



Certificate of Analysis

Standard Reference Material 82b

Nickel-Chromium Cast Iron

ANALYST	C		Mn	P	S	Si	Cu	Ni	Cr	V	Mo	Ti
	Total	Graphitic	Persulfate-Arsenite	Photometric	Combustion Iodate titration	Perchloric acid dehydration	Photometric	Weighed as nickel dimethyl- glyoxime	FeSO ₄ -KMnO ₄ titration	Photometric	H ₂ O ₂ photometric	
1.....	2.82	2.37	^a 0.745	^b 0.024	^c 0.006	^d 2.10	^e 0.038	^f 1.22	^g 0.336	^h 0.026	0.002	ⁱ 0.028
.....	^j 2.86	2.37	^k 0.750	^l 0.022	^m 0.008	2.12	ⁿ 0.036	1.22	^o 0.338	^{p,q} 0.024	.003	^r 0.025
.....	2.87	2.36	^k 0.74	{ ^r 0.026 ^s 1.027}	.007	^d 2.11	^s 0.035	1.22	.33	^t 0.031	.003	^u 0.027
4.....	2.85	2.39	.....	^l 0.026	.....	^v 2.08	^w 0.042	1.22	.33	.....	^x 0.002	.027
Average.....	2.85	2.37	0.745	0.025	0.007	2.10	0.038	1.22	0.333	0.027	0.002	0.027

^a Potentiometric titration.
^b Molybdenum-blue photometric method. See J. Res. NBS 26, 405 (1941) RP1386.
^c 1-g sample burned in oxygen at 1,425 °C and sulfur dioxide absorbed in starch-iodide solution. Iodine liberated from iodide by titration, during the combustion, with standard KIO₃ solution. Titer is based on 93 percent of the theoretical factor.
^d Double dehydration with intervening filtration.
^e Diethyldithiocarbamate photometric method. See J. Res. NBS 47, 380 (1951) RP2265.
^f Photometric method.
^g Persulfate oxidation, potentiometric titration with ferrous ammonium sulfate.

^h Vanadium separated from the bulk of the iron by hydrolytic precipitation with NaHCO₃, oxidized with HNO₃ and titrated potentiometrically with ferrous ammonium sulfate.
ⁱ Titanium separated from the bulk of the iron with cupferron and determined polarographically in a sodium acetate-EDTA supporting electrolyte.
^j Combustion-volumetric method.
^k Titrating solution standardized by the use of a standard iron or steel.
^l Alkali-molybdate method.
^m Combustion gases absorbed in NaOH-H₂O₂, and excess NaOH titrated with H₂SO₄.

ⁿ Neocuproine photometric method.
^o Persulfate oxidation, titration with FeSO₄-Ce(SO₄)₂.
^p Vanadium oxidized with HNO₃.
^q Vanadium separated by Na₂CO₃ fusion.
^r Molybdate-Mg₂P₂O₇.
^s Copper precipitated with Na₂S₂O₃ and determined by electrolysis.
^t Spectrographic method.
^u Vanadium separated by treatment with NaOH.
^v Sulfuric acid dehydration.
^w H₂S-CuS-CuO.
^x Alpha benzoinoxime gravimetric method.

List of Analysts

- J. R. Baldwin, B. B. Bendigo, R. K. Bell, E. J. Maienthal, E. R. Deardorff, and J. I. Shultz, Division of Analytical Chemistry, Institute for Materials Research, National Bureau of Standards.
- R. H. Elder, R. E. Deas, R. N. Smith, and J. B. Hobby, American Cast Iron Pipe Co., Birmingham, Ala.
- J. H. Beyer and C. P. Gaskill, United States Pipe and Foundry Co., Burlington, N. J.
- E. F. O'Neill, Bethlehem Steel Corp., Johnstown Plant, Johnstown, Pa.

The material for this Standard was furnished by the American Cast Iron Pipe Co.

Washington, D. C.
 April 12, 1966

W. Wayne Meinke, Chief
 Office of Standard Reference Materials