

# Database of Steel and Alloy ( Marochnik )

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## Characteristics for grade NP1 ( НП1 ).

|                           |              |
|---------------------------|--------------|
| <b>Grade :</b>            | NP1 ( НП1 )  |
| <b>Classification :</b>   | Semis nickel |
| <b>Equivalent grades:</b> | Is absent    |

## Chemical composition in % for grade NP1 ( НП1 )

| Ni+Co       | Fe          | C           | Si          | Mn           | S            | P            | Cu           | As           | Pb           | Mg          | Zn           | Sb           | Bi           | Sn           | Cd           | Impurity |
|-------------|-------------|-------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|--------------|--------------|--------------|--------------|--------------|----------|
| min<br>99.9 | max<br>0.04 | max<br>0.01 | max<br>0.03 | max<br>0.002 | max<br>0.001 | max<br>0.001 | max<br>0.015 | max<br>0.001 | max<br>0.001 | max<br>0.01 | max<br>0.005 | max<br>0.001 | max<br>0.001 | max<br>0.001 | max<br>0.001 | all 0.1  |

## Mechanical properties under T=20°C for grade NP1 ( НП1 )

| Assortment                    | Dimension | Direct. | $\sigma_B$ | $\sigma_T$ | $\delta_5$ | $\psi$ | KCU                 | Heat treatment |
|-------------------------------|-----------|---------|------------|------------|------------|--------|---------------------|----------------|
| -                             | mm        | -       | MPa        | MPa        | %          | %      | kJ / m <sup>2</sup> | -              |
| Sheet hotrolled, GOST 6235-91 |           |         | 370        |            | 15         |        |                     |                |
| Sheet, GOST 6235-91           |           |         | 370        |            | 35         |        |                     |                |
| Sheet, GOST 6235-91           |           |         | 540        |            | 2          |        |                     |                |
| Band, GOST 2170-73            |           |         | 390        |            | 35         |        |                     |                |
| Band, GOST 2170-73            |           |         | 540        |            | 3          |        |                     |                |

## Technological properties of the material NP1 ( НП1 ).

|                                |                |
|--------------------------------|----------------|
| <b>Melting temperature :</b>   | 1455 °C        |
| <b>Forging temperature :</b>   | 1140 - 1250 °C |
| <b>Annealing temperature :</b> | 700 - 800 °C   |
| <b>Casting temperature :</b>   | 1550 - 1650 °C |
| <b>Linear shrinkage :</b>      | 1 %            |

## 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]

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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