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## Characteristics for grade BrAMts9-2 ( БpAMц9-2 )

<b>Grade :</b>	BrAMts9-2 ( БpAMц9-2 ) ( CuA19Mn2 )
<b>Classification :</b>	Tin-free pressure-worked bronzes
<b>Equivalent grades:</b>	<a href="#">Go here</a>

## Chemical composition in % for grade BrAMts9-2 ( БpAMц9-2 )

Fe	Si	Mn	P	Al	Cu	Pb	Zn	Sn	Impurity
max 0.5	max 0.1	1.5 - 2.5	max 0.01	8 - 10	86 - 90.5	max 0.03	max 1	max 0.1	all 1.5

Comment: Cu is a basis; the percentage of Cu is given approximately.

## Mechanical properties under T=20°C for grade BrAMts9-2 ( БpAMц9-2 )

Assortment	Dimension	Direct.	$\sigma_B$	$\sigma_T$	$\delta_5$	$\psi$	KCU	Heat treatment
-	mm	-	MPa	MPa	%	%	kJ / m <sup>2</sup>	-
Bar, GOST 1628-78			540		12-15			
Bar, GOST 1628-78			470-490		20			
Strip hotrolled, GOST 1595-90			440		15			
Strip, GOST 1595-90			440		18			
Strip, GOST 1595-90			590		5			

Brinell hardness for BrAMts9-2 ( БpAMц9-2 ) , Bar GOST 1628-78	HB 10 <sup>-1</sup> = 115 MPa
Brinell hardness for BrAMts9-2 ( БpAMц9-2 ) , Bar GOST 1628-78	HB 10 <sup>-1</sup> = 95 MPa

## Friction coefficient of the material BrAMts9-2 ( БpAMц9-2 ) .

Friction coefficient with oil :	0.006
Friction coefficient without oil :	0.18

## Technological properties of the material BrAMts9-2 ( БpAMц9-2 ) .

Melting temperature :	1060 °C
Forging temperature :	750 - 850 °C
Annealing temperature :	650 - 750 °C

## Physical properties for grade BrAMts9-2 ( БpAMц9-2 )

T	E 10 <sup>-5</sup>	$\alpha$ 10 <sup>6</sup>	$\lambda$	$\rho$	C	R 10 <sup>9</sup>
Grade	MPa	1/Grade	Watt/(m·Grade)	kg/m <sup>3</sup>	J/(kg·Grade)	Ohm·m
20	0.92		71.4	7630		110
100		17			461	

**Equivalent steels for grade BrAMts9-2 ( БpAMц9-2 )**

Warning! Indicated both exact and nearest equivalents.

Germany	Czechia	Inter
DIN, WNr	CSN	ISO
2.0960 CuAl9Mn2	423044	CuAl9Mn2

**Types of delivery of grade BrAMts9-2 ( БpAMц9-2 )**

B05 - Welding and cutting of metals., Soldering, riveting

B53 - Sheets and Strips

B55 - Bars

**Specification :****Mechanical properties :**

- $\sigma_B$  - Tensile strength , [MPa]  
 $\sigma_T$  - Yield stress, [MPa]  
 $\delta_5$  - Specific elongation at fracture , [ % ]  
 $\psi$  - Reduction of area , [ % ]  
**KCU** - Impact strength , [ kJ / m<sup>2</sup>]  
**HB** - Brinell hardness , [MPa]

**Physical properties :**

- T** - Test temperature , [Grade]  
**E** - Young modulus , [MPa]  
 $\alpha$  - Coefficient of linear expansion (range 20° - T ) , [1/Grade]  
 $\lambda$  - Thermal (heat) condition coefficient , [Watt/(m·Grade)]  
 $\rho$  - Density , [kg/m<sup>3</sup>]  
**C** - Specific heat ( range 20° - T ), [J/(kg·Grade)]  
**R** - Electrical resistance , [Ohm·m]

**BrAMts9-2 ( БpAMц9-2 ) - Tin-free pressure-worked bronzes: chemical composition, mechanical and physical properties, hardness**  
**Database of steels and alloys (Marochnik) contains information about chemical composition and properties more then 3000 steels and alloys**