Inv# 175666; PO# 11988; H# 605719; 4 X 3 S160 RED TEE WPB

27321

MATERIAL TEST & INSPECTION CERTIFICATE

SUNGKWANG BEND CO., LTD.(SKB)
1720, Songjeong-Dong, Gangseo-Ku,Busan,Korea
TEL : 82-051-3300-450
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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.	170608	SPEC. FOR MATERIAL	ASTM/ASME A/SA234WPB-S 07/07ED	CERTIFICATE NO.	QCLP2010070029
PJT NO.	N/A	SPEC. FOR INSPECTION	ASME B16.9	DATE OF ISSUE	2010.06.09
STARTING MATERIAL	SEAMLESS PIPE	SKB NO.	2009102005	VISUAL & DIMENSION	SATISFACTORY

NO.	SEQ/LINE/ITEM NO	DESCRIPTION					QTY	HEAT NO.	MFG ID NO.	POR/CODE/TAG NO
160		REDUCING TEE	S160*S160	4"*2 1/2"	B.W SML'S	Black	25	605719	605719	
161		REDUCING TEE	S160*S160	4"*3"	B.W SML'S	Black	25	605719	605719	

CHEMICAL COMPOSITION(%) (L : LADLE, P : PRODUCT)

STD. / HEAT NO.	SPEC.	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	Nb	N	Al	B	W	Sn	Ti	C.E
	MIN		0.10	0.29															
	MAX	0.30		1.06	0.050	0.058	0.40	0.40	0.15	0.40	0.08								
605719	L	0.19	0.28	0.99	0.011	0.003	0.03	0.03	0.01	0.07	<0.01								
	P																		
	L																		
	P																		

TENSILE TEST

SPEC.	Y.S KSI	T.S KSI	EL. %	R.A %
MIN	35.0	60.0	30.0	
MAX		85.0		
	41.5	73.7	42.0	

IMPACT TEST / HEAT NO.	TEST TEMP.	SIZE OF SPECIMEN(mm)		ABSORBED ENERGY STD. / VALUE			AVE.	LATERAL EXPANSION STD. / VALUE			AVE.	PERCENT SHEAR STD. / VALUE			AVE.
605719			B/M												
			H.A.Z												
			W/M												
			B/M												
			H.A.Z												
			W/M												

HARDNESS	HD
MIN	
MAX	197
HB	147

HEAT TREATMENT	NORMALIZED. 900℃, 40Min., "Air"		
N.D.E	M.T:GOOD	PMI	N/A
FLATTENING TEST	N/A	**MEMO	
BENDING TEST	N/A		
HYDROSTATIC TEST	N/A		
CORROSION TEST	N/A		
GRAIN SIZE TEST	N/A		
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 : _____

QM DIV. SENIOR MANAGING DIRECTOR

SKE-8903