

Brammer Standard Company, Inc.

# Certificate of Analysis

## BS 40

### A-6 TOOL STEEL

Carbon	0.73	Aluminum	0.003
Manganese	2.01	Vanadium	0.015
Phosphorus	0.014	Cobalt	0.013
Sulfur	0.015		
Silicon	0.39		
Copper	0.036		
Nickel	0.036		
Chromium	0.99		
Molybdenum	1.14		
Tin	0.003		

*(analysis listed as percent by weight)*

Some of the co-operating laboratories were:

Alpha Research Laboratory, Stevensville, MI  
Dirats and Co., Inc., Westfield, MA  
Herron Testing Laboratories, Cleveland, OH  
Turret Alloys Ltd., Analytical Services, Sheffield, England  
VHG Labs, Andover, NH

See reverse side for more information.

Certificate Number REC40-050988

**THIS CERTIFICATE OF ANALYSIS HAS BEEN RECREATED FOR POSTING ON THE WEB.**

**Brammer Standard Company, Inc., 14603 Benfer Road, Houston, TX 77069**  
**Telephone (281) 440-9396 Fax (281) 440-4432**

Line Number	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	Sn	Al	V	Co
1	0.724	1.97	0.013	0.0130	0.370	0.030	0.030	0.97	1.10	0.0020	0.002	0.013	0.010
2	0.726	1.99	0.013	0.0140	0.377	0.030	0.033	0.97	1.12	0.0025	0.002	0.014	0.011
3	0.730	2.00	0.013	0.0140	0.378	0.033	0.033	0.99	1.14	0.0030	0.003	0.015	0.012
4	0.730	2.01	0.014	0.0150	0.390	0.033	0.040	1.00	1.14	0.0030	0.003	0.015	0.015
5	0.740	2.02	0.015	0.0155	0.390	0.036	0.040	1.00	1.15	0.0040	0.003	0.015	0.016
6	0.740	2.02	0.016	0.0160	0.400	0.040	0.042	1.00	1.15	0.0040	0.004	0.016	
7	0.740	2.03	0.017	0.0161	0.410	0.040		1.01	1.16	0.0050	0.005	0.016	
8		2.03			0.420	0.042		1.01	1.17				
Average	0.7329	2.009	0.0144	0.0148	0.3919	0.0355	0.0363	0.994	1.141	0.0034	0.0031	0.0149	0.0128
Std.Dev.	0.0070	0.021	0.0016	0.0012	0.0173	0.0047	0.0049	0.016	0.022	0.0010	0.0011	0.0011	0.0026
Certified	0.73	2.01	0.014	0.015	0.39	0.036	0.036	0.99	1.14	0.003	0.003	0.015	0.013

Data in parentheses are not certified but provided for information only.

Chemical analyses were made on millings from cross-sections of the bars. The values listed above are the individual analytical results.

Methods of analysis used were a combination of ASTM Standard Methods for classical wet chemistry, ICP and AA spectrometric methods, and combustion instrument procedures for carbon and sulfur.

Note: This Reference Material was produced by hot-rolling and annealing. This material should be used and compared with material of similar metallurgical history for best results.

Inquiries concerning this Reference Material should be directed to:

Brammer Standard Co., Inc. Phone: (281) 440-9396  
 14603 Benfer Road  
 Houston, Texas 77069-2895 USA Fax: (281) 440-4432

Certified by: \_\_\_\_\_ on May 9, 1988.  
 G. R. Brammer

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