

# Brammer Standard Company, Inc.

## Provisional Certificate of Analysis

### BS 4340B

Certified Reference Material for Low Alloy Steel Grade 4340 - UNS Number G43400

Analysis listed as percent by weight

	Estimated Analysis <sup>1</sup>		Estimated Analysis <sup>1</sup>
Al	0.023	Nb	0.003
As	0.009	Ni	1.85
B	<0.005	O	<0.005
C	0.41	P	0.008
Ca	<0.005	Pb	<0.005
Co	0.014	S	0.015
Cr	0.81	Sb	0.002
Cu	0.17	Si	0.28
Fe	95.5	Sn	0.007
H	<0.005	Ti	0.002
Mg	<0.005	V	0.004
Mn	0.66	W	0.003
Mo	0.23	Zr	<0.005
N	0.005		

<sup>1</sup> 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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4340B	Al	As	B	Be	Bi	C	Ca	Ce	Co	Cr	Cu	Fe	H	Mg
CSONH						0.42							0.000057	
BSC SAES	0.0216	0.0077	0.000037			0.411	0.0003		0.0146	0.81	0.168	95.49		0.0002
BSC GDS	0.0217	0.0118	0.000055			0.41	0.000026		0.0151	0.812	0.174	95.47		
MTR	0.026	0.007	0.0001			0.40			0.013	0.82	0.16		0.00021	
<b>Average</b>	0.0231	0.00883	0.000064			0.41025	0.000163		0.01423	0.814	0.16733	95.48	0.000134	0.0002
<b>Certificate</b>	<b>0.023</b>	<b>0.009</b>	<b>&lt;0.005</b>			<b>0.41</b>	<b>&lt;0.005</b>		<b>0.014</b>	<b>0.81</b>	<b>0.17</b>	<b>95.5</b>	<b>&lt;0.005</b>	<b>&lt;0.005</b>
4340B	Mn	Mo	N	Nb	Ni	O	P	Pb	S	Sb	Si	Sn	Ta	Ti
CSONH			0.006			0.0006			0.0157					
BSC SAES	0.653	0.235		0.0022	1.85		0.0082	0.0002	0.0162	0.0017	0.28	0.0079		0.0021
BSC GDS	0.664	0.236		0.0029	1.85		0.0083	0.000027	0.0162	0.0017	0.277	0.0069		0.0018
MTR	0.67	0.22	0.0049	0.005	1.84		0.008	0.0010	0.012		0.27	0.007		0.002
<b>Average</b>	0.66233	0.23033	0.00545	0.00337	1.84667	0.0006	0.008167	0.000409	0.01503	0.0017	0.27567	0.00727		0.00197
<b>Certificate</b>	<b>0.66</b>	<b>0.23</b>	<b>0.005</b>	<b>0.003</b>	<b>1.85</b>	<b>&lt;0.005</b>	<b>0.008</b>	<b>&lt;0.005</b>	<b>0.015</b>	<b>0.002</b>	<b>0.28</b>	<b>0.007</b>		<b>0.002</b>
4340B	V	W	Zn	Zr										
CSONH														
BSC SAES	0.0032	0.0019		0.0007										
BSC GDS	0.0032	0.0041		0.0002										
MTR	0.005	0.003		0.001										
<b>Average</b>	0.0038	0.003		0.00063										
<b>Certificate</b>	<b>0.004</b>	<b>0.003</b>		<b>&lt;0.005</b>										

**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: AR 4340; BS 60A, 60C, 60D, 210, 234, 4340; SRM 1261A.

**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 4340B 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 Timken Steel; Canton, OH.

**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:

**Brammer Standard Co., Inc.**  
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**Web: [www.brammerstandard.com](http://www.brammerstandard.com)**  
**Email: [contact@brammerstandard.com](mailto:contact@brammerstandard.com)**

Certified by: \_\_\_\_\_ on September 8, 2023.

Beau R. Brammer  
President