U. S. Department of Commerce

National Bureau of Standards

Certificate of Analyses

Standard Sample 87

Aluminum-Silicon Alloy

ANALYST	SILICON	NICKEL Weighed as nickel dimethylglyoxime	IRON	MAGNESIUM $NaOH$-$Mg_2P_2O_7$	COPPER Electrolytic	MANGANESE	CHROMIUM	TITANIUM Colorimetric	ZINC ZnS-ZnO	LEAD Weighed as PbO_2	TIN	
1	[a] 6.23	[b] 0.59	[c] 0.46	0.39	0.30	[d] 0.30	[e] 0.17	0.17	0.074	0.071	[f] 0.063	
2	[g] 6.14	.60	[h] .47	[i] .37	[j] .29	[k] .30	[l m] .17	.15	[n] .078	.067	[o] .061	
3	[p] 6.16	[b] .59	[q] .47	[r] .40	[s] .31	[d] .30	[t] .16	.16	[u] .074	.069	[v] .071	
4	[g] 6.28	.60	[h] .45	[w] .41	.32	[k] .31	[l] .16	.16	.09	.062	[x] .068	
5	[g] 6.23	.58	[h] .47	.38	.31	[d] .30	[l] .18	.17	.082	.072	[o] .055	
	[p] 6.15	.57	[h] .46	.39	[j] .29	[k] .30	[l] .18	.15	[y] .065	.07	[z] .05	
7	[g] 6.25	[b] .58	[z1] .45 [z2] .46	.39	.30	[k] .31	[l] .16 [t] .18	.15	[n] .078	.066	[x] .077	
8	[g] 6.28	[z3] .59	[z4] .46		.31							
9	[z5] 6.21	.60	[q] .46	.40	[j] .31	[k] .30	[l] .17	.17	[n] .082	.070	[x] .064	
10	[z5] 6.21	[b] .59	[z2] .46	.40	[z6] .30	[d] .31	[t] .17	.16	.073	.065	[v] .059	
Average	6.21	0.59	0.46	0.39	0.30	0.30	0.17	0.16	0.077	0.068	0.063	

[a] Sodium hydroxide-sulfuric acid method, using a 1-g sample. Triple dehydration with intervening filtrations.
[b] Dimethylglyoxime-photometric method.
[c] Silicon removed from a 5-g sample. Copper, lead, tin, and zinc precipitated in formic acid solution with H_2S. Iron precipitated in tartrate solution with $(NH_4)_2S$. Precipitate dissolved, iron precipitated with ammonium hydroxide, subsequently reduced with stannous chloride and titrated with potassium dichromate.
[d] KIO_4-photometric method.
[e] Persulfate oxidation and potentiometric titration with ferrous ammonium sulfate solution.
[f] Acid sulfides (footnote c) treated with HNO_3, etc. Tin distilled, precipitated with cupferron, and ignited to SnO_2. See J. Research NBS 33, 307 (1944) RP1610.
[g] Sodium hydroxide-perchloric acid method.
[h] Iron reduced with H_2S and titrated with $KMnO_4$.
[i] Hydrochloric acid-sodium hydroxide-magnesium pyrophosphate method.
[j] Iodide-thiosulfate method.
[k] Persulfate-arsenite method.
[l] Persulfate oxidation and titration with ferrous sulfate-permanganate.
[m] Same value obtained by the diphenylcarbazide-photometric method.
[n] $ZnHg(CNS)_4$ method.
[o] Tin reduced with aluminum and antimony and titrated with KIO_3.
[p] Molybdate-photometric method.
[q] Iron reduced with H_2S and titrated with $Ce(SO_4)_2$.
[r] 8-Hydroxyquinoline-photometric method.
[s] Same value obtained by the diethyldithiocarbamate-photometric method.
[t] Diphenylcarbazide-photometric method.
[u] Sulfide-electrolytic method.
[v] Spectrographic analysis.
[w] Mercury cathode-$Mg_2P_2O_7$ method.
[x] Tin reduced with antimony and titrated with KIO_3.
[y] Dithizone-photometric method.
[z] Iodine titration.
[z1] Iron reduced with zinc and titrated with $KMnO_4$.
[z2] Orthophenanthroline-photometric method.
[z3] Finished by electrolysis.
[z4] Iron reduced with stannous chloride and titrated with $KMnO_4$.
[z5] Sodium hydroxide-sulfuric acid method.
[z6] Diethyldithiocarbamate-photometric method.

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