

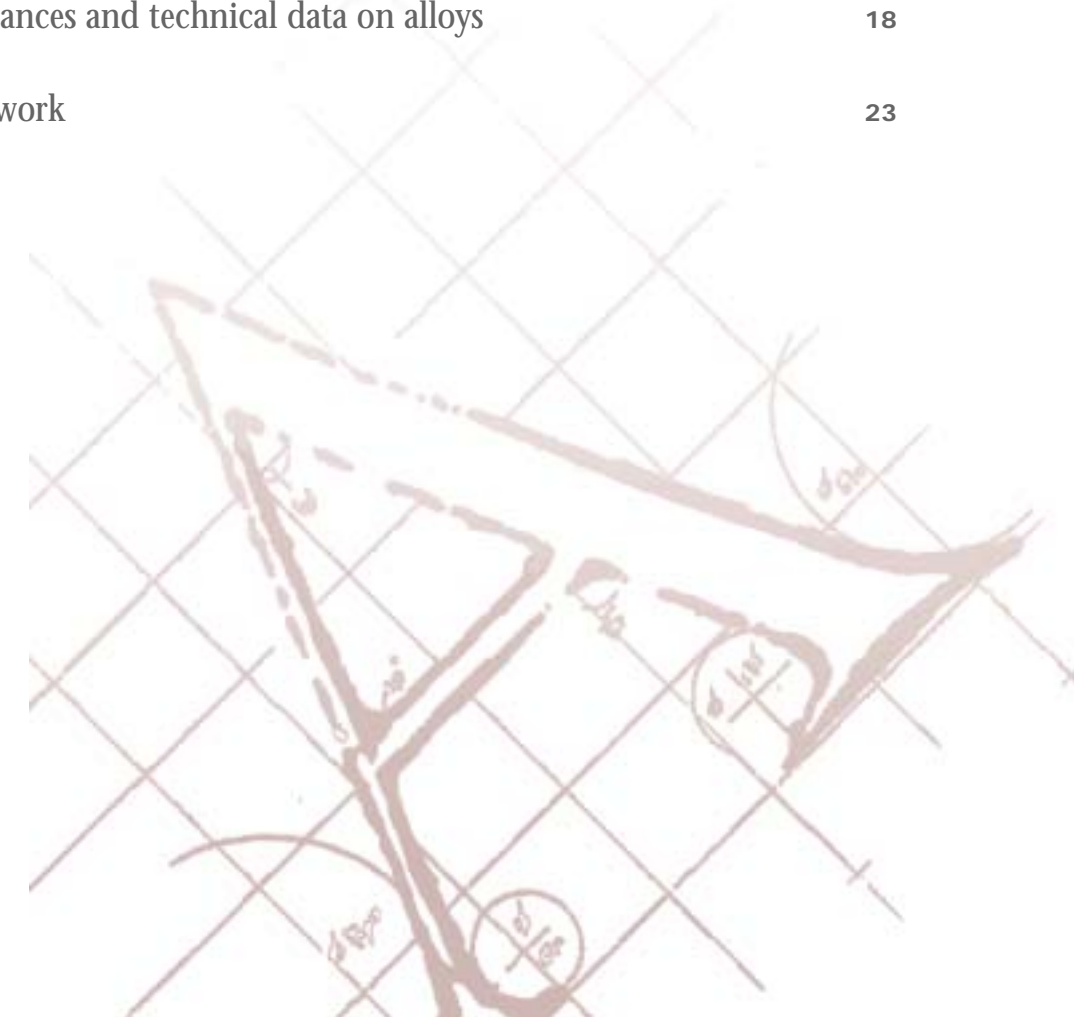
**arkita**<sup>®</sup>  
Architectural Brass and Bronze  
Flat bars and Profiles



- KM Europa Metal AG
- Europa Metalli S.p.A
- Tréfinétaux S.A.



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# arkita®

**Brass and bronze have for a long time been used as decoration and to embellish buildings due to:**

- **their wide range of colours, extending from gold to green, and all shades of brown,**
- **their capacity to withstand the corrosive effects of weather, giving them an exceptionally long life,**
- **their ease of implementation, making it possible to give life to any creation.**

The world's largest manufacturer of copper and copper alloy products KME, has developed a brass and bronze product range intended for architectural work and decoration: **arkita®**.

**arkita®** products range from flat bars and profiles

to complete systems, and one of their leading features is that they are easy to transform: bending, welding, gluing and assembling, etc. The new **arkita®** construction systems allow casement and facade manufacturers to propose new solutions. Also, **arkita®** offers a great number of colours and finish effects.

**arkita®** products combine perfectly with other materials such as stone, brick, tile and glass. It naturally forms a part of floor, wall and infrastructure decoration, as well as for reception halls and the design of lifts, showcases, etc.

To assist customers in all aspects of the utilisation of **arkita®** products, there is a comprehensive support

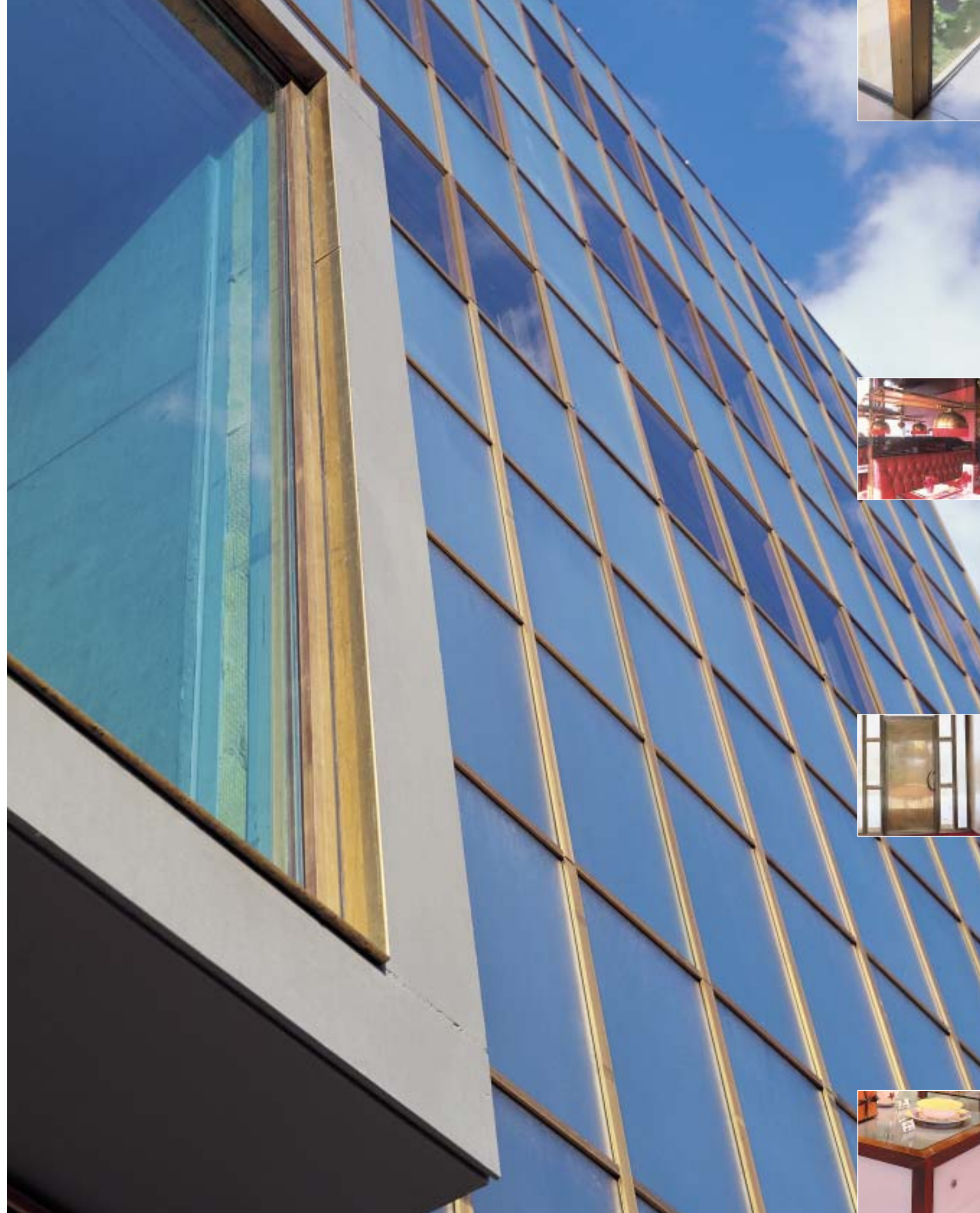
system which provides technical and economic advice.

**arkita®** products are available from stock and are distributed throughout the world by KME and its sales network, ensuring flexibility and short delivery times.

**To meet the expectations of consumers, the arkita® range is organized around:**

- **profiles for building systems (window and door casement profiles, profiles for facade structures and curtain walls),**
- **standard profiles (L.U.T., flat bars),**
- **profiles for interior decoration and fitting-out (floor profiles, handrails, half-round bars, moldings, bolts, curtain rails, hinges and butts, etc.).**

ISO  
9001



# Colours



Gold



Light bronze



Natural  
(Architectural bronze)



Medium bronze



Dark bronze



# Material finish effects



Polished



Shot-blasted CA 70



Brushed



Shot-blasted CG



Shot-blasted CER 30

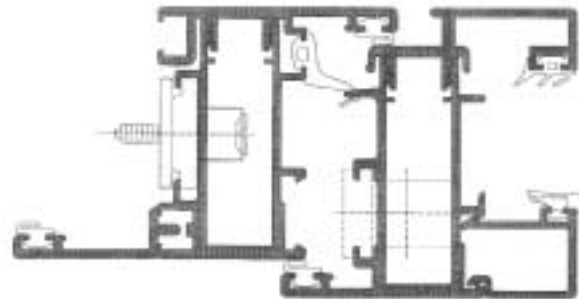
# Profiles for structural systems

## Applications

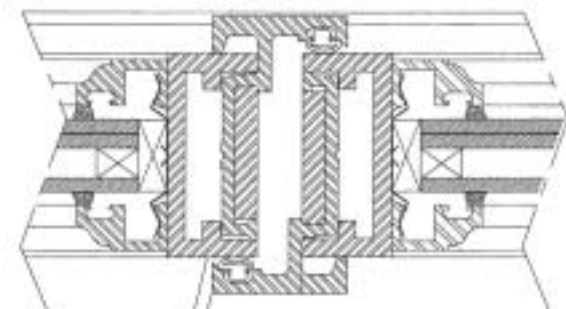
These profiles were the subject of a feasibility study carried out by architects, framing system manufacturers and our Design Office.

These profiles are used to manufacture all types of bronze profile systems for windows, doors, facades and curtain walls, with non-thermal or full thermal bridge systems. They can be used as load-bearing structures or as capping on traditional structures.

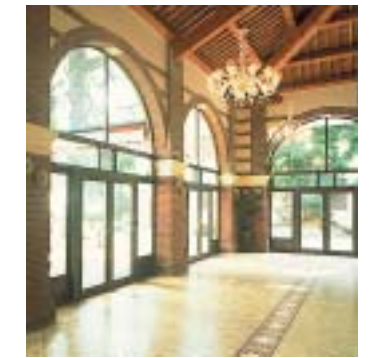
## Door and window casements



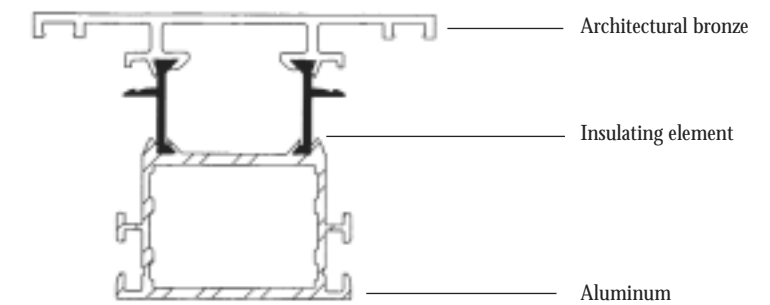
produced by: Astec (Italy)



produced by: Les Métalliers Champenois (France)

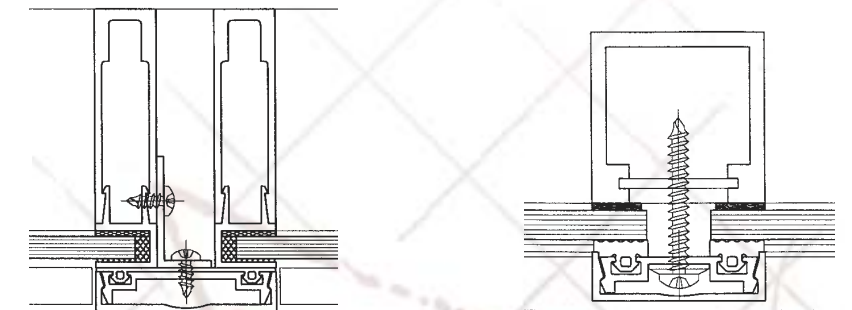


## Structure with full thermal bridges



produced by: KME (Germany)

## Facade structure and curtain walls



produced by: Kronenberger (Switzerland)

## Technical details

Delivery condition	As extruded
Standard alloys	Ref. R20: CuZn40Mn1Pb1 (Architectural bronze) Ref. R23: CuZn40Mn2Fe1 (Architectural bronze) Ref. N20: CuZn41Pb1Al
Standard lengths	Between 3 and 5 m, according to sizes
Tolerances	ISO J14 to J15, according to sizes

# Shapes and profiles

## Tees

The length of the flanges as well as their thickness, may be the same or different. The bar may be centred or off-centred. Examples of manufactured products:



## Angle sections

The length of the flanges as well as their thickness, may be the same or different. The bar may be centred or off-centred. Examples of manufactured products:



### Dimensions of tees and angle sections

Flange height (mm)	Minimum flange thickness (mm)
6 to 15 included	1
15 to 40 included	1.5
40 to 50 included	2
50 to 80 included	3
80 to 100 included	4



## Channels

Flanges may be of the same height or of different heights and of a thickness different to that of the base thickness. Examples of manufactured products:



### Channel sizes

Base width (mm)	Flange height (mm)
Minimum 6	6
Maximum 80	Twice the width between flanges Maximum height: 80

## Half-round bars and mouldings

Examples of manufactures products:



### Technical data on tees, angle sections, channels, half-round bars and mouldings

Delivery condition	As extruded, straightened
Standard alloys	Ref. N20: CuZn41Pb1Al (other alloys: consult us)
Standard lengths	Between 3 and 5 m
Tolerances	Sizes ≤ 40 mm = ISO J14; > 40 mm = ISO J15

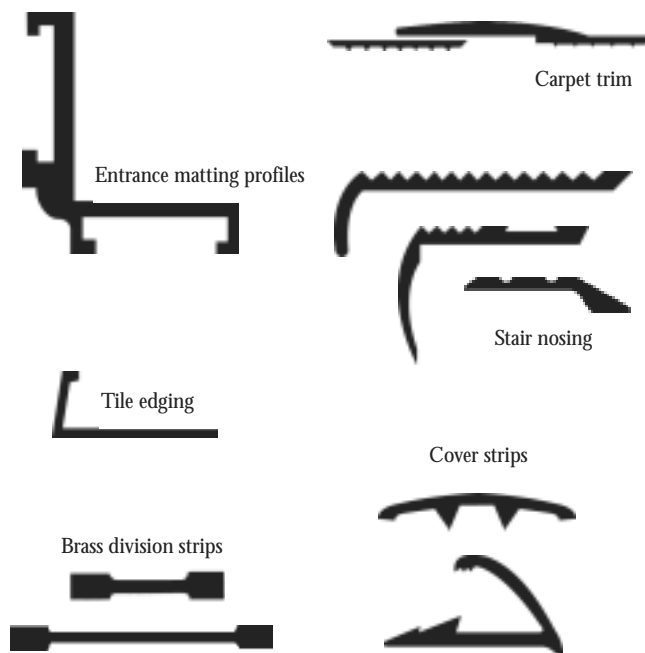


# Shapes and profiles

## Floor and profiles

Profiles are accessories for finishing and strengthening edges as well as joints in all floor coverings. In addition providing a warm aspect and a touch of quality.

Examples of manufactured products:



## Technical data

Delivery condition	As extruded, straightened
Standard alloys	Ref. N20: CuZn41Pb1Al (other alloys: please consult us)
Standard lengths	Between 3 and 5 m
Tolerances	ISO J14 to ISO J15 according to the dimensions



## Railings

These profiles, produced in a wide variety of forms, fit into all styles of decoration, and contribute to creating an atmosphere of comfort and sophistication. Examples of manufactured products:



## Technical data

Delivery condition	As extruded, straightened
Standard alloys	Ref. R20: CuZn40Mn1Pb1 or N 20: CuZn41Pb1Al
Standard lengths	Between 3 and 5 m
Tolerances	ISO J14 to ISO J15 according to sizes
Product forming on site	Please consult us



# Shapes and profiles

## Window channels

Examples of manufactured products:



## Bolts and curtain rails

Examples of manufactured products:



## Hinges and bolts

Examples of manufactured products:



### Technical data

Delivery condition	As extruded, straightened
Standard alloys	Ref. N18: CuZn40Pb2Al, if machined profile (hinges) Ref. N20: CuZn41Pb1Al (other alloys: please consult us)
Standard lengths	Between 3 and 5 m
Tolerances	ISO J14 to ISO J15 according to sizes



## Flat bars

Examples of manufactured products:



Standard flat bar with square corners



Flat bar with rounded sides

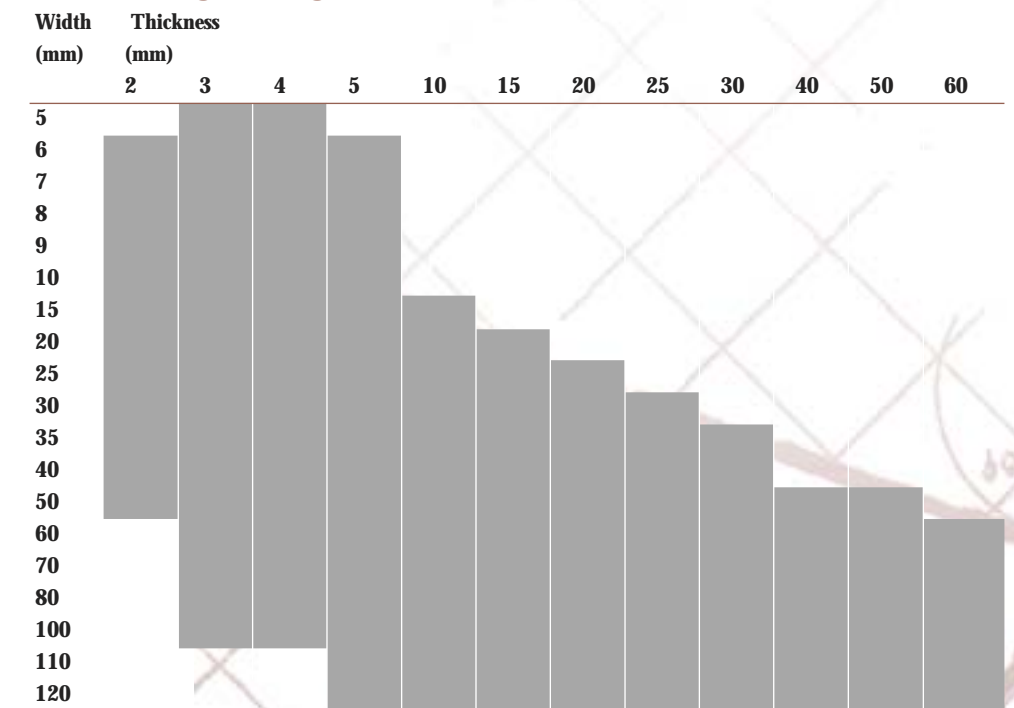


Flat bar with rounded corners

### Technical data

Delivery condition	Drawn product, as manufactured
Standard alloys	Ref. N17: CuZn40Pb2 (other alloys: please consult us)
Standard lengths	If cross-section < 3000 mm <sup>2</sup> , between 3 and 4 m -0/+50 mm If cross-section > 3000 mm <sup>2</sup> , between 2 and 3 m -0/+50 mm
Tolerances	ISO J13

### Manufacturing size range





# Installation of Architectural brass and bronze elements

*In order to facilitate the use of brass and architectural bronze profiles, we would like to draw your attention to some advice on fabrication techniques:*

## Machining

Architectural brass and bronze are perfectly suitable for drilling, sawing, milling, thread rolling, etc. No special preparation is necessary.

## Cold forming - Bending

Architectural brass and bronze with the highest copper content (Ref. N03: CuZn36Pb3) and the lowest lead content (Ref. N20: CuZn41Pb1Al or Ref. R20: CuZn40Mn1Pb1) are the best suited for cold forming and bending. Please consult us for our technical data sheet.

## Hot forming

Architectural brass and bronze with high zinc contents (Ref. N17: CuZn40Pb2) have a high hot ductility between 680 °C and 750 °C.

## Brazing and soldering

Architectural brass and bronze are very easy to tin and silver solder. They are less suited to welding. Please consult us for our technical data sheet.

## Mechanical assembly

Every method of mechanical assembly can be used with architectural brass and bronze: screwing, riveting, etc. The natural elasticity of brass allows for the assembly of complex shapes by clipping (frames, etc.).

Avoid metals and alloys with highly different electro-chemical potentials from touching each other (aluminum).

## Gluing

Architectural brass and bronze can be perfectly bonded to each other as well as to other metals and materials such as glass, wood, cement, synthetic materials, etc. These glues do not affect in any way whatsoever the appearance of the materials. There is a great variety of glues available: single and two-component epoxy resins, phenolic, acrylic and polyurethane resins, the characteristics of which are the different mechanical resistance levels and setting methods. Please consult us for our technical data sheet.



## Surface treatment

Architectural brass and bronze surfaces may easily be treated in order to:

- change their colour,
- create material finish effects,
- improve corrosion and aging resistance.

### ■ Colouring

Architectural brass and bronze are easy to colour. To make these materials brown, whether light or dark, two colouring methods are suggested:

- by natural oxidation of the alloy during profile manufacturing. An “ average brown ” colour offering good stability over time is obtained using architectural bronzes (Ref. R20: CuZn40Mn1Pb1 or R23: CuZn40Mn2Fe1). These alloys do not need any maintenance other than a wipe and a coat of liquid wax to refresh the colour.
- by chemical treatment of the metal before installation: a light brown to dark brown colour is obtained on all types of structural brass and bronze. To protect the colour, simply wax or oil the treated surface. Ask us for precise application specifications.

### ■ Material finish effects

Architectural brass and bronze may be

subject to mechanical treatment to modify the surface appearance, thus creating material finish effects. Highly esthetic finishes can be obtained after operations such as:

- brushing,
- shot blasting(wide variety of appearances brushing the technique used),
- polishing.

Quality polishing must be preceded by brushing the surface to be polished. To prevent treated surfaces from becoming quickly oxidized, it is recommended to varnish them. The surface treatment used to achieve the required finish is carried out before installation of the product.

### ■ Varnishing

After polishing, shot blasting or brushing, the application of a varnish to the architectural brass or bronze is the best way to preserve the appearance and colour of the metal. The varnish is chosen depending on how the part is used. Please consult us for a technical data sheet.

This information is given without any commitment, only in an advisory capacity.

# Size tolerances

Comparative table of the various materials

	Lead brass	Architectural bronze	Copper	Aluminum	Steel St 37	Stainless steel
Density	8,4	8,3	8,93	2,7	7,8	7,9
Thermal conductivity W.mk	120	80	328	237	50	15
Linear expansion coefficient mm/m x 1 °C	0,021	0,019	0,0168	0,023	0,012	0,017
Modulus of elasticity MPa	97 500	85 000	120 000	69 000	210 000	203 000
Tensile strength MPa (as pressed)	380	390	300	200/240	350	650
Proof stress at 0.2% MPa	200	200	250	170	200	200

Profile size tolerances (mm)

Profile dimensions	Drawn products	Products as extruded	
	J.13	J.14	J.15
as 1 to 3	+/- 0.070	+/- 0.125	
> 3 to 6	+/- 0.090	+/- 0.15	
> 6 to 10	+/- 0.110	+/- 0.180	
> 10 to 18	+/- 0.135	+/- 0.215	
> 18 to 30	+/- 0.165	+/- 0.260	
> 30 to 40	+/- 0.195	+/- 0.310	
> 40 to 50	+/- 0.195		+/- 0.500
> 50 to 80	+/- 0.230		+/- 0.600
> 80 to 120	+/- 0.270		+/- 0.700
> 120 to 160	+/- 0.315		+/- 0.800

Flat bar thickness and width tolerances (mm)

As per EN 12167: 1998. Tolerance class C

Nominal width	Width tolerance	Thickness tolerance for the thickness angle				
		3 to ≤ 6	6 to ≤ 10	10 to ≤ 18	18 to ≤ 30	30 to ≤ 50
6 to ≤ 18	± 0.10	± 0.07	± 0.09	± 0.10		
18 to ≤ 30	± 0.15	± 0.07	± 0.09	± 0.10	± 0.15	
30 to ≤ 50	± 0.20	± 0.09	± 0.10	± 0.12	± 0.15	± 0.20
50 to ≤ 80	± 0.25	± 0.11	± 0.12	± 0.15	± 0.20	± 0.25
80 to ≤ 120	± 0.30	± 0.12	± 0.15	± 0.18	± 0.23	± 0.35



# Technical data on alloys

**Table of standard alloys for Flat bars and Profiles (\*1)**

Standard EN 12 167		ASTM	Description KME	Main characteristics and uses	Average density g/cm <sup>3</sup>	Manufacturing capability				Thermal conductivity 20 ° C W/m.K	Specific heat capacity J/kg.K to 20°C	Linear expansion coefficient mm/m x 1°C	Modulus of elasticity MPa	Tensile strength status M (*2) MPa
Composition symbols	Number					Drawn flat bars	Profiles as extruded	Drawn profiles	Tubes					
<b>Brass and Architectural bronze</b>														
CuZn40Pb2Al	CW618N	(C38000)	N18	brass for profiles machining/polishing	8,3	X*	X St	X*	O	80	380	0,019	85 000	390
CuZn41Pb1Al	CW620N	C38000	N20	brass for profiles Thin and complex parts polishing/bending	8,3	X*	X St	X*	O	80	380	0,019	85 000	390
CuZn40Mn1Pb1	(CW720R)	-	R20	architectural bronze good surface appearance self-protective surface	8,3	X*	X St	X*	O	80	380	0,019	85 000	390
CuZn40Mn2Fe1	(CW723R)	-	R 23	architectural bronze good surface appearance self-protective surface	8,3	X*	X St	X*	O	80	380	0,019	85 000	390
<b>Leaded brass</b>														
CuZn40Pb2	CW617N	C37700	N17	machining hot stamping	8,4	X St	X*	X St	O	120	380	0,0207	97 500	360
CuZn39Pb3	CW614N	C38500	N14	machining	8,4	X	X*	X	O	120	380	0,0208	98 000	380
CuZn36Pb3	CW603N	C36001	N03	machining forming, cold crimping, rolling	8,4	X	X*	X	O	115	380	0,0205	101 000	340
CuZn38Pb2	CW608N	C35001	N08	machining forming, cold crimping	8,4	X	X*	X	O	120	380	0,0207	105 000	360
<b>Binary brass</b>														
CuZn36	CW507L	C27000	CuZn36	crimping heavy cold forming	8,4	X*	O	X*	X St	116	380	0,0203	105 000	360
CuZn40	CW509L	C28000	CuZn40	crimping	8,4	X*	O	X*	X St	123	375	0,0208	105 000	340

x: manufacturing possible  
 X Sr: standard product  
 X\*: only for certain sizes  
 O: no manufacturing capability

(\*1): other alloys possible  
 (\*2): status M = As extruded, not drawn



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