

National Bureau of Standards

Certificate of Analyses

OF

STANDARD SAMPLE No. 5g

CAST IRON

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	TITANIUM Determined colorimetrically in residue after HCl (sp gr 1.10) attack	ARSENIC
	CARBON 1. Total	2. Graphite	3. Combined	MANGANESE 1. Bismuthate (FeSO ₄ -KMnO ₄)	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, ZnS-Iodine (theoretical sulphur titre ^c)	SILICON Sulphuric acid dehydration							
1.....	2. 86	2. 15	0. 71	0. 611	0. 261	0. 260	0. 122	0. 122	1. 85	1. 44 ^d	0. 133	0. 018 ^e	0. 020 ^e	0. 001	0. 068	0. 031
.....	2. 86	2. 16	. 70	. 60	. 262	. 261 ^f	. 123	. 121	1. 82	1. 45 ^d	. 12	. 016				
.....	2. 85	2. 15	. 70	. 61 ^g	. 268	. 264	. 125	. 120 ^h	1. 85	1. 42	. 137	. 019				
4.....	2. 86	2. 18	. 68	. 62	. 263	. 259	. 122	. 118 ^h	1. 86	1. 46 ^d				. 07		
5.....	2. 89	2. 13	. 76	. 61	. 253		. 119	. 118	1. 84	1. 43	. 13	. 02	. 025		. 068	. 04
6.....	2. 84	2. 13	. 71	. 615	. 267	. 262	. 120	. 119 ^h	1. 85	1. 43 ^d	. 12 ⁱ	. 019	. 017		. 060	. 026
7.....	2. 84	2. 13	. 71	. 612	. 262	. 259	. 123	. 122	1. 84	1. 43 ^d	. 125 ⁱ				. 065	
8.....	2. 87	2. 13	. 74	. 604	. 257		. 120	. 118	1. 84	1. 44 ^d	. 128 ^d					
Averages.....	2. 86	2. 15	. 71	. 610	. 262	. 261	. 122	. 120	1. 84	1. 44	. 128	. 018	. 021			
Recommended values.....	2. 86	2. 15	. 71	. 610	. 261		. 122		1. 84	1. 44	. 128	. 018	. 021	. 001	. 066	. 032

^a Precipitated at 40° C, washed with a 1 percent solution of KNO₃ 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 covering with graphite, and heating for 20 minutes at 685° C. Sulphur evolved with concentrated HCl.

^c Value obtained by standardization of titrating solution against sodium oxalate through KMnO₄ and Na₂S₂O₄.

^d Finished by electrolysis.

^e Potentiometric titration.

^f Weighed as (NH₄)₂PO₄·12MoO₃.

^g Bismuthate-arsenite method.

^h Sample annealed by wrapping it in filter paper and heating for 20 minutes in a porcelain crucible at bright red heat. Dissolved in HCl (1+1).

ⁱ Weighed as NiO.

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