

Grey Cast Irons

Technical Data

Russell Ductile Castings Limited
 Web: www.russellductile.co.uk
 E-mail: enquiries@russellductile.co.uk
 A member of the Chamberlin plc group

Grey Cast Irons	Standard	Material Designation				
	BS EN 1561-2011	EN-GJL-150 (5.1200)	EN-GJL-200 (5.1300)	EN-GJL-250 (5.1301)	EN-GJL-300 (5.1302)	EN-GJL-350 (5.1303)
Characteristic	SI unit					
Tensile strength Rm	MPa	150 – 250	200 – 300	250 – 350	300 – 400	350 – 450
0.1% proof stress Rp0.1	MPa	98 – 165	130 – 195	165 – 228	195 – 260	228 – 285
Elongation A	%	0.8 to 0.3	0.8 to 0.3	0.8 to 0.3	0.8 to 0.3	0.8 to 0.3
Compression strength	MPa	510	636	753	861	963
0.1% compression proof strength	MPa	195	260	325	390	455
Bending strength	MPa	273	346	415	480	539
Shear strength	MPa	170	230	290	345	400
Torsional strength	MPa	204	272	340	408	476
Modulus of elasticity E	GPa	78 – 103	88 – 113	103 – 118	108 – 137	123 to 143
Poisson's number v	-	0.26	0.26	0.26	0.26	0.26
Bending fatigue strength	MPa	69	92	115	138	161
Fatigue limit under reversed tension – compression stresses	MPa	51	68	85	102	119
Fracture toughness K _{Ic}	MPa.m ^{1/2}	12	17	20	19	17
Density ρ	g/ cm ³	7.10	7.15	7.20	7.25	7.3
Specific heat capacity c between 20°C and 200°C between 20°C and 600°C	J/(kg.K)	460 535	460 535	460 535	460 435	460 535
Linear expansion coefficient α between -100°C and +20°C between 20°C and 200°C between 20°C and 400°C	µm/(m.K)	10.0 11.7 13.0	10.0 11.7 13.0	10.0 11.7 13.0	10.0 11.7 13.0	10.0 11.7 13.0
Thermal conductivity λ at 100°C at 200°C at 300°C at 400°C at 500°C	W/(m.K)	52.5 51.0 50.0 49.0 48.5	50.0 49.0 48.0 47.0 46.0	48.5 47.5 46.5 45.0 44.5	47.5 46.0 45.0 44.0 43.0	45.5 44.5 43.5 42.0 41.5
Resistivity ρ	Ω.mm ² /m	0.80	0.77	0.73	0.70	0.67
Coercivity H ₀	A/m	560 to 720	560 to 720	560 to 720	560 to 720	560 to 720
Maximum permeability µ	µH/m	220 to 330	220 to 330	220 to 330	220 to 330	220 to 330
Hysteresis losses at B = 1T	J/m ³	2500 to 3000	2500 to 3000	2500 to 3000	2500 to 3000	2500 to 3000
Torsional fatigue strength	MPa	57	76	95	114	133