U.S. DEPARTMENT OF COMMERCE

National Bureau of Standards

Certificate of Analyses

OF

STANDARD SAMPLE No. 7c

CAST IRON

(HIGH PHOSPHORUS)

ANALYST *	C			Mn	P		S		Si								
	CARBON 1. Total	2. Graphite	3. Combined	MANGANESE 1. Bismuthate ($FeSO_4$-$KMnO_4$)	PHOSPHORUS 1. Alkali-Molybdate [a]	2. Gravimetric (Weighed as $Mg_2P_2O_7$ 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 [c])	SILICON Sulphuric acid dehydration	COPPER H_2S-CuS-CuO	NICKEL Weighed as nickel dimethylglyoxime	CHROMIUM $FeSO_4$—$KMnO_4$ titration	VANADIUM	MOLYBDENUM	TITANIUM Determined colorimetrically in residue after HCl (sp. gr. 1.10) attack	ARSENIC
1	2. 32	1. 89	0. 43	0. 565	0. 774	0. 775	0. 064	0. 063 [d]	1. 82	0. 038	0. 010	0. 019 [e]	0. 041 [e]	0. 001	0. 069	0. 067
2	2. 30	1. 90	. 40	. 56	. 769	. 775	. 065	----------	1. 78	----------	----------	----------	----------	----------	. 062	----------
3	2. 35	1. 87	. 48	. 56	. 78	----------	. 068	. 062	1. 79	. 039	. 009	. 020	. 044	. 004	. 070	. 077
4	2. 32	1. 90	. 42	. 57 [f]	. 778 [g]	. 785	. 065	. 060	1. 78	----------	----------	----------	----------	----------	----------	----------
5	2. 33	1. 87	. 46	. 553	. 794	. 780	. 067	. 063 [h]	1. 78	----------	----------	----------	----------	----------	----------	----------
6	2. 32	1. 91	. 41	. 574 [i]	. 785	. 761	. 062	. 061	1. 78	. 040	. 012	. 016 [j]	----------	. 004	. 068	----------
7	2. 32	1. 90	. 42	. 559	. 777	. 783	. 061	. 061	1. 78	----------	----------	----------	----------	----------	----------	----------
8	2. 35	1. 88	. 47	. 57	. 784	. 780	. 066	. 062 [d]	1. 82	. 04 [k]	----------	. 02	----------	. 002	----------	----------
9	2. 34	1. 88	. 46	. 564	. 787	. 784	. 065	. 061	1. 80	. 036	. 009	. 021	----------	. 001	. 067	. 069
10	2. 30	1. 90	. 40	. 56 [i]	. 781	----------	. 066	. 065	1. 77	----------	----------	----------	----------	----------	----------	----------
Averages	2. 33	1. 89	. 44	. 564	. 780	. 778	. 065	. 063	1. 79	. 039	. 010	. 019	. 042	. 002	. 067	. 071
Recommended values	2. 33	1. 89	. 44	. 564	. 778		. 065		1. 79	. 039	. 010	. 019	. 042	. 002	. 067	. 071

[a] Precipitated at 40 C., washed with a 1 percent solution of KNO_3 and titrated with alkali standardized by the use of National 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 $KMnO_4$ and $Na_2S_2O_3$.

[d] Sample annealed by covering with graphite, and heating for 20 minutes at 685 C. Sulphur evolved with concentrated HCl.

[e] Potentiometric titration.

[f] Bismuthate arsenite.

[g] Titrating solution standardized against a standard cast iron.

[h] Absorbed in $CdCl_2$ solution.

[i] Persulphate-arsenite method.

[j] Colorimetric method.

[k] Finished by electrolysis.

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