

## Database of Steel and Alloy ( Marochnik )

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## Characteristics for grade 18KHG ( 18XГ ).

|                    |                         |
|--------------------|-------------------------|
| Grade :            | 18KHG ( 18XГ )          |
| Classification :   | Alloy structural steel  |
| Equivalent grades: | <a href="#">Go here</a> |

## Chemical composition in % for grade 18KHG ( 18XГ )

| C           | Si          | Mn        | Ni      | S         | P         | Cr        | Cu      |
|-------------|-------------|-----------|---------|-----------|-----------|-----------|---------|
| 0.15 - 0.21 | 0.17 - 0.37 | 0.9 - 1.2 | max 0.3 | max 0.035 | max 0.035 | 0.9 - 1.2 | max 0.3 |

## Temperature of critical points for grade 18KHG ( 18XГ ).

 $A_{c1} = 765$  ,  $A_{c3}(A_{cm}) = 840$ 

## Mechanical properties under T=20°C for grade 18KHG ( 18XГ )

| Assortment        | Dimension | Direct. | $\sigma_B$ | $\sigma_T$ | $\delta_5$ | $\psi$ | KCU                 | Heat treatment                            |
|-------------------|-----------|---------|------------|------------|------------|--------|---------------------|-------------------------------------------|
| -                 | mm        | -       | MPa        | MPa        | %          | %      | kJ / m <sup>2</sup> | -                                         |
| Bar, GOST 4543-71 | Ø 15      |         | 880        | 735        | 10         | 40     |                     | Guenching 880°C, oil, Drawing 200°C, air, |

Brinell hardness for 18KHG ( 18XГ ) (annealing) , GOST 4543-71

HB 10 <sup>-1</sup> = 187 MPa

## Technological properties for grade 18KHG ( 18XГ )

|                     |             |
|---------------------|-------------|
| Flakes :            | predisposed |
| Temper brittleness: | predisposed |

## Equivalent steels for grade 18KHG ( 18XГ )

Warning! Indicated both exact and nearest equivalents.

| USA    | Germany  | Japan    | France    | England | European  | Italy   | Belgium | Spain   | China  | Sweden | Bulgaria | Hungary | Poland | Romania   | Czechia | Finland | Australia | South Korea |
|--------|----------|----------|-----------|---------|-----------|---------|---------|---------|--------|--------|----------|---------|--------|-----------|---------|---------|-----------|-------------|
| -      | DIN, WNr | JIS      | AFNOR     | BS      | EN        | UNI     | NBN     | UNE     | GB     | SS     | BDS      | MSZ     | PN     | STAS      | CSN     | SFS     | AS        | KS          |
| 5115   | 1.7131   | SMnC420  | 16MC4     | 16MnCr5 | 1.7131    | 16MnCr5 | 16MnCr5 | 16MnCr5 | 15CrMn | 2127   | 16ChG    | BC3     | 15HG   | 17MnCr10  | 14220   | 20MnCr5 | 5120      | SMnC420H    |
| 5120   | 1.7147   | SMnC420H | 16MC5     | 20MnCr5 | 1.7147    | 20MnCr5 |         | 20MnCr5 | 20CrMn | 2173   | 18ChG    | BC3Z    | 16HG   | 18MnCr10q | 14221   |         | 5120H     |             |
| G51150 | 16MnCr5  |          | 16MnCr5RR | 16MnCr5 | 527M17    |         |         | F.1516  |        |        |          |         | 18HGT  | 18MnCr11  | 14222   |         |           |             |
| G51200 | 16MnCrS5 |          | 20MC5     | 527M20  | 16MnCr5KD |         |         |         |        |        |          |         | 20HG   | 20MnCr12  | 14223   |         |           |             |
| H51200 | 20MnCr5  |          |           | 590H17  | 20MnCr5   |         |         |         |        |        |          |         |        |           |         |         |           |             |
|        | 20MnCrS5 |          |           | 590M17  | 20MnCrB5  |         |         |         |        |        |          |         |        |           |         |         |           |             |

## 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]                  |

## Weldability :

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

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