

U. S. Department of Commerce

# National Bureau of Standards

## Certificate of Analyses

Standard Sample 162

Nickel—Copper Alloy

(66 Ni-29 Cu)

ANALYST	NICKEL Weighed as nickel dimethylglyoxime	COPPER Electrolytic	MANGANESE Persulfate-arsenite	SILICON	COBALT	IRON	CHROMIUM	ALUMINUM	TITANIUM Colorimetric	CARBON Direct combustion	SULFUR
1	66.35	28.94	<sup>a</sup> 2.33	<sup>b</sup> 0.67	{ <sup>c</sup> 0.53 <sup>d</sup> .54 }	<sup>e</sup> 0.34	<sup>f</sup> 0.24	{ <sup>g</sup> 0.23 <sup>h</sup> .22 }	0.20	<sup>i</sup> 0.110	<sup>j</sup> 0.003
2	66.37	28.92	2.35	<sup>k</sup> .67	<sup>d</sup> .55	<sup>l</sup> .34	<sup>f</sup> .24	<sup>m</sup> .22	.20	.108	<sup>n</sup> .003
3	{ 66.35 66.36 }	28.94	{ 2.35 <sup>p</sup> 2.34 }	<sup>b</sup> .67	<sup>e</sup> .55	<sup>e</sup> .33	<sup>q</sup> .23	<sup>r</sup> .22	{ .20 <sup>s</sup> .21 }	.112	<sup>t</sup> .003
4	<sup>o</sup> 66.44	28.94	<sup>p</sup> 2.36	<sup>b</sup> .67	<sup>e</sup> .53	<sup>u</sup> .34	<sup>v</sup> .23	<sup>h</sup> .23	.19	.114	<sup>w</sup> .001
5	66.44	28.90	<sup>p</sup> 2.31	<sup>k</sup> .67	<sup>d</sup> .54	<sup>x</sup> .33	<sup>v</sup> .24	<sup>b</sup> .24	{ .19 <sup>s</sup> .20 }	.111	
6	66.35	28.92	<sup>v</sup> 2.33	<sup>k</sup> .67	<sup>e</sup> .54	<sup>l</sup> .34	<sup>q</sup> .23	<sup>s</sup> .23	.21	.12	<sup>u</sup> .002
7	66.41	28.95	<sup>p</sup> 2.33	<sup>a</sup> .67	<sup>x</sup> .54	<sup>z1</sup> .33	<sup>z2</sup> .23	<sup>z3</sup> .23	.20	.111	<sup>u</sup> .003
Average	66.38	28.93	2.34	0.67	0.54	0.34	0.23	0.23	0.20	0.112	0.003

<sup>a</sup> Potentiometric titration.  
<sup>b</sup> Sulfuric acid method. Double dehydration with intervening filtration.  
<sup>c</sup> Copper removed by electrolysis, then ZnO-alpha nitroso beta naphthol method.  
<sup>d</sup> Nitroso-R salt—photometric method.  
<sup>e</sup> SnCl<sub>2</sub>-K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub> method.  
<sup>f</sup> Persulfate oxidation and potentiometric titration with ferrous ammonium sulfate solution.  
<sup>g</sup> Cyanide-8-hydroxyquinoline-cupferron-Al<sub>2</sub>O<sub>3</sub> method.  
<sup>h</sup> Mercury cathode-cupferron-Al<sub>2</sub>O<sub>3</sub> method.  
<sup>i</sup> Determination made by Charles T. Litsey.  
<sup>j</sup> Combustion-iodate method. Determination made by Charles T. Litsey.

<sup>k</sup> Perchloric acid method.  
<sup>l</sup> SnCl<sub>2</sub>-KMnO<sub>4</sub> method.  
<sup>m</sup> Mercury cathode-double ammonium hydroxide precipitation, and Al<sub>2</sub>O<sub>3</sub> corrected for TiO<sub>2</sub>.  
<sup>n</sup> Combustion-iodate method.  
<sup>o</sup> Dimethylglyoxime-electrolytic method.  
<sup>p</sup> Bismuthate method.  
<sup>q</sup> Persulfate oxidation and titration with ferrous ammonium sulfate-permanganate, using ortho-phenanthroline indicator.  
<sup>r</sup> Mercury cathode-cupferron-AlPO<sub>4</sub> method.  
<sup>s</sup> Weighed as TiO<sub>2</sub>.  
<sup>t</sup> Meineke method on a 10-g sample.  
<sup>u</sup> Iron reduced with zinc and titrated with KMnO<sub>4</sub>.

<sup>v</sup> Persulfate oxidation.  
<sup>w</sup> 5-g sample dissolved in HBr. Evolved gases passed into HCl-Br. Sulfur precipitated and weighed as BaSO<sub>4</sub>.  
<sup>x</sup> Thiocyanate-photometric method.  
<sup>y</sup> KIO<sub>4</sub>-photometric method.  
<sup>z</sup> Perchloric-sulfuric acid method. Double dehydration with intervening filtration.  
<sup>z1</sup> Iron reduced with powdered copper and titrated with KMnO<sub>4</sub>.  
<sup>z2</sup> KMnO<sub>4</sub> oxidation.  
<sup>z3</sup> Copper removed electrolytically. Cupferron separation followed by double ammonium hydroxide precipitation, and aluminum weighed as Al<sub>2</sub>O<sub>3</sub>.

### List of Analysts

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E. U. CONDON, *Director*.

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