Brammer Standard Company, Inc.

Provisional Certificate of Analysis

BS 73D

Certified Reference Material for Steel Grade 86L20 - UNS Number G86200

Analysis listed as percent by weight

	Estimated Analysis[1]		Estimated Analysis[1]
Al	**0.015**	**Nb**	**0.002**
As	**<0.05**	**Ni**	**0.42**
B	**<0.005**	**O**	**<0.005**
C	**0.20**	**P**	**0.018**
Ca	**0.0004**	**Pb**	**0.19**
Co	**0.013**	**S**	**0.027**
Cr	**0.47**	**Sb**	**<0.05**
Cu	**0.24**	**Si**	**0.29**
Fe	**97.1**	**Sn**	**0.021**
H	**<0.005**	**Ti**	**0.001**
Mn	**0.83**	**V**	**0.003**
Mo	**0.16**	**W**	**<0.05**
N	**0.010**	**Zr**	**<0.05**

[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 September 8, 2025

Brammer Standard Company, Inc., 14603 Benfer Road, Houston, TX 77069-2895 USA
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73D	Al	As	B	Be	Bi	C	Ca	Ce	Co	Cr	Cu	Fe	H	Mg
CSONH						0.201							0.000063	
BSC SAES	0.0124	0.0052	0.0006			0.2	0.0004		0.0126	0.469	0.258	97.1		
BSC GDS	0.0127		0.0003			0.204	0.0004		0.0124	0.469	0.236	97.11		
MTR	0.020					0.190				0.460	0.240		0.00025	
Average	0.01503	0.0052	0.00045			0.19875	0.0004		0.0125	0.466	0.24467	97.105	0.000157	
Certificate	**0.015**	**<0.05**	**<0.005**			**0.20**	**0.0004**		**0.013**	**0.47**	**0.24**	**97.1**	**<0.005**	

73D	Mn	Mo	N	Nb	Ni	O	P	Pb	S	Sb	Si	Sn	Ta	Ti
CSONH			0.0097			0.0016			0.0275					
BSC SAES	0.789	0.163		0.002	0.427		0.0176	0.179	0.026	0.0005	0.29	0.0208		0.001
BSC GDS	0.843	0.163		0.0024	0.417		0.0181	0.175	0.0263	0.0031	0.291			0.0012
MTR	0.860	0.160			0.420		0.019	0.2200	0.027		0.280	0.021		
Average	0.83067	0.162	0.0097	0.0022	0.42133	0.0016	0.01823	0.19133	0.0267	0.0018	0.287	0.0209		0.0011
Certificate	**0.83**	**0.16**	**0.010**	**0.002**	**0.42**	**<0.005**	**0.018**	**0.19**	**0.027**	**<0.05**	**0.29**	**0.021**		**0.001**

73D	V	W	Zn	Zr
CSONH				
BSC SAES	0.0031	0.011		0.0016
BSC GDS	0.0033			
MTR	0.004			
Average	0.00347	0.011		0.0016
Certificate	**0.003**	**<0.05**		**<0.05**

	0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

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 61DD, 70A, 70B, 73A, 73B, 1951, 2022, 2991, 4002, 8620A.

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 73D 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.

Source: The bar stock for this CRM was produced by Sidenor Aceros Especiales; Basauri, Spain.

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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Email: contact@brammerstandard.com

Certified by: _____ on September 8, 2023.

Beau R. Brammer

President