

National Bureau of Standards

Certificate of Analyses
OF
STANDARD SAMPLE No. 103
CHROME REFRACTORY

(All results are based on a sample dried for 2 hours at 105 to 110 C)

Analyst*	Cr ₂ O ₃	Al ₂ O ₃	Total iron as FeO	MnO	MgO	CaO	SiO ₂	TiO ₂	ZrO ₂	P ₂ O ₅
1.....	36.98 ^a	20.86	14.36	0.23	16.32	0.82 ^b	8.24	0.91	0.07	0.08
2.....	36.93 ^c	20.86	14.24	.....	16.21	.80	8.25	.93	.....	.05
3.....	36.90 ^d	20.82	14.50	.19	16.20	.76	8.23	.93	.....	.....
4.....	37.05	.....	.....	.....	.....	.....	.....	.....	.....	.....
5.....	37.05 ^d	20.68	14.50	.....	16.36	.81	8.22	.91	.....	.....
6.....	36.99 ^a	.....	14.35	.....	.....	.....	.....	.....	.....	.....
7.....	36.92 ^d	20.85	14.47	.19	16.19	.79	8.20	.93	.....	.....
8.....	36.91 ^d	20.84	14.40	.20	16.21	.83	8.28	.96	.07	.08
9.....	36.92 ^c	20.86	14.25	.22	16.30	.74	8.22	.95	.....	.....
10.....	36.98 ^d	20.88	14.46	.21	16.29	.80	8.25	.92	.....	.06
Averages.....	36.97	20.83	14.39	0.21	16.27	0.79	8.24	0.93	0.07	0.07

^a One-gram sample fused with Na₂O₂ in a porcelain or ingot iron crucible, melt dissolved in H₂O; solution boiled to remove H₂O₂ and then acidified with H₂SO₄ (1:1). Solution heated to boiling and sufficient KMnO₄ added to color solution pink, and after a few minutes boiling 5 ml of HCl (1:3) added and boiling continued for 5 minutes. Solution cooled and titrated potentiometrically with FeSO₄ which had been standardized by the use of recrystallized K₂Cr₂O₇. Titration corrected for 0.08 vanadium content of the refractory.

^b Two-gram sample dissolved in HClO₄-H₂SO₄, fumed with H₂SO₄, iron and chromium separated with a mercury cathode, aluminum and titanium precipitated with NH₄OH, calcium and magnesium precipitated as phosphates, calcium separated as sulphate, reprecipitated as oxalate, ignited and weighed as oxide.

^c Sample fused with Na₂O₂, melt dissolved in H₂O; solution boiled to remove H₂O₂; then acidified and titrated with FeSO₄ and KMnO₄ standardized on oxalate.

^d Sample fused with Na₂O₂, melt dissolved in H₂O; solution boiled to remove H₂O₂ and then acidified and oxidized with (NH₄)₂S₂O₈ and AgNO₃ prior to titration with FeSO₄ and KMnO₄.

For suggested procedures for the analysis of chrome refractories, see Analysis of Chrome Ores, by T. R. Cunningham and T. R. McNeil, Ind. Eng. Chem. anal. ed., vol. 1, p. 70, 1929.

The atomic weight 52.01 was used for chromium.

* LIST OF ANALYSTS

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Washington, D.C.
May 10, 1934