

DEPARTMENT OF COMMERCE

Bureau of Standards

Certificate of Analyses

OF

STANDARD SAMPLE No. 7 a

IRON E

ANALYST.	CARBON.			SILICON.		TITANIUM (COLORIMETRIC METHOD).	PHOSPHORUS.			MANGANESE.		COPPER (CuS-CuO).	VANADIUM.	ARSENIC (DISTILLATION OF AS Cl ₃).	CHROMIUM.	NICKEL.
	TOTAL.	GRAPHITE.	COMBINED.	SULPHURIC ACID DEHYDRATION.	OTHER METHODS.		ALKALI-MOLYBDATE.	GRAVIMETRIC (corrected for Ti, As, and V, and weighed as Mg ₂ P ₂ O ₇).	SULPHUR,* DIRECT OXIDATION (final precipitation in reduced solution).	BISMUTHATE (FeSO ₄ -KMnO ₄).	OTHER METHODS.					
1	2.34	1.97	.37	2.21		.102	.838	.838	.051	.456		.020	a. 067	{ b. 052 c. 038}	.018	.016
2	2.36	1.99	.37	2.23		.097	.854	.855	.049	.432		.022	d. 059	c. 041	d. 017	.013
3	2.34	2.00	.34	2.20		.085	.829		.048	.443	e. 463	.025	{ .058 d. 056}	.050	d. 024	.023
	2.38			2.22		.081	.826			.43	f. 439					
5	2.36	1.98	.38	2.18	g2. 16	.101		.845	.050	.472	e. 46	{ h. 023 .014}				
6	2.33	1.96	.37			.101				.47					.021	.020
7	2.32	1.96	.36	2.17		.087	.841	.838	.051	.453			i. 073	b. 054	.014	.021
8	2.35	2.00	.35	2.22			{ k. 826 .833}		.050	.43	j. 43	.020	{ l. 060 d. 056}			.024
9	2.32			g2. 23		.11	.842		m. 049	.44		n. 020			.02	
10	2.30	1.95	.35	2.18	g2. 17			.843	.048	.44	e. 43					
Average	2.34	1.98	.36	2.20	2.19	.096	.836	.844	.050	.447	.444	.021	.061	.047	.019	.020
GEN. AV	2.34	1.98	.36	2.20		.096	.839		.050	.446		.021	.061	.047	.019	.020

* NOTE.—The evolution method for sulphur is not recommended. This sample indicates a value of 0.038 per cent sulphur when it is analyzed by the evolution method and the theoretical sulphur titre of the iodate or iodine solution is used.

- a Bureau of Standards fusion method.
- b Weighed as As₂S₃.
- c Converted to Mg₂As₂O₇.
- d Electrometric titration.
- e Persulphate—Arsenite.

- f Arsenite titration.
- g Drown's method.
- h Color comparison method.
- i FeSO₄-KMnO₄ titration.
- j Persulphate.

- k Weighed yellow precipitate.
- l Phosphomolybdate separation.
- m Precipitated in FeCl₃ solution.
- n Finished by electrolysis.

INDEX TO ANALYSTS

1. James I. Hoffman, Bureau of Standards.
2. Routine Laboratory, Bureau of Standards, H. A. Bright in charge.
3. Charles E. Nesbitt, Carnegie Steel Co., Edgar Thomson Works, Braddock, Pa.
4. V. E. Hillman, Crompton & Knowles Loom Works, Worcester, Mass.

5. M. B. Mayfield, Pittsburgh Testing Laboratory, Pittsburgh, Pa.
6. J. Gorham, Colorado Fuel & Iron Co., Pueblo, Colo.
7. F. G. Kelly, Tennessee Coal, Iron & Railroad Co., Ensley, Ala.
8. H. E. Slocum, Jones & Laughlin Steel Co., Pittsburgh, Pa.
9. A. D. Shankland, Bethlehem Steel Co., Bethlehem, Pa.
10. E. C. Frost, Western Electric Co., Chicago, Ill.

I. B.—Most of the loose graphite was purposely blown out in preparing this sample, but its loss has affected in no way the nature of the compounds existing in the iron, which are those proper to the iron as cast.

S. W. STRATTON,

Director.

Washington, D. C.

July 22, 1921.