

**TEST REPORT**

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**Purchase Order No.** : 6022BAS Rev1      **Report No.** : WAR063-09-04-21947-1  
**Date Received** : 4/29/2009      **Report Date** : 5/5/2009  
**Report Delivered Via** : [wardindustries@gmail.com](mailto:wardindustries@gmail.com)  
**Attachments** : None

**Work Requested:** Perform hardness measurement, comprehensive chemical analysis and testing in tension on one (1) sample per AMS4898.

SCRS ID	Customer ID:	Description	Submitted As
1	Job # 6022	1.375" x 6.125" Rd bar	AMS4898/6222s Ti

**Hardness Test Results**

HRC						
SCRS ID	Reading 1	Reading 2	Reading 3	Average	Method	
1	40.5	39.5	40.0	40.0	E18	

Method(s)

- E18 = ASTM E18-08a - Standard Test Methods for Rockwell Hardness of Metallic Materials

**Mechanical Testing Results**

SCRS ID	UTS (ksi)	UTS (MPa)	YS (0.2% Offset) (ksi)	YS (0.2% Offset) (MPa)	Elongation (% in 2")	Ra (%)	Modulus Msi
1	173	1190	166	1140	11	31	16.2
Methods	E8	E8	E8	E8	MAN	E8	E111

Method(s)

- E8 = In General Accordance with ASTM E8/E8M-08 Standard Test Methods for Tension Testing of Metallic Materials
- MAN = Elongation Measured Manually

Respectfully submitted



Audrey Bressler (248) 960-4900 Ext: 454

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## Chemical Analysis Results

Element	1	Specification	Method
	(%)	(%)	
Al	5.66	5.25-6.25	ISO1
Sn	1.90	1.75-2.25	ISO1
Zr	1.90	1.75-2.25	ISO1
Mo	1.98	1.75-2.25	ISO1
Cr	1.91	1.75-2.25	ISO1
Si	0.13	0.10-0.20	ISO1
Fe	0.12	0.15 max	ISO1
O	0.15	0.15 max	L
C	<0.01	0.08 max	L
N	<0.005	0.05 max	L
Ti	Base	Base	ISO1

### Method(s)

- ISO1 = Bulk chemical analysis by Glow Discharge - Optical Emission Spectrometry (GD-OES) in general accordance with ISO-14707:2000E First edition (2000-08-15)
- L = ASTM E1019-03 Determination of Carbon, Sulfur, Nitrogen, and Oxygen in Steel and in Iron, Nickel, and Cobalt Alloys.

Respectfully submitted



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