

Brammer Standard Company, Inc.

Certificate of Analysis

BS 36C

Grade A-2 Tool Steel Reference Material

C	Mn	P	S	Si
0.96	0.46	0.023	0.027	0.31
Cu	Ni	Cr	Mo	Co
0.18	0.19	5.01	0.99	0.03
	W	V		
	(0.04)	0.11		

(analysis listed as percent by weight)

Note: This reference material has been made for optical emission and X-Ray spectrochemical analyses. When establishing a working curve, care must be used in selecting the proper reference materials. The reference materials should be similar in composition. The element sought should be the only varying element among the reference materials used. If this procedure is not followed, extensive correction for the other elements may be required. This reference material has a normal production heat metallurgical history and is compatible with most samples to be analyzed.

COOPERATING LABORATORY ANALYSES were:

Allegheny Ludlum, Brackenridge, PA
Allegheny Ludlum, Lockport, NY
Brammer Standard Company, Inc., Houston, TX
Crucible Specialty Metals, Syracuse, NY
Midstates Analytical Laboratories, Tulsa, OK

See reverse side for more information.

Certificate No. REC36C-072088

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

Analysis Number	C	Mn	P	S	Si	Cu	Ni	Cr	Mo
1	0.950	0.440	0.019	0.026	0.290	0.180	0.190	4.98	0.960
2	0.960	0.449	0.020	0.026	0.292	0.180	0.190	5.00	0.960
3	0.963	0.459	0.022	0.027	0.300	0.180	0.190	5.00	0.970
4	0.965	0.464	0.024	0.029	0.310	0.180	0.199	5.02	0.983
5	0.970	0.469	0.025	0.320	0.188	0.200		5.03	0.998
6		0.470	0.026	0.322		0.200			1.000
7		0.470							1.000
8		0.480							1.020
Average	0.9616	0.4626	0.0227	0.0270	0.3057	0.1847	0.1938	5.006	0.9864
Std.Dev.	0.0074	0.0129	0.0028	0.0014	0.0138	0.0082	0.0052	0.019	0.0217
Certified	0.96	0.46	0.023	0.027	0.31	0.18	0.19	5.01	0.99

continued

Analysis Number	W	V	Co	Sn	Al	Nb
1	0.030	0.100	0.020	0.010	0.010	0.004
2	0.030	0.100	0.024	0.012	0.019	0.005
3	0.043	0.107	0.030	0.015		
4	0.050	0.110	0.030	0.015		
5		0.110	0.031			
6		0.110				
7		0.115				
Average	0.0383	0.1074	0.0270	0.0130	0.0145	0.0045
Std.Dev.	0.0099	0.0056	0.0048	0.0024		
Certified	(0.04)	0.11	0.03	0.013	(0.015)	(0.005)

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

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

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

Inquiries concerning this Reference Material should be directed to:

Brammer Standard Co., Inc.
14603 Benfer Road
Houston, Texas 77069 USA

Phone: (281) 440-9396
Fax: (281) 440-4432

Certified by _____ on July 20, 1988.
G. R. Brammer

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