

DEPARTMENT OF COMMERCE

Bureau of Standards

Certificate of Analyses

OF

STANDARD SAMPLE No. 82

NICKEL-CHROMIUM CAST IRON

ANALYST*	C			Mn	P		S		Si	Ni	Cr	VANADIUM	MOLYBDENUM	TITANIUM Determined colorimetrically in residue after HCl (sp. gr. 1.10) attack	ARSENIC	
	CARBON 1. Total	2. Graphitic	3. Combined	MANGANESE	PHOSPHORUS 1. Alkali-Molybdate ^a 2. Gravimetric (Weighed as Mg ₂ P ₂ O ₇ after removal of arsenic)	1. SULPHUR Gravimetric (Direct oxidation and final precipitation in reduced solution)	2. SULPHUR ^b Evolution with HCl (1:1) ZnS-iodine (theoretical sulphur titre)	SILICON Sulphuric acid dehydration	COPPER H ₂ S-CuS-CuO		NICKEL Weighed as nickel dimethylglyoxime					CHROMIUM FeSO ₄ -KMnO ₄ titration
1	2.77	2.32	0.45	0.727 ^d	0.104	0.100	0.033	0.032	2.11	0.021	0.99	0.24 ^e	0.012 ^e	0.001 ^f	0.048	0.007
2	2.77	2.30	.47	.728 ^d	.103	.106	.035	.031	2.08	.022	1.01	.276	.009	.008	.043	.011
3	2.78	2.23	.55	.72 ^g	.104	.104	.037	.030	2.10		1.01	.200				
	2.79	2.31	.48	{.713 ^d .714 ^g }	.101	.100	.032	{.026 ^h .030}	2.07		{.987 ⁱ .99 ^j }	.238			.051	
	2.77	2.34	.43	.715 ^d		.101	.033		2.09		1.01	.25				
6	2.80	2.26	.54	.735 ^g	.101	.100	.033	{.025 ^h .028 .030 ^h .034}	2.09	.020 ^k	.974	.233	.013		.049	.008
7	2.74	2.26	.48	.727 ^d	.103	.102	.034		2.06	.019	.98	.24			.047	
8	2.82	2.29	.53	.71	.103		.031	.033	2.09	.016	1.01	.232				
9	2.81	2.28	.53	.715 ^d	.104	.104	.032		2.09	.022	1.00	.239		.005	.050	.009
10	2.79	2.31	.48	.720 ^d	.102		.035	.034	2.09	.018	1.01	.235			.045	
11	2.74								2.09		1.02	.242				
Averages	2.78	2.29	.49	.722	.103	.102	.033	.031	2.09	.020	1.00	.245	.011	.004	.048	.009
General Averages	2.78	2.29	.49	.722	0.102		.033 [†]	.031	2.09	.020	1.00	.245	.011	.004	.048	.009

† Recommended value.

^a Precipitated at 40° C., washed with a 1 per cent solution of KNO₃ and titrated with alkali standardized by the use of Bureau of Standards acid potassium phthalate and the 23:1 ratio.

^b Sample annealed by wrapping it in filter paper and heating for 20 minutes in a tightly covered porcelain crucible at a bright red heat.

^c Value obtained by standardization of titrating solution against sodium oxalate through KMnO₄ and Na₂S₂O₈.

^d Bismuthate (FeSO₄-KMnO₄).

^e Electrometric titration.

^f Colorimetric by developing color with KCNS and SnCl₂.

^g Bismuthate-arsenite.

^h Unannealed.

ⁱ Precipitated with dimethylglyoxime, dissolved and titrated with KCN.

^j Finished by electrolysis.

^k Na₂S₂O₈-CuS-CuO.

* LIST OF ANALYSTS

1. Ferrous Laboratory, Bureau of Standards, H. A. Bright, in charge; analysis by C. P. Larrabee and W. C. Fedde.
2. W. F. Muehlberg, Newburgh Steel Works, Cleveland, Ohio.
3. G. A. England, American Car & Foundry Co., St. Louis, Mo.
4. E. C. Raysor, Bethlehem Steel Co., Coatesville, Pa.
5. W. H. C. Berg., C. A. H. Knapp, and E. R. Gray, The Whitney Manufacturing Co., Hartford, Conn.
6. G. Kelly, The Tennessee Coal, Iron & Railroad Co., Ensley, Ala.

7. C. E. Nesbitt, Carnegie Steel Co., Edgar Thomson Works, Braddock, Pa.
8. J. C. Gorham, The Colorado Fuel & Iron Co., Pueblo, Colo.
9. Western Electric Co., Manufacturing Department, Chicago, Ill.
10. J. L. Mayberry, Republic Iron & Steel Co., Youngstown, Ohio.
11. T. R. Cunningham and R. J. Price, Electro Metallurgical Co., New York, N. Y.

Washington, D. C.
January 21, 1928

U. S. GOVERNMENT PRINTING OFFICE: 1928 J99569

George K. Burgess
Director.