

# MATERIAL TEST & INSPECTION CERTIFICATE

**SUNGKWANG BEND CO., LTD.(SKB)**

CUSTOMER: MCJUNKIN CORPORATION  
PROJECT NAME: N/A

According to  
DIN 50049 3.1 / EN 10204 3.1 / ISO 10474 3.1

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PURCHASE ORDER NO.	C 078 614899 8D0	SPEC. FOR MATERIAL	ASTM/ASME A/SA403WP316/316L-W 07/07ED	CERTIFICATE NO.	QCLA2010090384
PJT NO.	N/A	SPEC. FOR INSPECTION	ASME B16.9	DATE OF ISSUE	2010.09.14
STARTING MATERIAL	E.F.W PIPE	SKB NO.	2010042904	VISUAL & DIMENSION	SATISFACTORY

NO.	SEQ/LINE/ITEM NO	DESCRIPTION	QTY	HEAT NO.	MFG ID NO.	POR/CODE/TAG NO
257		90D ELBOW SHORT S40S 2 1/2" B.W WELDED SUS	10	D0903551	D0903551	
258		90D ELBOW SHORT S40S 6" B.W WELDED SUS	5	D0515751	D0515751	

CHEMICAL COMPOSITION(%) (L : LADLE, P : PRODUCT)																				TENSILE TEST					
ST.D.	SPEC.	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	Nb	N	Al	B	W	Sn	Ti	C.E.	SPEC.	Y.S 0.2% offset	T.S	EL	RA	
																					KSI	KSI	%		
	MIN						10.00	16.00	2.00												MIN	30.0	75.0	28.0	
	MAX	0.030	1.00	2.00	0.045	0.030	14.00	18.00	3.00												MAX				
D0515751	L	0.028	0.57	1.02	0.028	0.002	10.48	16.74	2.02													42.5	88.6	59.0	
	P																								
D0903551	L	0.018	0.46	1.32	0.029	0.002	10.10	16.65	2.02													45.6	83.5	57.0	
	P																								

IMPACT TEST ST.D.	TEST TEMP.	SIZE OF SPECIMEN(mm)	ABSORBED ENERGY STD. I		LATERAL EXPANSION STD. I		PERCENT SHEAR STD. I		HARDNESS HRC		HEAT TREATMENT	SOLUTION TREATED. 1060°C, 20Min., "Water"	
			VALUE	AVE.	VALUE	AVE.	VALUE	AVE.	MIN	MAX		PMI	N/A
D0515751		B/M							MAX	22.0	N.D.E	N/A	N/A
		H.A.Z							HB	149	FLATTENING TEST	N/A	MEMO
		W/M									BENDING TEST	N/A	
D0903551		B/M							HB	149	HYDROSTATIC TEST	N/A	
		H.A.Z									CORROSION TEST	N/A	
		W/M									GRAIN SIZE TEST	N/A	
											HIC TEST	N/A	

MATERIAL MEETS THE REQUIREMENTS OF NACE MR0175 & 0103.

**WE CERTIFY THIS MATERIAL HAS BEEN MANUFACTURED AND EXAMINED IN ACCORDANCE WITH ALL REQUIREMENTS OF THE SPECIFICATION AND THE RESULTS OF ALL EXAMINATION ARE ACCEPTABLE.**

REVIEWED BY : \_\_\_\_\_  
WITNESSED BY : \_\_\_\_\_

*[Signature]*  
QM DIV. SENIOR MANAGING DIRECTOR