U. S. DEPARTMENT OF COMMERCE

National Bureau of Standards

Certificate of Analyses

OF

STANDARD SAMPLE 37c

SHEET BRASS

Analyst*	Copper (electrolytic)	Zinc (sulfide-oxide)	Lead (electrolytic)	Tin	Nickel (dimethylglyoxime)	Iron	
1	[a] 70. 08	27. 21	0. 96[4]	[b] 0. 96[5]	0. 57[7]	[c] 0. 16[4]	
2	[d] 70. 08	27. 21	. 97	[e]. 95	[f]. 59	[g]. 17	
3	[h] 70. 07	27. 22	. 98 [i]. 98	[j]. 96	. 58	[k]. 17	
4	[n] 70. 07	27. 24	. 98	[l]. 95	[m]. 57	[n]. 18	
5	[h] 70. 05	27. 20	. 96	[o]. 95	. 57	[p]. 18	
6	70. 11	27. 19	[q]. 98	. 92	. 58	. 18	
7	[h] 70. 05	27. 24	. 98	[r]. 97	. 57	[n]. 17	
8	[s] 70. 08	27. 26	. 96	[t]. 95	. 56	[u]. 16	
9	[v] 70. 06		. 98	[w]. 96	. 59	[n]. 18	
Averages	**70. 07**	**27. 22**	**0. 97**	**0. 95**	**0. 58**	**0. 17**	
Recommended values	**70. 07**	**27. 22**	**0. 97**	**0. 96**	**0. 58**	**0. 17**	

[a] Five-g sample. Copper, lead, and iron in the metastannic acid recovered by ammonium iodide treatment (Caley and Burford, Ind. Eng. Chem., Anal. Ed. 8, 114 (1936)), and added to the nitric acid filtrate.

[b] Sample dissolved in dilute nitric acid. An excess of ammonium hydroxide added. Precipitate separated and digested in H_2SO_4-HNO_3. Tin distilled with HBr-HCl, essentially as directed in J. Research NBS 21, 95 (1938) RP1116. Tin distillate diluted, chilled, and tin precipitated with cupferron, and ignited to SnO_2 in a porcelain crucible.

[c] Weighed as Fe_2O_3.

[d] Copper deposited in the presence of tin from an HNO_3-HF solution.

[e] Tin precipitated with NH_4OH. Solution filtered and the precipitate digested in H_2SO_4-$(NH_4)_2S_2O_8$. Solution diluted, tin reduced with iron, and $SnCl_2$ titrated with KIO_3.

[f] Nickel dimethylglyoxime dissolved and nickel determined by electrolysis.

[g] Iron reduced with H_2S and titrated with $KMnO_4$.

[h] Copper, lead, and the like in the metastannic acid precipitate recovered by the alkaline sodium-sulfide method.

[i] Determined as $PbSO_4$.

[j] Copper and lead removed electrolytically from an HNO_3-HF solution. Sulfuric acid added to the electrolyte and the solution evaporated to copious fumes of sulfuric acid. Tin reduced with iron and antimony in a hydrochloric acid solution. $SnCl_2$ titrated with iodine standardized with high-purity tin.

[k] Reduction in a Jones reductor and titration with $KMnO_4$.

[l] Metastannic acid and ammonium hydroxide precipitates digested in H_2SO_4-HNO_3 and fumed. Solution diluted, tin reduced with test lead, and $SnCl_2$ titrated with KIO_3-KI solution.

[m] Nickel dimethylglyoxime ignited to NiO.

[n] Iron reduced with $SnCl_2$ and titrated with $KMnO_4$.

[o] As in (e), but tin reduced with nickel, and $SnCl_2$ titrated with KIO_3-KI solution.

[p] Iron reduced with H_2S and titrated with $Ce(SO_4)_2$, using orthophenanthroline indicator.

[q] Weighed as $PbCrO_4$.

[r] As in (l) but $SnCl_2$ titrated with iodine.

[s] Two g dissolved in 20 ml of HNO_3 (sp gr 1.42) Solution diluted to 200 ml and copper deposited, using a current density of 3 amperes and a rotating cathode.

[t] Metastannic acid precipitate separated and digested in H_2SO_4-HNO_3. Solution diluted, tin reduced with Swedish iron, and $SnCl_2$ titrated with iodine solution.

[u] Iron reduced with $SnCl_2$ and titrated with $K_2Cr_2O_7$.

[v] As in (a) but 3-g sample used.

[w] Tin separated by double precipitation with NH_4OH. Tin reduced with iron and antimony and $SnCl_2$ titrated with iodine solution.

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