

Austempered Ductile Cast Irons (ADI)

Technical Data

Austempered Ductile Cast Irons (ADI)	Standard	Material designation: symbol and (number)					
	BS EN 1564 (2011)	EN-GJS-800-10 (5.3400)	EN-GJS-800-10-RT (5.3401)	EN-GJS-900-8 (5.3402)	EN-GJS-1050-6 (5.4303)	EN-GJS-1200-3 (5.3404)	EN-GJS-1400-1 (5.3405)
Characteristic	SI unit	Indicative values for properties 1)					
Tensile strength R _m	MPa	800	800	900	1050	1200	1400
0.2% proof strength R _{p0.2} (min)	MPa	500	500	600	700	850	1100
Elongation A (min)	%	10	10	8	6	3	1
Impact resistance values (min) Charpy (notched) at (23±5)°C			10 ² (9 ³)	2) mean value of 3 tests 3) individual value			
Compression strength σ _{db} 0.2% proof strength	MPa	1300	1300	1420	1675	1900	2200
Shear strength σ _{aB} 0.2% proof strength	MPa	720	720	800	940	1080	1260
Torsional strength σ _{tB} 0.2% proof strength	MPa	720	720	800	940	1080	1260
Fracture toughness K _{1c}	MPa.m ^{1/2}	62	62	60	59	54	50
Fatigue limit (Wöhler) (rotating bending) unnotched (dia. 10.6mm) N = 2 x 10 ⁶ cycles	MPa	375	375	400	430	450	375
Fatigue limit (Wöhler) (rotating bending) notched 4) (dia. 10.6 mm) N = 2 x 10 ⁶ cycles	MPa	225	225	240	265	280	275
		Typical values					
Brinell hardness	HB	250 - 310	250 - 310	280 - 340	320 - 380	340 - 420	380 - 480
Modulus of Elasticity E (tension and compression)	GPa	170	170	169	168	167	165
Poisson's ratio ν	-	0.27	0.27	0.27	0.27	0.27	0.27
Shear modulus	GPa	65	65	65	64	63	63
Density ρ	g/cm ³	7.1	7.1	7.1	7.1	7.0	7.0
Linear expansion coefficient α	μm/(m.K)	14.6	14.6	14.6	14.3	14.0	13.8
Thermal conductivity λ	W/(m.K)	22.1	22.1	22.1	21.8	21.5	21.2
Note 1: The minimum values can be obtained on a wall thickness up to 50mm. For heavier section agreement between purchaser and manufacturer is recommended Note 4: Notched after heat treatment							