

BRAMMER STANDARD COMPANY, INC.

Provisional Certificate of Analysis BS 55H

Certified Reference Material for Mold Steel Grade P20 Modified

Estimated
Analysis¹

Estimated
Analysis¹

Analysis listed as percent by weight

Al	0.026	Nb	0.005
As	0.003	Ni	0.95
B	<0.005	O	<0.005
C	0.39	P	0.012
Ca	0.001	Pb	<0.005
Co	0.015	S	0.004
Cr	1.82	Sb	<0.005
Cu	0.16	Si	0.32
Fe	[94.7]	Sn	0.011
H	<0.0005	Ta	<0.05
Mg	<0.005	Ti	0.002
Mn	1.42	V	0.005
Mo	0.14	W	<0.005
N	0.005	Zr	<0.005

¹ The estimated value listed is the present best estimate of the true value. Values are given in weight percent.

Form: This CRM is machined in the form of a disc approximately 38mm in diameter and 19mm thick by Brammer Standard Company, Inc.

A detailed final certificate of analysis will be supplied by February 08, 2025.

55H	Al	As	B	Be	Bi	C	Ca	Ce	Co	Cr	Cu	Fe	H	Mg
CSONH						0.391							0.000070	
BSC SAES	0.0257	0.0031	0.0002			0.395	0.0011		0.0158	1.81	0.156	94.73		
BSC GDS	0.026	0.0035	0.001			0.39	0.0011		0.0146	1.82	0.156	94.65		0.0008
MTR						0.390				1.840				
Average	0.02585	0.0033	0.0006			0.3915	0.0011		0.0152	1.82333	0.156	94.69	0.000070	0.0008
Certificate	0.026	0.003	<0.005			0.39	0.001		0.015	1.82	0.16	[94.7]	<0.0005	<0.005
55H	Mn	Mo	N	Nb	Ni	O	P	Pb	S	Sb	Si	Sn	Ta	Ti
CSONH			0.0053			0.00059			0.0036					
BSC SAES	1.41	0.137		0.0046	0.945		0.0119	0.0002	0.0041	0.0017	0.321	0.0114	0.0013	0.0025
BSC GDS	1.43	0.143		0.0052	0.96		0.0123		0.0033	0.0001	0.334	0.0099	0.0117	0.002
MTR	1.430	0.150					0.011		0.004		0.320			
Average	1.42333	0.14333	0.0053	0.0049	0.9525	0.00059	0.01173	0.0002	0.00375	0.0009	0.325	0.01065	0.0065	0.00225
Certificate	1.42	0.14	0.005	0.005	0.95	<0.005	0.012	<0.005	0.004	<0.005	0.32	0.011	<0.05	0.002
55H	V	W	Zn	Zr										
CSONH														
BSC SAES	0.005	0.0014		0.0021										
BSC GDS	0.0058	0.0002		0.000070										
MTR														
Average	0.0054	0.0008		0.001085										
Certificate	0.005	<0.005		<0.005										

Homogeneity: This Certified Reference Material (CRM) was tested for homogeneity using ASTM Standard Method E826 and found acceptable. It was also examined by spark atomic emission spectrometry and found to be compatible with the following Reference Materials — BS 55G, 1763; CMSI 2064; SRM 1139A, 1263A, 1764; BAS 403.

Validity statement: ISO Guide 31 states that the certification should contain an expiration date for all materials where instability has been demonstrated or is considered possible, after which the certified value is no longer guaranteed by the certifying body. The certification of BS 55H is valid indefinitely. The certification is nullified if this CRM is damaged, contaminated, or otherwise modified.

Storage: This CRM must be stored in a cool, dry, non-corrosive environment.

Certified Area: The entire depth of the CRM may be used.

Caution: As with any bar material, avoid spark atomic emission spectrometric burns in the center of the CRM (5 mm radius), as some segregation may be present.

Sample Preparation: For best analytical results, use the same method for preparing the analytical surface on all reference materials as used for production specimens. Avoid overheating the sample during surface preparation.

Caution: CRM contains significant insoluble soft metal inclusions. Surface smearing may occur. Spark atomic emission spectrometers may require extended preburns to compensate.

Safety Notice: A Safety Data Sheet (SDS) is not required for this material. This material will not release or otherwise result in exposure to a hazardous chemical, under normal conditions of use. Inquiries concerning this Reference Material should be directed to:

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Certified by: _____ on February 08, 2023.

Beau R. Brammer
President