

# Bureau of Standards

## Certificate of Analyses

OF

STANDARD SAMPLE No. 5a

### IRON C

ANALYST.	CARBON.				SILICON.		TITANIUM.		PHOSPHORUS.				SULPHUR.		MANGANESE.				COPPER. Cu <sub>2</sub> S-ELECTROLYSIS.
	TOTAL.				DROWN METHOD.	OTHER METHODS.	COLOR METHOD.	GRAVIMETRIC (Blair).	ALKALI-MOLYBDATE.	MOLYBDATE REDUCTION.	WEIGHING PHOSPHO-MOLYBDATE.	AS Mg. P <sub>2</sub> O <sub>5</sub> FROM PHOSPHO-MOLYBDATE.	OXIDATION.	EVOLUTION (CuS-Iodine).	FORD (Min as Mg <sub>2</sub> P <sub>2</sub> O <sub>7</sub> ).	FORD-WILLIAMS.	BISMUTHATE.	COLOR (Persulphate).	
	DIRECT COMBUSTION.	SOLUTION AND COMBUSTION.	GRAPHITE.	COMBINED.															
1		2.76	2.23	.56		1.87	.074			.199			.035	.036 <sup>a</sup>		.74			.06
2		2.75	2.24	.51	1.80			.063 <sup>b</sup>				.195	.035	.038			.74 <sup>c</sup>		
3		2.75	2.17	.58	1.85	1.89		.102		.195			.035	.031 <sup>d</sup>			.75		
4		2.77	2.22	.55	1.81			.053				.194	.036	.036			.77		
5	2.75 <sup>e</sup>		2.23	.52	1.85							.179	.181	.038	.032		.72 <sup>f</sup>		
		2.78	2.19	.59	1.85			.084		.195			.032	.033			.72		
7		2.78	2.23	.55	1.82				.192				.037	.036			.74		
8	2.79	2.77			1.81			.064	.199	.197		.198	.038	.034	.75	.74			
9		2.78	2.25	.53	1.83		.070		.198			.188	.034	.033	.78				
10		2.82	2.25	.57	1.82							.193	.030	.035	.74			.72	
11		2.71			1.86							.186		.033				.76	
12					1.83				.190			.192	.030	.033	.725				
Av	2.77	2.77			1.83	1.88	.076	.070	.192	.196	.189	.191			.75	.735	.745	.74	
GEN. Av	2.77	2.22	.55		1.84		.073			.192			.035	.034		.74			.06

<sup>a</sup> Evolution-Na<sub>2</sub>S-Iodine.  
<sup>b</sup> Author's volumetric method.

<sup>c</sup> By use of Mn standard; 0.72 by Fe standard.  
<sup>d</sup> Evolution-PbS-BaSO<sub>4</sub>.

<sup>e</sup> In Shimer crucible, with Fe<sub>2</sub>O<sub>3</sub> or FeO<sub>3</sub> and CuO on sand bottom.  
<sup>f</sup> Final solution in oxalic acid.

### INDEX TO ANALYSTS

- John R. Cain (total C and Cu by J. L. 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 3.37 per cent total carbon and 2.75 per cent graphite, thus approximating the original C 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.