

DEPARTMENT OF COMMERCE

Bureau of Standards

Certificate of Analyses

OF

STANDARD SAMPLE No. 13c

BASIC OPEN-HEARTH STEEL, 0.6% CARBON

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	ARSENIC	ALUMINUM	
	CARBON Direct combustion	MANGANESE 1. Bismuthate (FeSO ₄ -KMnO ₄) 2. Other methods	PHOSPHORUS 1. Alkali-Molybdate ^a 2. Gravimetric (Weighed as MgP ₂ O ₇ after removal of arsenic)	1. SULPHUR Gravimetric (Direct oxidation and final precipitation in reduced solution) 2. SULPHUR Evolution with HCl (1:1), ZnS-Iodine (theoretical sulphur titre)	SILICON Sulphuric acid dehydration										
1	0.583	0.704	0.014	0.012	0.023	0.022	0.204	0.154	0.191	0.050 ^e	0.003 ^e	0.003 ^d		0.017	
2	.571	.706	.013	.012	.024	.021	.198	.160	.197	.055 ^e	.004 ^e	.002	0.010 ^f	.021	
	.575	.705	.012		.025	.025	{ .208 .203 ^g }	.155 ^h	.190 ⁱ	.052					
4	.570	.692		.013	.020 ^j		.207	.168							
5	.58	0.69 ^k	.013			.023	.195	.172	.200 ⁱ	.04					
6	.569	.692	.700 ^l	.011	.012	.022	.022	.192	.17	.18	.05	.003			
7	.572	.697	.012		.024	.025	.203	.171							
8	.57	.71 ^m	.015			.022	.19	.169	.21	.06					
9	.570	.706	.013		.025		.202	.164	.202	.061					
Averages	.573	.700	.700	.013	.012	.023	.023	.200	.165	.196	.053	.003	.003	.010	.019
General Averages	.573	.700	.700	.013	.012	.023	.023	.200	.165	.196	.053	.003	.003	.010	.019

^a Precipitated at 40°C., washed with a 1 per cent solution of KNO₃ and titrated with alkali standardized by means of B. S. benzoic acid and the 23:1 ratio.

^b Value obtained by standardization of titrating solution against sodium oxalate through KMnO₄ and Na₂S₂O₃.

^c Colorimetric.

^d Colorimetric by developing color with KCNS and SnCl₂.

^e Electrometric titration.

^f Distilled as AsCl₃, precipitated as As₂S₃, converted As₂S₃ to arsenate, precipitated as Ag₃AsO₄, dissolved in HNO₃ and titrated with KCNS.

^g Hydrochloric acid dehydration.

^h Determined electrolytically.

ⁱ Dimethylglyoxime precipitation, KCN titration.

^j Obtained same result by precipitation in FeCl₃ solution.

^k Bismuthate-Arsenite.

^l Persulphate-Arsenite.

^m Titrated electrometrically with mercurous nitrate.

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This standard is not recommended for colorimetric carbon determinations, because of uncertainty as to the condition of the carbon.

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