

*N7158*



280 Henry St. Brantford, Ontario N3T 5S7  
Tel. (519)758-8100 Fax. (519)756-2041

Form: PF02 Rev. 1

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**CERTIFIED MATERIAL TEST REPORT**

<b>Customer:</b> RYERSON CANADA- EDMONTON	<b>Customer Part No:</b> 0123-2700/A105LF2-14.187
<b>Cust. P.O.:</b> 693211	<b>Item #:</b> 008
<b>Material Spec:</b> ASTM A350-07, LF2, A105-10, A576-90B (2006), API 6A, NACE MR-0175 QUENCHED & TEMPERED	<b>Tag:</b>
<b>Description:</b> ROUGH MACHINED TO 14.187" DIA X R/L, -1 (210.875" LG), -2 (184.375" LG), BAR	<b>Patriot Forge Shop Order#</b> L1739-1 <b>Pce. Dash#s:</b> 1-2 <b>Cert Pcs:</b> 2

**Chemical Analysis**

**Mill Data**

Heat#: N7158

C	Mn	P	S	Si	Cr	Mo	Ni	V	Al	Cu	H	Ti	Nb	Co	C/Cr
%	%	%	%	%	%	%	%	%	%	%	PPM	%	%	%	EQ
.18	1.13	.009	.008	.22	.07	.01	.04	.004	.032	.12	1.6	.001	.001	.006	40

**MECHANICAL PROPERTIES - LONGITUDINAL**

Yield (P.S.I.)	Ultimate (P.S.I.)	Elongation (%in4D)	Red of Area (%)	Offset (%)
48500	71500	35	73	0.2

**Heat Treatment**

Load#

1. Hold	1600 F/	14.20 H.M	WATER QUENCH	36676
2. Hold	1100 F/	11.15 H.M	AIR COOL	36683

**CHARPY V NOTCH IMPACT - LONG.**

Temperature	Impact test FT. LBS	Lat Expansion Mils	Shear Fracture %
-50 F	15	5	10
-50 F	20	8	10
-50 F	67	49	30

**Non Destructive Tests**

UT TO PSG40.

**Miscellaneous Tests:**

GRAIN SIZE = 9.5

CE= .40

QUENCH TEMPS. ....

START 40 DEG F

FINISH 46 DEG F

BRINELL HARDNESS @ SURFACE = 1) 153  
2) 147

SHIP WEIGHT = 1) 9,515 LBS  
2) 8,335 LBS

REDUCTION RATIO = 3.23:1

ELECTRIC FURNACE VACUUM DEGASSED  
TEST TAKEN FROM 1/4T OF A PROLONGATION

These forgings have not come into direct contact with mercury or any of its compounds, nor with any mercury containing devices during manufacturing, testing, inspection or storage.

\*No welding with filler metal performed on parts.

The products supplied are in compliance with the quality requirements of the purchase order and specifications identified unless otherwise noted on the MTR/CMTR. Material produced according to our Q.A manual.

Q.A. Assistant

*Hazel Walker*

PATRIOT FORGE CO.

QUALITY ASSURANCE

Date: March 23, 2011

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*AS*  
*3/24/11*

# L1739-1