



APPROVED
AD 2000 WO
PED 97/23/EC
MANUFACTURER

RWTUV

MILL TEST CERTIFICATE - EN 10204 3.1

VIRAJ
Forgings Ltd.

CUSTOMER :							MANUFACTURER'S SYMBOL		MTR NO.		FRG/23722 - C			
									DATE		14.04.2006			
									MATERIAL SPECIFICATION		ASTM A182/A182M-05			
									GRADE		ASME SA182/SA182M - 04			
									DIMENSIONAL SPECIFICATION		F316/316L			
									MATERIAL CONFORMS TO NACE MR0 175 - 2002		ASME B16.5 2003			
ORDER NO.: 06.02.161/EV			L/C NO.: 02RI250033 DT: 2006-02-13				STAINLESS STEEL FORGED FLANGES							
CHEMICAL ANALYSIS														
SL NO	ITEM DESCRIPTION		HEAT NO	QTY	%C	%Mn	%Si	%S	%P	%Cr	%Ni	%Mo	N2 PPM	
1	1"	BLRF	300#	71468	100	0.025	1.81	0.49	0.007	0.039	16.72	10.00	2.01	680
2	1/2"	BLRF	150#	70873	200	0.029	1.73	0.41	0.018	0.035	16.50	10.05	2.04	740
3	1/2"	BLRF	1500#	66816	50	0.022	1.77	0.48	0.018	0.043	16.65	10.12	2.09	740
4	2"	BLRF	300#	69073	100	0.030	1.82	0.47	0.013	0.041	16.70	10.15	2.04	655
5	2"	BLRF	600#	69073	50	0.030	1.82	0.47	0.013	0.041	16.70	10.15	2.04	670
6	3"	BLRF	600#	71404	25	0.025	1.84	0.45	0.011	0.036	16.66	10.01	2.04	670
7	3/4"	BLRF	150#	71700	200	0.028	1.78	0.50	0.005	0.035	16.68	10.03	2.05	805
8	6"	BLRF	600#	71038	10	0.024	1.85	0.44	0.014	0.042	16.80	10.65	2.05	785
MECHANICAL PROPERTIES														
HEAT NO	ITEM DESCRIPTION		TENSILE STRENGTH (Mpa)	YIELD STRENGTH (Mpa)	ELONGATION % L _{0-4D}	REDUCTION OF AREA %	IMPACT TEST					HARDNESS (BHN)		
							CHARPY V-NOTCH 193Jmax (COULES) 200C				AVG			
71468	1"	BLRF	300#	550.25	282.18	57.00	75.20	188	185	182		185	145	
70873	1/2"	BLRF	150#	553.20	290.53	57.00	73.91	182	188	176	182	157		
66816	1/2"	BLRF	1500#	554.94	293.21	58.40	73.39	196	198	202	199	153		
69073	2"	BLRF	300#	563.66	296.87	58.00	73.70	200	212	210	207	160		
69073	2"	BLRF	600#	563.66	296.87	56.00	73.70	200	212	210	207	160		
71404	3"	BLRF	600#	562.08	287.01	57.20	72.21	185	188	190	188	159		
71700	3/4"	BLRF	150#	548.34	290.46	56.40	73.13	168	175	172	172	160		
71038	6"	BLRF	600#	550.33	298.01	57.00	73.95	186	196	202	195	154		
MELTING PROCESS : INDUCTION / AOD (PES) / CONCAST HEAT TREATMENT : SOLUTION ANNEALED AT 1050°C AND WATER QUENCHED DIMENSIONAL INSPECTION : CONFORM WITH THE SPECIFICATION (100% INSPECTED) SURFACE INSPECTION : SATISFACTORY PMI : NO OBJECTION (100% TESTED WITH MOBILE SPECTRO) INTER GRANULAR CORROSION TEST : PASSED IGC TEST IN ACCORDANCE WITH ASTM A262 PRACTICE E MICRO OBSERVATION : NO CARBIDE PRECIPITATION OBSERVED ON GRAIN BOUNDARIES RADIOACTIVITY TEST : ALL THE ABOVE MATERIAL IS TESTED FOR RADIOACTIVITY AND FOUND WITH IN THE LIMIT OF BACKGROUND RADIATION WE CERTIFY THAT THE MATERIAL DESCRIBED ABOVE HAS BEEN TESTED AND COMPLIES WITH THE ORDER/CONTRACT AND IS OF INDIAN ORIGIN.														
STEUER NEDERLAND B.V. 1-1 QA/QC Dept. 19379 A. Korevaar										 WORKS INSPECTOR				

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