

DEPARTMENT OF COMMERCE

Bureau of Standards

Certificate of Analyses

OF

STANDARD SAMPLE No. 10d

BESSEMER STEEL, 0.4% CARBON

ANALYST*	C	Mn		P		S		Si	COPPER H ₂ S-CuS-CuO	NICKEL Weighed as nickel dimethylglyoxime	CHROMIUM FeSO ₄ -KMnO ₄ titration	VANADIUM	MOLYBDENUM	ARSENIC
	CARBON Direct combustion	MANGANESE I. Bismuthate (FeSO ₄ -KMnO ₄) 2. Other methods	PHOSPHORUS I. Alkali-Molybdate* 2. Gravimetric (Weighed as Mn ₂ P ₂ O ₇ after removal of arsenic)	SULPHUR I. Sulphuric acid oxidation and final precipitation in reduced solution 2. Sulphur with HCl evolution with ZnS-Iodine (1:1) (theoretical sulphur titre ^b)	SILICON Sulphuric acid dehydration									
1.....	0.418	0.921		0.089	0.087	0.030	0.029	0.064	0.008 ^c	0.002	0.006 ^d	0.007 ^d	0.003 ^e	0.005
2.....	.425		0.930 ^f	.090			.033	.063	.014 ^c	.004	.006	.004	<.001	
3.....	.427	.907	.909 ^f	.087	.086	.032	.031	.058		.001		.007	.005	
	.419		.912 ^f	.091	.091	.031	.032	.059						
5.....	.412	.91	.92 ^f	.091	.090	.030	.028	.061		<.002	<.01	<.01	.002	
6.....	.42		.91 ^g	.090		.033 ^h	.032	.062	.010 ⁱ					
7.....	.419		.913 ^f	.090			.033	.067	.011					
8.....	.408		.915 ^g	.090	.087	.028	.031	.064						
9.....	.425	.917			.089	.030	.028	.065	.010					
Averages.....	.419	.914	.916	.090	.088	.030	.031	.063	.010	.002	.006	.006	.003	.005
Recommended Values.....	0.419	0.915		0.088		0.030		0.063	0.010	0.002	0.006	0.006	0.003	0.005

* Precipitated at 40° C., washed with a 1 per cent solution of KNO₃ and titrated with alkali standardized by means of B. S. benzoic acid and the 23:1 ratio.
^b Value obtained by standardization of titrating solution against sodium oxalate through KMnO₄ and Na₂S₂O₃.
^c Finished by electrolysis.
^d Electrometric titration.

* Colorimetric by developing color with KSCN and SnCl₂.
^f Persulphate-arsenite.
^g Bismuthate-arsenite.
^h Precipitated in FeCl₃ solution.
ⁱ Thiosulphate precipitation, finished by electrolysis.

* LIST OF ANALYSTS

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| 1. Ferrous Laboratory, Bureau of Standards, H. A. Bright in charge; analysis by C. P. Larrabee. | 6. W. F. Lantz, Bethlehem Steel Co., Bethlehem, Pa. |
| 2. John L. Harvey, Carnegie Steel Co., Munhall, Pa. | 7. Karl Pitschner, American Chain Co., Bridgeport, Conn. |
| 3. E. E. Edris, Lebanon Steel Foundry, Lebanon, Pa. | 8. E. J. Daggett, Chicago, Burlington & Quincy Railroad Co., Aurora, Ill. |
| 4. A. D. Beers, Illinois Steel Co., Gary, Ind. | 9. Dr. M. E. McDonnell, The Pennsylvania Railroad System, Altoona, Pa. |
| 5. W. D. Brown, Carnegie Steel Co., Duquesne, Pa. | |

This standard is not recommended for colorimetric carbon determinations, because of uncertainty as to the conditions of the carbon.

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 Director.