UNITED STATES DEPARTMENT OF COMMERCE
WASHINGTON 25, D.C.

National Bureau of Standards Certificate of Analyses

Standard Sample 62 D

Manganese Bronze

ANALYST	COPPER Electrolytic	ZINC	ALUMINUM Weighed as Al_2O_3	IRON	MANGANESE Photometric	TIN $SnCl_2$–KIO_3	NICKEL Photometric	LEAD Weighed as PbO_2	SILICON
1	59.04	[a] 37.14	[b] 1.23	[c] 0.86	[d] 0.66	[e] 0.38	[f] 0.27	{ 0.22 / [g] .23 }	[h] 0.080
2	59.08	[i] 37.10	1.23	{ [j] .87 / [k] .86 }	.66	[l] .37	.29	.23	.070
3	59.09	[a] 37.17	[m] 1.21	[n] .85	.66	[o] .39	{ .29 / [p] .28 }	.23	[q] .072
	59.06	[r] 37.17	[s] 1.24	[t] .86	.66	[u] .40	[v] .28	.23	[v] .079
Average	59.07	37.14	1.23	0.86	0.66	0.38	0.28	0.23	0.075
62 C	59.16	37.24	1.22	.74	66	.39	28	.24	.068

[a] ZnS—ZnO method.
[b] Copper and lead in a 3-g sample removed by electrodeposition. $HClO_4$ added to the electrolyte and evaporated to dense white fumes. Solution electrolyzed in a mercury cathode cell. Aluminum precipitated twice with NH_4OH and ignited to Al_2O_3.
[c] $SnCl_2$—$K_2Cr_2O_7$ method.
[d] Potentiometric titration of a 1-g sample.
[e] Tin reduced with test lead and titrated with KIO_3 standardized with pure tin.
[f] Weighed as nickel dimethylglyoxime.
[g] Weighed as $PbCrO_4$.
[h] Double dehydration with $HClO_4$ with intervening filtration.
[i] Ethylenediaminetetraacetic acid titration.
[j] Dipyridyl-photometric method.
[k] Iron reduced with zinc and titrated with ceric sulfate.
[l] Tin reduced with nickel and titrated with KIO_3.
[m] Aluminum precipitated with 8-hydroxyquinoline and titrated with $KBrO_3$.
[n] Iron reduced with zinc and titrated with $K_2Cr_2O_7$.
[o] Tin reduced with iron in the presence of added antimony and titrated with KIO_3.
[p] Dimethylglyoxime precipitate titrated with cyanide.
[q] Perchloric acid dehydration.
[r] Zinc extracted as thiocyanate and titrated with sodium ethylenediamine tetraacetate.
[s] Modified aluminon-photometric method. See Anal. Chem. **24**, 1,120 (1952).
[t] Thiocyanate-photometric method.
[u] Tin reduced with aluminum and titrated with KIO_3.
[v] See ASTM Method E62–56.
Analyst 2 reported 0.015 percent cadmium by the dithizone-photometric method.

Lists of Analysts

1. Nonferrous Laboratory, National Bureau of Standards; R. K. Bell, in charge. Analysis by E. E. Maczkowske.
2. Kurt C. Braun, American Smelting and Refining Co., South Plainfield, N.J.
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4. J. D. Kopp, Scovill Manufacturing Co., Waterbury, Conn.

The metal for the preparation of this standard was furnished by the Federated Metals Division, American Smelting and Refining Co.

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