

Brammer Standard Company, Inc.

Certificate of Analysis

BS No. TM-1

M-1 Grade Tool Steel

C	Mn	P	S	Si	Cu
0.86	0.23	0.007	0.012	0.46	0.054
Ni	Cr	Mo	V	W	Co
0.057	3.72	8.4	1.05	1.7	0.45

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-TM1-082588p1

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

BS TM-1		M-1 Tool Steel				Certificate No. REC-TM1-082588p2			
Analysis Number	C	Mn	P	S	Si	Cu	Ni	Cr	Mo
1	0.855	0.230	0.007	0.012	0.420	0.050	0.050	3.62	8.32
2	0.860	0.230	0.007	0.012	0.460	0.051	0.055	3.69	8.37
3	0.862	0.232	0.007	0.012	0.460	0.053	0.060	3.71	8.41
4	0.865	0.233		0.013	0.470	0.055	0.060	3.73	8.52
5		0.239			0.485	0.060	0.062	3.76	8.53
6					0.490			3.81	8.54
Average	0.8605	0.2328	0.0070	0.0123	0.4642	0.0538	0.0574	3.720	8.448
Std.Dev.	0.0042	0.0037	0.0000	0.0005	0.0250	0.0040	0.0049	0.064	0.094
Certified	0.86	0.23	0.007	0.012	0.46	0.054	0.057	3.72	8.4

continued

Analysis Number	W	V	Co	Sn	Nb	Ti
1	1.61	1.01	0.41	0.009	0.008	0.002
2	1.64	1.03	0.43		0.024	0.003
3	1.66	1.04	0.46			
4	1.69	1.05	0.46			
5	1.75	1.07	0.46			
6	1.78	1.09	0.47			
Average	1.688	1.048	0.448			0.0025
Std.Dev.	0.066	0.029	0.023			0.0007
Certified	1.7	1.05	0.45			(0.003)

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 the individual laboratory analytical results.

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.
 14603 Benfer Road
 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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