

# Bureau of Standards

## Certificate of Analyses

OF

### STANDARD SAMPLE No. 4d

### CAST IRON

ANALYST*	C			Mn	P		S		Si	COPPER H <sub>2</sub> S-CuS-CuO	NICKEL Weighed as nickel dimethylglyoxime	CHROMIUM FeSO <sub>4</sub> -KMnO <sub>4</sub> titration	VANADIUM	MOLYBDENUM Colorimetric by developing color with ACNS and SnCl <sub>2</sub>	TITANIUM Determined colorimetrically in resi- due after HCl (sp. gr. 1.10) attack	ARSENIC
	CARBON I. Total	2. Graphitic	3. Combined	MANGANESE Bismuthate (FeSO <sub>4</sub> -KMnO <sub>4</sub> )	PHOSPHORUS 1. Alkali-Molybdate <sup>a</sup> 2. Gravimetric (Weighed as Mg <sub>2</sub> P <sub>2</sub> O <sub>7</sub> after removal of arsenic)	1. SULPHUR Gravimetric (Direct oxidation and final precipitation in re- duced solution)	2. SULPHUR <sup>b</sup> Evolution with HCl (1:1) ZnS-Iodine (theoretical sul- phur titre <sup>c</sup> )	SILICON Sulphuric acid dehydration								
1 -----	2.66	1.98	0.68	0.892	0.078	0.079	0.076	0.070	1.29	0.24 <sup>d</sup>	0.033	0.016 <sup>e</sup>	0.009 <sup>e</sup>	<0.001	0.038	0.010
2 -----	2.67	2.02	.65	.89 <sup>f</sup>	.083 <sup>g</sup>		.078 <sup>h</sup>	.079	1.29	.25 <sup>d</sup>						
3 -----	2.67	2.01	.66	.89	.081	0.079	.075	.077	1.27	.25 <sup>d</sup>	.036 <sup>i</sup>	.012			.037	
4 -----	2.63	2.02	.61	.898	.081	0.080	.075	.067	1.26	.23 <sup>d</sup>	.039	.02			.031	
5 -----	2.66	2.02	.64	.89 <sup>j</sup>	.080		.071	.070	1.25	.22 <sup>d</sup>		.01		.002		
6 -----	2.65	2.00	.65	.896	.081		.075	.073	1.27	.24						
7 -----	2.64	1.99	.65	.899	.080	0.081	.075	.066	1.26	.24	.033	.015	.007	<.001	.036	.007
8 -----	2.63	2.01	.62	.898	.079	.078	.074	.071	1.25	.24	.034	.015	.005	.002	.036	.007 <sup>k</sup>
9 -----	2.63	2.02	.61	.90	.081	.081	.074	.072	1.25	.24	.03 <sup>i</sup>	<.01	<.01	.003	.037	
10 -----	2.67	1.98	.69	.893	.080	.080	.077	.072	1.27	.24	.033	.016			.041	
11 -----	2.63	1.99	.64	.893	.080	.081	.076	.073	1.26	.24	.031	.016	.008	.001	.035	.006
Averages -----	2.66	2.00	.65	.894	.080	.080	.075	.072	1.27	.24	.034	.014	.008	.002	.036	.008
Recom- mended values -----	2.66	2.00	.65	.894	0.080	.075	.072	1.27	.24	.034	.015	.008	.001	.036	.008	

- \* Precipitated at 40°C., washed with a 1 per cent solution of KNO<sub>3</sub> and titrated with alkali standardized by the use of Bureau of Standards acid potassium phthalate and the 23 : 1 ratio.
- <sup>a</sup> Sample annealed by wrapping it in filter paper and heating for 20 minutes in a tightly covered porcelain crucible at a bright red heat.
- <sup>b</sup> Value obtained by standardization of titrating solution against sodium oxalate through KMnO<sub>4</sub> and Na<sub>2</sub>S<sub>2</sub>O<sub>5</sub>.
- <sup>c</sup> Finished by electrolysis.

- <sup>d</sup> Electrometric titration.
- <sup>e</sup> Bismuthate arsenite.
- <sup>f</sup> Solutions standardized against a standard cast iron.
- <sup>g</sup> Precipitation in ferric chloride solution.
- <sup>h</sup> Titrated with KCN.
- <sup>i</sup> Persulphate-arsenite.
- <sup>j</sup> Weighed as As<sub>2</sub>S<sub>3</sub>.

### \* LIST OF ANALYSTS

1. Ferrous Laboratory, H. A. Bright in charge; analysis by C. P. Larrabee and R. M. Fowler.
2. W. F. Lantz, Bethlehem Steel Co., Bethlehem, Pa.
3. E. C. Raysor, Bethlehem Steel Co., Coatesville, Pa.
4. J. C. Gorham, The Colorado Fuel & Iron Co., Pueblo, Colo.
5. W. A. Harris, American Sheet & Tin Plate Co., Canton, Ohio.
6. H. E. Slocum, Jones & Laughlin Steel Co., Pittsburgh, Pa.
7. W. F. Muehlberg, Newburgh Steel Works, Cleveland, Ohio.
8. G. S. Rutherford, Western Electric Co., Chicago, Ill.
9. W. D. Brown, Carnegie Steel Co., Duquesne, Pa.
10. H. E. Campbell, Carnegie Steel Co., Clairton, Pa.
11. Charles McKimmon, The Tennessee Coal, Iron & Railroad Co., Ensley, Ala.

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*George K. Burgess*

Director.