DEPARTMENT OF COMMERCE

Bureau of Standards

Certificate of Analyses

OF

STANDARD SAMPLE No. 6b

IRON D

ANALYST.	CARBON.				SILICON.		TITANIUM.		PHOSPHORUS.				SULPHUR.	MANGANESE.			COPPER.	CHROMIUM.	NICKEL.	VANADIUM.
	TOTAL.		GRAPHITE.	COMBINED.	DEHYDRATION BY SULPHURIC ACID.	OTHER METHODS.	COLOR METHOD.	VOLUMETRIC (SHIMER).	ALKALI-MOLYBDATE.	MOLYBDATE REDUCTION.	WEIGHING PHOS-PHO-MOLYBDATE.	AS $Mg_2P_2O_7$ FROM PHOSPHO-MOLYBDATE.	GRAVIMETRIC.	FORD-WILLIAMS.	PERSULPHATE (Arsenite Titration).	BISMUTHATE.				
	DIRECT COMBUSTION.	SOLUTION AND COMBUSTION.																		
1	2.39		1.76	.63		2.62		.08		.532	.535		.048			1.52	.046	.014	.026	.026
2	2.40		1.80	.60		2.58	.08		.538		.526		.050			1.53	.044	.014	.026	.024
3	2.39	2.39	1.81	.58	2.52			.08		.534		.539	.046	1.53		1.53	.044			
4	2.41	2.40	1.78	.63	2.57	2.56	.08	.086[a]		.535	.527		.044			1.55	.043	.013		.025
5	2.35	2.36	1.73	.62	2.54			.07		.523	.54		.048	1.53			.049			
6	2.39	2.38	1.77	.62		2.64	.08		.533		.524		.042	1.54[b]		1.52	.04			
7	2.38		1.78	.60		2.58	.08		.532		.529		.044	1.54		1.53	.043			
8	2.40		1.85	.55	2.57		.07			.538	.538		.046		1.56[c]	1.54	.035			
9	2.39		1.80	.59	2.64		.07		.528		.528		.048		1.53	{1.53 / 1.54[d]}	.05			
10	2.38		1.80	.58	2.64		.07		.527		.522		.047	1.54		1.55	.045			
Av	2.39	2.38	1.79	.60	2.58	2.60	.076	.079	.532	.532	.530	.539	.046	1.54	1.55	1.53	.044	.014	.026	.025
Gen. Av.	2.39				2.59		.077		.531					1.54						

[a] Gravimetric method. [b] Volhard method. [c] Colorimetric method. [d] With arsenate titration.

NOTE.—In all but two instances the values given above for carbon by direct combustion are those obtained by reburning the oxides resulting from combustion of the iron. In no instance did the carbon found on reburning much exceed 0.02 per cent. The values reported for sulphur by evolution were too discordant to be of value.

INDEX TO ANALYSTS

1. L. F. Witmer, Bureau of Standards.
2. F. H. Tucker, Bureau of Standards.
3. Porter W. Shimer & Son, Easton, Pa.
4. Booth, Garrett & Blair, Philadelphia, Pa.
5. Geo. C. Davis, Philadelphia, Pa.
6. Saunders & Franklin, Providence, R. I.
7. George P. Vanier, Pennsylvania Steel Co., Steelton, Pa.
8. H. E. Slocum, Jones & Laughlin Steel Co., South Side Department Laboratory, Pittsburgh, Pa.
9. W. D. Brown, Carnegie Steel Co., Duquesne Works.
10. I. A. Nicholas, Carnegie Steel Co., Clairton Works.

B.—*As cast*, this iron contained 3.13 per cent total carbon and 2.52 per cent graphite, thus approximating the original D of the American Foundrymen's Association. Most of the loose graphite was purposely blown out in preparing the 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.

June, 1916.

F. J. H.