

**CERTIFIED MATERIAL TEST REPORT**

Tube Forgings of America, Inc.

5200 NW Front Avenue

Portland, OR 97210

ISO 9001-2000 Certified

8/30/2005

**Sold To:** PLESA ANÁHUAC y CÍAS, S.A. de C.V.  
 AV. VALLE DE LAS ALAMEDAS NO. 66-A  
 TULTITLAN, EDO., MEX. C. P.54940

**TFA Sales Order :**  
**Customer ID:** 38350  
**Customer PO Reference:**  
**Attention To:**

**TFA Heat Code:** P489  
**Grade:** WPB  
**TFA Part ID:** 20018  
**Description:** 20 STD CAP  
**Quantity:** 1  
**Mill:** USS  
**Mill Heat :** A85018  
**Process:** WPB-H1  
**Customer Part ID:**

**Test Bar Type:** STRIP  
**Yield (PSI):** 41000  
**Tensile (PSI):** 69500  
**% Elong In 2"** 47.00  
**B.H.N. :** 106  
**Tensile Orientation:** TRANSVERSE

C	MN	P	S	SI	MO	CR	NI	CU	V	CB	B	TI	AL	C.E.
0.190	1.050	0.012	0.007	0.180	0.030	0.100	0.040	0.020	0.002	0.002	0.0000		0.0390	0.40

Coupon Size:	Ft. Lbs	% Shear	Lateral Expansion (Mils)
Charpy V notch test at	1:	1:	1:
degrees F:	2:	2:	2:
Charpy Orientation:	3:	3:	3:
	Avg:	Avg:	

1.THESE FITTINGS WERE HOT FORMED BETWEEN 1150FAND1800F AND AIR COOLED. 2.THE HARDNESS DOES NOT EXCEED 197 BHN PART TO PART. 3. STARTING MATERIAL IS SEAMLESS PIPE WHICH MEETS THE MELTING,CHEMICAL AND PHYSICAL REQUIREMENTS OF ASTM A 106 GR B. 4. THIS PRODUCT IS SEAMLESS.

THE MATERIAL IS MANUFACTURED TO ASTM A 234 GR WPB REV: 03. ,ALSO PER ASME SEC II SA 234 GR WPB,2001 EDITION THRU ALL ADDENDAS AT TIME OF ORDER. 2. DESIGN AND DIMENSIONS TO ASME B16.9-2003 OR MSS-SP-75-98 AS APPLICABLE BY DESIGN. 3.PER NACE MR-01-75, 2003 REVISION. 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).

Heat Code: P489 Grade WPB

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*[Signature]*  
 John Peachey, Mgr. Quality Assurance

Certificate: 30248