

# Database of Steel and Alloy (Marochnik)

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## Characteristics for grade 08KH21N6M2T ( 08X21H6M2T ).

|                    |                                               |
|--------------------|-----------------------------------------------|
| Grade :            | 08KH21N6M2T ( 08X21H6M2T ) ( 0X21H6M2T ЭП54 ) |
| Classification :   | High alloy high-temperature steel             |
| Equivalent grades: | <a href="#">Go here</a>                       |

## Chemical composition in % for grade 08KH21N6M2T ( 08X21H6M2T )

| C        | Si      | Mn      | Ni        | S         | P         | Cr      | Mo        | Ti        |
|----------|---------|---------|-----------|-----------|-----------|---------|-----------|-----------|
| max 0.08 | max 0.8 | max 0.8 | 5.5 - 6.5 | max 0.025 | max 0.035 | 20 - 22 | 1.8 - 2.5 | 0.2 - 0.4 |

## Mechanical properties under T=20°C for grade 08KH21N6M2T ( 08X21H6M2T )

| Assortment                | Dimension | Direct. | $\sigma_B$ | $\sigma_T$ | $\delta_5$ | $\psi$ | KCU                 | Heat treatment                          |
|---------------------------|-----------|---------|------------|------------|------------|--------|---------------------|-----------------------------------------|
| -                         | mm        | -       | MPa        | MPa        | %          | %      | kJ / m <sup>2</sup> | -                                       |
| Forging, GOST 25054-81    |           |         | 539        | 343        | 18-22      | 35-40  | 390-780             |                                         |
| Bars, GOST 5949-75        | 60        |         | 590        | 345        | 25         | 45     |                     | Guenching 950 - 1050°C, Cooling air,    |
| Sheet trick, GOST 7350-77 |           |         | 590        | 345        | 20         |        | 590                 | Guenching 1025 - 1075°C, Cooling water, |
| Sheet thin, GOST 5582-75  |           |         | 590        |            | 22         |        |                     | Guenching 1000 - 1080°C, Cooling air,   |

|                                                                         |                                     |
|-------------------------------------------------------------------------|-------------------------------------|
| Brinell hardness for 08KH21N6M2T ( 08X21H6M2T ) , Forging GOST 25054-81 | HB 10 <sup>-1</sup> = 140 - 200 MPa |
|-------------------------------------------------------------------------|-------------------------------------|

## Technological properties for grade 08KH21N6M2T ( 08X21H6M2T )

|              |                      |
|--------------|----------------------|
| Weldability: | without limitations. |
|--------------|----------------------|

## Physical properties for grade 08KH21N6M2T ( 08X21H6M2T )

| 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    | 1.93               |                          |                | 7850              |              | 700               |
| 100   | 1.85               | 9.5                      | 14.6           |                   |              |                   |
| 200   | 1.78               | 13.8                     | 15.9           |                   |              |                   |
| 300   | 1.69               | 16                       | 17.5           |                   |              |                   |
| 400   | 1.64               | 16                       | 19.2           |                   |              |                   |
| 500   | 1.62               | 16.3                     | 20.5           |                   |              |                   |
| 600   | 1.53               | 16.7                     | 21.7           |                   |              |                   |
| 700   | 1.39               | 17.1                     | 21.7           |                   |              |                   |
| 800   | 1.36               | 17.1                     | 24.3           |                   |              |                   |
| 900   |                    | 17.4                     | 25.5           |                   |              |                   |

|   |                    |                          |           |        |   |                   |
|---|--------------------|--------------------------|-----------|--------|---|-------------------|
| T | E 10 <sup>-5</sup> | $\alpha$ 10 <sup>6</sup> | $\lambda$ | $\rho$ | C | R 10 <sup>9</sup> |
|---|--------------------|--------------------------|-----------|--------|---|-------------------|

**Equivalent steels for grade 08KH21N6M2T ( 08X21H6M2T )**

Warning! Indicated both exact and nearest equivalents.

|               |              |          |
|---------------|--------------|----------|
| USA           | Germany      | Japan    |
| -             | DIN, WNr     | JIS      |
| 329<br>S32900 | X2CrNiMoN225 | SUS329J1 |

**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]

**Weldability :**

- without limitations** - welding is done without heating and subsequent heat treating  
**limited weldability** - welding is possible under heating up to 100-120 grade and subsequent heat treating  
**hard weldability** - obtaining the quality welding needs the additional operations: heating up to 200-300 grade; the heat treating is annealing

Database of steels and alloys (Marochnik) contains information about chemical composition and properties more than 2500 steels and alloys (stainless steel, alloy steel, carbon 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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