

Brammer Standard Company, Inc.

Certificate of Analysis

B.S. H-8

Nickel Alloy Hastelloy G-30

(analysis listed as percent by weight)

Carbon	0.004	Vanadium	0.038
Manganese	1.10	Cobalt	2.58
Phosphorus	(0.01)	Aluminum	0.18
Sulfur	<0.001	Niobium	0.69
Silicon	0.20	Titanium	0.008
Copper	1.66	Boron	0.0028
Chromium	29.43	Magnesium	0.0059
Molybdenum	5.02	Tungsten	2.66
Iron	14.61	Nickel (by difference)	41.8

Some of the co-operating laboratories were:

Allegheny Ludlum Steel Corp., Brackenridge, Pennsylvania
Allegheny Ludlum Steel Corp., Lockport, New York
Brammer Standard Co., Inc., Houston, Texas
Crucible Specialty Metals, Syracuse, New York
J. Dirats and Co., Inc., Westfield, Massachusetts
VHG Laboratories, Inc., Manchester, New Hampshire

CAUTION: Because this Reference Material contains a high percent of chromium, iron, molybdenum, tungsten and cobalt, care must be taken in its application. Make certain that corrections are made for possible element interference and dilution effects.

See reverse side for more information.

Certificate Number H8-010992

Brammer Standard Company, Inc., 14603 Benfer Road, Houston, TX 77069
Telephone (281) 440-9396 Fax (281) 440-4432

BS H8

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Analysis	C	Mn	P	S	Si	Cu	Cr	Mo	W
1	0.0034	1.08	0.005	0.0005	0.163	1.61	29.4	5.01	2.62
2	0.0039	1.09	0.005	0.0007	0.188	1.65	29.41	5.02	2.66
3	0.005	1.10	0.013	<0.001	0.196	1.66	29.43	5.02	2.68
4		1.10	0.013	<0.002	0.20	1.67	29.45	5.04	2.70
5		1.11			0.207	1.68	29.48		
6		1.12			0.214	1.71			
Average	0.0041	1.100	0.0090		0.195	1.663	29.434	5.023	2.665
Std Dev	0.0008	0.014	0.0046		0.018	0.033	0.032	0.013	0.034
Certified	0.004	1.10	(0.01)	<0.001	0.20	1.66	29.43	5.02	2.66

Analysis	V	Co	Al	Nb	Ti	B	Mg	Fe	Ni
1	0.0352	2.55	0.178	0.673	0.0073	0.0024	0.0057	14.56	
2	0.037	2.56	0.18	0.678	0.0082	0.0026	0.0058	14.58	
3	0.038	2.56	0.180	0.69	0.009	0.0027	0.0061	14.62	
4	0.039	2.58	0.182	0.698	0.009	0.0029		14.65	
5	0.040	2.61	0.183	0.70	0.009	0.0032		14.65	
6	0.0404	2.65	0.191	0.71					
7			0.20						
Average	0.0383	2.585	0.185	0.692	0.0085	0.0028	0.0059	14.612	
Std Dev	0.0020	0.038	0.008	0.014	0.0008	0.0003	0.0002	0.041	
Certified	0.038	2.58	0.18	0.69	0.008	0.0028	0.0059	14.61	[41.8]

Data in parentheses is not certified but provided for information only. Nickel content calculated by difference.

Chemical analyses were made on millings from cross-sections of the bars. The individual values listed above are the average of each analyst's results.

Methods of analysis used were a combination of ASTM Standard Methods E 354, E 1019, plus additional ICP, and AA spectrometric methods. The following Certified Reference Materials were used to validate the analytical data listed above: NIST SRMs 349a, 864, 865, 866, 867, 3171, 3172; British CRM BCS 350

This Reference Material was tested for homogeneity using ASTM Standard Method E 826 and found acceptable.

The bar stock used for this material was produced by hot-rolling billets. The entire depth of the disc may be used.

A Material Safety Data Sheet (MSDS) 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. Phone: (281) 440-9396
 14603 Benfer Road
 Houston, Texas 77069-2895 USA Fax: (281) 440-4432

Certified by: _____ January 9, 1992
 G. R. Brammer