



VANGUARD FOUNDRY

manufacturers of high integrity ductile castings

SPECIAL CAST IRONS

High Silicon - Molybdenum Irons

Vanguard Designation	Chemical Analysis						Mechanical Analysis		
	C %	Si %	Mn %	S %	Mo %	Mg %	Tensile strength N/mm ² Minimum	0.2% Proof stress N/mm ² Minimum	Elongation %
0.5 to 0.7 SiMo	3.0 to 3.4	3.8 to 4.2	0.4 Max	0.15 Max	0.5 to 0.7	0.03 to 0.08	460	310	8
0.7 to 1.25 SiMo	3.2 to 3.8	4.0 to 5.0	0.4 Max	0.15 Max	0.7 to 1.25	0.03 to 0.08	550	480	5

Notes

1) The above internal specifications were created to accommodate the slight variations in customer to customer requirements. On the very infrequent occasions that the customer's specification falls outside of this range Vanguard's versatility means that most variations can be produced.

2) Typically these materials will be subject to a ferritising heat-treatment. (Anneal)

Special cast irons covers a multitude of materials but High Silicon - Molybdenum and Austempered Ductile Irons are two in regular production at Vanguard Foundry Ltd.

High Silicon - Molybdenum irons were developed to meet the increasing demands for high strength ductile irons capable of operating at high temperatures. This material is ideally suited to applications such as manifolds and turbocharger housings where strength, oxidation resistance, structural stability and resistance to thermal cycling are key to performance. Austempered Ductile Iron was developed to provide a cost effective material with high strength but more importantly excellent wear resistance. The combination of strength and resistance to abrasion whilst retaining some ductility makes it an ideal material for agriculture, construction, mining, gears and many other diverse applications.

BS EN 1564: 1997 Austempered Ductile Iron (ADI)

Material Designation		Tensile strength N/mm ² Minimum	0.2% Proof Stress N/mm ² Minimum	Elongation %	Brinell Hardness HB
Symbol	Number				
EN-GJS-800-8	EN-JS 1100	800	500	8	260 to 320
EN-GJS-1000-5	EN-JS 1110	1000	700	5	300 to 360
EN-GJS-1200-2	EN-JS 1120	1200	850	2	340 to 440
EN-GJS-1400-1	EN-JS 1130	1400	1100	1	380 to 480

ASTM 897M-03 Austempered Ductile Iron (ADI)

Grade	Tensile strength N/mm ² Minimum	0.2% Proof Stress N/mm ² Minimum	Elongation %	Brinell Hardness HB
1	900	650	9	269 to 341
2	1050	750	7	302 to 375
3	1200	850	4	341 to 444
4	1400	1100	2	388 to 477
5	1600	1300	1	402 to 512

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