Spheroidal Graphite Cast Irons

Technical Data

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A member of the Chamberlin plc group

Spheroidal Graphite Cast Irons	**Standard**	**Material designation**								
	BS EN 1563 (1997)	**EN-GJS-350-22 LT (EN-JS1015)**	**EN-GJS-400-18 LT (EN-JS1025)**	**EN-GJS-400-18 (EN-JS1020)**	**EN-GJS-400-15 (EN-JS1030)**	**EN-GJS-450-10 (EN-JS1040)**	**EN-GJS-500-7 (EN-JS1050)**	**EN-GJS-600-3 (EN-JS1060)**	**EN-GJS-700-2 (EN-JS1070)**	**EN-GJS-800-2 (EN-JS1080)**
Characteristic	SI unit									
Tensile strength R_m (min)	N/mm^2	350	400	400	400	450	500	600	700	800
0.2% proof stress $R_{p0,2}$ (min)	N/mm^2	220	240	250	250	310	320	370	420	480
Elongation A (min)	%	22	18	18	15	10	7	3	2	2
Brinell hardness (typical)	HB	max 163	max 179	max 187	max 201	160/221	170/241	192/269	229/302	248/352
Impact resistance values (min) at (-40 ± 2)°C at (-20 ± 2)°C	 J J	 12[1] (9[2])	 12[1] (9[2])	not specified						
Compression strength σdb	N/mm^2	———	———	700	700	700	800	870	1000	1150
Shear strength σaB	N/mm^2	315	360	360	360	405	450	540	630	720
Torsional strength τtB	N/mm^2	315	360	360	360	405	450	540	630	720
Modulus of elasticity E (tension and compression)	GN/m^2 (kN/mm^2)	169	169	169	169	169	169	174	176	176
Poisson's ratio ν	-	0,275	0,275	0,275	0,275	0,275	0,275	0,275	0,275	0,275
Fatigue limit (Wöhler) (rotating bending) unnotched (dia 10.6 mm)	N/mm^2	180	195	195	195	210	224	248	280	304
Fatigue limit (Wöhler) (rotating bending) notched (dia 10.6 mm)	N/mm^2	114	122	122	122	128	134	149	168	182
Fracture toughness K_{1c}	Mpa $\sqrt{m}^{1/2}$	31	30	30	30	23	25	20	15	14
Density ρ	g/cm^3	7,1	7,1	7,1	7,1	7,1	7,1	7,2	7,2	7,2
Specific heat capacity c between 20°C and 500°C	J/(kg.K)	515	515	515	515	515	515	515	515	515
Linear expansion coefficient α between 20°c and 400°C	µm/(m.K)	12,5	12,5	12,5	12,5	12,5	12,5	12,5	12,5	12,5
Thermal conductivity λ at 300°C	W/(m.K)	36,2	36,2	36,2	36,2	36,2	35,2	32,5	31,1	31,1
Resistivity ρ	µΩ.m	0,50	0,50	0,50	0,50	0,50	0,51	0,53	0,54	0,54
Maximum permeability µ	µH/m	2136	2136	2136	2136	2136	1596	866	501	501
Hysteresis losses at B = 1T	J/m^3	600	600	600	600	600	1345	2248	2700	2700

Note 1: Mean value from 3 tests.
Note 2: Individual value.