UNITED STATES DEPARTMENT OF COMMERCE
WASHINGTON

National Bureau of Standards

Certificate of Analyses

Standard Sample 124c
Ounce Metal

ANALYST	COPPER Electrolytic	TIN $SnCl_2$–KIO_3	ZINC ZnS–ZnO	LEAD Weighed as PbO_2	NICKEL Weighed as nickel dimethylglyoxime	ANTIMONY	IRON	SULFUR	PHOSPHORUS Colorimetric	SILICON Perchloric acid dehydration
1	[a] 84. 22	[b] 5. 13	4. 93	[c] 4. 71	0. 60	[d] 0. 20	[e] 0. 105	[f] 0. 046	[g] 0. 024	[h] 0. 002
2	[i,j] 84. 23	[k] 5. 12	4. 91	4. 73	[l] .60 / [m] .61	[n] .20	[e] .110	[f] .045	[o] .024	
3	[p] 84. 21	[q] 5. 16	4. 93	4. 76	.59	[r] .20	[e] .108	[s] .052	[t] .023	
4	[u] 84. 22	[v] 5. 12	4. 95	[c,w] 4. 74	[l] .59 / [m] .60	[n,x] .21	[y] .107	[z] .048	[o] .024	[z1] .002
Average	84. 22	5. 13	4. 93	4. 74	0. 60	0. 20	0. 107	0. 048	0. 024	0. 002

...ve-gram sample dissolved in 55 ml of HNO_3(1+1). Metastannic-acid precipitate filtered off, treated with HNO_3–$HClO_4$–HBr, and the residual solution added to the first filtrate. Two drops of 0.1 *N* HCl added, solution diluted to 325 ml and electrolyzed overnight, using a current density of 0.5 amp/dm². H_2SO_4 added to the electrolyte, solution evaporated to fumes of H_2SO_4, diluted, and residual copper precipitated as CuS and determined by the diethyldithiocarbamate-colorimetric method.

[b] Three-gram sample dissolved in HCl-HNO_3, iron added, and tin precipitated twice with NH_4OH. Precipitate dissolved in HCl, tin reduced with nickel and titrated with KIO_3 standardized with pure tin. See ASTM method E54—49, Methods for Chemical Analysis of Metals, p. 267 (1950). American Society for Testing Materials, Philadelphia, Pa.

[c] Weighed as $PbSO_4$.

[d] Antimony separated by distillation from a 5-g sample, precipitated with H_2S, and titrated with $KMnO_4$ as described in J. Research NBS **21**, 95 (1938) RP1116. $KMnO_4$ standardized with NBS standard sodium oxalate 40c.

[e] $SnCl_2$–$K_2Cr_2O_7$ method.

[f] Combustion-iodate method.

[g] Molybdenum-blue photometric method.

[h] Double dehydration with $HClO_4$ with intervening filtration.

[i] As in footnote (a) except 3-g sample used.

[j] Same value obtained by depositing copper in the presence of tin in an HNO_3–HF solution of a 3-g sample.

[k] Tin reduced with iron in the presence of added antimony and titrated with KIO_3.

[l] Nickel precipitated with dimethylglyoxime and titrated with KCN.

[m] Dimethylglyoxime-photometric method.

[n] Metastannic-acid precipitate separated and digested in H_2SO_4–HNO_3–K_2SO_4. Antimony reduced with tartaric acid and titrated with $KBrO_3$.

[o] Molydivanadophosphoric-photometric method. See ASTM method E62—50T.

[p] Copper deposited in the presence of tin in an HNO_3–HF solution.

[q] Tin reduced with lead in the presence of added antimony and titrated with KIO_3.

[r] Antimony reduced with tartaric acid and titrated with $KMnO_4$.

[s] Evolution method; titration with iodine.

[t] Phosphomolybdate-alkalimetric method.

[u] As in footnote (a), except residual copper determined by electrolysis.

[v] Tin reduced with iron and titrated with KIO_3.

[w] Same value obtained by the $PbCrO_4$ method.

[x] Same value also obtained by the pyridine-iodide colorimetric method.

[y] Iron reduced with $SnCl_2$ and titrated with $KMnO_4$. Same value obtained by the KCNS-colorimetric method.

[z] HBr evolution method; titration with KIO_3. See ASTM method E54—50T.

[z1] Molybdisilicic acid-photometric method.

Analyst 2 reported 0.0016 percent aluminum by the aluminon-photometric method, and 0.002 percent arsenic by the $KBrO_3$ method.

List of Analysts

1. Nonferrous Laboratory, National Bureau of Standards, R. K. Bell, in charge. Analysis by E. E. Maczkowske.
2. A. B. Shapiro, H. Kramer and Co., Chicago, Ill.
3. Vincent Schwarz, Magnus Metal Division of National Lead Co., Chicago, Ill.
4. John P. Brull, North American Smelting Co., Wilmington, Del.

ASHINGTON, D. C., April 30, 1954.

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U. S. GOVERNMENT PRINTING OFFICE 288957