

# Bureau of Standards

## Certificate of Analyses

OF

STANDARD SAMPLE No. 4a

### IRON B

ANALYST.	CARBON.				SILICON.		TITANIUM.		PHOSPHORUS.				SULPHUR.		MANGANESE.				
	TOTAL.				DROWN METHOD.	OTHER METHODS.	COLOR METHOD.	GRAVIMETRIC (Blair).	ALKALI MOLYBDATE.	MOLYBDATE REDUCTION.	WEIGHING PHOSPHO-MOLYBDATE.	AS $Mg_2P_2O_7$ FROM PHOSPHO-MOLYBDATE.	OXIDATION.	EVOLUTION (CaS-Iodine).	FORD (Mn as $Mn_2P_2O_7$ ).	FORD-WILLIAMS.	BISMUTHATE.	COLOR (Persulphate).	VOLHARD.
	DIRECT COMBUSTION.	SOLUTION AND COMBUSTION.	GRAPHITE.	COMBINED.															
1					1.39	.056			.108				.041	.041 <sup>a</sup>		1.05			
2					1.34			.042 <sup>b</sup>					.041	.040			1.04 <sup>c</sup>		
3					1.37	1.41		.104		.106			.044	.031 <sup>d</sup>			1.055		
4					1.35			.042			.102		.042	.038			1.08		
5					1.37						.100	.101	.041	.035		1.03 <sup>e</sup>			
					1.42		.052			.104			.042	.036		1.04			
7					1.39				.107				.043	.038		1.04			
8					1.35			.078	.104	.104		.105	.041	.038	1.06	1.04			
9					1.36		.060		.099		.099		.031	.030	1.06				
10					1.32						.102		.030	.032	1.03			1.03	
11					1.40						.100			.037				1.00	
12					1.34				.105		.102		.032	.036	1.02				1.04
Av					1.364	1.40	.055	.066	.104	.1055	.101	.103			1.04	1.04	1.05	1.015	1.04
GEN. Av	3.13 <sup>g</sup>		2.49	.67	1.37		.062		.103			.039 <sup>f</sup>	.036	1.04					

<sup>a</sup>Evolution- $Na_2S$ -Iodine.

<sup>b</sup>Author's volumetric method.

<sup>c</sup>By use of Mn standard; 1.02 by Fe standard.

<sup>d</sup>Evolution- $PbS$ - $BaSO_4$ .

<sup>e</sup>See note below.

<sup>f</sup>Final solution in oxalic acid.

<sup>g</sup>If 9, 10, and 12 are omitted, the average is 0.042.

### INDEX TO ANALYSTS

- John R. Cain (total C by L. F. Witmer), Bureau of Standards.
- Porter W. Shimer, Easton, Pa.
- Booth, Garrett & Blair, Philadelphia, Pa.
- A. S. McCreath & Son, Harrisburg, Pa.
- Geo. C. Davis, Philadelphia, Pa.
- Saunders & Franklin, Providence, R. I.

- George P. Vanier, Pennsylvania Steel Co., Steelton, Pa.
- Jones & Laughlin Steel Co., South Side Department Laboratory, Pittsburg, Pa.
- R. J. Wysor, Carnegie Steel Co., Duquesne Works.
- C. H. Rich, Carnegie Steel Co., Clairton Works.
- J. L. Harvey, Carnegie Steel Co., Homestead Works.
- Carnegie Steel Co., Edgar Thomson Works.

N. B.—As cast, this iron contained 4.16 per cent total carbon and 3.47 per cent graphite, thus approximating the original B 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. The sample is, however, not recommended as a carbon standard, for the reason that the individual values reported were too discordant. When remixed and reanalyzed as to carbon and graphite, new certificates will be issued. In the meantime Iron C is recommended for carbon.

S. W. STRATTON,  
Director.

Washington, D. C.