

PO#: 274 Pack#: 134454 Order#: 857460 Lot#: skb.2-76698 Desc: 5 STD SMLS LR 90 A/SA420 WPL6 SKB

MATERIAL TEST & INSPECTION CERTIFICATE

SUNGWANG 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

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PURCHASE ORDER NO.	172239	SPEC. FOR MATERIAL	ASTM/ASME A/SA420WPL6-S 07/07ED	CERTIFICATE NO.	QCLA2012041012 ✓
PJT NO.	N/A	SPEC. FOR INSPECTION	ASME B16.9	DATE OF ISSUE	2012.04.24 ✓
STARTING MATERIAL	SEAMLESS PIPE	SKB NO.	2011022803	VISUAL & DIMENSION	SATISFACTORY

NO.	SEQ/LINE/ITEM NO	DESCRIPTION	QTY	HEAT NO.	MFG ID NO.	PCR/CODE/TAG NO
3		90D ELBOW(L) STD 4" B.W.SMLS Black	500	3-84771	3-84771	
4		90D ELBOW(L) STD 5" B.W.SMLS Black	300	2-76698	2-76698	

HEAT NO.	STD.	SPEC.	CHEMICAL COMPOSITION(%) (L: LADLE, P: PRODUCT)																	TENSILE TEST(Gauge Length :5D)					
			C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	Nb	N	Al	B	Zr	Fe	Ti	CE	SPEC.	Y.S 0.2% offset KSI	T.S KSI	EL %	RA %
			MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
2-76698	L	0.13	0.22	0.90	0.014	0.004	0.02	0.04	0.01	0.03	0.0001	<0.001										41.7	62.3	49.0	
	P																								
3-84771	L	0.14	0.20	0.87	0.013	0.004	0.01	0.02	<0.01	0.01	0.002	<0.001										45.6	62.3	49.0	
	P																								

HEAT NO.	IMPACT TEST	TEST TEMP.	SIZE OF SPECIMEN(mm)	ABSORBED ENERGY STD./57FLbf/Min/Ave.				LATERAL EXPANSION STD./		PERCENT SHEAR STD./		HARDNESS HRC		HEAT TREATMENT	NORMALIZED 900°C, 30Min., "As"		
				VALUE	AVE.	VALUE	AVE.	VALUE	AVE.	MIN	MAX	MIN	N.D.E		RA		
				MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX		MIN		
3-84771	-45°C	10x5.0	BM	98.30	92.80	105.40	98.17					HB 158	FLATTENING TEST	NA	MEMO 1" THE MINIMUM ELONGATION OF THE FITTING MATERIAL REFER TO TABLE 3 OF A/SA420 SPEC.		
			H.A.Z										BENDING TEST	NA			
			WM											HYDROSTATIC TEST		NA	
2-76698	-45°C	10x5.0	BM	95.50	101.20	99.70	98.80					HB 142	CORROSION TEST	NA			
			H.A.Z										GRAIN SIZE TEST	NA			
			WM										HRC TEST	NA			

- 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.

[Signature]
 QR DIV. SENIOR MANAGING DIRECTOR

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