

# Database of Steel and Alloy (Marochnik)

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## Characteristics for grade 15KH2M2FBS ( 15X2M2ΦБC ).

|                    |                                  |
|--------------------|----------------------------------|
| Grade :            | 15KH2M2FBS ( 15X2M2ΦБC )         |
| Classification :   | Low alloy high-temperature steel |
| Equivalent grades: | Is absent                        |

## Chemical composition in % for grade 15KH2M2FBS ( 15X2M2ΦБC )

| C           | Si      | Mn        | Ni      | S        | P        | Cr        | Mo        | V          | Nb          | Cu      |
|-------------|---------|-----------|---------|----------|----------|-----------|-----------|------------|-------------|---------|
| 0.13 - 0.18 | 0.7 - 1 | 0.5 - 0.8 | max 0.3 | max 0.03 | max 0.03 | 1.8 - 2.3 | 1.2 - 1.5 | 0.25 - 0.4 | 0.08 - 0.15 | max 0.3 |

## Temperature of critical points for grade 15KH2M2FBS ( 15X2M2ΦБC ).

$Ac_1 = 780 - 830$  ,  $Ac_3(Ac_m) = 1020 - 1040$  ,  $Ar_3(Arc_m) = 830$

## Mechanical properties under T=20°C for grade 15KH2M2FBS ( 15X2M2ΦБC )

| Assortment | Dimension | Direct.      | $\sigma_B$ | $\sigma_T$ | $\delta_5$ | $\psi$ | KCU                 | Heat treatment |
|------------|-----------|--------------|------------|------------|------------|--------|---------------------|----------------|
| -          | mm        | -            | MPa        | MPa        | %          | %      | kJ / m <sup>2</sup> | -              |
| Pipe       |           | longitudinal | 550        | 380        | 18         | 50     | 600                 |                |
| Pipe       |           | dihedral     | 550        | 380        | 16         | 45     | 500                 |                |
| Forging    |           | longitudinal | 640        | 450        | 17         | 50     | 500                 |                |

Brinell hardness for 15KH2M2FBS ( 15X2M2ΦБC ) ,

HB 10<sup>-1</sup> = 180 - 197 MPa

## Physical properties for grade 15KH2M2FBS ( 15X2M2ΦБC )

| 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    | 2.24               |                          |                | 7850              |              | 450               |
| 100   | 2.19               | 12                       | 34.8           |                   |              | 460               |
| 200   |                    |                          | 34.3           |                   |              | 520               |
| 300   | 2.05               |                          | 34.1           |                   |              | 600               |
| 400   |                    | 14.5                     | 33.9           |                   |              | 670               |
| 500   | 1.87               |                          | 33.7           |                   |              | 770               |
| 600   | 1.76               |                          | 33.5           |                   |              | 950               |
| 700   | 1.64               |                          |                |                   |              |                   |
| T     | E 10 <sup>-5</sup> | $\alpha$ 10 <sup>6</sup> | $\lambda$      | $\rho$            | C            | R 10 <sup>9</sup> |

Specification :

**Mechanical properties :**

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

**Physical properties :**

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