

R606 Rev B – ASTM B637 Alloy 718 (UNS N07718)

Rev	Date	ECN	Issue	Prepared by	Check/Approved
B	11.01.08	264	Revised/Re-issued	T.S.	J.S.
A	09.05.06	----	Revised/Re-issued	A.K.	N.R.
0	04.09.91	----	Revised/Re-issued	A.K.	J.S.

Product Form	Standard	Grade	Acceptable Class
Forged Bar Blank Ring Rolled Bar	ASTM B637	UNS N07718	-

Scope	This specification outlines the modifications and additional requirements to the relevant ASTM Specifications for the supply of raw material to manufacture Vector International sealrings and similar hollow cylindrical parts. This specification is not intended for blank parts subject to pressure loading.								
Other Applicable Specifications	ASTM A370 (Latest Issue) NACE MR-01 75 (Latest Issue)								
Heat Treatment	Heat Treatment to be in accordance with ASTM B637 (Latest Issue) or modified. ASTM B637: Solution Treat at 924 to 1010°C (1700 to 1850°F), hold ½hour min, air cool or faster. Precipitation hardening cycle at 718±14°C (1325±25°F), hold at temperature for 8hours, furnace to cool 621±14°C (1150±25°F), hold until total precipitation heat treatment time has reached 18hours, air cool. Modified: Solution anneal at 995 to 1038°C (1823 to 1900°F), hold for 1 to 2½hours, water quench. Precipitation hardening cycle at 760 to 816°C (1400 to 1500°F) hold for 6 to 8hours, air cool. <i>Note: Full Heat Treatment Temperatures and Times to be reported.</i>								
Chemical Analysis % (Heat)		Min	Max		Min	Max		Min	Max
	C	-	0.08	Ni Cr	50.0	55.0	Al	0.20	0.80
	Si	-	0.35	Mo	17.0	21.0	B	-	0.006
	Mn	-	0.35	Cu	2.80	3.30	Co	-	1.00
	P	-	0.015	Ti	-	0.30			
	S	-	0.015		0.65	1.15			
	<i>Note: Nb+Ta = 4.75 - 5.50</i>								
Mechanical Properties				Min			Max		
	Tensile (R_m):			130000psi (897MPa)		-			
	Yield (R_{p0.2}):			110000psi (759MPa)		-			

R606 Rev B – ASTM B637 Alloy 718 (UNS N07718)

	Elongation (A %): R. of A (Z %): Hardness:	12 15 -	- - 38HRC
	<i>Note: If hardness on test specimen exceeds 38HRC, the production parts shall be tested (Max. allowable = 39HRC or 360HB).</i>		
Test Sampling	Test coupons must be taken from prolongations or suitable test coupon, and must be representative of the finished forging/bar. Test coupon must be of the same cast/heat and must be heat treated with the production forgings. Forgings shall be stacked in the furnace in accordance with good practice to ensure even heat treatment. The test coupons must receive essentially the same forging reduction ratio as the production forgings. Mechanical Testing to be carried out to ASTM A370 after final heat treatment.		
Surface Finish and Quality	Forgings to be of sufficient quality for LPI check. LPI on finished machined parts to be undertaken by Vector International Ltd.		
Repair of Defects	Weld repair is not acceptable.		
Marking	Forgings must be fully traceable and shall be marked with Heat Number, Material Grade, and Vector Specification.		
Certification	Certification to be in accordance with EN10204-3.1: Chemical Analysis, Mechanical Analysis, Heat Treatment Report / Graphs, Mill Certificate (Wet Stamped). Suppliers are asked to keep certification packages as concise as possible.		
Notes	1. Refer to PO for supplemental details. 2. Any deviation from this specification must be formally raised as a concession request prior to delivery. Certification must include concession documentation.		