48158

Inv# 232896; PO# 63; H# 303845; 16 S80 TEE WPB

MATERIAL TEST & INSPECTION CERTIFICATE

SUNGKWANG BEND CO., LTD.(SKB)
1720, Songjeong-Dong, Gangseo-Ku,Busan,Korea
TEL : 82-051-3300-450
FAX : 82-051-3300-335
http://www.skbend.com

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.	173162	SPEC. FOR MATERIAL	ASTM/ASME A/SA234WPB-S 07/07ED	CERTIFICATE NO.	QCLH2012110528
PJT NO.	N/A	SPEC. FOR INSPECTION	ASME B16.9	DATE OF ISSUE	2012.10.30
STARTING MATERIAL	SEAMLESS PIPE	SKB NO.	2012041307	VISUAL & DIMENSION	SATISFACTORY

NO.	SEQ/LINE/ITEM NO	DESCRIPTION	QTY	HEAT NO.	MFG ID NO.	POR/CODE/TAG NO
28		STRAIGHT TEE S80 16" B.W SMLS Black	16	303845	303845	

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

HEAT NO. \ STD.	SPEC.	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	Nb	N	Al	B	Zr	Fe	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								
303845	L	0.18	0.23	0.96	0.006	0.004	0.04	0.02	0.02	0.12	<0.01								
	P																		
	L																		
	P																		

TENSILE TEST(Gauge Length :5D)

SPEC.	Y.S 0.2% offset KSI	T.S KSI	EL. %	R.A %
MIN	35.0	60.0	22.0	
MAX		85.0		
	40.7	66.7	41.0	

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.
303845			B/M												
			H.A.Z												
			W/M												
			B/M												
			H.A.Z												
			W/M												

HARDNESS HB	
MIN	
MAX	197
HB	149

HEAT TREATMENT	NORMALIZED. 900℃, 1Hr., "Air"		
PMI	N/A	N.D.E	M.T:GOOD
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
MATERIAL ALL MANUFACTURED IN KOREA.

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