

# Database of Steel and Alloy ( Marochnik )

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[Home](#)

[European steel grades](#)

[Steel and Alloy](#)

[Search](#)

[Equivalent grades](#)

[Grading](#)

[GOST Standard](#)

[Contacts](#)

YOU HERE: [Steel and Alloy](#) -> [Structural steel](#)

## Characteristics for grade 08kp ( 08кп ).

|                    |                                      |
|--------------------|--------------------------------------|
| Grade :            | 08kp ( 08кп )                        |
| Substitute:        | 08                                   |
| Classification :   | High quality structural carbon steel |
| Equivalent grades: | <a href="#">Go here</a>              |

## Chemical composition in % for grade 08kp ( 08кп )

| C           | Si       | Mn         | Ni      | S        | P         | Cr      | Cu      | As       |
|-------------|----------|------------|---------|----------|-----------|---------|---------|----------|
| 0.05 - 0.12 | max 0.03 | 0.25 - 0.5 | max 0.3 | max 0.04 | max 0.035 | max 0.1 | max 0.3 | max 0.08 |

## Temperature of critical points for grade 08kp ( 08кп ).

|                                                                        |
|------------------------------------------------------------------------|
| $Ac_1 = 732$ , $Ac_3(Ac_m) = 874$ , $Ar_3(Arc_m) = 854$ , $Ar_1 = 680$ |
|------------------------------------------------------------------------|

## Mechanical properties under T=20°C for grade 08kp ( 08кп )

| Assortment                         | Dimension | Direct. | $\sigma_B$ | $\sigma_T$ | $\delta_5$ | $\psi$ | KCU                 | Heat treatment |
|------------------------------------|-----------|---------|------------|------------|------------|--------|---------------------|----------------|
| -                                  | mm        | -       | MPa        | MPa        | %          | %      | kJ / m <sup>2</sup> | -              |
| Sheet heat-treatment, GOST 4041-71 | 4 - 8     |         | 270-370    |            | 34         |        |                     |                |
| Pipe, GOST 5005-82                 |           |         | 390        | 350        | 10         |        |                     |                |
| Pipe, GOST 10705-80                |           |         | 294        | 174        | 27         |        |                     |                |
| Rolled stock, GOST 10702-78        |           |         | 370        |            | 8          | 60     |                     |                |
| Steel cold-drawn n , GOST 10702-78 |           |         | 314-412    |            |            | 60     |                     | Annealing      |
| Strip, GOST 1577-93                | 6 - 60    |         | 290        | 175        | 35         | 60     |                     | Normalizing    |

|                                                                 |                               |
|-----------------------------------------------------------------|-------------------------------|
| Brinell hardness for 08kp ( 08кп ) , Sheet GOST 4041-71         | HB 10 <sup>-1</sup> = 100 MPa |
| Brinell hardness for 08kp ( 08кп ) , Rolled stock GOST 10702-78 | HB 10 <sup>-1</sup> = 115 MPa |
| Brinell hardness for 08kp ( 08кп ) , Rolled stock GOST 10702-78 | HB 10 <sup>-1</sup> = 131 MPa |

## Technological properties for grade 08kp ( 08кп )

|                     |                      |
|---------------------|----------------------|
| Weldability:        | without limitations. |
| Flakes :            | not predisposed      |
| Temper brittleness: | not predisposed      |

## Physical properties for grade 08kp ( 08кп )

| 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    | 2.03               |                          | 63             | 7871              |              | 147               |
| 100   | 2.07               | 12.5                     | 60             | 7846              | 482          | 178               |
| 200   | 1.82               | 13.4                     | 56             | 7814              | 498          | 252               |
| 300   | 1.53               | 14                       | 51             | 7781              | 514          | 341               |
| 400   | 1.41               | 14.5                     | 47             | 7745              | 533          | 448               |
| 500   |                    | 14.9                     | 41             | 7708              | 555          | 575               |
| 600   |                    | 15.1                     | 37             | 7668              | 584          | 725               |
| 700   |                    | 15.3                     | 34             | 7628              | 626          | 898               |
| 800   |                    | 14.7                     | 30             | 7598              | 695          | 1073              |

|             |                          |                         |           |             |            |                         |
|-------------|--------------------------|-------------------------|-----------|-------------|------------|-------------------------|
| <b>900</b>  |                          | <b>12.7</b>             | <b>27</b> | <b>7602</b> | <b>703</b> | <b>1124</b>             |
| <b>1000</b> |                          | <b>13.8</b>             |           |             | <b>695</b> |                         |
| <b>T</b>    | <b>E 10<sup>-5</sup></b> | <b>α 10<sup>6</sup></b> | <b>λ</b>  | <b>ρ</b>    | <b>C</b>   | <b>R 10<sup>9</sup></b> |

**Equivalent steels for grade 08kp ( 08kn )**

Warning! Indicated both exact and nearest equivalents.

| USA    | Germany | Japan    | France | England | European | Italy | Spain | China | Sweden | Bulgaria | Hungary | Poland | Romania | Czechia | Finland   | Austria  | Australia |
|--------|---------|----------|--------|---------|----------|-------|-------|-------|--------|----------|---------|--------|---------|---------|-----------|----------|-----------|
| -      | DIN,WNr | JIS      | AFNOR  | BS      | EN       | UNI   | UNE   | GB    | SS     | BDS      | MSZ     | PN     | STAS    | CSN     | SFS       | ONORM    | AS        |
| 1008   | 1.0322  | SPCC     | 3C     | 040A10  | 1.0330   | DC01  | AP13  | 08F   | 1147   | 08       | ASZ2    | 08X    | A1n     | 11304   | RACOLD01F | St02F    | 1008      |
| 1010   | 1.0335  | SPHE     | DC01   | 1449-   | 1.0335   | FeP13 | DC01  | ML08  |        | DD11     |         |        |         | 11320   |           | St02FK32 | CA1       |
| A619   | DC01    | SWRCH10R | DD13   | 1HR     | DC01     |       | DD13  |       |        | DD13     |         |        |         | 11321   |           | St02FK40 | CA2       |
| A622   | DC04    | SWRCH8R  | FB8    | 1HR     | DC04     |       |       |       |        |          |         |        |         | 11325   |           | St02FK50 | CA3       |
| G10080 | DC04G1  |          | Fd4    | 2HR     | DD13     |       |       |       |        |          |         |        |         |         |           | St02FK60 | CA4       |
| G10120 | DD11    |          | FR8    | DC01    | FeP01    |       |       |       |        |          |         |        |         |         |           | St02FK70 | HA1       |
|        | DD13    |          | XC6    | DD13    | FeP03    |       |       |       |        |          |         |        |         |         |           | St24F    | HA3       |
|        | St12    |          |        |         |          |       |       |       |        |          |         |        |         |         |           |          | HA4N      |
|        | St14    |          |        |         |          |       |       |       |        |          |         |        |         |         |           |          |           |
|        | St22    |          |        |         |          |       |       |       |        |          |         |        |         |         |           |          |           |
|        | StW24   |          |        |         |          |       |       |       |        |          |         |        |         |         |           |          |           |
|        | USI3    |          |        |         |          |       |       |       |        |          |         |        |         |         |           |          |           |
|        | USI4    |          |        |         |          |       |       |       |        |          |         |        |         |         |           |          |           |

**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 treeting  
**limited weldability** - welding is possible under heating up to 100-120 grade and subsequent heat treeting  
**hard weldability** - obtaining the quality welding needs the additional operations: heating up to 200-300 grade; the heat treeting ia annealing

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

[Top](#)

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