DEPARTMENT OF COMMERCE

Bureau of Standards

Certificate of Analyses

OF

STANDARD SAMPLE No. 21b

ACID OPEN-HEARTH STEEL, 0.6% CARBON

ANALYST.*	C	Mn		P		S		Si	Cu	Ni	Cr	V	Mo	As
	CARBON. Direct combustion.	MANGANESE. 1. Bismuthate ($FeSO_4$-$KMnO_4$).	2. Other methods.	PHOSPHORUS. 1. Alkali-Molybdate.[a]	2. Gravimetric (Weighed as $Mg_2P_2O_7$ 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[b]).	SILICON. Sulphuric acid dehydration.	COPPER. H_2S-CuS-CuO.	NICKEL. Weighed as nickel dimethylglyoxime.	CHROMIUM. $FeSO_4$-$KMnO_4$ titration.	VANADIUM.	MOLYBDENUM.	ARSENIC.
1	0.608	0.560		0.065	0.063	0.037	0.037	0.163	0.031	0.060	0.024	0.004	0.005	0.01
2	.606	.564		.064	.063	.037	.036	.161	.031	.060	.025	.005	.007	.008
3	.602	.572	0.565[c]	.062		.039	.038	.162[d] .162	.037[e]	.06		.007		
	.604	.569	.57[c]	.065	.064	.035	.035	.159	.028	.063			.005	
5	.609	.558		.065		.034[f] .034	.034	.157						
6	.591		.566[g]	.063		.035	.035	.164[h] .162[i]	.026	.064[j]				
7	.616		.554[k]	.065		.035		.164	.033[l]	.065[l]	.015			
8	.600		.563[c]	.065		.036	.035	.162			.017			
Averages	.605	.565	.564	.064	.063	.036	.036	.162	.031	.062	.020	.005	.006	.009
General Averages	.605	.564		.064		.036		.162	.031	.062	.020	.005	.006	.009

[a] Precipitated at 40° C., washed with 1 per cent KNO_3 solution and titrated with alkali standardized by the use of B. S. benzoic acid and the 23:1 ratio.
[b] Value obtained by standardization of titrating solution against sodium oxalate through $KMnO_4$ and $Na_2S_2O_3$.
[c] Persulphate-arsenite.
[d] Solution in HCl and dehydration with H_2SO_4.
[e] Finished by electrolysis.
[f] Precipitated in $FeCl_3$ solution.
[g] Bismuthate-arsenite.
[h] HCl dehydration.
[i] Solution in HNO_3 and H_2SO_4.
[j] Weighed as NiO.
[k] PbO_2-arsenite.
[l] Finished by titration with KCN.

*LIST OF ANALYSTS

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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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Director.