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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<br>CuAl9Mn2 | 423044  | CuAl9Mn2 |

**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]

Database of steels and alloys (Marochnik) contains information about chemical composition and properties more then 2500 steels and alloys (stainless steel, alloy steel, carbone steel, structural steel, tool steel, cast iron, aluminum alloy, titanium alloy, copper alloy, nickel alloy, magnesium alloy and others).  
 Helpfull for specialists in grade technology, structural engineer, mechanical engineer, metallurgy and metal trader

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