

U. S. DEPARTMENT OF COMMERCE

National Bureau of Standards  
 Certificate of Analyses  
 OF  
 STANDARD SAMPLE 157  
 COPPER-NICKEL-ZINC ALLOY

ANALYST*	COPPER Electrolytic	NICKEL Weighed as nickel dimethylglyoximate	ZINC H <sub>2</sub> -ZnS-ZnO	COBALT	IRON	LEAD Weighed as PbO <sub>2</sub>	MANGANESE
1.....	72.14	17.90	9.69	<sup>a</sup> 0.137	<sup>b</sup> 0.053	0.022	<sup>d</sup> 0.021
2.....	72.12	17.86	9.68	<sup>a</sup> .13	<sup>b</sup> .055	<sup>e</sup> .023	<sup>f</sup> .019
3.....	72.15	17.92	9.70	<sup>e</sup> .135	{ <sup>b</sup> .051}	{ <sup>i</sup> .023}	<sup>d</sup> .021
.....	72.13	17.91	9.71	{ <sup>a</sup> .14}	{ <sup>b</sup> .055}	{ <sup>i</sup> .021}	<sup>d</sup> .021
.....	.....	.....	.....	{ <sup>e</sup> .135}	<sup>i</sup> .051	.022	<sup>d</sup> .021
5.....	72.12	17.90	9.70	<sup>a</sup> .147	<sup>b</sup> .051	.024	<sup>d</sup> .021
6.....	72.14	17.93	9.71	<sup>a</sup> .13	<sup>b</sup> .055	<sup>k</sup> .025	<sup>f</sup> .018
7.....	72.15	17.89	9.66	{ <sup>a</sup> .136}	{ <sup>b</sup> .056}	.022	<sup>l</sup> .022
.....	.....	.....	.....	{ <sup>e</sup> .13}	{ <sup>b</sup> .052}	.....	.....
Averages.....	<b>72.14</b>	<b>17.90</b>	<b>9.69</b>	<b>0.136</b>	<b>0.053</b>	<b>0.023</b>	<b>0.020</b>

<sup>a</sup> Copper and iron removed, and cobalt precipitated with  $\alpha$ -nitroso- $\beta$ -naphthol. Precipitate ignited and weighed as Co<sub>2</sub>O<sub>4</sub>.  
<sup>b</sup> Iron reduced with SnCl<sub>2</sub> and titrated with K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub>.  
<sup>c</sup> Same value obtained with FeCl<sub>3</sub>-photometric method.  
<sup>d</sup> KIO<sub>4</sub>-photometric method.

<sup>e</sup> Lead separated electrolytically as PbO<sub>2</sub>, and titrated with Na<sub>2</sub>S<sub>2</sub>O<sub>4</sub>.  
<sup>f</sup> Persulfate-arsenite method.  
<sup>g</sup> Nitroso-R salt-photometric method.  
<sup>h</sup> FeCl<sub>3</sub>-photometric method.  
<sup>i</sup> Lead separated electrolytically as PbO<sub>2</sub>, and determined polarographically.

<sup>j</sup> Salicylate-photometric method. See ASTM Method E-63.  
<sup>k</sup> Electrolysis in HNO<sub>3</sub>-HClO<sub>4</sub> solution.  
<sup>l</sup> Manganese precipitated as MnO<sub>2</sub>·xH<sub>2</sub>O and determined by the persulfate-arsenite method. See ASTM Method E-39.

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