

Brammer Standard Company, Inc.

# Certificate of Analysis

Reference Material for Pure Nickel Powder

## B.S. HPN-1

	<b>Certified Value</b>	<b>Standard Deviation</b>
<b>Aluminum</b>	70	6
<b>Carbon</b>	268	11
<b>Chromium</b>	22	3
<b>Copper</b>	2	1
<b>Iron</b>	202	8
<b>Lead</b>	0.2	0.1
<b>Manganese</b>	2	0.4
<b>Molybdenum</b>	3	1
<b>Oxygen</b>	1850	136
<b>Phosphorus</b>	5	1
<b>Silicon</b>	6	2
<b>Sulfur</b>	4	2

*Certified Values expressed as micrograms per gram ( $\mu\text{g/g}$ )*

The certified values are the mean averages from the participating laboratories.

See reverse side for more information.

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Some of the participating laboratories were:

Allegheny Ludlum Steel, Brackenridge, Pennsylvania, USA	INCO Europe Ltd., Clydach Refinery, Clydach, Wales
Brammer Standard Co., Inc., Houston, Texas, USA	Laboratory Testing, Inc., Hatfield, Pennsylvania, USA
Exova, Glendale Heights, Illinois, USA	Lakefield Research, Lakefield, Ontario, Canada
J. Dirats & Co., Westfield, Massachusetts, USA	LECO, St. Joseph, Michigan, USA
INCO Ltd., Copper Cliff, Ontario, Canada	Sandvik Steel, Sanviken, Sweden
INCO, Copper Cliff Nickel Refinery, Copper Cliff, Ontario, Canada	Sumitomo Metal Mining Co., Ltd., Niihama, Ehime, Japan
INCO, J. Roy Gordon Research Lab, Mississauga, Ontario, Canada	TCR Engineering Services, Bombay, India
INCO ALLOYS LTD., Hereford, England	TSL Environmental Labs, Mississauga, Ontario, Canada
INCO Alloys International, Huntington, West Virginia, USA	VHG Labs, Inc., Manchester, New Hampshire, USA

The following data are not certified. They are given as a best estimate of the analysis based on the data reported during the inter-laboratory testing program.

Ag	<0.1	Co	<2	Se	<0.5
As	<0.5	Ga	<0.5	Sn	<1
B	<2	H	99	Te	<0.2
Ba	<1	In	<0.2	Ti	<1
Be	<1	Mg	1	Tl	<0.1
Bi	<0.2	N	27	V	<1
Ca	3	Na	4	Zn	<1
Cd	<0.1	Sb	<0.1		

This material was produced by the Canadian Alloy Division of INCO Limited.

The material is supplied in powder form. The powder available as a Reference Material is sieve mesh size -100 and +325. The particle size is approximately 45 µm to 150 µm.

Expiration: 20 years from date of certification, which is October 1, 2035. The material is valid until that date.

Revision 1 October 1, 2015: This material was tested by Exova - Glendale Heights Laboratory and after review was found to be stable in 2015.

Revision 2 July 14, 2017: This material was tested by Brammer Standard, Laboratory Testing Inc., and LECO for Oxygen, Nitrogen, and Hydrogen. Oxygen has been changed from provisional to certified. Nitrogen and Hydrogen have been changed from provisional to informational.

Inquiries concerning this Reference Material should be directed to:

Brammer Standard Co., Inc.	Phone: (281) 440-9396
14603 Benfer Road	Fax: (281) 440-4432
Houston, Texas 77069 USA	

Certified by \_\_\_\_\_ on July 14, 2017  
Beau R. Brammer

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