

Brammer Standard Company, Inc.

Certificate of Analysis

BS No. TH-11

H-11 Grade Tool Steel

C	Mn	P	S	Si	Cu
0.423	0.31	0.016	0.005	0.88	0.041
Ni	Cr	Mo	V	W	Co
0.11	5.04	1.27	0.46	(0.01)	(0.008)

Some of the testing laboratories were:

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

See reverse side for additional data.

Certificate No. REC-TH11-082588p1

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	0.416	0.310	0.015	0.005	0.860	0.039	0.098	4.98	1.24
2	0.420	0.310	0.016	0.005	0.860	0.040	0.100	5.02	1.25
3	0.423	0.313	0.016	0.005	0.860	0.040	0.110	5.04	1.26
4	0.425	0.314	0.016	0.006	0.870	0.043	0.110	5.05	1.27
5	0.430	0.315	0.019		0.870	0.043	0.110	5.07	1.28
6		0.319			0.910			5.10	1.29
7		0.320			0.917				
Average	0.4228	0.3144	0.0164	0.0053	0.8781	0.0410	0.1056	5.043	1.265
Std.Dev.	0.0053	0.0040	0.0015	0.0005	0.0246	0.0019	0.0061	0.041	0.019
Certified	0.423	0.31	0.016	0.005	0.88	0.041	0.11	5.04	1.27

continued

Analysis Number	W	V	Co	Sn	Al	Nb	Ti
1	0.009	0.45	0.0070	0.005	0.005	0.004	0.004
2	0.010	0.45	0.0078	0.006		0.005	0.004
3		0.46	0.0090	0.007			0.006
4		0.46					
5		0.47					
6		0.47					
7		0.48					
Average	0.0095	0.463	0.0079	0.0060		0.0045	0.0047
Std.Dev.	0.0007	0.011	0.0010	0.0010		0.0007	0.0012
Certified	(0.01)	0.46	(0.008)	(0.006)		(0.005)	(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 are the individual laboratory analytical results for the elements listed.

This Reference Material (RM) was produced by cold-rolling and annealing. This RM should be used and compared with material of similar metallurgical history as it may not plot well with chill-cast materials on some instruments.

Inquiries concerning this Reference Material should be directed to:

Brammer Standard Co., Inc.
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Houston, Texas 77069 USA
www.brammerstandard.com

Phone: (281) 440-9396
Fax: (281) 440-4432
email: contact@brammerstandard.com

Certified by _____ on August 25, 1988.
G. R. Brammer

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