

Database of Steel and Alloy (Marochnik)

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Characteristics for grade M1r (M1p).

Grade :	M1r (M1p)
Classification :	Copper
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Chemical composition in % for grade M1r (M1p)

Fe	Ni	S	P	As	Pb	Zn	O	Sb	Bi	Sn	-
max 0.005	max 0.002	max 0.005	0.002 - 0.012	max 0.002	max 0.005	max 0.005	max 0.01	max 0.002	max 0.001	max 0.002	Cu+Ag min 99.9

Mechanical properties under T=20°C for grade M1r (M1p)

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			
Pipe, GOST 21646-2003			200		35			
Pipe, GOST 21646-2003			290		3			
soft cold-rolled, GOST 1173-2006			200-260		42			
hard cold-rolled, GOST 1173-2006			290		6			

Brinell hardness for M1r (M1p) , soft GOST 1173-2006	HB 10 ⁻¹ = 55 MPa
Brinell hardness for M1r (M1p) , hard GOST 1173-2006	HB 10 ⁻¹ = 95 MPa

Technological properties of the material M1r (M1p) .

Melting temperature :	1083 °C
Casting temperature :	1150 - 1250 °C
Linear shrinkage :	2.1 %

Physical properties for grade M1r (M1p)

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	1.28		387	8940	390	17.8

100	1.32	16.7				
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Equivalent steels for grade M1r (M1p)

Warning! Indicated both exact and nearest equivalents.

USA	Germany	Japan	European
-	DIN, WNr	JIS	EN
C12000 C12200	SF-Cu SW-Cu	C1201 C1220	Cu-DLP

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 / m²]
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/m³]
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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