

U. S. DEPARTMENT OF COMMERCE

National Bureau of Standards

Certificate of Analyses

OF

STANDARD SAMPLE 13D

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 Colorimetric
	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)	Combustion	Sulfuric acid dehydration					
1	0. 575	0. 923	0. 924	0. 015 ^c	0. 016	0. 025	0. 026		d 0. 265	0. 023	0. 010 ^e	0. 023 ^f	0. 002	0. 002
2	. 580	g. 926	g. 913		g. 015		g. 026		dh. 274	i. 021	i. 014	. 026	k. 002	. 003
3	. 573	g. 921	g. 928		g. 018		g. 027		h. 268	i. 021	. 009	i. 023	k. 002	. 003
4	. 581 ^m	g. 917		n. 018	g. 018	. 027	. 027		. 257	. 019	. 016	. 021	. 003	. 004
5	. 576 ^m	g. 920		n. 015	. 016	. 025	g. 026	. 025	o. 257	. 023	p. 006	. 020	. 001	. 001
	. 570		g. 920		. 018		. 024		. 273	i. 027	. 010	. 025	k. 002	. 002
7	. 587	. 92	. 92		g. 016	. 025	g. 025		. 263					
8	. 572		g. 922	. 018	g. 019	. 025		. 025	dh. 267	. 020	. 009	. 023	k. 003	. 001
9	. 570	. 922	. 93		. 019		. 027		do. 260	. 030	p. 010	i. 020		. 002
10	. 579		. 94		. 020	. 027	. 026		. 268	q. 020	i. 012	q. 026		
11	. 572		. 929	. 016	g. 017	. 023	. 023	. 023	dh. 264	. 020	. 012	. 024	k. 004	. 002
12	. 573	. 928		n. 016	. 016		. 024	. 023	do. 271	q. 016	. 012	. 020	. 002	. 001
13	. 586		g. 920	. 016	g. 017	. 025	. 026		. 263	i. 020	i. 011	. 024	k. 002	. 003
Averages	. 576	. 922	. 925	. 016	. 017	. 025	. 026	. 024	. 265	. 022	. 010	. 023	. 002	. 002
Recommended values	0. 576	0. 924		0. 016		0. 025			0. 265	0. 022	0. 010	0. 023	0. 002	0. 002

^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 Na₂S₂O₄, and use of the ratio 2 I:1 S.

^c Colorimetric method. See J. Research NBS 26, 405 (1941) RP1386.

^d Double dehydration.

^e Persulfate oxidation, potentiometric titration with ferrous ammonium sulfate solution standardized with recrystallized potassium dichromate.

^f Nitric acid oxidation, potentiometric titration with ferrous ammonium sulfate solution standardized with recrystallized potassium dichromate.

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

^h Perchloric acid dehydration.

ⁱ Finished by electrolysis.

^j Dimethylglyoxime colorimetric method.

^k Hydrogen peroxide colorimetric method.

^l Perchloric acid oxidation.

^m Titration with sodium arsenite.

ⁿ Weighed as ammonium phosphomolybdate.

^o Nitric-sulfuric acid dehydration.

^p Titration with KCN solution.

^q Colorimetric method.

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