



5200 NW Front Avenue
Portland, OR 97210



Certificate #: 30248

TFA Heat:	S734	Mill:	USS
TFA Grade:	WPB	Mill Heat:	A23165
Product:	18" STD 45 ELL		

Chemical Properties

C: 0.16	CU: 0.03
MN: 0.97	V: 0.002
P: 0.009	CB: 0.001
S: 0.005	B:
SI: 0.22	TI:
MO: 0.03	AL:
CR: 0.08	CE: 0.3474
NI: 0.02	

Physical Properties

Yield PSI:	51000
Tensile PSI:	72500
Test Bar Type:	STRIP
Tensile Orientation:	LONG
% Elongation in 2":	45
Brinnell Hardness:	174

Coupon Size:
Charpy V Notch Text @:
Charpy Orientation:

% Shear

1:	2:	3:	Avg:
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Joules

1:	2:	3:	Avg:
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Lateral Expansion (Mils)

1:	2:	3:
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1. THESE FITTINGS WERE HOT FORMED BETWEEN 1150F AND 1800F AND AIR COOLED. 2. THE HARDNESS DOES NOT EXCEED 197 BHN PART TO PART. 3. STARTING MATERIAL IS ASTM A 106 GRB SEAMLESS PIPE. 4. THIS PRODUCT IS SEAMLESS.

THE MATERIAL IS MANUFACTURED TO ASTM A 234 GR WPB REV: 06A. ALSO PER ASME SEC II SA 234 GR WPB, 2004 EDITION THRU ALL ADDENDAS AT TIME OF ORDER. 2. DESIGN AND DIMENSIONS TO ASME B16.9-2003 OR MSS-SP-75-04 AS APPLICABLE BY DESIGN. 3. PER NACE MR0175/ISO15156-2. OUR QUALITY SYSTEM HAS BEEN REGISTERED BY (ABS) TO (ISO-9001, REV: 2000), CERTIFICATE #: 30248. OUR ORGANIZATIONAL STRUCTURE AND CERTIFICATION COMPLIES WITH (EN 10204-3.1.B). OUR FITTINGS SATISFY THE MATERIAL REQUIREMENT OF (PED 97/23-EC ANNEX 1-4.3). RESULTS OF TESTS AND INSPECTIONS REQUIRED BY THE ABOVE STANDARDS MEET THE REQUIREMENTS OF THE STANDARDS.

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