

33838

MATERIAL TEST & INSPECTION CERTIFICATE

SUNGKWANG BEND CO., LTD.(SKB)

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CUSTOMER: FORGINGS FLANGES & FITTINGS INC.
 PROJECT NAME: N/A

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

PURCHASE ORDER NO.	171858	SPEC. FOR MATERIAL	ASTM/ASME A/SA234WPB-S 07/07/ED	CERTIFICATE NO.	QCLP2011020736
PJT NO.	N/A	SPEC. FOR INSPECTION	ASME B16.9	DATE OF ISSUE	2011.01.18
STARTING MATERIAL	SEAMLESS PIPE	SKB NO.	2010092716	VISUAL & DIMENSION	SATISFACTORY

NO.	SEQ/LINE/ITEM NO	DESCRIPTION	QTY	HEAT NO.	MFG ID NO.	POR/CODE/TAG NO
508		90D ELBOW(L) S80 16" B.W SMLS Black	100	403416	403416	

CHEMICAL COMPOSITION(%) (L : LADLE, P : PRODUCT)																			TENSIL TEST							
HEAT NO.	STD.	SPEC.	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	Nb	N	Al	B	Zr	Fe	Ti	C.E	SPEC.	Y.S 0.2% offset	T.S	EL	RA	
																						KSI	KSI	%	%	
403416	MIN			0.10	0.29																	MIN	35.0	60.0	22.0	
	MAX	0.30		1.06	0.030	0.058	0.40	0.40	0.15	0.40	0.08											MAX		85.0		
	L	0.19	0.24	0.97	0.010	0.004	0.03	0.03	0.01	0.09	<0.01												44.5	71.5	40.0	
	P																									

HEAT NO.	IMPACT TEST	TEST TEMP.	SIZE OF SPECIMEN(mm)	ABSORBED ENERGY STD. /		LATERAL EXPANSION STD. /		PERCENT SHEAR STD. /		HARDNESS HB		HEAT TREATMENT	HOT FORMED. 870°C, N/A., "Air"			
				VALUE	AVE.	VALUE	AVE.	VALUE	AVE.	MIN	197		PMI	N/A	N.D.E	N/A
403416				B/M							HB	149	FLATTENING TEST	N/A	**MEMO	
				H.A.Z									BENDING TEST	N/A		
				W/M										HYDROSTATIC TEST		N/A
				B/M										CORROSION TEST		N/A
				H.A.Z										GRAIN SIZE TEST		N/A
				W/M										HIC TEST		N/A

- MATERIAL MEETS THE REQUIREMENTS OF NACE MR0175 & 0103.
 - PED(97/23/EC)

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

Inv# 175666; PO# 11988; H# 403416; 16 LR 90 S80 WPB