpened	hundlos 500 kg							
		20	18,1 - 30,0 30,1 - 50,0				-0,13 -0,16	2 mm/m	-		bundles 500 kg							
L	L		30,1 - 30,0				0,10	~	I	l	L							





Gra	ade			Mechanica	l properties						
Symbol	Number	Temper	Dimension s (mm)	Tensile Strength Rm N/mm2 (MPa) min	Yield Strength Rp02 N/mm2 (MPa) min	Tolerances s (mm)	Straightness	Length (mm)	Ends	Packing	
			3,1 - 6,0		1	-0,06	2 mm/m		chamfered /cut off	cases 500 kg	
	0		6,1 - 10,0			-0,09					
	W6	M R28 CW602N; CW625N;	10,1 - 18,0 18,1 - 30,0	Without : mechanica		-0,11 -0,13	1,5 mm/m		chamfered /sharpened		
	02		30,1 - 50,0	meenamea	i properties	-0,15				bundles 500 kg	
	, , ,		50,1 - 63,5			-0,19	2 mm/m		cut off		
S	NC N		5,0 - 6,0		-	-0,06	0	3000	chamfered /cut off	F00 km	
CuZn36Pb2As	620		6,1 - 10,0			-0,09	2 mm/m			cases 500 kg	
36F	, , , , , , , , , , , , , , , , , , ,	R280	10,1 - 18,0	280	200*	-0,11	1,5 mm/m	0.+	chamfered /sharpened		
ъ 2	22	80	18,1 - 30,0	200	200	-0,13	1,0 1111/11	+/-50	chamered /sharpened	bundles 500 kg	
As	V62		30,1 - 50,0			-0,16	2 mm/m	0		sandlee eee ng	
	CW626N; CW626N 9b2As		50,1 - 60,0			-0,19			cut off		
	- <u>-</u> -		5,0 - 6,0			-0,06	2 mm/m		chamfered /cut off	cases 500 kg	
CW602N	R320	6,1 - 10,0 10,1 - 18,0	320	200	-0,09 -0,11						
	20	18,1 - 30,0	520	200	-0,13	1,5 mm/m	n chamfered /sharpened		bundles 500 kg		
	2N		30,1 - 50,0			-0,16	2 mm/m			bundles 500 kg	

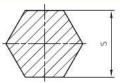




Gra	ade			Mechanica	l properties						
Symbol	Number	Temper	Dimension s (mm)	Tensile Strength Rm N/mm2 (MPa) min	Yield Strength Rp02 N/mm2 (MPa) min	Tolerances s (mm)	Straightness	Length (mm)	Ends	Packing	
			3,1 - 6,0			+/- 0,08	2 mm/m			cases 500 kg	
			6,1 - 10,0			+/- 0,11	2 11111/111		broken	cases 500 kg	
		Z	10,1 - 18,0	Without specifi	ied mechanical	+/- 0,14			DIOKEII		
		4	18,1 - 30,0	prop	erties	+/- 0,17	1 mm/m			bundles 500 kg	
			30,1 - 50,0			+/- 0,20			cut off	bunules 500 kg	
			50,1 - 63,5	 	1	+/- 0,37	2 mm/m		cuton		
		-	3,1 - 6,0	_	230*	+/- 0,08	2 mm/m			cases 500 kg	
ç	CV		6,1 - 10,0			+/- 0,11	2	3000 +/-50	broken		
CuZn37	CW508L	R290	10,1 - 18,0	290		+/- 0,14			bronon		
7	135	06	18,1 - 30,0	200	200	+/- 0,17	1 mm/m			bundles 500 kg	
			30,1 - 50,0			+/- 0,20			cut off	barraice eee kg	
			50,1 - 63,5			+/- 0,37	2 mm/m		outon		
			3,1 - 6,0			+/- 0,08	2 mm/m			cases 500 kg	
		ਸ	6,1 - 10,0			+/- 0,11	2		broken		
		R370	10,1 - 18,0	370	240	+/- 0,14	17 1 mm/m				
		_	18,1 - 30,0			+/- 0,17				bundles 500 kg	
			30,1 - 40,0			+/- 0,20			cut off		

* max value





Drawn hexagonal rods in Imperial Measurements

		WMD	MS 13	- CuZn36F	2 b3 (C	36000) acc to	ASTM	B 16		
								Propertie	S	
Dime s	nsion S	Tolera		Straightness	Length	Ends	Temper	Rm min	A min	Packing
[cal]	[mm]	[cal]	[mm]	SS	[mm]			[Mpa]	[%]	
5/32	3,97									0 0
3/16	4,76	_				chamfered / cut off				ase
7/32	5,56					outon				s 50
1/4	6,35			2 mm/m						00 K
9/32	7,14	+/-0,003	+/-0,08	(0,08"/39")				395	7	g (
5/16	7,94	+/-0,003	+/ - 0,00	(0,00,000)				395	7	100
11/32	8,73									Cases 500 kg (1000 lbs)
3/8	9,52									(s
7/16	11,11									
1/2	12,70									
9/16	14,29									
5/8	15,87				366					
11/16	17,46				3660 +/-25					
3/4	19,05	+/-0,004	+/-0,10		/-25	char		380	10	
7/8	22,23					nfei	H02			ω
15/16	23,81				(12ft +/-1")	red				und
1	25,40				t +/-	/ sh				lles
1 - 1/16	26,99			1,5 mm/m	.1")	chamfered / sharpened				Bundles 500 kg
1 - 1/8	28,58					enec				kg
1 - 3/16	30,16			(0,06"/39")						
1 - 1/4	31,75									(1000 lbs)
1 - 5/16	33,34									0 Ib
1 - 3/8	34,93		1/0.12					245	15	s)
1 - 7/16	36,51	+/-0,005	+/-0,13					345	15	
1 - 1/2	38,10									
1 - 5/8	41,28									
1 - 3/4	44,45									
1 - 7/8	47,63									
2	50,80									

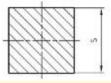


Drawn square rods acc to EN12164

Grad	de			Mechanical	properties					
Symbol	Number	Temper	Dimension s (mm)	Tensile Strength Rm N/mm2 (MPa) min	Yield Strength Rp02 N/ mm2 (MPa) min	Tolerances s (mm)	Straightness	Length (mm)	Ends	Packing
			3,0 - 6,0			-0,06	0		chamfered /cut off	500 lun
			6,1 - 10,0			-0,09	2 mm/m			cases 500 kg
		\leq	10,1 - 18,0	Without s mechanical		-0,11			abovefeved (above even	
			18,1 - 30,0	meenamear	properties	-0,13	1,5 mm/m		chamfered /sharpened	bundles 500 kg
0			30,1 - 50,0			-0,16				
CuZn39P3; CuZn40Pb2	Ŝ		6,0 - 10,0	_		-0,09	2 mm/m			cases 500 kg
139F	V61-	R360	10,1- 18,0	360	320*	-0,11		зc	chamfered /sharpened	
ů,	CW614N; CW617N	60	18,1 - 30,0	500	520	-0,13	1,5 mm/m	3000 +/-50	chamered /sharpened	bundles 500 kg
Cuz	Ŝ		30,1 - 50,0			-0,16		+/-5		
In40	617		3,0 - 6,0	4		-0,06	2 mm/m	õ	chamfered /cut off	cases 500 kg
)Pb	ž	R	6,1 - 10,0	4		-0,09	2			
		R430	10,1 - 18,0	430	220	-0,11			chamfered /sharpened	bundles 500 ka
		0	18,1 - 30,0	-		-0,13	1,5 mm/m		enamerea venarpenea	Sanalee eee kg
	-		30,1 - 35,0			-0,16				
		R500	3,0 - 6,0	500	350	-0,06	2 mm/m		chamfered /cut off	cases 500 kg
		õ	6,1 - 10,0			-0,09			chamfered /sharpened	
			3,0 - 6,0	-		-0,06	2 mm/m		chamfered /cut off	cases 500 kg
		_	6,1 - 10,0	Without s	pecified	-0,09				
C L		Ζ	10,1 - 18,0	mechanical		-0,11	1 5 mana/ma		chamfered /sharpened	hundles EOO ka
Zn3	0		18,1 - 30,0	-		-0,13	1,5 mm/m			bundles 500 kg
င္ နာ	W6		30,1 - 50,0			-0,16	0			500 lun
1; C Zn3	07N		6,0 - 10,0	-		-0,09	2 mm/m			cases 500 kg
9Pt	CW607N; CW608N; CW610N CW611N; CW612N		10,1 - 18,0	-		-0,11	1 5 100 100	300	chamfered /sharpened	hundles 500 km
n38 01; (N90 N; 0		18,1 - 30,0 30,1 - 50,0	-		-0,13	1,5 mm/m	3000 +/-50		bundles 500 kg
Pb2	08N		30,1 - 50,0			-0,16 -0,06		/-50	chamfered /cut off	cases 500 kg
n39	612I		6,1 - 10,0	-		-0.09	2 mm/m	-	Shannorda / dat on	cubbe coo kg
Pb2	V61	R410	10,1 - 18,0	410	230	-0,11				
.º 39P	Ñ	10	18,1 - 30,0		200	-0,13	1,5 mm/m		chamfered /sharpened	bundles 500 kg
CuZn38Pb1; CuZn38Pb2; CuZn39Pb0,5 CuZn39Pb1; CuZn39Pb2			30,1 - 35,0			-0,16				
	-	ת	3,0 - 6,0			-0,06			chamfered /cut off	
		R500	6,1 - 10,0	500	350	-0,09	2 mm/m		chamfered /sharpened	cases 500 kg

* max value





Gra	ade			Mechanica	l properties					
Symbol	Number	Temper	Dimension s (mm)	Tensile Strength Rm N/mm2 (MPa) min	Yield Strength Rp02 N/mm2 (MPa) min	Tolerances s (mm)	Straightness	Length	Ends	Packing
			3,0 - 6,0			-0,080	2 mm/m		chamfered /cut off	cases 500 kg
		Σ	6,1 - 10,0	Without		-0,090				
Cuz	00		10,1 - 18,0	mechanica	l properties	-0,110	1,5 mm/m		chamfered /sharpened	
In3(W C		18,1 - 30,0 30,1 - 50,0			-0,130 -0,16	2 mm/m			bundles 500 kg
SPb	300 303		3,0 - 6,0			-0,18	2 mm/m	3000 +/-50	chamfered /cut off	
ο 3; 3;	ZZ		6,1 - 10,0	-	250	-0,09	2 mm/m	00	chamered /out on	cases 500 kg
	С Х Х	т	10,1 - 14,0	-		0,00		+/-5		
CuZn35Pb1; CuZn35Pb2 CuZn36Pb3; CuZn37Pb2	CW600N; CW601N CW603N; CW606N	R370	14,1 - 18,0	370	180	-0,11	1,5 mm/m	0	chamfered /sharpened	hundles 500 kg
Pb2	~ ~		18,1 - 30,0		160	-0,13				bundles 500 kg
10 10			30,1 - 35,0			-0,16	2 mm/m			
		R440	3,0 - 6,0 6,1 - 10,0	440	340	-0,08 -0,09	2 mm/m		chamfered /cut off chamfered /sharpened	cases 500 kg
			5,0 - 6,0			-0,06	2		chamfered /cut off	ECO Ire
0			6,1 - 10,0			-0,09	3 mm/m			cases 500 kg
μ		\leq	10,1 - 18,0	Without : mechanica		-0,11			abovefeved (above eved	
n37	Q		18,1 - 30,0	mechanica	rproperties	-0,13	2 mm/m	30	chamfered /sharpened	bundles 500 kg
Mr	N7		30,1 - 50,0			-0,16		00.		
CuZn37Mn3Al2PbS	CW713R		5,0 - 6,0			-0,06	3 mm/m	3000 +/-50	chamfered /cut off	cases 500 kg
I2P	~	сī	6,1 - 10,0			-0,09	3 1111/11	õ		
bSi		590	10,1 - 18,0	590	370	-0,11	a <i>i</i>		chamfered /sharpened	bundles 500 ka
			18,1 - 30,0 30,1 - 40,0	-		-0,13 -0,16	2 mm/m			5
			5,0 - 6,0			-0,16			chamfered /cut off	
			6,1 - 10,0			-0,09	3 mm/m			cases 500 kg
		Z	10,1 - 18,0	Without		-0,11				
Cu			18,1 - 30,0	mecnanica	l properties	-0,13	2 mm/m	(1)	chamfered /sharpened	bundles 500 kg
Znć	СМ		30,1 - 50,0			-0,16		3000 +/-50		
MOI	CW720R	R440	40, - 50,0	440	180	-0,160	3 mm/m) + C	chamfered /sharpened	bundles 500 ka
CuZn40Mn1Pb	R		5,0 - 6,0			-0,06		-50	chamfered /cut off	
ď		-	6,1 - 10,0			-0,09	3 mm/m			hundlog 500 km
		R500	10,1- 18,0	500	270	-0,11			abamforod /abamanad	bundles 500 kg
		ō	18,1 - 30,0			-0,13	2 mm/m		chamfered /sharpened	
			30,1 - 40,0			-0,16				cases 500 kg

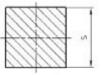


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111	111	

Gra	de			Mechanio	cal properties					
Symbol	Number	Temper	Dimension s (mm)	Tensile Strength Rm N/mm2 (MPa) min	Yield Strength Rp02 N/mm2 (MPa) min	Tolerances s (mm)	Straightness	Length (mm)	Ends	Packing
			5,0 - 6,0 6,1 - 10,0	_		-0,06 -0,09	2 mm/m			cases 500 kg
	0	Ζ	10,1- 18,0 18,1 - 30,0		ified mechanical perties	-0,11	1,5 mm/m	30	broken	bundles 500 kg
CuZ	W5		30,1 - 50,0			-0,16	2 mm/m	00	cut off	
CuZn40	CW509L		5,0 - 6,0	-		-0,06	2 mm/m	3000 +/-50		cases 500 kg
		R360	6,1 - 10,0 10,1 - 18,0	360	300*	-0,09 -0,11		0	broken	
		ő	18,1 - 30,0			-0,13	1,5 mm/m			bundles 500 kg
			30,1 - 50,0			-0,16 -0,06			cut off	
			3,0 - 6,0 6,1 - 10,0	-	-(2 mm/m		chamfered /cut off	cases 500 kg
Cu		\leq	10,0 - 18,0		ified mechanical	-0,09 -0,11	4 E		ale and fame of the annual of	
CuZn36Pb2As; CuZn35Pb1,5AlAs CuZn33Pb1,5AlAs			18,1 - 30,0	più	perties	-0,13	1,5 mm/m		chamfered /sharpened	bundles 500 kg
SPb Cu	CW602N; CW625N CW626N		30,1 - 50,0			-0,16	2 mm/m		chamfered /cut off	
2As Zn3	602 C/	_	5,0 - 6,0 6,1 - 10,0	-		-0,06 -0,09	2 mm/m	300	chamiered /cut on	cases 500 kg
Pb2As; CuZn35Pb CuZn33Pb1,5AlAs	N; C	R280	10,1 - 18,0	280	200*	-0,11	1,5 mm/m	3000 +/-50	abamfarad (abarpanad	
1,5,	6N (0	18,1 - 30,0	-		-0,13		/-50	chamfered /sharpened	bundles 500 kg
AIAs)25N		30,1 - 50,0 5,0 - 6,0			-0,16 -0,06	2 mm/m		chamfered /cut off	
ў <u>01</u> 5	~	-	6,1 - 10,0	-		-0,00	2 mm/m		channered /cut on	cases 500 kg
AIA		R320	10,1 - 18,0	320	200	-0,11	1,5 mm/m		chamfered /sharpened	
0		0	18,1 - 30,0	-		-0,13			chamered /sharpened	bundles 500 kg
			30,1 - 50,0 3,0 - 6,0			-0,16 +/- 0,08	2 mm/m			
			6,1 - 10,0			+/- 0,11	2 mm/m		la una la sura	cases 500 kg
		\leq	10,1 - 18,0		ified mechanical perties	+/- 0,14			broken	
			18,1 - 30,0	-		+/- 0,17	1 mm/m		cut off	bundles 500 kg
	-		30,1 - 50,0 4,0 - 6,0			+/- 0,20 +/- 0,08			cut on	
ß	СМ	R	6,1 - 10,0			+/- 0,11	2 mm/m	3000 +/-50	broken	cases 500 kg
CuZn37	CW508L	R290	10,1 - 18,0	290	230*	+/- 0,14		0 +/	DIOKEIT	
7	٣	-	18,1 - 30,0 30,1 - 50,0	-		+/- 0,17 +/- 0,20	1 mm/m	-50	cut off	bundles 500 kg
	ŧ		4,0 - 6,0			+/- 0,08	0		outon	500 km
		Ŗ	6,1 - 10,0	-		+/- 0,11	2 mm/m		broken	cases 500 kg
		R370	<u>10,1 - 18,0</u> 18,1 - 30,0	370	240	+/- 0,14 +/- 0,17	1 mm/m			bundles 500 kg
			30,1 - 35,0	-		+/- 0,17	1 11111/111		cut off	bundles 500 kg
			3,0 - 6,0		ľ	-0,06	2 mm/m		cut off/ chamfered	cases 500 kg
			6,1 - 10,0	Without spec	ified mechanical	-0,09	2 11111/111			cases 500 kg
		\leq	10,1 - 18,0 18,1 - 30,0		perties	-0,11 -0,13	1,5 mm/m		chamfered/ sharpened	
			30,1 - 50,0	-		-0,16	0			bundles 500 kg
			50,1 - 63,5			-0,19	2 mm/m		cut off	
Q	0		5,0 - 6,0			-0,06	2 mm/m	30	cut off/ chamfered	cases 500 kg
CuZn38As	CW511L	ק	6,1 - 10,0 10,0 - 18,0	280 2	200* 30	-0,09 -0,11		3000 +/-50	chamfered/	
38A	1 1 1	R280	18,1 - 30,0	200 /		-0,13	1,5 mm/m	+/-5(sharpened	bundles 500 kg
S			30,1 - 50,0			-0,16	2 mm/m	0		
			50,1 - 60,0 5,0 - 6,0			-0,19 -0,06			cut off cut off/ chamfered	
			6,1 - 10,0			-0,00	2 mm/m			cases 500 kg
		R320	10,0 - 18,0	320	200 20	-0,11	1 mm/m		chamfered/	
		Ő	18,1 - 30,0 30,1 - 50,0			-0,13	1,5 mm/m		sharpened	bundles 500 kg
			50,1 - 50,0	I I		-0,16	1,0 1111/111			

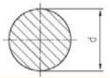
* max value





		Drawn	square	e rods in l	mperia	l Measurer	nents	;		
	V	/MD MS [·]	13 <i>-</i> Cu	uZn36Pb3 ((C36000	D) acc to AS	STM E	8 16		
		-					I	Properti	es	
Dime	ension S	Tolera s		Length Im		Ends	Temper	Rm min	A min	Packing
[cal]	[mm]	[cal]	[mm]	SS	[mm]			[Mpa]	[%]	
5/32	3,97									0
3/16	4,76	-				chamfered / cut off				ase
7/32	5,56	-				outon				Cases 500 kg
1/4	6,35			2 mm/m						0 kg
9/32	7,14	+/-0,003	+/-0,08	(0,08"/39")	(1)			395	7	
5/16	7,94			(0,00739)	3660 +/-25					(1000 lbs)
23/64	9,13) +/) Ibs
3/8	9,52				-25	cha				Ű
1/2	12,70					mfe	H02			п
5/8	15,87				(12ft +/-1")	erec				Suna
3/4	19,05	+/-0,004	+/-0,10		t +/-	l /st		380	10	dles
7/8	22,23	+/-0,004	+/-0,10			narr		300	10	50
1	25,40			1,5 mm/m	•	chamfered /sharpened				Bundles 500 kg
1 - 1/8	28,58					ed				D
1 - 1/4	31,75			(0,06"/39")						(1
1 - 1/2	38,10	+/-0,005	+/-0,13					345	15	000
1 - 5/8	41,28									(1000 lbs)
1 - 3/4	44,45									ÿ

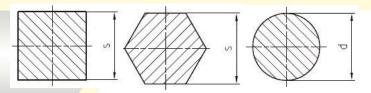




Extruded round rods acc to EN12165

Gra	de			ion Mechanical properties Tensile Yield Strength T				Stra			
Symbol	Number	Temper	Dimension d (mm)	Hardness HB	Tensile Strength Rm N/mm2 (MPa) min	Yield Strength Rp02 N/mm2 (MPa) min	Tolerances d (mm)	Straightness	Length	Ends	Packing
ဝဝဝ			16,0-18,0				+/- 0,25				
	ଟଟ୍ଟ	_	18,1-30,0				+/- 0,30				
39F	CW608N; CW611N; CW614N;	\leq	30,1-50,0	without sp	ecified mechani	cal properties	+/- 0,60				
³ b2;	44 N N N N N N N N N N N N N N N N N N		50,1-80,0				+/- 0,70	3 m	2000 1/ 50		hundles 500 km
	<u> </u>		16,0-18,0				+/- 0,25	mm/m	3000 +/-50	cut off	bundles 500 kg
IZn3	V61 V61	Н	18,1-30,0	00	(250)	(1.10)	+/- 0,30				
CuZn38Pb2;CuZn39Pb0,5 CuZn39Pb1; CuZn39Pb2 CuZn39Pb3; CuZn40Pb2	; CW610N ; CW612N ; CW617N	H080	30,1-50,0	80	(350)	(140)	+/- 0,60				
62 52 52			50,1-80,0				+/- 0,70				
	0		16,0-18,0				+/- 0,25				
CuZn36Pb2As CuZn35Pb1,5AlAs CuZn33Pb1,5AlAs CuZn38lAs	CW602N; CW625N CW626N;CW511L	Z	18,1-30,0	Without sr	ecified mechani	cal properties	+/- 0,30				
CuZn36Pb2As JZn35Pb1,5Al/ JZn33Pb1,5Al/ CuZn38lAs	302 /62	_	30,1-50,0	, in all out op			+/- 0,60	ω			
3Pb Zn3	SN NG		50,1-80,0 16,0-18,0				+/- 0,70 +/- 0,25	mm/m	3000 +/-50	cut off	bundles 500 kg
8 A A B A 5 5 2		т	18,1-30,0				+/- 0,25	/m			
S AIA	625 1511	H070	30,1-50,0	70	(280)	(120)	+/- 0,60				
N N	ΓŻ	U	50,1-80,0				+/- 0,70				
			16,0-18,0				+/- 0,25				
		\leq	18,1-30,0	Without sr	ecified mechani	cal properties	+/- 0,30				
00	22		30,1-50,0	without op		cal properties	+/- 0,60	ω			
CuZn37 CuZn40	N5(50,1-80,0				+/- 0,70	mm/m	3000 +/-50	cut off	bundles 500 kg
137 140	CW508L CW509L	т	16,0-18,0 18,1-30,0				+/- 0,25 +/- 0,30	ı/m			_
		H070	30,1-50,0	70	(300)	(100)	+/- 0,30				
		0	50,1-80,0				+/- 0,70				
			16,0-18,0		I	I	+/- 0,25				
		\leq	18,1-30,0	Without sr	ecified mechani	cal properties	+/- 0,30				
0	2	_	30,1-50,0	without op			+/- 0,60	ω			
CuZn42	CW510L		50,1-80,0				+/- 0,70	mm/m	3000 +/-50	cut off	bundles 500 kg
142	10L	т	16,0-18,0 18,1-30,0				+/- 0,25 +/- 0,30	/m			
		060H	30,1-50,0	90			+/- 0,60				
		0	50,1-80,0				+/- 0,70				
0			16,0-18,0		I	I	+/- 0,25				
μZ		Σ	18,1-30,0	Without en	ecified mechani	cal properties	+/- 0,30				
n37	2	7	30,1-50,0	without sp		cal properties	+/- 0,60	ω			
Mn	W713R		50,1-80,0				+/- 0,70	mm/m	3000 +/-50	cut off	bundles 500 kg
3AU	13R	т	16,0-18,0 18,1-30,0				+/- 0,25 +/- 0,30	ı/m			
CuZn37Mn3Al2PbSi		H130	30,1-50,0	130	(550)	(200)	+/- 0,30				
<u>N</u>		0	50,1-80,0				+/- 0,70				
0			16,0-18,0				+/- 0,25				
CuZn35Ni3Mn2AIPb		Z	18,1-30,0	Without sr	ecified mechani	cal properties	+/- 0,30				
135	5	_	30,1-50,0				+/- 0,60	ω			
Ni3	CW710R		50,1-80,0				+/- 0,70	mm/m	3000 +/-50	cut off	bundles 500 kg
Mní	ନ	т	16,0-18,0 18,1-30,0				+/- 0,25 +/- 0,30	/m			
2AIF		H100	30,1-50,0	100	(440)	(180)	+/- 0,30				
Ъ		0	50,1-80,0				+/- 0,70				
			16,0-18,0				+/- 0,25				
<u> </u>		Σ	18,1-30,0	Without sr	ecified mechani	cal properties	+/- 0,30		3000 +/-100		
JZn J	22	_	30,1-50,0				+/- 0,60	ω	0000 / 005		
40N	N7:		50,1-80,0				+/- 0,70	mm/m	3000 +/-200	cut off	bundles 500 kg
/In1 /In2	CW720R CW723R		16,0-18,0 18,1-30,0				+/- 0,25 +/- 0,30	۱/m	3000 +/-100		9
CuZn40Mn1Pb1 CuZn40Mn2Fe1		H80	30,1-50,0	80	(350)	(160)	+/- 0,60		0000 1/-100		
		0	50,1-80,0				+/- 0,70		3000 +/-200		
<u> </u>	I		00,100,0	I			., 0,70		5555 7 200		



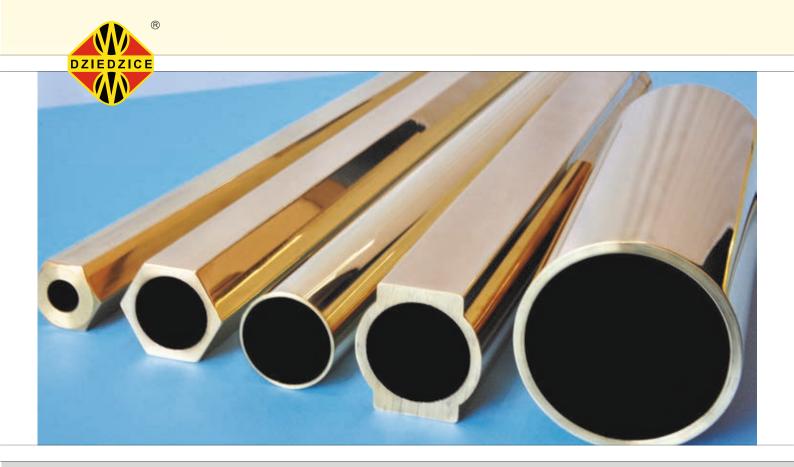


Extruded round rods acc to specification below

Grade				Mechanical	Tolerances	Str (acc to			
Symbol	Number	Temper	Dimension s (mm)	properties (acc to confirmation)	s (mm) (acc to confirmation)	Straightness to confirmation)	Length (acc to confirmation)	Ends	Packing
CuZn38Pb2 CuZn39Pb0,5 CuZn39Pb1 CuZn39Pb2 CuZn39Pb3	CW608N CW610N CW611N CW612N CW614N		80,1-100	Withou	+/- 1,2	3mm/m	3000 +/-200		
CuZn40Pb2 CuZn36Pb2As CuZn37	CW617N CW602N CW508L	М	100,1-110	t specified m			1500-3000	cut off	bundles 5
CuZn40 CuZn37Mn3Al2PbSi CuZn35Ni3Mn2AlPb CuZn40Mn1Pb1	CW509L CW713R CW710R CW720R		110,1-140	Without specified mechanical properties	+/- 1,6	5mm/m	1000-2000	ff	500 kg
CuZn40Mn2Fe1 CuZn35Pb CuZn33Pb CuZn38IAs	CW723R CW625N CW626N CW511L		140,1-180,0		., 1,0		500-1500		

Extruded square and hexagonal rods acc to specification below

Grade						(acc			
Symbol	Number	Temper	Dimension s (mm)	Mechanical properties (acc to confirmation)	Tolerances s (mm) (acc to confirmation)	Straightness cc to confirmation)	Length (acc to confirmation)	Ends	Packing
			20,0-30,0	With	+/- 0,5	3 m	3000 +/-100		
CuZn38Pb2 CuZn39Pb0,5 CuZn39Pb1 CuZn39Pb2	CW608N CW610N CW611N CW612N CW614N		30,1-50,0	nout specifi	+/- 0,8	mm/m	3000 +/-200		þ
CuZn39Pb3 CuZn40Pb2 CuZn36Pb2As CuZn37	CW614N CW617N CW602N CW508L CW509L	М	50,1-80,0	Without specified mechanical properties	+/- 1,0	5 mm/m	3000 11-200	cut off	bundles 500 kg
CuZn40 CuZn37Mn3Al2PbSi CuZn35Ni3Mn2AlPb CuZn40Mn1Pb1	CW713R CW710R CW720R CW723R		80,1-100,0	iical proper	+/- 1,6	7 mm/m	1500-3000		ĝ
CuZn40Mn2Fe1 CuZn35Pb CuZn33Pb CuZn38IAs	CW625N CW626N CW511L		100,1- 130,0	ties	+/- 2,2	n/m	500-1500		



BRASS TUBES



Drawn tubes are manufactured in sizes ranging 16-65 mm, while hot extruded tubes are in 16-180 mm size range.

Offered tubes are produced in several copper alloys with zinc and other additives, which provide them with a wide range of use, mainly in the fittings industry, as part of the heating and plumbing installations.

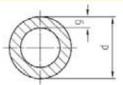
Corrosion resistance, which is characteristic for the products of these alloys, allows to produce installation elements and devices working in environment of water, chemical and gas.

Lead-brass tubes are mainly used in housing construction, industrial and transmission applications. Depending on the needs of the customer, such tubes are produced and sold extruded or drawn.

Within this group of products we manufacture tube from multi-component alloys, resistant to the major pressure, abrasion, also in sea water environments.

Dimensional charts shown further correspond to the EN standards. Brass rods are also produced according to other norms.





Drawn round tubes

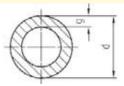
Grades		Dime	ensional ran	ge				Tolerances [mm]		
Symbol	Number	External dimension d [mm]	Wall thickness [g mm]	Length [mm]	Temper	Mechanical properties	External dimension d	Wall thickness g	Straightness	Length
CuZn35Pb2	CW601N	16,0 - 18,0	2,0 - 3,0				- 0,11	+/- 12%		
CuZn36Pb2As	CW602N	10,0 - 10,0	3,1 - 4,0				- 0, 11	+/- 10%		+
CuZn36Pb3 CuZn37Pb1	CW603N CW605N		2,0 - 3,0					+/- 12%		+/- 50
CuZn37Pb2	CW606N	18,1 - 30,0	3,1 - 6,0				- 0,13	+/- 10%		0
CuZn38Pb1 CuZn38Pb2	CW607N CW608N		6,1 - 8,0	2000		Without		+/- 9%	, л С	
CuZn39Pb1	CW6000N CW611N		3,1 - 6,0	1	М	Specified		+/- 10%	1/mr	
CuZn39Pb2 CuZn39Pb3	CW612N CW614N	30,1 - 50,0	6,1 - 8,0	4000		mechanical properties	- 0,16	+/- 9%	mm/1000mm	
CuZn39Pb3 CuZn40Pb2	CW614N CW617N		8,1 - 10,0	00		properties		17- 378	Jmn	+_
CuZn37Mn3Al2PbSi	CW713R		3,1 - 6,0					+/- 10%		- 100
CuZn40Mn1Pb1 CuZn35Pb1,5AlAs	CW720R CW625N	50,1 - 65,0	6,1 - 8,0				- 0,30	+/- 9%		0
CuZn33Pb1,5AlAs CuZn38lAs	CW626N CW511L	00,1 00,0	8,1 - 10,0				0,00	17- 378		
CUZII38IAS	CWSIIL		> 10,1					+/- 8%		
			I	Ratio d/g m	nax 18					
			Minimum	internal dia	ameter10,0n	าm				

Grad	es	Dime	nsional rang	je			anical erties		Tolerances [mm]	3	
Symbol	Number	External dimension d [mm]	Wall thickness g [mm]	Length [mm]	Temper	Hardness HB	Hardness HV	External dimension d	Wall thickness g	Straightness	Length
		16,0 - 18,0	2,0 - 3,0					- 0,11	+/- 12%		
		10,0 10,0	3,1 - 4,0					0,11	+/- 10%		+
			2,0 - 3,0						+/- 12%		+/- 50
		18,1 - 30,0	3,1 - 6,0					- 0,13	+/- 10%		0
CuZn36Pb3	CW603N		6,1 - 8,0		H 110 max				+/- 9%	<u> </u>	
CuZn37Pb1 CuZn37Pb2	CW605N CW606N		3,1 - 6,0	2000	wall thickness	110 - 160	120 - 170		+/- 10%	1,5 m	
CuZn38Pb1 CuZn38Pb2	CW607N CW608N	30,1 - 50,0	6,1 - 8,0 8,1 - 10,0		10,0mm			- 0,16	+/- 9%	mm/1000mm	
CuZn39Pb1 CuZn39Pb2	CW611N CW612N		3,1 - 6,0	4000					+/- 10%)0mr	+
CuZn39Pb3	CW614N		6,1 - 8,0							н	/- 100
CuZn40Pb2	CW617N	50,1 - 65,0	8,1 - 10,0					- 0,30	+/- 9%		õ
			> 10,1		H 090 min wall thickness 10,1mm	90 - 140	100 - 150	0,00	+/- 8%		
				R	atio d/g max 18	3			· I		
			Ν	linimum iı	nternal diamete	er10,0mm					



Grades	6	Dime	ensional ran	ige		Mech			Tolerances [mm]	;	
Symbol	Number	External dimension d [mm]	Wall thickness g [mm]	Length [mm]	Temper	Hardness HB	Hardness HV	External dimension D	Wall thickness g	Straightness	Length
		16,0 - 18,0	2,0 - 3,0					- 0,11	+/- 12%		
		10,0 - 10,0	3,1 - 4,0					-0,11	+/- 10%		+
			2,0 - 3,0						+/- 12%		+/- 50
		18,1 - 30,0	3,1 - 6,0					- 0,13	+/- 10%		
			6,1 - 8,0	20					+/- 9%	1,51	
CuZn36Pb2As	CW602N		3,1 - 6,0	2000 -	H070	70-110	00.400		+/- 10%	/mm	
CuZn35Pb1,5AlAs	CW625N	30,1 - 50,0	6,1 - 8,0	4000	HU70	70-110	80-120	- 0,16	+/- 9%	mm/1000mm	
CuZn33Pb1,5AlAs CuZn38lAs	CW626N CW511L		8,1 - 10,0	8					17- 370)mm	+/-
			3,1 - 6,0						+/- 10%		- 100
		50,1 - 65,0	6,1 - 8,0					- 0,30	+/- 9%		ō
		50,1-05,0	8,1 - 10,0					- 0,30	1/- 970		
			> 10,1						+/- 8%		
				R	atio d/g max	(18					
			Ν	Minimum i	nternal diam	eter10,0mm	ı				

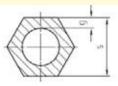
Grades		Dimensional range				Mecha prope		Tolerances [mm]				
Symbol	Number	External dimension d [mm]	Wall thickness g [mm]	Length [mm]	Temper	Hardness HB	Hardness HV	External dimension d	Wall thickness g	Straightness	Length	
		16,0 - 18,0	2,0 - 3,0 3,1 - 4,0		H 110 max wall thickness 10,0mm			- 0,11	+/- 12% +/- 10%			
			2,0 - 3,0				120 - 170	- 0,13	+/- 12%		+/- 50	
		18,1 - 30,0	3,1 - 6,0	2000 - 4000					+/- 10%		õ	
			6,1 - 8,0			110 - 160			+/- 9%			
			3,1 - 6,0					- 0,16	+/- 10%	3,0 n		
CuZn37Mn3Al2PbSi	CW713R	30,1 - 50,0	6,1 - 8,0						+/- 9%	nm/		
Cuzh371WIN3AI2PDSI	CWIISK		8,1 - 10,0						., .,	100		
			3,1 - 6,0	00					+/- 10%	mm/1000mm	t	
			6,1 - 8,0						+/- 9%		+/- 100	
		50,1 - 65,0	8,1 - 10,0					- 0,30			Ō	
		50,1 - 03,0	> 10,1		H 090 min wall thickness 10,1mm	90 - 140	100 - 150	3,00	+/- 8%			
		·	·	Ratio d	/g max 18	·						
			Minimu	um interna	al diameter1	0,0mm						





Grades		Dim	ensional rang	je			anical erties	Т	olerances [mm]		
Symbol	Number	External dimension d [mm]	Wall thickness g [mm]	Length [mm]	Temper	Hardness HB	Hardness HV	External dimension d	Wall thickness g	Straightness	Length
		16,0 - 18,0	2,0 - 3,0	-				- 0,11	+/- 12%		
		10,0 10,0	3,1 - 4,0					0,11	+/- 10%		+
			2,0 - 3,0						+/- 12%		+/- 50
		18,1 - 30,0	3,1 - 6,0		H 110 max wall thickness 10,0mm			- 0,13	+/- 10%		
			6,1 - 8,0						+/- 9%		
			3,1 - 6,0	2000 - 4000		110 - 160	120 - 170		+/- 10%	,0 n	
		30,1 - 50,0	6,1 - 8,0					- 0,16	+/- 9%	nm/	
CuZn40Mn1Pb1	CW720R		8,1 - 10,0						17- 370	3,0 mm/1000mm	
			3,1 - 6,0	00					+/- 10%		+/-
			6,1 - 8,0						+/- 9%		- 100
		50,1 - 65,0	8,1 - 10,0					- 0,30	+/- 3 /0		õ
		50,1-05,0	> 10,1		H 090 min wall thickness 10,1mm	90 - 140	100 - 150	- 0,30	+/- 8%		
				Ratio	d/g max 18						
			Mir	nimum inter	nal diameter1	0,0mm					

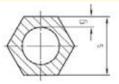




Drawn hexagonal tubes

Grades		Dime	ensional ran	ge					Tolerance [mm]	S					
Symbol	Number	External dimension s [mm]	Wall thickness g [mm]	Length [mm]	Corners radius	Temper	Mechanical properties	External dimension s	Wall thickness g	Straightness	Length				
CuZn35Pb2 CuZn36Pb2As	CW601N CW602N	16,0 - 18,0 -	2,0 - 3,0 3,1 - 4,0		0,5 - 1,2		×	- 0,11	+/- 12% +/- 10%		+/-				
CuZn36Pb3 CuZn37Pb1 CuZn37Pb2 CuZn38Pb1	CW720R	CW605N CW606N CW607N CW608N CW611N CW612N	CW605N CW606N	CW605N CW606N	CW605N CW606N	18,1 - 30,0	2,0 - 3,0 3,1 - 6,0 6,1 - 8,0	2000	0,6 - 1,8		Without specified properti	- 0,13	+/- 12% +/- 10% +/- 9%	2,0 m	/- 50
CuZn38Pb2 CuZn39Pb1 CuZn39Pb2 CuZn39Pb3			30,1 - 50,0	3,1 - 6,0 6,1 - 8,0 8,1 - 10,0	00 - 4000	0,7 - 2,8	Μ	pecified me properties	- 0,16	+/- 10% +/- 9%	mm/1000mm	+/-			
CuZn40Pb2 CuZn37Mn3Al2PbSi CuZn40Mn1Pb1 CuZn35Pb1,5AlAs		7N 3R 0R 50,1 - 63,5	3,1 - 6,0 6,1 - 8,0 8,1 - 10,0 > 10,1		0,8 - 4,0		mechanical es	- 0,30	+/- 10% +/- 9% +/- 8%	m	- 100				
CuZn33Pb1,5AlAs CuZn38lAs	CW626N CW511L		.0,1	Ratio	o s/g max 1	8			, 0,0						
			Mini		rnal diamet										

Grade	es	Dime	nsional ranç	ge			Mecha prope			Tolerances [mm]			
Symbol	Number	External dimension s [mm]	Wall thickness g [mm]	Length [mm]	Corners radius	Temper	Hardness HB	Hardness HV	External dimension s	Wall thickness g	Straightness	Length	
		16,0 - 18,0	2,0 - 3,0 3,1 - 4,0		0,5 - 1,2				- 0,11	+/- 12% +/- 10%	_		
		2,0 - 3,0							+/- 12%		+/- 50		
			18,1 - 30,0	3,1 - 6,0		0,6 - 1,8				- 0,13	+/- 10%		0
	CW603N CW605N		6,1 - 8,0			H 110 max wall	110 -	120 -		+/- 9%	2,0		
CuZn37Pb1 CuZn37Pb2	CW605N		3,1 - 6,0	2000		thickness) - 160	- 170		+/- 10%			
CuZn38Pb1 CuZn38Pb2	CW607N CW608N	30,1 - 50,0	6,1 - 8,0	- !	0,7 - 2,8	2,8 10,0mm	00	0	- 0,16	+/- 9%	n/10		
CuZn39Pb1	CW611N		8,1 - 10,0							(100(mm/1000mm		
CuZn39Pb2 CuZn39Pb3	CW612N CW614N		3,1 - 6,0							+/- 10%	mm	+ -	
CuZn40Pb2	CW617N		6,1 - 8,0							+/- 9%		100	
		50,1 - 63,5	8,1 - 10,0		0,8 - 4,0	11.000 min			- 0,30				
			> 10,1			H 090 min wall thickness 10,1mm	90 - 140	100 - 150		+/- 8%			
				•	Ratio s/	g max 18							
				Minim	um interna	l diameter10,	,0mm						





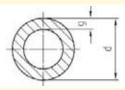
Grades	S	Dime	nsional rang	je			Mecha		Т	olerances [mm]		
Symbol	Number	External dimension s [mm]	Wall thickness g [mm]	Length [mm]	Corners radius	Temper	Hardness HB	Hardness HV	External dimension s	Wall thickness g	Straightness	Length
		16,0 - 18,0	2,0 - 3,0		0,5 - 1,2			80-120	- 0,11	+/- 12%		
		10,0 - 10,0	3,1 - 4,0		0,5 - 1,2					+/- 10%		-
			2,0 - 3,0						- 0,13	+/- 12%		+/- 50
		18,1 - 30,0	3,1 - 6,0		0,6 - 1,8					+/- 10%		0
			6,1 - 8,0	2						+/- 9%	2,0	
CuZn36Pb2As	CW602N		3,1 - 6,0	2000 - 4000		H070	70-110			+/- 10%	mm/1000mm	
CuZn35Pb1,5AlAs	CW625N	30,1 - 50,0	6,1 - 8,0		0,7 - 2,8				- 0,16	+/- 9%		
CuZn33Pb1,5AlAs CuZn38lAs	CW626N CW511L		8,1 - 10,0							+/- 9 /0	mm	+/-
			3,1 - 6,0							+/- 10%		/- 100
		50,1 - 63,5	6,1 - 8,0		0,8 - 4,0				- 0,30	+/- 9%		0
		50,1-05,5	8,1 - 10,0		0,0 - 4,0					+/- 9 /0		
			> 10,1							+/- 8%		
					Ratio s/g m	nax 18						
			I	Minimum	internal dia	ameter10,0	mm					

Grades		Dimensional range					Mechanical properties		Tolerances [mm]			
Symbol	Number	External dimension s [mm]	Wall thickness g [mm]	Length [mm]	Corners radius	Temper	Hardness HB	Hardness HV	External dimension s	Wall thickness g	Straightness	Length
		16,0 - 18,0	2,0 - 3,0		0,5 - 1,2				- 0,11	+/- 12%		
			3,1 - 4,0			H 110 max wall thickness 10,0mm		120 - 170		+/- 10%		+/-
			2,0 - 3,0						0.40	+/- 12%		- 50
		30,1 - 50,0			0,6 - 1,8				- 0,13	+/- 10%		
			6,1 - 8,0							+/- 9%	4,0	
	CW713R		3,1 - 6,0	2000 - 4000					- 0,16	+/- 10%	mm/1000	
CuZn37Mn3Al2PbSi										+/- 9%		
			8,1 - 10,0	400								
			3,1 - 6,0	0						+/- 10%	mm	+-
			6,1 - 8,0							+/- 9%		100
		50,1 - 63,5	8,1 - 10,0		0,8 - 4,0				- 0,30			0
		00,1 00,0	> 10,1		0,0-4,0	H 090 min wall thickness 10,1mm	90 - 140	100 - 150	0,00	+/- 8%		
			•	Rat	io s/g max	(18	•	•				
			Min	imum int	ernal diam	eter10,0mm	ı					



Grades		Dimer	isional ran	ge			Mechanical properties		Tolerances [mm]			
Symbol	Number	External dimension s [mm]	Wall thickness g [mm]	Length [mm]	Corners radius	Temper	Hardness HB	Hardness HV	External dimension s	Wall thickness g	Straightness	Length
		16,0 - 18,0	2,0 - 3,0 3,1 - 4,0		0,5 - 1,2				- 0,11	+/- 12% +/- 10%		
	CW720R	18,1 - 30,0	2,0 - 3,0 3,1 - 6,0		0,6 - 1,8				- 0,13	+/- 12% +/- 10%		+/- 50
			6,1 - 8,0 3,1 - 6,0	2		H 110 max wall	110 - 160	120 - 170		+/- 9% +/- 10%	4,0	
CuZn40Mn1Pb1		30,1 - 50,0	6,1 - 8,0 8,1 - 10,0	00	0,7 - 2,8	thickness 10,0mm			- 0,16	+/- 9%	mm/1000mm	
			3,1 - 6,0 6,1 - 8,0							+/- 10%	0mm	+/- 100
		50,1 - 63,5			0,8 - 4,0	11.000			- 0,30	+/- 9%		00
			> 10,1			H 090 min wall thickness 10,1mm	90 - 140	100 - 150		+/- 8%		
				Minimu	Ratio s/g m internal	max 18 diameter10,	Omm					

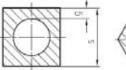




Extruded round tube

Grades	Di	mensional rar				Tolerances [mm]					
Symbol Nun	nber dimens d [mn	ion thickness	Length [mm]	Temper	Mechanical properties	External dimension d	Outer diameter ovality	Wall thickness g	Straightness	Length	
	18,0 - 3 30,1 - 5	6,1 - 8,0 2,5 - 3,0	2000 - 4000			+/- 0,31	Half of the permissible tolerance	+/- 12% +/- 10% +/- 9% +/- 12% +/- 10% +/- 9%	1,5 mm/1000mm	+/- 50	
	50,1 - 8	0,0 3,0 - 6,0 6,1 - 8,0 8,1 - 10,0 > 10,1				+/- 0,60		+/- 10% +/- 9% +/- 8%	Omm	+/- 100	
	80,1 - 9 501N 502N	15,0 17,0 20,0 22,0	2000 - 4000		Withou	+/- 1,2	+/- 2,4	+/- 0,5 +/- 0,6 +/- 0,7 +/- 0,9 +/- 1,1 +/- 1,3 +/- 1,4 +/- 1,6 +/- 1,8		+/- 200	
CuZn36Pb3 CW6 CuZn37Pb1 CW6 CuZn37Pb2 CW6 CuZn38Pb1 CW6 CuZn38Pb1 CW6 CuZn39Pb1 CW6 CuZn39Pb1 CW6 CuZn39Pb1 CW6 CuZn39Pb2 CW6 CuZn39Pb3 CW6 CuZn40Pb2 CW6 CuZn37Mn3Al2PbSi CW7	503N 505N 506N 507N 508N 511N 512N 512N 514N 517N	8,0 10,0 12,0 15,0 20,0 22,0 25,0 27,0 30,0	1500 - 3000	Σ	Without specified mechanical properties	+/- 1,6	+/- 2,9	+/- 0,7 +/- 0,9 +/- 1,1 +/- 1,3 +/- 1,4 +/- 1,6 +/- 1,8 +/- 2,0 +/- 2,2 +/- 2,4	5 mm/1000mm		
CuZn35Pb1,5AlAs CW6 CuZn33Pb1,5AlAs CW6	525N 526N 511L 120,1 150,0		1000 - 2000		ß	+/- 1,9	+/- 3,2	+/- 1,4 +/- 1,6 +/- 1,8 +/- 2,0 +/- 2,2 +/- 2,4 +/- 2,5 +/- 2,8		Without exact length	
	150,1 180,0		500 - 1500			+/- 2,2	+/- 3,5	+/- 1,6 +/- 1,8 +/- 2,0 +/- 2,2 +/- 2,4 +/- 2,5 +/- 2,8 +/- 3,1 +/- 3,5			
		outer dian diameter froi outer diameter	n ø 65,1r		nm ratio	o d/g max 14,					
				rnal diamete							

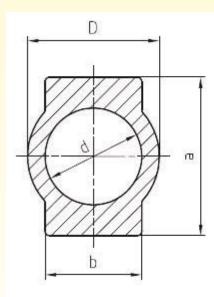


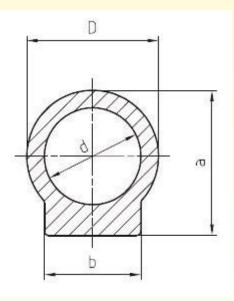


Grades			nsional ran			agonarta		Tolera											
Grades		Diffe		90				[mr	n]	S									
Symbol	Number	External dimension s [mm]	Wall thickness g [mm]	Length [mm]	Temper	Mechanical properties	External dimension s	Outer diameter ovality	Wall thickness g	Straightness	Length								
	CW601N CW602N CW603N CW605N CW606N CW607N CW608N CW611N CW612N	18,0 - 30,0	2,5 - 3,0 3,1 - 6,0 6,1 - 8,0 2,5 - 3,0 3,1 - 6,0	2000			+/- 0,31	Half of the	+/- 12% +/- 10% +/- 9% +/- 12% +/- 10%	1,5 mn	+/- 50								
		30,1 - 50,0	6,1 - 8,0 8,1 - 10,0 3,0 - 6,0	2000 - 4000				permissible tolerance	+/- 9% +/- 10%	mm/1000mm	+								
CuZn35Pb2 CuZn36Pb2As		CW602N CW603N CW605N CW606N CW607N CW608N CW611N CW612N	CW602N CW603N CW605N CW606N CW607N CW608N CW611N CW612N	CW602N CW603N CW605N CW606N CW607N CW608N CW611N	50,1 - 80,0	6,1 - 8,0 8,1 - 10,0 > 10,1			Without	+/- 0,60		+/- 9% +/- 8%		+/- 100					
CuZn36Pb3 CuZn37Pb1 CuZn37Pb2 CuZn38Pb1 CuZn38Pb2 CuZn39Pb1 CuZn39Pb2 CuZn39Pb3					CW603N CW605N CW606N CW607N CW608N CW611N CW612N CW614N	CW603N CW605N CW606N CW607N CW608N CW611N CW612N CW614N	CW603N CW605N CW606N CW607N CW608N CW611N CW612N CW614N	CW603N CW605N CW606N CW607N CW608N CW611N CW612N CW614N	CW605N CW606N CW607N CW608N CW611N CW612N CW614N	CW605N CW606N CW607N CW608N CW611N CW612N CW614N	CW605N CW606N CW607N CW608N CW611N CW612N	CW605N CW606N CW607N CW608N CW611N CW612N CW614N	CW605N CW606N CW607N CW608N CW611N CW612N CW614N CW617N	80,1 - 90,0	6,0 7,0 8,0 10,0 12,0 15,0		Σ	Without specified mechanical properties	+/- 1,2
CuZn40Pb2 CuZn37Mn3Al2PbSi CuZn40Mn1Pb1 CuZn35Pb1,5AlAs CuZn33Pb1,5AlAs	CW617N CW713R CW720R CW625N CW626N		17,0 20,0 22,0 8,0 10,0	1500 - 3000		al properties			+/- 1,4 +/- 1,6 +/- 1,8 +/- 0,7 +/- 0,9	7 mm/1000mm	Without exact length								
CuZn33Pb1,5AlAs CuZn38lAs	CW626N CW511L	CW626N	CW626N	90,1 - 120,0	12,0 15,0 17,0 20,0 22,0 25,0 27,0 30,0	Ō			+/- 1,6	+/- 2,9	+/- 1,1 +/- 1,3 +/- 1,4 +/- 1,6 +/- 1,8 +/- 2,0 +/- 2,2 +/- 2,4	nm	ength						
outer diameter of 65,0mm ratio s/g max 18, outer diameter from 65,1mm to 120,0mm ratio s/g max 14																			
			Minim	um interr	nal diamete	r12,0mm													

Extruded square and hexagonal tubes



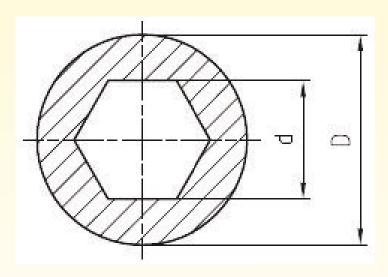




Type of	Diameter	Tolerances	Diameter	Tolerances	Dimension	Tolerances	Dimension	Tolerances			
profile		D		d		а		b			
				[m	im]						
C1	46		36		51		26				
C2	39		30,5	± 0,5	50	± 0,5	26	± 0,5			
C3	39	± 0,5	30,5	_ 0,0	42	_ 0,0	26	_ 0,0			
C4	31	± 0,5	23		34,5		26				
C5	38		30		40		26				
C6	38		30,3		42		25				
C6,5	37,5	+/- 0,1	30	+ 0,3	41	- 0,2	25	-0,15			
C7	37	+/- 0,2	30,6	+/- 0,2	39	+/- 0,2	25,3	-0,3			
C11	38	+/- 0,3	30	+ 0,5	42	+/- 0,3	27	+/- 0,25			
C13	38	-1	31,3	+/-0,5	42	+/- 0,5	25	+/- 0,5			
		DECENT	RISITY max	10% C1-C5	C6,5, C7; ma	x 12% C-6					
				Grades							
	CuZn40Pb2; CuZn39Pb3; CuZn39Pb2; CuZn38Pb2; CuZn39Pb1,5; CuZn39Pb1; CuZn37Pb2; CuZn36Pb3; CuZn36Pb2As; CuZn36Pb1,5; CuZn35Pb2; CuZn35Pb1										
	Other dimensions to be agreed										

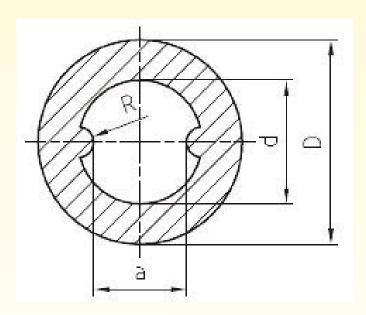
Drawn and extruded hollow profiles





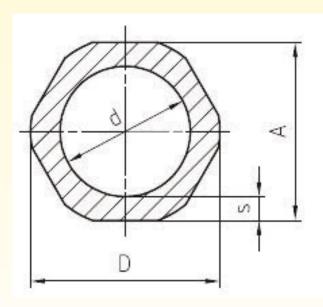
		Diameter	Tolerances	Dimension	Tolerances					
Туре	of profile				d					
			[n	nm]						
	A1	24	+/- 0,5	14	+/- 0,5					
	A2	30	+/- 0,6	19	+/- 0,5					
	A3	30	+/- 0,6	14	+/- 0,5					
	A4	38	+/- 0,8	19	+/- 0,5					
	A5	30	+/- 0,6	17	+/- 0,5					
	A6	34	+/- 0,6	14	+/- 0,5					
	A7	25	+/- 0,5	14	+/- 0,5					
	A8	31	+/- 0,6	17	+/- 0,5					
	A9	24	+/- 0,6	13	+/- 0,5					
	A10	30	+/- 0,6	12	+/- 0,5					
	A11	32	+/- 0,6	12	+/- 0,5					
,	A12	19	+/- 0,6	10	+/- 0,5					
,	A13	36	+/- 0,6	17	+/- 0,5					
	DECENTRISITY max 10%									
Grades	CuZn40Pb2; CuZn39Pb3; CuZn39Pb2; CuZn38Pb2; CuZn39Pb1,5; CuZn39Pb1; CuZn37Pb2; CuZn36Pb3; CuZn36Pb2As; CuZn36Pb1,5; CuZn35Pb2; CuZn35Pb1									





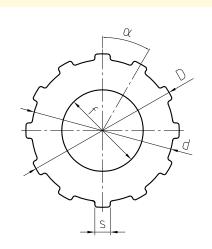
Type of	Diameter	Tolerances	Dimension	Tolerances	Dimension	Tolerances	Corners				
profile		D	(d	а		R				
			1	[mm]							
B1	24	+ 0,6	15	+/- 0,35	11	+/- 0,35	~ 2,0				
B2	30	+ 0,6	19	+/- 0,45	15	+/- 0,45	~ 2,0				
B3	38	+ 0,6	24	+/- 0,5	18	+/- 0,5	~ 3,0				
B4	30	+ 0,6	13	+/- 0,5	10	+/- 0,5	~ 1,5				
B5	33	+ 0,6	19	+/- 0,45	15	+/- 0,45	~ 2,0				
B7	38	+ 0,6	17	+/- 0,45	13,4	+/- 0,45	~ 2,0				
B9	45	+/- 0,4	32,2	+/- 0,6	26	+/- 0,3	~ 3,0				
B10	52	+/- 0,5	38,2	+/- 0,6	31	+/- 0,35	~ 3,0				
B11	70	+/- 0,6	50	+/- 0,6	45	+/- 0,50	~ 3,1				
B12	55	+/- 0,5	38,2	0,6	31	+/- 0,35	~ 3,0				
B13	63	+/- 0,6	49,2	0,6	42	+/- 0,4	~ 3,0				
B1 pc	24	-0,21	15	+0,2/-0,7	11	+0,2/-0,7	~ 2,0				
B2 pc	30	-0,21	19	+0,2/-0,7	15	+0,2/-0,7	~ 2,0				
B6 pc	20	+/- 0,3	11,5	+/- 0,3	8,7	+/- 0,3	~ 2,0				
	DECENTRISITY max 10%										
Grades	CuZn40Pb2; CuZn39Pb3; CuZn39Pb2; CuZn38Pb2; CuZn39Pb1,5; CuZn39Pb1; CuZn37Pb2; CuZn36Pb3; CuZn36Pb2As; CuZn36Pb1,5; CuZn35Pb2; CuZn35Pb1										





Lp.			Weigh of 1 m [kg]							
	Α	S	d	D						
1	22	5,5	11	24	2,8					
2	24	3	18	26,4	2,1					
3	24	5,5	13	26,4	3,1					
4	24	5	14	27	2,9					
5	27	5	17	29,5	3,4					
6	30	4	22	33,2	3,4					
7	30	5	20	33,5	4					
8	32	7	18	35	5,4					
9	40	6,2								
10	40	6,5	27	43,5	6,9					
11	40	6	28	43,5	6,5					
12	41	3	35	45,5	4,2					
13	42,06	3,66	34,75	46,4	5					
14	44,45	5,72	33,02	50	7,3					
15	49,99	6,1	37,79	54,36	8,9					
16	50	7	36	55	9,8					
17	51	3	45	56	5,6					
18	54	3	48	60	6,1					
19	54	8,5	37	60	12,3					
20	55	8	39	59	12,1					
21	55	12,5	30	60	16,3					
22	57	4,5	48	61	8,5					
23	60	6	48	65,5	11,1					
Grades	CuZn40Pb2; CuZn39Pb3; CuZn39Pb2; CuZn38Pb2; CuZn39Pb1,5; CuZn39Pb1; Grades CuZn37Pb2; CuZn36Pb3; CuZn36Pb2As; CuZn36Pb1,5; CuZn35Pb2; CuZn35Pb1; CuZn38Pb1, CuZn39Pb0,5, CuZn37Mn3Al2PbSi, CuZn40Mn1Pb1; CuZn40Mn1Fe1;									
	1	Other dimens	sions to be agre							



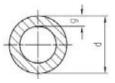


	Diameter	Tolerances	Dimension	Tolerances	Diameter	Tolerances	α	Dimension	Tolerances	cross- section		
Туре	D	D	d	d	f	f	[*]	S	S			
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]		[mm]	[mm]	mm ²		
E0	26	+/- 0,4	24	+/- 0,25	13,8	+/- 0,35	30	2,6	+/- 0,2	334		
E1	30	+/- 0,4	27,8	+/- 0,25	17	- 0,6	45	2,6	+/- 0,2	402,8		
E2	28	+/- 0,4	26	+/- 0,5	17	- 0,6	30	2,6	+/- 0,2	325,1		
E3	32	+/- 0,4	29,6	+/- 0,25	18	+/- 0,42	30	2,6	+/- 0,2	741		
E4	34	+/- 0,4	34,7	+/- 0,5	22	- 0,6	30	2,6	+/- 0,2	601,5		
E5	47,2	+/- 0,4	45	+/- 0,25	27	+/- 0,42	25,714	2,8	+/- 0,2	1061,3		
E6	54	+/- 0,6	51,8	+/- 0,25	38	+/- 0,6	25,714	2,8	+/- 0,2	1016,4		
E7	30	+/- 0,4	27,8	+/- 0,25	18	+/- 0,35	45	2,6	+/- 0,2	375,4		
E8	28	+/- 0,4	26	+/- 0,5	18	+/- 0,35	30	2,6	+/- 0,2	297,6		
E9	32	+/- 0,4	29,6	+/- 0,25	19	+/- 0,42	30	2,6	+/- 0,2	442		
E10	37	+/- 0,4	35	+/- 0,5	23	+/- 0,4	30	2,6	+/- 0,2	577,7		
E11	47,2	+/- 0,4	45	+/- 0,25	29	+/- 0,42	24,714	2,8	+/- 0,2	973,4		
E12	47,2	+/- 0,4	45	+/- 0,25	32	+/- 0,42	24,714	2,8	+/- 0,2	829,6		
E13	39	+/- 0,4	37	+/- 0,25	25	+/- 0,4	30	2,6	+/- 0,2	615,5		
E14	36	+/- 0,35	34	+/- 0,25	19	+/- 0,35	30	26	+/- 0,2	650,3		
				DECENT	RISITY max 1	0%						
	Radius corners R=0,5mm											
Gatunk	ci		CuZn39P	b1,5; CuZn	9Pb3; CuZ 39Pb1; CuZ	Zn37Pb2; C	uZn36F	²b3;				
		CuZn36Pb2As; CuZn36Pb1,5; CuZn35Pb2; CuZn35Pb1										



UNLEADED BRASS TUBES





Tubes are produced in straight lengths depending on customer's requirement in following ranges:

Drawn tubes:

- outer diameter 16,0 60,0mm
- Length> 12000 mm by prior arrangement
- Diameters of rd 6.0 mm and \leq 8.0 mm wall thickness 0.6 \leq 0.8 mm after prior arrangement

Annealed condition, annealing in an oxidizing atmosphere, outer and inner surface oxidized.

Extruded tubes:

- outer diameter of rd 80 mm or less, length 2000-4000 mm with tolerance of \pm 100 mm
- outer diameter bigger than rd 80 mm to 120 mm, inclusive length of 1500-3000 mm without specifying a close length
- outer diameter bigger than rd 120 mm to 180 mm, inclusive length of 1000-2000 mm without specifying a close length

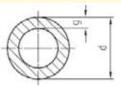
Packing:

- wooden cases
- bundles of 500 kg

Application:

- elements of heating and cooling systems in the automotive industry
- elements of the lamps in the lighting industry
- decorative elements in buildings
- parts of sanitary fittings covered with decorative coatings



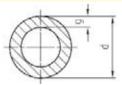


Drawn round unleaded brass tubes

Gra	ides	Di	mensional ra	nge		Mecha	nical propert			Tolerances [mm]	6	
Symbol	Number	External diameter d [mm]	Wall thickness g [mm]	Length [mm]	Temper	Tensile Strength Rm N/ mm2 (MPa) min	Yield Strength Rp02 N/ mm2 (MPa) min	Elongation A100 mm % min	External diameter d	Wall Thickness g	Straightness	Length
		8,0 - 10,0	0,75 - 0,99 1,0 - 1,49	4000-8000					+/- 0,06	+/- 15% +/- 13%		+ 10
		10,1 - 20,0	0,75 - 0,99 1,0 - 1,49 1,50-2,0 2,51-3,0	4000-12000		300	0001	45	+/- 0,08	+/- 15% +/- 13%	3,0 mm	+ 20
CuZn37		20,1 - 30,0	1,0 - 1,49 1,50-2,0 2,51-3,0	4000-12000	R300	300	220*		+/- 0,12	+/- 13%	3,0 mm/1000mm	+ 10
		30,1 - 50,0	1,0 - 1,49 1,50-2,0 2,51-3,0	4000-8000					+/- 0,15	+/- 13%		+ 10
		8,0 - 10,0	0,75 - 0,99 1,0 - 1,49	4000-8000		370			+/- 0,06	+/- 15% +/- 13%		+ 10
		10,1 - 20,0	0,75 - 0,99 1,0 - 1,49 1,50-2,0 2,51-3,0	4000-12000					+/- 0,08	+/- 15% +/- 13%	3,0 mm	+ 20
CuZn37	CW508L	20,1 - 30,0	1,0 - 1,49 1,50-2,0 2,51-3,0	4000-12000	R370		200	25	+/- 0,12	+/- 13%	nm	+ 20
		30,1 - 50,0	1,0 - 1,49 1,50-2,0 2,51-3,0	4000-8000					+/- 0,15	+/- 13%		+ 10
		8,0 - 10,0	0,75 - 0,99 1,0 - 1,49	4000-8000					+/- 0,06	+/- 15% +/- 13%		+ 10
	CuZn37 CW508L	10,1 - 20,0	0,75 - 0,99 1,0 - 1,49 1,50-2,0 2,51-3,0	4000-12000	-				+/- 0,08	+/- 15% +/- 13%	3,0 mm/	+ 20
CuZn37		20,1 - 30,0	1,0 - 1,49 1,50-2,0 2,51-3,0	4000-12000	R440	440	320	10	+/- 0,12	+/- 13%	3,0 mm/1000mm	+ 20
		30,1 - 50,0	1,0 - 1,49 1,50-2,0 2,51-3,0	4000-8000	_				+/- 0,15	+/- 13%		+ 10

*max value





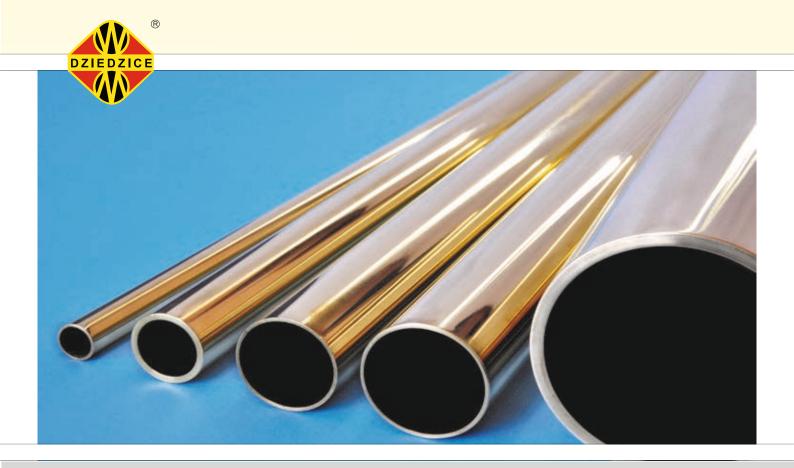
Gra	des	Din	nensional ra	nge		Mechar	nical properties	3		Tolerances [mm]			
Symbol	Number	External diameter d [mm]	Wall thickness g [mm]	Length [mm]	Temper	Tensile Strength Rm N/mm2 (MPa) min	Yield Strength Rp02 N/mm2 (MPa) min	Elongation A100 mm % min	External diameter d	Wall Thickness g	Straightness	Length	
		8,0 - 10,0	0,75 - 0,99 1,0 - 1,49	4000-8000					+/- 0,06	+/- 15% +/- 13%		+ 10	
		10,1 - 20,0	0,75 - 0,99 1,0 - 1,49 1,50-2,0 2,51-3,0	4000-12000	50.40	0.10	250*	35	+/- 0,08	+/- 15% +/- 13%	3,0 mm/	+ 20	
CuZn36	CW507L	20,1 - 30,0	1,0 - 1,49 1,50-2,0 2,51-3,0	4000-12000	R340	340			+/- 0,12	+/- 13%	3,0 mm/1000mm	+ 20	
		30,1 - 50,0	1,0 - 1,49 1,50-2,0 2,51-3,0	4000-8000					+/- 0,15	+/- 13%		+ 10	
		8,0 - 10,0	0,75 - 0,99 1,0 - 1,49	4000-8000					+/- 0,06	+/- 15% +/- 13%		+ 10	
		10,1 - 20,0	0,75 - 0,99 1,0 - 1,49 1,50-2,0 2,51-3,0	4000-12000	00 R410 410			+/- 0,08	+/- 15% +/- 13%	3,0 mm	+ 20		
CuZn36	CuZn36 CW507L	20,1 - 30,0	1,0 - 1,49 1,50-2,0 2,51-3,0	4000-12000	R410	410	250	18	+/- 0,12	+/- 13%	mm/1000mm	+ 20	
		30,1 - 50,0	1,0 - 1,49 1,50-2,0 2,51-3,0	4000-8000					+/- 0,15	+/- 13%		+ 10	
		8,0 - 10,0	0,75 - 0,99 1,0 - 1,49	4000-8000					+/- 0,06	+/- 15% +/- 13%	3,0 mm/100	+ 10	
		10,1 - 20,0	0,75 - 0,99 1,0 - 1,49 1,50-2,0 2,51-3,0	4000-12000					+/- 0,08	+/- 15% +/- 13%		+ 20	
CuZn30	CW505L	20,1 - 30,0	1,0 - 1,49 1,50-2,0 2,51-3,0	4000-12000	R280	280	180*	50	+/- 0,12	+/- 13%		+ 20	
		30,1 - 35,0	1,0 - 1,49 1,50-2,0 2,51-3,0	4000-12000					+/- 0,15	+/- 13%		+ 20	
		8,0 - 10,0	0,75 - 0,99 1,0 - 1,49 0,75 - 0,99	4000-8000					+/- 0,06	+/- 15% +/- 13% +/- 15%		+ 10	
CuZn30		10,1 - 20,0	1,0 - 1,49 1,50-2,0 2,51-3,0	4000-12000	R350	350	200	25	+/- 0,08	+/- 13%	3,0 mm/1000mm	+ 20	
Guznou		20,1 - 30,0	1,0 - 1,49 1,50-2,0 2,51-3,0	4000-12000		50 350	200	25	+/- 0,12	+/- 13%	1000mm	+ 20	
		30,1 - 35,0	1,0 - 1,49 1,50-2,0 2,51-3,0	4000-12000					+/- 0,15	+/- 13%		+ 20	

*max value





Examples of profiles manufactured in Walcownia Metali "Dziedzice " S.A.



CONDENSER TUBES



Due to the specific application of the heat exchanger tubes, including tubes for steam condensers in power plants, the choice of alloying elements requires special care. Elimination of metallic and non-metallic impurities allows to achieve a product that corresponds to all the standards and norms.

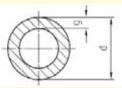
Tubes for heat exchangers are manufactured in two basic alloys, one of them – admiralty brass- with adder of tin, and the second- aluminium brass- with adder of aluminium.

Tubes for heat exchangers are manufactured with main operation on pilger process, providing excellent tube quality after rolling.

They are mainly used in power plants (conventional and nuclear), desalination plants petrochemical and marine industry.

Dimensional charts shown further correspond to the EN standards. Brass rods are also produced according to other norms.





Condenser tubes

Grad	des	Di	mensional rai	ng		Mecha	inical prope	erties	Tolerances [mm]			
Symbol	Number	External diameter [mm]	Wall thickness [mm]	Length [mm]	Temper	Tensile strength Rm N/mm2 (MPa) min	Yield strength Rp02 N/mm2 (MPa) min	Elongation A100 mm % min	External diameter [mm]	Wall thickness	Straightnes s	Length [mm]
CuZ		8,0 - 14,0	0,75 - 0,99	2000-8000					-0,12		ŝ	
CuZn20Al2As, C68700	CW702R	14,1 - 26,0	0,75 - 0,99 1,0 - 1,49 1,50-2,0 2,51-2,5	2000-14000	R340	340	120	55	- 0,20	+/- 10%	3,0mm/1000mm	+ 5
68700		26,1 - 35,0	1,0 - 1,49 1,50-2,0 2,51-3,0	2000-14000					- 0,30		mm	
ĉ		8,0 - 14,0	0,75 - 0,99 1,0 - 1,49	2000-8000					-0,12			
CuZn20Al2As , C68700	CW702R	14,1 - 26,0	0,75 - 0,99 1,0 - 1,49 1,50-2,0 2,51-3,0	2000-14000	R390	390	150	45	- 0,20	+/- 10%	3,0mm/1000mm	+ 5
C68700	~	26,1 - 35,0	1,0 - 1,49 1,50-2,0 2,51-3,0	2000-14000					- 0,30		Imm	
Cui	C C	8,0 - 14,0	0,75 - 0,99 1,0 - 1,49	2000-8000		340			-0,12		6	
Zn28Sn1As,		14,1 - 26,0	0,75 - 0,99 1,0 - 1,49 1,50-2,0 2,51-2,5	2000-14000	R340		120	55	- 0,20	+/- 10%	3,0mm/1000mm	+ 5
C44300	~	26,1 - 35,0	1,0 - 1,49 1,50-2,0 2,51-3,0	2000-14000					- 0,30)mm	
Cui		8,0 - 14,0	0,75 - 0,99 1,0 - 1,49	2000-8000					-0,12			
CuZn28Sn1As , C44300	CW706R	14,1 - 26,0	0,75 - 0,99 1,0 - 1,49 1,50-2,0 2,51-3,0	2000-14000	R390	390	150	45	- 0,20	+/- 10%	3,0mm/1000mm	+ 5
C44300		26,1 - 35,0	1,0 - 1,49 1,50-2,0 2,51-3,0	2000-14000	_				- 0,30		nm	
		8,0 - 14,0	0,75 - 0,99 1,0 - 1,49	2000-8000					-0,12			
CuZn30As		14,1 - 26,0	0,75 - 0,99 1,0 - 1,49 1,50-2,0 2,51-3,0	2000-14000	_	340	130 45	45	- 0,20	+/- 10%	3,0mm/1000mm	+ 5
		26,1 - 35,0	1,0 - 1,49 1,50-2,0 2,51-3,0	2000-14000	-14000						nm	



Tubes are produced in straight lengths as below:

- rd 8,0-15,0 mm, length 2000 mm 8000mm
- over rd 15,0 mm length 2000 mm 14000 mm
- length over 14000 mm acc to arrangement

Annealed condition, annealing in an oxidizing atmosphere, outer and inner surface oxidized.

Leakproofness of tubes checked by Eddy Currents Test for 100% of tubes.

The warranty for corrosion resistance tubes:

- 2.5 years for the alloy CuZn28Sn1 agreed by the warranty card for condenser tubing in power industry
- 3 years for the alloy CuZn20Al2 agreed by the warranty card for condenser tubing in power industry

Packing: wooden cases.

Application:

- condenser tubing (capacitors) in the energy industry
- heat exchangers and systems for power plants
- heat exchangers and coolers used in the shipbuilding industry operating in marine environments
- systems for water desalination



CERTIFICATE

Quality Assurance System for Material Manufacturer acc. to Pressure Equipment Directive 97/23/EC

Certificate no.: 07-202-9120 WZ-0998/13

Name and address of manufacturer: Walcownia Metali "Dziedzice" PL 43-502 Czechowice-Dziedzice UI. Kaniowska 3

This is to certify that the manufacturer has implemented and applies a QA System. This QA System has been subjected to a specific assessment for material acc. to Directive 97/23/EC, annex I, sec. 4.3 with regard to the materials mentioned within the scope of approval.

Approved:QA System acc. to AD2000-Merkblatt W0
and EN 764-5, sec. 4.2Audit report no.:9120 P-0998/13Scope of approval:Seamless Copper Alloy Tubes
Details of the scope are mentioned in the annex of the
certificate AD2000-Merkblatt W0.Production site:Walcownia Metali "Dziedzice"
PL 43-502 Czechowice-Dziedzice
UI. Kaniowska 3

The manufacturer disposes of the essential procedures and equipments as well as the required qualified personnel to ensure quality of manufacturing and testing the materials and products mentioned in the scope of approval.

Katowice, 31.10.2013

Remark of validity: Valid until 10.2016

> Tel. +48 (32) 786 46 51 Fax +48 32 786 46 05 e-mail m.tarczynski@tuv-nord.pl

o body

TIN NORD

Certification Body for Pressure Equipment of TÜV NORD Systems GmbH & Co. KG

M.Tarczyński

Notified body, registration no. 0045

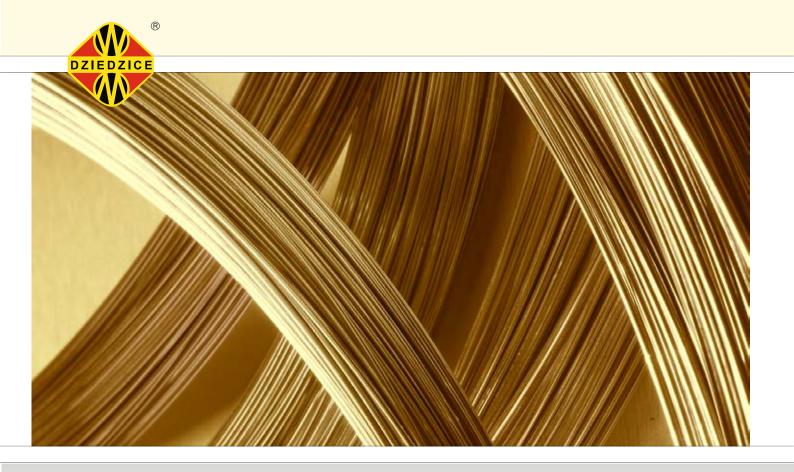
Zertifizierungsstelle für Druckgeräte Benannte Stelle 0045 Große Bahnstraße 31 D-22525 Hamburg/Germany

TÜV NORD Systems GmbH & Co. KG

STW DOR W F8-320 Zerff/kat-DGR-W ENG Rev.04 2013-07



Tube Production Division, Extrusion press run out table



BRASS WIRE



We offer a wide range of brass wire in several grades of alloys. Wires are available:

- In irregular coils, weighing 60 kg 140 kg
- In regular coils, weighing 400 1200 kg

Wires are intended for further machining, hot forging and cold heading.

Used in electrical industry due to good electrical conductivity, in the automotive industry as a spokes nipples, valves an others.



Wire in irregular coil structure



Wire in irregular coil structure



Wire in irregular coil :

- size range: 2,0 10, 0 mm
- inner coil diameter min 500 mm
- outer coil diameter max 800 mm
- coil weight 30-40 kg, 50-70 kg, 120-140 kg
- circles bound in four places

Wire in regular coil :

- size range 3,0 mm 10, 0 mm
- coil weight max 1200 kg
- inner coil diameter 700 mm
- coil height 430 mm
- outside coil diameter depends on the weight of the coil

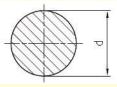
Surface: clean and bright, half-hard temper or for soft temper dull, oxidized.

Packing: coils on pallets or in bulk

Application :

- screw joints resistant to sea-water, manufactured by cold forming
- welding and resistance welding electrodes; brazing solders
- electrodes for electromachining (for further drawing)
- components and accessories in electrical and automotive industry
- metal wool production (CW508L)

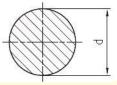




WMD MS 20 (CuZn39Pb3) acc to EN 12166 Properties												
External dimension d	То	lerances d	Temper	Rm min	Rm max	R 0,2 approx	A100 min	A11,3 min	A min	Packing		
[mm]		[mm]		[Mpa]	[Mpa]	[Mpa]			[%]			
2,0												
2,2												
2,3												
2,5		+0 / -0,04	R510	510		(400)	(4)					
2,8		+07-0,04	K310	510		(400)	(4)			<u>8</u>		
3,0										ls 5		
3,5										Õ I		
4,0										coils 50 - 70 kg		
4,5	c									kg		
4,8	class											
5,0	Ē	+0 / -0,05								irre		
5,1		+07-0,05								gula		
5,5										aro		
6,0			R500	500		(390)		6		(irregular coil structure)		
6,2										stru		
6,5										ctur		
7,0										.е)		
7,5		+0 / -0,06										
8,0												
8,3			R490	490					8			
9,0			R490	490					0			
4,8												
5,0												
5,1		+0 / -0,05										
5,5										spc		
6,0	Cla		R500	500		(390)		6		sloc		
6,2	class		1300	500		(080)		0		읏		
6,5	Ш									spools ok. 1000 kg		
7,0)00		
7,5		+0 / -0,06								kg		
8,0												
8,3			R490	490					8			
9,0			11700	+50					5			

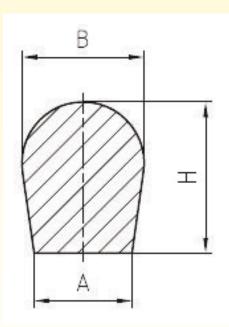
Round drawn wires acc to EN12166





WMD MD 10 (CuZn37) acc to EN 12166											
					Pro	perties					
External dimension d	Tolerances d		Temper	Rm min	Rm max	R 0,2 approx	A100 min	A11,3 min	A min	Packing	
[mm]		[mm]		[Mpa]	[Mpa]	[Mpa]			[%]		
2,0											
2,2					570						
2,3			R470 47			(200)	(5)				
2,5		+0 / -0,04		470							
2,8			K470	470	570	(390)					
3,0										CO	
3,5										ils 5(
4,0										coils 50 - 70 kg	
4,5		+0 / -0,05								0 kg	
4,8	class										
5,0	SS E									irreg	
5,1	111									Jular	
5,5										coil	
6,0										(irregular coil structure)	
6,2			R370	370	470	(250)		(20)	(25)	ıctur	
6,5										e)	
7,0											
7,5		+0 / -0,06									
8,0											
8,3											
9,0											





Drawn profiles in circles

						acc to EN					
Symbol		Dim	ensions	and tole	Pro						
	Α	tol. A	В	tol. B	н	tol. H	Temper	Rm min	A11,3%	Form	
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[Mp				
K-001	3,8	0,2	4,8	0,2	6	0,2					
K-002	4,2	0,2	5,8	0,2	7,5	0,2					
K-003	4	0,2	5	0,2	6,1	0,2					
K-004	3,2	-0,12	4	-0,12	4,5	-0,12					
K-005	4,4	-0,15	4,4	-0,15	5,5	-0,16				coils 50 - 70 kg (irregular coil structure)	
K-006	5,6	-0,16	7,2	-0,16	8,2	-0,16					
K-007	2,9	0,2	4,3	0,2	5,7	0,2					
K-008	3,7	-0,1	4,7	-0,1	6,1	-0,1					
K-009	4,4	-0,15	4,4	-0,15	5,9	-0,15					
K-015	4	0,1	5,5	-0,15	7	-0,15	R420	420	8		
K-016	5	-0,15	5	-0,15	7	-0,1					
K-017	4	+/-0,10	5,6	+/-0,10	6,7	+/-0,10					
K-018	3,7	+/-0,10	4,5	+/-0,10	5,7	+/-0,10					
K-019	3,7	+/-0,10	5	-2	5,7	+/-0,05					
K-020	2,8	+/-0,10	3,8	+/-0,10	4,7	+/-0,10	1				
K-025	5	-0,14	5	-0,14	6	-0,16					
K-026	3,7	-0,12	4	-0,12	4,5	-0,12					
K-027	3,5	-0,1	4,7	-0,1	6,1	-0,1	1				
K-028	5,08	+/-0,05	7,92	+/-0,05	9,04	+/-0,05	1		1		



Profiles are produced according to costumer requirements in a wide range of dimensions, according to drawings. Profiles are utilized in many industries like key manufacturing, electronic industry and others.

Size range: in accordance to following charts or in acc to EN 12164, EN 12167 or acc to approved specifications.

Length of manufactured profiles: 3000-4000mm with length tolerance +/-50mm. **Temper:** Ordered as extruded: the hot extrusion

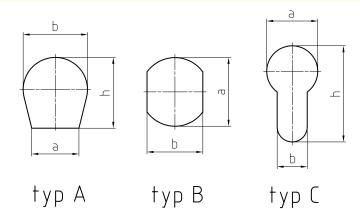
Ordered as drawn

- M no specific mechanical properties
- R430 according to EN 12164, EN 12167 for the alloys CW614N, CW617N.

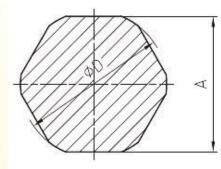
Surface: defined by manufacturing process .

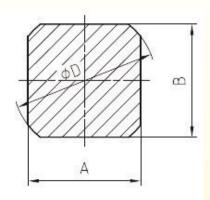
Dimensional charts shown further correspond to the EN standards. Brass rods are also produced according to other norms.





Profile dimensions [mm] Grades **Symbol** Тур tol. a b tol. b h tol. h а +/- 0,05 +/-0,05 K-021 В f 6,0 5,0 --CuZn36Pb2As CW602N K-022 С 17,0 +/-0,1 10,0 -0,1 33,0 -0,1 CuZn39Pb2 CW612N CuZn39Pb3 CW614N K-024 В f 7,8 +/-0,05 3,5 -0,2 --CuZn40Pb2 CW617N А K-029 4,4 -0,15 -0,15 4,4 5,1 -0,16 K-030 С 17,0 +/-0,1 10,0 +/-0,1 32,0 +/-0,1 K-031 С 8,2 -0,15 2,4 -0,12 10,6 -0,2 K-032 С 20,95 -0,15 9,95 -0,1 31,95 -0,20 С K-034 14 +0,05/-0,13 4 +0,05/-0,13 +0,05/-0,15 19 K-035 А 11 +/-0,2 15 10 +0,1/-0,2 K-036 С 17,0 +/-0,1 10,0 32,88 -0,1 -0,1



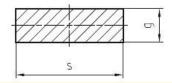


Grades		Lp.	Туре	Rod dimensions Ax Bx D [mm]					
Symbol	Number	1	А	7,93 x 7,93 x 9,42					
		2	А	9,14 x 9,14 x 11,15					
		3	А	10,03 x 10,03 x 12,4					
CuZn36Pb2As CuZn39Pb2 CuZn39Pb3 CuZn40Pb2	CW602N CW612N CW614N	CW612N	4	А	12,98 x 12,98 x 16,33				
							5	А	15,98 x 16,99 x 21,23
	CW617N	6	В	26,99 x — x 30,16					
		7	В	25,4 x — x 27,85					



BRASS FLAT BARS



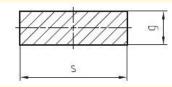


Drawn flat bars in straight lengths according to EN12167

Gra	ade		Dimensic	onal range	Mechanical prop		erties			rances nm)	Cor	St							
Symbol	Number	Temper	Width s [mm]	Thickness g mm]	Tensile Strength Rm N/ mm2 (MPa) min	Yield Strength Rp02 N/ mm2 (MPa) min	Elongation A% min	Hardness HB	Width s [mm]	Thickness g [mm]	Corners radius	Straightness	Torsion	Length (mm)	Ends				
			6,0-18,0	3,0 - 6,0 6,1-10,0 10,1 - 18,0					+/- 0,10	+/- 0,07 +/- 0,09 +/- 0,10	0,3-0,5 0,4-0,8 0,5-1,2		1 mm/m		broken				
	M R480 H130* CW614N; CW617N CuZn39P3; CuZn40Pb2		18,1-30,0	4,0 - 6,0 6,1-10,0 10,1 - 18,0 18,1 - 30,0					+/- 0,15	+/- 0,07 +/- 0,09 +/- 0,10 +/- 0,15	0,3-0,5 0,4-0,8 0,5-1,2 0,6-1,8		1,5 mm/m						
		Z	30,1-50,0	5,0 - 6,0 6,1-10,0 10,1 - 18,0 18,1 - 30,0 30,1 - 40,0	Without	specified m properties	ified mechanical perties			+/- 0,09 +/- 0,10 +/- 0,12 +/- 0,15 +/- 0,20	0,3-0,5 0,4-0,8 0,5-1,2 0,6-1,8 0,7-2,8	2 mm/m	2 mm/m		cut off				
CuZnt			50,1-60,0	40,1-45,0 5,0-6,0 6,1-10,0 10,1-18,0 18,1-30,0					+/- 0,25	+/- 0,11 +/- 0,12 +/- 0,15 +/- 0,20	0,8-4,0 0,3-0,5 0,4-0,8 0,5-1,2 0,6-1,8		3 mm/m						
39P3; CuZ			6,0-18,0	30,1 - 40,0 40,1 - 45,0 3,0 - 6,0	480	(330) (5	(5)		+/- 0,10	+/- 0,25	0,7-2,8 0,8-4,0 0,3-0,5	N	1 mm/m	3000 +/-50	broken				
n40Pb2		R480 1130*	18,1-30,0 30,1-50,0 50,1-60,0	4,0 - 6,0 5,0 - 6,0 5,0 - 6,0				130*	+/- 0,15 +/- 0,20 +/- 0,25	+/- 0,07 +/- 0,09 +/- 0,11	0,3-0,5 0,3-0,5 0,3-0,5	2 mm/m	1,5 mm/m 2 mm/m 3 mm/m		cut off				
		R430 H110*	R430 H110*	R430 H110*	R430 H110*	-	R430 H110*	6,0-18,0 18,1-30,0	6,0-10,0 10,1 - 18,0 6,0-10,0 10,1 - 18,0						+/- 0,09 +/- 0,10 +/- 0,09 +/- 0,10	0,4-0,8 0,5-1,2 0,4-0,8 0,5-1,2		1mm/m 1,5 mm/m	
								R430 H110*	R430 H110*	30,1-50,0	18,1 - 30,0 6,0-10,0 10,1 - 18,0 18,1 - 30,0 30,1 - 40,0 40,1 - 45,0	430 (200)	(15)	110*		+/- 0,15 +/- 0,10 +/- 0,12 +/- 0,15 +/- 0,20	0,6-1,8 0,4-0,8 0,5-1,2 0,6-1,8 0,7-2,8 0,8-4,0	2 mm/m	2 mm/m
			50,1-60,0	6,0-10,0 10,1 - 18,0 18,1 - 30,0 30,1 - 40,0 40,1 - 45,0	· - - -					+/- 0,12 +/- 0,15 +/- 0,20 +/- 0,25	0,4-0,8 0,5-1,2 0,6-1,8 0,7-2,8 0,8-4,0		3 mm/m						

Applies only to temper of H *





Grade		Temper	Dimensic	onal range	Mechanical properties		ances m)	Corners	Straightness	Torsion	Length (mm)	Ends						
Symbol	Number	per	Iper	Iper	Width s [mm]	Thickness g [mm]	anical erties	Width s [mm]	Thickness g [mm]	radius	ntness	sion	gth m)	ds				
			20,0-30,0	18,0 - 30,0		+/- 0,33	+/- 0,33	0,3-0,5		3 mm/m								
				6,0 - 10,0	İ		+/- 0,27	0,4-0,8	1		3000 +/-100							
0 7 07	0.4/50.01			10,1 - 18,0			+/- 0,33	0,5-1,2		4 mm/m								
	CuZn37 CW508L CuZn40 CW509L CuZn35Pb1 CW600N CuZn35Pb2 CW601N CuZn36Pb3 CW603N CuZn37Pb2 CW606N CuZn36Pb2As CW602N		30,1-50,0	18,1 - 30,0	_	+/- 0,62	+/- 0,45	0,6-1,8	-									
							30,1 - 40,0	Without specified		+/- 0.62	0,7-2,8			00				
								40,1 - 50,0	out		., 0,02	0,8-4,0						
		CW606N CW602N CW607N CW608N CW610N CW611N CW612N		5,0 - 6,0	ds		+/- 0,27	0,3-0,5										
				6,1-10,0	ecif		+/- 0,33	0,4-0,8	-									
CuZn38Pb1	CW607N		М				10,1 - 18,0	ied		+/- 0,45	0,5-1,2	g						
CuZn38Pb2	CW608N			50,1-80,0	18,1 - 30,0	me	∃e +/- 1,2	+/- 0,52	0,6-1,8	6m m/m	6 mm/m	ω	cut off					
CuZn39Pb0,5 CuZn39Pb1								30,1 - 40,0	5	chanic	+/- 0.74	0,7-2,8	m/r		000	off		
CuZn39Pb2	CW612N							40,1- 50,0			., 0,,,+	0.8-4.0) +/			
CuZn39P3	CW614N									I	I	I		50,1 - 80,0			+/- 1,0	0,0 1,0
CuZn40Pb2 CuZn35Ni3Mn2AlPb	CW617N					CW617N CW710R				1		5,0 - 6,0	rop		+/- 0,33	0,3-0,5	-	
CuZn37Mn3Al2PbSi	CW710R CW713R			6,1-10,0	erti		+/- 0,45	0,4-0,8	-									
CuZn40Mn1Pb1	CW720R			10,1 - 18,0	es		+/- 0,52	0,5-1,2	-									
CuZn40Mn2Fe1	CW723R		80,1-130	18,1 - 30,0		+/- 2,20	+/- 0,74	0,6-1,8	-	9 mm/m								
				30,1 - 40,0			+/- 1,0	0,7-2,8			1500-3000							
				40,1- 50,0				0,8-4,0										
				50,1 - 80,0			+/- 1,2	0,0 4,0			1000-2000							

Extruded flat bars in straight lengths according to EN12167



Copper Processing Plant, Production Hall



BRASS AND ALUMINUM PROFILES

BRASS PROFILES



The offer provides all kinds of shapes according to customer's request.

The main purpose of the brass profiles whose thickness usually does not exceed 3 mm is the construction industry.

Parts made of these profiles are very well polished, improving the presentation of the interior.

Application of profiles are: connection elements in partition walls, ceramic tile flooring and antiskid skirting boards .

Profiles are produce acc to our own **alloy MA 56** with following contents:

- Cu 56.0 59.0%
- Pb 1.0 3.0%
- Al 0.3 1.0%
- Zn rest
- total impurities max 1.8%

Shapes and dimensions :

- profiles with the straight cross-section
- equal and unequal angles
- equal and unequal tee bars
- channel sections

Profiles with a complex cross-section made in accordance with existing drawings or drawings provided by the client (open profiles) length 2000 - 4000 mm length tolerance of + 15

Dimensional tolerances:

According to PN - 75 / H - 08 sheet 93623 Size range of produced profiles:

- cross-section in the circumscribed circle with a diameter of 80 mm
- minimum wall thickness of 1.0 mm

Temper: after hot extrusion with no specified and tested properties

Surface: defined by manufacturing process such as the hot extrusion



Produced and offered in a wide range of assortment according to customer's request.

Component recipe of the main alloy from which the profiles are made, provides very good mechanical properties.

Used primarily in construction, but also in the production of household appliances, automotive and electrical industry and many others.

Alloy: Alloy PA 38, according to PN - 79 / H - 88026

Shapes and :dimensions

- profiles with the straight cross-section
- equal and unequal angles
- equal and unequal tee bars
- channel sections

Profiles with a complex cross-section made in accordance with existing drawings or drawings provided by the client:

- full
- half-closed

Dimensional range of profiles :

- cross-section described in circle with a diameter of 80 mm
- minimum wall thickness of 1.0 mm
- length 2000 4000 mm length tolerance of + 15 mm

Temper: after hot extrusion

Surface: defined by manufacturing process such as the hot extrusion



Standard products stock



ADDITIONAL INFORMATION



In order to meet the demands of the market and provide customers highest quality Walcownia Metali "Dziedzice" SA introduces standardization of products.

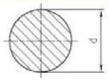
Standardization is based on the standards EN12164 and includes drawn rods in the alloy CW614N. The introduction of new standards led to the creation of a stock, and thus the fast, few-day delivery.

Stock composition is constantly replenished, allowing us to offer a wide range of dimensions .



In order to obtain information about the current status of stock please contact our Sales Department

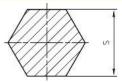




	WMD MS 20 (CuZn39Pb3) acc to EN 12164									
			1	1			Prop	perties		
Dimensional range d		ances d	Straightness	Length	Ends	Temper	Rm min	R 0,2 approx	A min	Packing
[mm]		[mm]	ess	[mm]		ř	[Mpa]	[Mpa]	[%]	
2,0 2,3 2,5 3,0		+0/-0,025			broken	_				
3,5 4,0 4,5 4,8 5,0 5,5 6,0 6,5 7,0 7,5 8,0 8,5 9,0 9,5		+0/-0,030 +0/-0,036	1 mm/m		chamfered /cut off	R500	500	(390)	8	Cases 500 kg
10,0 10,5 11,0 11,5 12,0 13,0 14,0 15,0	h9	+0/-0,043								
16,0 17,0 18,0 19,0 20,0 21,0 22,0 23,0 24,0 25,0		+0/-0,052	0,5 mm/m	3000 +/-50	chamfered /sharpened					Bundle
26,0 27,0 28,0 29,0 30,0					d.	R430	430	(250)	10	Bundles 500 kg
31,0 32,0 33,0 34,0 35,0 36,0 37,0 38,0 39,0 40,0	h10	+0/-0,16	1 mm/m							
40,0 41,0 - 50,0 51,0- 65,0		+0/-0,19	2 mm/m	-		М	Without	specified me properties	echanical	

Standard products manufactured in WMD





		WN	ID MS 20	(CuZn39	⊃b3) a	cc to EN 1216	4 Propert	ies										
Dimensional range s	Tolera	ancess	Straightness	Length	Ends	Temper	Rm min		A min	Packing								
[mm]		[mm]	less	[mm]	<u>,</u>		[Mpa]	[Mpa]	[%]	g								
3,5 4,0 4,5 4,8 5,0 5,5 6,0		+0/-0,08			chamfered/ cut off					Case								
6,5 7,0 7,5 8,0 8,5 9,0 9,5		+0/-0,09	2 mm/m			R500	500	(390)	8	Cases 500 kg								
10,0 10,5 11,0 11,5 12,0 13,0 14,0 15,0 16,0 17,0 18,0		+0/-0,11																
19,0 20,0 21,0 22,0 23,0 24,0 25,0 26,0 27,0 28,0 29,0 30,0	h11	+0/-0,13	- 1,5 mm/m	1,5 mm/m	1,5 mm/m	1,5 mm/m	1,5 mm/m	1,5 mm/m	1,5 mm/m	1,5 mm/m	1,5 mm/m	3000 +/-50	chamfered / sharpened	R430	430 (24	(250)	10	Bundles 500 kg
$\begin{array}{r} 31,0\\ 32,0\\ 33,0\\ 34,0\\ 35,0\\ 36,0\\ 37,0\\ 38,0\\ 39,0\\ 40,0\\ 41,0\\ 42,0\\ 43,0\\ 44,0\\ 45,0\\ 46,0\\ \end{array}$		+0/-0,16				М	Without s	specified me properties	echanical	500 kg								
47,0 48,0 50,0 51,0-63,0		+0/-0,19	2 mm/m	-														



11	111	1
71	114	- 10
11	111	
11	111	- 1

	WMD MS 20 (CuZn39Pb3) acc to EN 12164															
							Prope	rties								
Dimensional range s	Tolera	ancess	Straightness	Length	Ends	Temper	Rm min	R 0,2 approx	A min	Packing						
[mm]		[mm]	SS	[mm]			[Mpa]	[Mpa]	[%]							
3,5					с г											
4,0					chamfered / cut off											
4,5		+0/-0,08			ere											
5,0		. 0/-0,00			d/d					S						
5,5			2 mm/m		cut					lses						
6,0					off	R500	500	(390)	8	\$ 50						
7,0										Cases 500 kg						
8,0										ŋ						
8,5		+0/-0,09														
9,0																
10,0																
11,0																
12,0																
13,0	+0/-0,11															
13,5																
14,0		+0/-0,11		30												
15,0	h11			00	<u>ი</u>											
16,0				h11 h11 h11 h11 h11 h11 h11 h11 h11 h11 h11 h1,5 mm/m												
17,0						ö	nfer									
18,0			-		ed											
19,0					/ sh	-				Bu						
20,0			1,5 mm/m		arp	R430	430	(250)	10	Bundles						
22,0			1,3 1111/11		ene											
24,0					ď					500 kg						
25,0		+0/-0,13								kg						
26,0																
27,0																
28,0 29,0																
30,0																
30,5																
32,0																
35,0-50,0		+0/-0,16				М	With mecha	out speci nical prop	fied perties							

NEW ECO-ALLOYS FOR DRINKING WATER





Accordingly to European and United States regulations, of the lead content of elements used in drinking water systems, Walcownia Metali "Dziedzice" S.A. has undertaken several measures to start the production of low-lead and lead-free alloys, and together with the Institute of Non-Ferrous Metals in Gliwice, is continuing to develop the offer of ecological alloys for use in drinking water systems.

We currently offer products for use in drinking water systems in two groups depend on lead content in alloys. The first of these contains Pb in the form of impurities, while the second group contains lead present as an alloying component:

1. Pb content max 0,20%:

- <u>CW509L (CuZn40) C28500acc to ASTM</u>
 - the maximum content of Pb is 0,2%, ensures compatibility with the upcoming (year 2013/2014) restrictive legal requirements on installation materials used for drinking water in Europe and USA (Directive: UE 98/83/EC; DIN50916-T1; Reduction of Lead in Drinking Water Act),
 - has very good properties for heat operation,
 - has non-sparking properties thus is suitable for gas installations,
 - is suitable for mechanical as well as electromechanical polishing
 fully recyclable
- <u>CW510L (CuZn42) C28000 acc to ASTM</u>
 - the maximum content of Pb is 0,2%, ensures compatibility with the upcoming (year 2013/2014) restrictive legal requirements on installation materials used for drinking water in Europe and USA (Directive: UE 98/83/EC; DIN50916-T1; Reduction of Lead in Drinking Water Act),
 - has very good properties for heat operation,
 - has non-sparking properties thus is suitable for gas installations,
 - is suitable for mechanical as well as electromechanical polishing
 - fully recyclable



- CW511L (CuZn38As) - C27450 acc to ASTM

- arsenic content makes this type resistant to dezincification (just like CW602N),
- characterized by good resistance to stress corrosion,
- the maximum content of Pb is 0,2%, ensures compatibility with restrictive legal requirements on installation materials used for drinking water in Europe and USA (Directive: UE 98/83/EC; DIN50916-T1; Reduction of Lead in Drinking Water Act),
- has very good properties for cold working,
- in case of heat operation (eg. forging), in order to obtain resistance to dezincification, heat treatment is recommended,
- characterized by a lower machinability than CW602N,
- has non-sparking properties thus is suitable for gas installations,
- fully recyclable

2. Pb content between 1,2-2,2%

- <u>CW602N (CuZn36Pb2As</u>)
- <u>CW617N</u> (CuZn40Pb2)
- CW626N (CuZn33Pb1,5AlAs)
 - alternative alloy to CW602N (CuZn36Pb2As)
 - higher dezincification resistant than alloy CW602N,
 - high resistance of stress corrosion cracking,
 - fully accorded with restrictive legal regulations in USA and Europe regarding installation's material used for drinking water (Directive UE 98/83/EC; DIN50916-T1;Reduction of Lead in Drinking Water Act),
 - has very good properties for hot working and forging, limited cold working;
 - high corrosion resistance in sea water;
 - fully recyclable.



Work is currently underway to implement additional lead-free and low-lead alloys



Our products are offered in the following grades

Standard brass offered by WMD							
Symbol	Compliance with norms	General characteristics of the alloy	Examples of use				
CuZn36Pb1	EN (CW 600N), CSN (CuZn36Pb1)	perfect for profiling, for cold working, stamping, riveting machining, water-resistance, salt solution resistance and various organic liquids	components made by different methods machining and forming				
CuZn36Pb1,5	EN (CW 601N), DIN (CuZn36Pb1,5), ASTM (C34500), PN (MO62)	easily machined, susceptible for cold and hot working	components made by different methods machining and forming				
CuZn37Pb2	EN (CW 606N), BS (CZ 131), ASTM (C35300)	easily machined, susceptible for cold working (limited bending and riveting)	components made by different methods machining and forming				
CuZn36Pb3	EN (CW 603N), DIN (CuZn36Pb3), ASTM (C36000), JIS (C3601,C3602), BS (CZ 124), PN (MO61)	very easily machined (suitable for processing on automats), with limited susceptibility for cold working	components made by different methods machining, suitable for processing on automatic				
CuZn38Pb1.5	EN (CW 607N), DIN (CuZn38Pb1,5), PN (MO60)	easily machined, susceptible for cold working	components made by different methods machining and hot forming				
CuZn38Pb2	EN (CW 608N)	with good mechanical properties, suitable for machining and hot working. Alloy CuZn38Pb2 has a good fastness to water, alkaline solution of organic salts, it is not fastness of acids and sulphur	components made by different methods machining and hot forming (watches envelopes, optical elements, embossed and engraved parts)				
CuZn39Pb0,5	EN (CW 610N), DIN (CuZn39Pb0,5)	easily machined, susceptible for cold working	alloy typical for cold bending				
CuZn39Pb1	EN (CW 611N)	easily machined, susceptible for cold working	components made by different methods machining and hot forming				
CuZn39Pb1	GOST (Łs 59-1), CSN (CuZn39Pb1)	easily machined, susceptible for cold working	components made by different methods machining and hot forming				
CuZn39Pb2	EN (CW 612N), DIN (CuZn39Pb2), ASTM (C37700), JIS (C3771), PN (MO59)	very susceptible for hot forging and machining , cold working is limited, characterized by high ductility	components made by different methods machining and hot forming				
CuZn39Pb3	EN (CW 614N), DIN (CuZn39Pb3), PN (MO58, MO58A), ASTM (C38500), JIS(C3603, C3604)	easily machined, with limited susceptible for cold working (classical alloy for automatic machining)	components made by different methods machining, especially for processing on automatic				
CuZn39Pb3	EN (CW 614N), DIN (CuZn39Pb3)	perfect for machining, with limited susceptible for cold working (classical alloy for automatic machining)	components made by different methods machining, especially for processing on automatic with the requirements of DIN 50930-6 (drinking water) - sanitary fittings elements				
CuZn39Pb3	EN (CW 614N)	alloy similar to MS 20 with increased susceptibility for machining	components made by different methods machining, especially for processing on automatic				
CuZn39Pb3	EN (CW 614N)	alloy similar to MS 20 with increased susceptibility to plastic strains	components made by different methods machining, especially for processing on automatic where there is an additional requirement for increased plasticity				
CuZn39Pb3	BS (CZ121)	perfect for machining, with limited susceptible for cold working	components made by different methods machining, especially for processing on automatic				
CuZn40Pb2	EN (CW 617N), DIN (CuZn40Pb2), CSN (CuZn40Pb2), PN (MO58B)	easily machined, with limited susceptible for cold working, with high susceptible for hot working	production of forged parts with complex shapes, industrial clamps, parts for pipe fittings, plumbing parts, heating, industrial fittings, etc .				
CuZn40Pb2	EN (CW 617N), DIN (CuZn40Pb2)	easily machined, with limited susceptible for cold working, with high susceptible for hot working	production of forged parts with complex shapes, industrial clamps, parts for pipe fittings, plumbing parts, heating, industrial fittings, with the requirements of DIN 50930-6 (drinking water)				
CuZn40Pb2	BS (CZ122)	easily machined, with limited susceptible for cold working, with high susceptible for hot working	production of forged parts with complex shapes, industrial clamps, parts for pipe fittings, plumbing parts, heating, industrial fittings, etc				
CuZn36Pb2As	EN (CW 602N)	easily machined and susceptible for cold working, very high resistance for dezincification	elements which require high resistance to dezincification combined with good machinability				
CuZn36Pb2As	EN (CW 602N)	easily machined and susceptible for cold working, very high resistance for dezincification	elements which require high resistance to dezincification combined with good machinability with the requirements of DIN 50930-6 (drinking water) - sanitary fittings elements				

Special brass offered by WMD							
Symbol	Compliance with norms	General characteristics of the alloy	Examples of use				
CuZn37Pb2Sn1	ASTM (C48500)	easily machined and susceptible for hot working, high susceptibility for soldering	the marine industry (elements of valves, screws)				
CuZn38Sn1	ASTM (C46400)	corrosion resistance	perforated bottoms of marine equipment capacitors				
CuZn31Si1	EN (CW 708R)	high mechanical properties machinability of 40-50%	bearings and sliding elements				
CuZn35Ni3Mn2AIPb	EN (CW 710R), DIN (CuZn35Ni2)	high structural strength, corrosion and abrasion resistance	elements of devices, valves				
CuZn40Al2	EN (CW 713R), DIN (CuZn40Al2)	high mechanical properties machinability of 40-50%	bearings and sliding elements				
CuZn40Mn2	PN (MM58), DIN (CuZn40Mn2)	high atmospheric corrosion resistance	elements of the apparatus, architecture				
CuZn40Mn1Pb1	EN (CW 720R), DIN (CuZn40Mn1Pb)	slightly increased mechanical properties, high atmospheric corrosion resistance	architectural elements (windows frames, railing, curtain rails)				
CuZn40Mn2Fe1	EN (CW 723R)	slightly increased mechanical properties, high atmospheric corrosion resistance	architectural elements (windows frames, railing, curtain rails)				
CuZn20Al2	EN (CW 702R) ASTM (C68700) JIS (C6870) DIN (CuZn20Al2) BS (CZ 110) PN (MA77) TLV (CuZn20Al2As)	high corrosion resistance, especially in sea water environment	condenser tubes (for heat exchangers), tubes for ship borne condenser				
CuZn28Sn1	EN (CW 706R) DIN (CuZn28Sn1) ASTM (C44300) BS (CZ 111) JIS (C4430) PN (MC70) TLV (CuZn28Sn1As)	high corrosion resistance	condenser tubes (for heat exchangers)				
CuZn40	EN CW509L ASTM C28000 BS CZ109 DIN CuZn40	very susceptible to cold working, can be soldered	elements made with different forming methods				
CuZn42	CW510L EN	high susceptibility to hot working (forging)	production of forged parts, industrial clamps, parts for pipe fittings, plumbing parts, heating parts, industrial valves, etc.				
CuZn38As	CW511L EN	relatively good machinability and susceptibility to cold working, high resistance to dezincification, CW602N alloy alternative	elements which require high resistance to dezincification				
CuZn33Pb1,5AlAs	CW626N EN	relatively good machinability and susceptibility to cold working, high resistance to dezincification, CW602N alloy alternative	elements which require high resistance to dezincification, product meets the requirements for "drinking water".				
CuZn35Pb1,5AlAs	CW625N EN	relatively good machinability and susceptibility to cold working, high resistance to dezincification, CW602N alloy alternative	elements which require high resistance to dezincification, product meets the requirements for "drinking water".				

Two-Component Brass Alloys Offered by WMD						
Symbol	Compliance with norms	General characteristics of the alloy	Examples of use			
CuZn37	EN (CW 508L) DIN (CcZn37) CSN (CuZn37) GOST (Ł63) PN (M63)	well susceptible for cold working, well for soldering (basics two-component brass alloy)	elements made by various method of machining and plastic forming, including by the deep drawing			
CuZn30	EN (CW 505L) DIN (CcZn30) CSN (CuZn30) ASTM (C26000) JIS (C2600) PN (M70)	well susceptible for cold working, well for soldering	elements made by various method of machining and plastic forming, including by the deep drawing			

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GENERAL CONDITIONS OF SALE



- 1. The following General Conditions of Sale shall refer to all sales between the Seller and Buyers and shall override any other conditions of purchase.
- 2. An order containing the data such as the type, hardness, quantity, dimensions and any other additional demands shall be made by the Buyer in writing by letter or e-mail.
- 3. An order confirmation containing the conditions of the order shall be sent to the Buyer by the Seller in writing by letter or e-mail within 7 days from the receipt of the order.
- 4. The conditions of the order can be changed only if both parties agree on the change in writing by letter or e-mail.
- 5. If the Buyer is responsible for the transport, the Buyer shall collect the goods within 5 days from the receipt of the notification of readiness that the Seller shall send in writing by letter or e-mail. After the above-mentioned period, the Seller reserves the right to send the goods to the Buyer with all risks and costs transferred to the Buyer. In case of delay to collect the goods, the Seller is entitled to charge the Buyer with penalty interest of sales value at the statutory rate- the penalty interest shall in no way exclude the Seller's right to claim for damages in line with general principles. The Seller shall pack the goods as it has been requested by the Buyer or in conformity with Seller's practice for the transport
- involved.
 If the Seller is responsible for the transport, the goods shall be sent after the Buyer is notified about the readiness of goods for dispatch (in writing by letter or e-mail) and the Buyer shall collect the goods. The Seller shall pack the goods as it has been requested by the Buyer or in conformity with Seller's practice for the transport involved.
- 7. The Seller reserves the right to invoice the Buyer for the packaging of the goods. If accepted by mutual agreement, the costs of packaging may be included in the price of goods or returnable packaging may be sent. The returnable packaging shall be returned within 60 days unless agreed otherwise. The costs of return are transferred to the Buyer unless both contractual parties have agreed otherwise.
- 8. Payment shall be made by the Buyer at contractually agreed time regardless of a filed complaint.
- 9. In case of delay in payment, the Buyer shall pay penalty interest at the statutory or agreed rate.
- 10.In case of order cancelation in writing by the Buyer that shall be approved by the Seller, the Buyer is obliged to pay to the Seller all costs of production, stock of material and costs of currency unless the loss is higher. The amount, which the Buyer is charged with, shall be agreed on the basis of individual calculation prepared by the Seller.
- 11.In case of order cancelation by the Buyer approved by the Seller before the production of goods, the Buyer shall cover all costs of metal hedging on the LME. The amount, which the Buyer is charged with, shall be agreed on the basis of individual calculation prepared by the Seller.
- 12.Until the payment goods remain the property of the Seller.
- 13.In the case of the Buyer's late payment, the Seller reserves the right to withhold shipment until the due payment and claim interest for late payment.
- 14. Any dispute arising out of or in connection with this contract shall be determined by appropriate provisions of the Polish law.
- 15. Matters in dispute shall be adjudicated by negotiations; in case the agreement cannot be reached, matters in dispute shall be adjudicated by court of general jurisdiction- the court having jurisdiction over the Seller's seat.
- 16.Both parties are excluded from the liability if they cannot fulfil contractual obligations due to force majeure. If force majeure occurs, the party shall immediately notify the other contractual party in writing. However, the occurrence of force majeure shall not affect the Buyer's responsibility to pay for delivered goods.
- 17.If the Seller provides the Buyer with General Conditions of Sale in other languages than Polish, the Polish version shall be applied in case of any divergence

THE RULES OF FILING AND INVESTIGATING COMPLAINTS



1. The Seller guarantees proper quality of the goods in accordance with standards listed in the order confirmation.

2. The rules of filing the complaints:

- 2.1. All the complaints shall be filed immediately after finding a defect regarding the following conditions:
- 2.2. Complaints regarding shipping (quantity, surface conditions, packaging) shall be filed immediately during delivery acceptance otherwise the right to question it is lost.

The precondition of examining the complaint is entering the weight differences in the delivery documentation, signed by representatives of both parties or by people responsible for transport.

In case of deliveries of products ordered by different measurement than by weight, for example by meters or number of items, the base for the evaluation of the delivery as to its quantity is the weight specified in the delivery documentation. The precondition of examining the complaint is entering the mass differences in the delivery documentation, signed by representatives of both parties or by people responsible for transport.

2.3. Complaints concerning quality in case of apparent defects (surface, shape, dimensions) shall be filed according to the rule described in Point 2.1, but not later than 14 days from the delivery date.

2.4. Complaints concerning quality in case of hidden defects, material defects and product's features not in accordance with the standards confirmed in the order (not mentioned above) shall be filed within 6 months after delivering the goods, unless agreed on other period of time.

- 2.5. The Seller is not responsible for the quantity and quality of the surface of products stored in the Buyer's or third parties' warehouses after 14 days since the delivery.
- 3. The complaint shall include:
 - 3.1. Number of the order confirmation.
 - 3.2. Date of delivering the product to the Customer.
 - 3.3. Detailed description of the defective product.
 - 3.4. Quantity of defective products.
 - 3.5. Cause of complaint with evidence: samples, photos or description.
 - 3.6. Possible suggestion of examination of the complaint.
- 4. Rules of investigating the complaints:
 - 4.1. The Seller shall investigate a complain within 35 days from the receipt of the complain if possible. The Seller reserves the right to extend the time to investigate the complain by suitable period of time needed to take certain actions, e.g. to go to the Customer or to return goods to the Seller. All the arrangements shall be made in writing (letter or e-mail.)
 - 4.2. All the arrangements shall be made in writing (letter or e-mail.)
 - 4.3. The Seller reserves the right to examine defective products directly at the Customer's premises.
 - 4.4. The Seller reserves the right to reject a complaint in case of not receiving from the Customer the proper quantity of the product's samples proving that the product has not been manufactured according to the order.
 - 4.5. In case of accepting a claim by the Seller, the Seller is the only party with the right to decide if the defected product is to be scrapped at the Customer's premises or sent to the Seller at the Seller's expense.
 - 4.6. Complaints concerning the defects appeared during transportation will be investigated according to the rules included in INCOTERMS 2000.
 - 4.7. Any dispute arising out of or in connection with the rules shall be determined by appropriate provisions of the Polish law. Matters in dispute shall be adjudicated by negotiations; in case the agreement cannot be reached, matters in dispute shall be adjudicated by court of general jurisdiction- the court having jurisdiction over the Seller's seat



CERTIFICATE OF APPROVAL

This is to certify that the Quality Management System of:

Walcownia Metali "Dziedzice" S. A. ul. Kaniowska 3 43-502 Czechowice-Dziedzice, Poland

has been approved by Lloyd's Register Quality Assurance to the following Quality Management System Standards:

ISO 9001:2008

The Quality Management System is applicable to:

Manufacture of rods, tubes, sections of copper alloys and sections of aluminium and aluminium alloys and manufacture of strips and coinage blanks.

This certificate is valid only in association with the certificate schedule bearing the same number on which the locations applicable to this approval are listed.

Approval Certificate No: GDK0003516/Q Original Approval:2nd May 1996Current Certificate:1st May 2014Certificate Expiry:30th April 2017

Issued by: Lloyd's Register (Polska) sp. z o.o. for and on behalf Lloyd's Register Quality Assurance Limited



Lloyd's Register (Polska) sp. z o.o., Al. Zwycięstwa 13a, 80-219 Gdańsk, KRS 0000117768 for and on behalt of Hiramford, Middlemarch Office Village, Siskin Drive, Coventry, CV3 4FJ, United Kingdom

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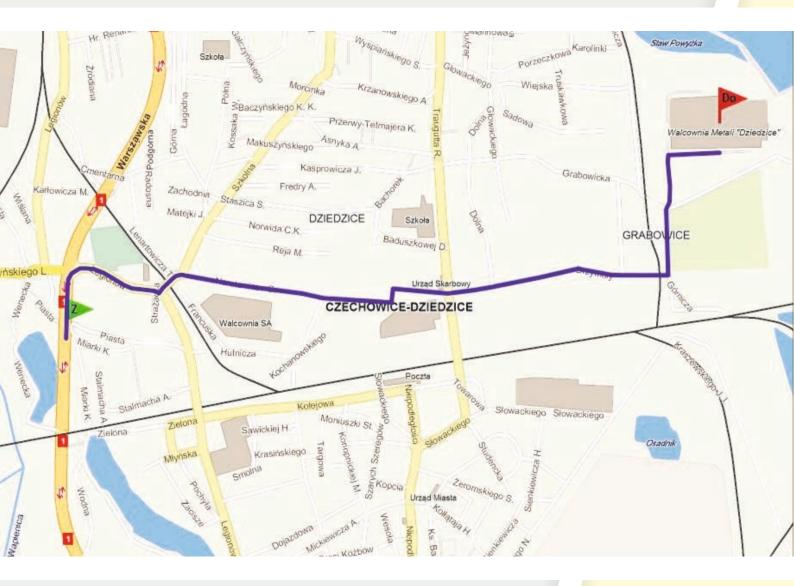
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MEASURE CONVERSION TABLE



			Length		Weight			
mm	~2500	~3000	~3660	~4000	~5000			
in	100	120	144	157	197			
ft	~8,3	10,0	12,0	[~] 13,0	~16,5			
kg			·			250	500	1000
lbs						~550	~1100	~2200

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