U. S. DEPARTMENT OF COMMERCE

National Bureau of Standards
Certificate of Analyses
OF
STANDARD SAMPLE 37D

SHEET BRASS

ANALYST*	Cu	Zn	Sn	Pb	Ni	IRON	
	Electrolytic	*ZnS–ZnO*	*$SnCl_4$–Iodine*	*Electrolytic*	*Weighed as nickel dimethylglyoxime*		
1	[a] 70. 78	26. 65	[b] 0. 96	0. 94	0. 57	[c] 0. 074	
2	[d] 70. 77	26. 62	[e] . 97	. 94	. 58	[f] . 077	
3	[g] 70. 77	26. 65	[h] . 96	[g] . 94	. 57	[i] . 081	
4	[j] 70. 79	26. 64	[k] . 97	. 94	. 58	[l] . 074	
5	[a] 70. 78	26. 66	[m] . 97	. 93	. 57	[n] . 081	
6	[g] 70. 79	26. 65	[m] . 96	. 95	[o] . 57	[p] . 08	
7	[q] 70. 76	26. 66	[r] . 97	[s] . 93	. 58	[t] . 07	
8	70. 78	26. 66	[m] . 96	. 94	. 58	[n] . 074	
9	[a] 70. 77	26. 65	[u] . 97	. 95	[v] . 58	[w] . 077	
Averages	**70. 78**	**26. 65**	**0. 97**	**0. 94**	**0. 58**	**0. 076**	

[a] Five-gram sample dissolved in 110 ml of HNO_3 (1:4). Solution digested overnight on a steam bath, filtered, and the precipitate washed with hot HNO_3 (1:99). Filtrate diluted to 350 ml, 2 drops of 0.1–N HCl added, and solution electrolyzed overnight by the use of a current density of 0.5 amp/dm^2. Metastannic-acid precipitate and paper treated with HNO_3-H_2SO_4. Tin, antimony, and arsenic volatilized by HBr-Br_2, and the residual solution combined with the electrolyte. Residual copper and lead in the combined solutions precipitated with H_2S and determined by electrolysis.

[b] Five-gram sample dissolved in HNO_3 (1:2). An excess of NH_4OH added. Precipitate separated and digested with HNO_3-H_2SO_4. Tin distilled with HBr-HCl, precipitated with cupferron, and ignited to SnO_2. See J. Research NBS **33**, 307 (1944) RP1610.

[c] Filtrate from the copper sulfide precipitation (footnote a) boiled to remove H_2S. Iron oxidized and precipitated twice with NH_4OH. Precipitate dissolved and iron determined by the $SnCl_2$-$K_2Cr_2O_7$ method.

[d] Two-gram sample dissolved in HNO_3-H_2SO_4 lead sulfate filtered off, and filtrate electrolyzed for copper in the presence of tin.

[e] Tin reduced with aluminum.

[f] Five-gram sample treated with HNO_3. Metastannic-acid precipitate separated, tin volatilized by treatment with $HClO_4$-HBr. Residual solution added to main solution. Iron precipitated with NH_4OH. Precipitate dissolved, and iron determined by the $SnCl_2$-$K_2Cr_2O_7$ method.

[g] Copper and lead deposited in an HNO_3-HF solution in the presence of tin. PbO_2 replated in HNO_3 (1:13).

[h] Tin reduced with an iron coil in the presence of added antimony.

[i] Iron reduced with zinc and titrated with $KMnO_4$.

[j] As in (d), except a 5-g sample used.

[k] Tin reduced with nickel and titrated with KIO_3.

[l] $FeCl_3$-photometric method.

[m] Tin reduced with test lead.

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

[o] Potassium dithiooxalate-photometric method.

[p] Iron reduced with H_2S and titrated with Ce-$(NH_4)_4(SO_4)_4$, using orthophenanthroline indicator.

[q] As in (a), except copper, lead, and iron in the metastannic-acid precipitate recovered by the alkaline-sodium sulfide method.

[r] Tin reduced with test lead in the presence of added antimony.

[s] Weighed as $PbCrO_4$.

[t] Weighed as Fe_2O_3.

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

[v] Dimethylglyoxime-photometric method.

[w] NH_4CNS-photometric method.

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The rolled brass used in the preparation of this standard was furnished by The American Brass Co.

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