

U. S. DEPARTMENT OF COMMERCE

National Bureau of Standards

Certificate of Analyses

OF

STANDARD SAMPLE 15c

BASIC OPEN-HEARTH STEEL, 0.1% CARBON

ANALYST*	C	Mn		P		S		Si							
	Direct combustion	Bismuthate (FeSO ₄ -KMnO ₄)	Persulfate Arsenite	Gravimetric (weighed as Mg ₂ P ₂ O ₇ after removal of arsenic)	Alkali-molybdate ^a	Gravimetric (direct oxidation and final precipitation in reduced solution)	Evolution with HCl (1-1) ZnS-Iodine (theoretical sulfur titre) ^b	Sulfuric acid dehydration	COPPER H ₂ S-CuS-CuO	NICKEL Weighed as nickel dimethylglyoxime	CHROMIUM FeSO ₄ -KMnO ₄ titration	VANADIUM	MOLYBDENUM Colorimetric	NITROGEN	
1	0.127	0.536	0.535	0.013	0.016	0.021	0.021	0.269	0.142	0.079	0.057	0.005	0.004	0.005	
2	.132	° 53	° 53	.014	° 015	.022	.022	.271	° 143	.079	.056		.005		
3	.131	^h 532	° 529		° 014		° 023	ⁱ 265	° 145	.075	.057	.008	.003		
4	.127		° 530	ⁱ 013	.014	.021	.021	^o 267	° 135	.076	.056	.003	^k 004		
	.128	.530	.536		.015			.260	° 136	.081	.051	.005	.005		
6	.134		° 538		° 015	.023	° 023	^l 273	^m 142	.083	.058	.007	.004		
7	.129		.537		.016	.024	.023	.262	.134	.080	.053				
8	.131	.53	.53		.015	.023	ⁿ 023	° 270	.138	.076	° 053				
9	.132		° 533		.014	.021	.023	^o 265	^m 140	.084	.057				
10	.134	.531	.528		.015	.022	° 023	.262	.15	.086	.056	.006	.005		
Averages	0.131	0.532	0.533	0.013	0.015	0.022	0.023	0.266	0.141	0.080	0.055	0.006	0.004	0.005	
General average	0.131	0.533		0.014		0.022		0.266	0.141	0.080	0.055	0.006	0.004	0.005	

^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 ratio 23 NaOH: 1 P.

^b Value obtained by standardizing the titrating solution by means of sodium oxalate through KMnO₄ and Na₂S₂O₃.

^c Double dehydration.

^d Finished by electrolysis.

^e Potentiometric titration.

^f Determination made by Vernon C. Holm by the vacuum-fusion method. See BS J. Research 7 375, (1931) RP346.

^g Titrating solution standardized by the use of a standard steel.

^h Bismuthate-arsenite method.

ⁱ Nitric-sulfuric acid dehydration.

^j Weighed as (NH₄)₂PO₄·12 MoO₃.

^k Weighed as PbMoO₄.

^l Perchloric acid dehydration.

^m KI-Na₂S₂O₃ titration.

ⁿ Solution in concentrated HCl.

^o Sample ignited in oxygen, gases passed into H₂O₂, and H₂SO₄ titrated with 0.01 N NaOH.

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Washington, D. C.
February 28, 1940

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Director.