

DEPARTMENT OF COMMERCE

Bureau of Standards

Certificate of Analyses

OF
STANDARD SAMPLE NO. 65a

ACID ELECTRIC STEEL

ANALYST*	C	Mn		P		S		Si						
	CARBON Direct combustion	MANGANESE 1. Permanganate (FeSO ₄ -KMnO ₄)	2. Persulphate Arsenite	PHOSPHORUS 1. Alkali-Molybdate ^a	2. Gravimetric (Weighed as Mg ₂ P ₂ O ₇ after re- moval of arsenic)	1. SULPHUR Gravimetric (Direct oxidation and final precipitation in re- duced solution)	2. SULPHUR Extraction with HCl (1:1) ZnS-Iodine (theoretical sulphur titre ^b)	SILICON Sulphuric acid dehydra- tion	COPPER H ₂ S-CuS-CuO	NICKEL Weighed as nickel dimethyl- glyoxime	CHROMIUM FeSO ₄ -KMnO ₄ titration	VANADIUM	MOLYBDENUM Colorimetric	ARSENIC
1.....	0. 256	0. 750	0. 752	0. 034	0. 034	0. 050	0. 050	0. 453	0. 182 ^c	0. 243	0. 173 ^d	0. 007 ^a	0. 003	0. 012 ^e
2.....	. 252		. 744	. 037	. 037	. 051 ^f	. 051 ^g	. 451 ^h	. 167 ⁱ	. 228 ^j	. 190			
3.....	. 261	. 747	. 742	. 037	. 036 ^k	. 048	. 048	. 441	. 168	. 237	. 177		. 005	
4.....	. 260		. 740	. 037			. 048 ^l	. 434 ^l	. 186 ^l	. 245	. 190			
5.....	. 263	. 755	. 749	. 038 ^m	. 037	. 050	. 051 ⁿ	. 434	. 180	. 237	. 168			
6.....	. 254	. 754	. 744	. 036	. 034	. 046	. 047	. 436	. 172 ⁿ	. 248	. 173	. 005	. 006	
7.....	. 254		. 743	. 038 ^m		. 047	. 048 ^o	. 441		. 23	. 187			
	. 264		. 748	. 036		. 049	. 048 ^o	. 439	. 182	. 252				
9.....	. 255	. 743		. 038	. 037	. 047 ⁱ	. 049 ^o	. 439	. 182					
10.....	. 258		. 750	. 039	. 040		. 048	. 448	. 168 ^e					
11.....	. 253		. 744	. 036			. 048	. 435 ^o	. 181 ^o	. 244	. 172			
12.....	. 259	. 751	. 745	. 038			. 048	. 440	. 174	. 257	. 176			
13.....	. 260		. 740	. 037 ^p	. 036	. 048	. 049	. 440	. 175	. 240				
Averages.....	. 258	. 750	. 745	. 037	. 036	. 048	. 049	. 441	. 176	. 242	. 178	. 006	. 005	. 012
General Averages.....	. 258	. 748		. 036		. 048		. 441	. 176	. 242	. 178	. 006	. 005	. 012

^a Precipitated at 40°C., washed with 1 per cent KNO₃ and titrated with alkali standardized against B. S. acid potassium phthalate, using the 23:1 ratio.

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

^c Finished by electrolysis.

^d Potentiometric titration.

^e Distillation as AsCl₃, precipitation as As₂S₃, conversion to Ag₃AsO₄ and titration with KCNS.

^f Precipitated in FeCl₃ solution.

^g Absorbed in CdCl₂.

^h HCl-HNO₃ dehydration.

ⁱ Iodide method.

^j Solution of nickel dimethylglyoxime and KCN titration.

^k Weighed as ammonium phospho-molybdate.

^l H₂SO₄-HNO₃ method.

^m Titrating solution standardized against standard steel.

ⁿ Colorimetric method.

^o HClO₄ dehydration.

^p Titrating solution standardized against oxalic acid.

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2. O. L. Van Valkenburgh, Halcomb Steel Co., Syracuse, N. Y.
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5. T. W. Ellis, Mesta Machine Co., Pittsburgh, Pa.
6. John Disario, United States Steel Products Co., Columbia Department, Torrance, Calif.
7. J. L. Roeder and J. H. Tanquary, Sivyer Steel Casting Co., Chicago, Ill.

8. H. A. Burkhardt, E. C. Atkins & Co. (Inc.), Indianapolis, Ind.
9. F. W. Washburn, International Harvester Co., Wisconsin Steel Works, South Chicago, Ill.
10. J. W. Ivance, Chicago, Burlington & Quincy Railroad Co., Aurora, Ill.
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This standard is not recommended for colorimetric carbon determinations, because of uncertainty as to the condition of the carbon.

Washington, D. C.
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George K. Burgess
Director.