

DEPARTMENT OF COMMERCE

Bureau of Standards
Certificate of Analyses
 OF
STANDARD SAMPLE No. 74
CAST IRON

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	TITANIUM Determined colorimetrically in residue after HCl (sp. gr. 1.10) attack	ARSENIC
	CARBON 1. Total	2. Graphitic	3. Combined	MANGANESE 1. Bismuthate (FeSO ₄ -KMnO ₄)	PHOSPHORUS 1. Alkali-Molybdate ^a	2. Gravimetric (Weighed as Mg ₂ P ₂ O ₇ after removal of arsenic)	1. SULPHUR Gravimetric (Direct oxidation and final precipitation in reduced solution)	2. SULPHUR ^b Evolution with HCl (1:1) ZnS-Iodine (theoretical sulphur titre)	SILICON Sulphuric acid dehydration							
1.....	3.05	2.76	0.29	0.662	0.457	0.469	0.083	0.081	2.57	0.031	0.035	0.035	0.017	0.001 ^d	0.119 ^e	-----
2.....	3.02	2.76	.26	.656	.460	.472	.084	.083	2.56	.033	.039	.040 ^f	.020 ^f	.002 ^d	.109	0.011
3.....	3.02	2.80	.22	.665	.464	.461	.085	.079	2.55	.027	.036	.036	.020	.002	.110	.007
-----	3.03	2.75	.28	.657	.465	.466	.082	.078	2.54	.031	-----	-----	-----	-----	-----	-----
5.....	3.08	2.83	.25	{.660 .656 ^g }	.465	.462	.084	.082	2.54	.027 ^h	-----	.028	.019	-----	.105	-----
6.....	3.05	-----	-----	.67 ⁱ	.462	.460	.086	.082	2.57	-----	-----	-----	-----	-----	-----	-----
7.....	3.00	2.79	.21	{.664 .66 ^g }	.469	.465	.084	.074	2.54	.027 ^j	.034	.032	.015	-----	.122	.017
8.....	3.03	2.76	.27	.65	.47	-----	.081	.072	2.54	-----	-----	-----	-----	-----	.12	-----
Averages	3.04	2.78	.26	.660	.464	.465	.084	.079	2.55	.029	.036	.034	.018	.002	.114	.012
General averages	3.04	2.78	.26	.660	.464	-----	.084 [†]	.079	2.55	.029	.036	.034	.018	.002	.114	.012

† Recommended value.
^a Precipitated at 40° C., washed with a 1 per cent solution of KNO₃ and titrated with alkali standardized by the use of B. S. benzoic acid and the 23:1 ratio.
^b Sample annealed by wrapping it in filter paper and heating for 20 minutes in a tightly covered porcelain crucible at a bright red heat. On the unannealed sample an average of 0.073 per cent was

obtained by five analysts and the results varied from 0.068 to 0.076 per cent.
^c Value obtained by standardization of titrating solution against sodium oxalate through KMnO₄ and Na₂S₂O₈.
^d Determined colorimetrically by developing color with KCN₂ and SnCl₂.
^e Represents total titanium determined gravimetrically by the use of cupferron.

^f Electrometric titration.
^g Persulphate oxidation.
^h H₂S-CuS-Electrolysis.
ⁱ Bismuthate-arsenite.
^j Na₂S₂O₈-CuS-CuO.
 Determinations by analyst No. 1 on 10g samples showed 0.004 per cent cobalt, no aluminum, and no zirconium

*** LIST OF ANALYSTS**

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. James I. Hoffman, Bureau of Standards. 2. Ferrous Laboratory, Bureau of Standards, H. A. Bright, in charge; W. C. Fedde and C. P. Larrabee, analysts. 3. W. F. Muehlberg, Newburgh Steel Works, Cleveland, Ohio. 4. H. E. Slocum, Jones & Laughlin Steel Corporation, Pittsburgh, Pa. 5. F. A. Hull, Testing Laboratory, General Electric Co., Schenectady, N. Y. | <ol style="list-style-type: none"> 6. G. A. England, American Car & Foundry Co., St. Louis, Mo. 7. F. G. Kelly and F. S. Andrews, Tennessee Coal, Iron & R. R. Co., Ensley, Ala. 8. James T. MacKenzie, American Cast Iron Pipe Co., Birmingham, Ala. |
|--|--|

Washington, D. C.
 May 4, 1926

GEORGE K. BURGESS,
 Director.