

Database of Steel and Alloy (Marochnik)

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Characteristics for grade M3r (M3p).

Grade :	M3r (M3p)
Classification :	Copper
Equivalent grades:	Is absent

Chemical composition in % for grade M3r (M3p)

Fe	Ni	S	P	Cu	As	Pb	O	Sb	Bi	Sn
max 0.05	max 0.2	max 0.01	0.005 - 0.06	min 99.5	max 0.05	max 0.03	max 0.01	max 0.05	max 0.003	max 0.05

Mechanical properties under T=20°C for grade M3r (M3p)

Assortment	Dimension	Direct.	σ_B	σ_T	δ_5	ψ	KCU	Heat treatment
-	mm	-	MPa	MPa	%	%	kJ / m ²	-
Pipe, GOST 617-2006			180-190		32			
soft cold-rolled, GOST 1173-2006			200-260		42			
hard cold-rolled, GOST 1173-2006			290		6			

Brinell hardness for M3r (M3p) , soft GOST 1173-2006	HB 10 ⁻¹ = 55 MPa
Brinell hardness for M3r (M3p) , hard GOST 1173-2006	HB 10 ⁻¹ = 95 MPa

Friction coefficient of the material M3r (M3p) .

Friction coefficient with oil :	0.011
Friction coefficient without oil :	0.43

Physical properties for grade M3r (M3p)

T	E 10 ⁻⁵	α 10 ⁶	λ	ρ	C	R 10 ⁹
Grade	MPa	1/Grade	Watt/(m·Grade)	kg/m ³	J/(kg·Grade)	Ohm·m
20	1.32		387	8940	390	17.8
100	1.28	16.7				

Specification :
Mechanical properties :

σ_B	- Tensile strength , [MPa]
σ_T	- Yield stress , [MPa]
δ_5	- Specific elongation at fracture , [%]
ψ	- Reduction of area , [%]
KCU	- Impact strength , [kJ / m ²]
HB	- Brinell hardness , [MPa]

Physical properties :

T	- Test temperature , [Grade]
E	- Young modulus , [MPa]
α	- Coefficient of linear expansion (range 20° - T) , [1/Grade]
λ	- Thermal (heat) condition coefficient , [Watt/(m·Grade)]
ρ	- Density , [kg/m ³]
C	- Specific heat (range 20° - T) , [J/(kg·Grade)]
R	- 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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