

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

39514

PURCHASE ORDER NO.	172509	SPEC. FOR MATERIAL	ASTM/ASME A/SA234WPB-S 07/07ED	CERTIFICATE NO.	QCLP2011120435
PJT NO.	N/A	SPEC. FOR INSPECTION	ASME B16.9	DATE OF ISSUE	2011.10.25
STARTING MATERIAL	SEAMLESS PIPE	SKB NO.	2011062812	VISUAL & DIMENSION	SATISFACTORY

NO.	SEQ/LINE/ITEM NO	DESCRIPTION					QTY	HEAT NO.	MFG ID NO.	POR/CODE/TAG NO
149		REDUCING TEE	STD*STD	4**3"	B.W SMLS	Black	250	J8K8106	J8K8106	
150		REDUCING TEE	STD*STD	6**2"	B.W SMLS	Black	40	7-05660	7-05660	

CHEMICAL COMPOSITION(%) (L : LADLE, P : PRODUCT)																				TENSILE 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.	R.A	
																						KSI	KSI	%	%	
		MIN		0.10	0.29																	MIN	35.0	60.0	*1	
		MAX	0.30		1.06	0.050	0.058	0.40	0.40	0.15	0.40	0.08										MAX		85.0		
7-05660		L	0.20	0.19	0.48	0.007	0.002	0.01	0.01	<0.01	0.01	0.001											43.5	65.5	40.0	
		P																								
J8K8106		L	0.19	0.21	0.55	0.020	0.006	0.02	0.04	0.01	0.02	0											45.3	71.6	38.0	
		P																								

HEAT NO.	IMPACT TEST	TEST TEMP.	SIZE OF SPECIMEN(mm)	ABSORBED ENERGY STD. /		LATERAL EXPANSION STD. /		PERCENT SHEAR STD. /		HARDNESS HB		HEAT TREATMENT	NORMALIZED. 900°C, 30Min., "Air"		
				VALUE	AVE.	VALUE	AVE.	VALUE	AVE.	MIN	MAX		197	PMI	N/A
7-05660			B/M								HB	145	FLATTENING TEST	N/A	**MEMO 1* THE MINIMUM ELONGATION OF THE FITTING MATERIAL REFER TO TABLE 2 OF A/ SA234 SPEC.
			H.A.Z										BENDING TEST	N/A	
			W/M										HYDROSTATIC TEST	N/A	
J8K8106			B/M								HB	145	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# 232895; PO# 60; H# J8K8106; 4 X 3 STD RED TEE WPB