

Material properties of cast iron

Cast iron with lamellar graphite (GJL)

Europa-Standard DIN EN 1561 current			EN-GJL-200	EN-GJL-250	EN-GJL-300	EN-GJL-350
Europe-Norm DIN EN 1561 before 2012			EN-JL-1030	EN-JL-1040	EN-JL-1050	EN-JL-1060
Designation according to DIN 1691			GG20	GG25	GG30	GG35
Tensile strength	Rm min.	N/mm ²	160 - 200	200 - 250	240 - 300	280 - 350
0.1% yield strength	Rp 0,1 min.	N/mm ²	130 - 195	165 - 228	195 - 260	228 - 285
Ultimate strain	A ₅ min.	%	0,3 - 0,8			
Compressive strength	σ _{dB}	N/mm ²	720	840	960	1080
Brinell hardness	HB30	-	160 - 210			
Framework			Pearlitic			
Shear strength	σ _{aB}	N/mm ²	230	290	345	400
Torsional strength	T _{tb}	N/mm ²	230	290	345	400
Modulus of elasticity	E	kN/mm ²	88 - 113	103 - 118	108 - 137	123 - 143
Poisson number	ν	-	0.26			
0.1% compression limit	σ _{d0,1}	N/mm ²	260	325	390	455
Flexural fatigue strength	σ _{bw}	N/mm ²	90	120	140	145
Bending strength	σ _{bB}	N/mm ²	290	340	390	455
Tensile-compressive fatigue	σ _{zdW}	N/mm ²	50	60	75	85
Fracture toughness	K _{Ic}	N/mm ^{3/2}	400	480	560	650
Density	ρ	g/cm ³	7,15	7,20	7,25	7,30
Thermal conductivity 100 - 500°C	λ	W/(m·K)	50,0 - 46,0	48,5 - 44,5	47,5 - 43,0	45,5 - 41,5
specific heat capacity						
At 20 to 200 °C	c	J/(kg·K)	460			
At 20 to 600 °C			535			
Thermal Coefficient of linear expansion						
At -100 to +20 °C	α	μm/(m·K)	10,0			
At 20 to 200 °C			11,7			
At 20 to 400 °C			13,0			
specific electrical Resistance	ρ	Ωmm ² /m	0.77	0.73	0.70	0.67
Coercive field strength	H _o	A/m	560 - 720			
Maximum permeability	μ	μH/m	220 - 330			
Hysteresis losses at B=1T		J/m ³	2.500 - 3.000			