MAIN EDITION

British Chemical Standards

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Bureau of Analysed Samples, Ltd.

Directors (1962-64):—

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C. GILDON, *F.C.A.*

Certificate of Analyses

B.C.S. No. 240/2 0·4% CARBON STEEL

(REPLACEMENT OF B.C.S. No. 240/1)

Prepared under rigorous laboratory conditions and, AFTER STANDARDIZATION BY ANALYSTS IN GREAT BRITAIN, issued by the Bureau of Analysed Samples, Ltd.

The standard bar, specially selected for its homogeneity, was supplied by English Steel Rolling Mills Corporation Ltd., Sheffield.

CO-OPERATING ANALYSTS AND FIRMS

REFEREE ANALYSTS—INDEPENDENT

1. BRITISH IRON & STEEL RESEARCH ASSOCIATION per (P. H. Scholes, *A.Met.*), Sheffield.
2. COPPINS, W. C., *M.Sc., A.R.I.C.*, Ridsdale & Co. Ltd., Middlesbrough

ANALYSTS representing MAKERS and USERS

3. BAGSHAWE, B., *A.Met., F.I.M., M.Inst.F.*, Brown-Firth Research Laboratories, Sheffield.
4. DICKINSON, E. A., *A.Met., A.I.M.*, Catton & Co. Ltd., Leeds.
5. GLEDHILL, P. K., *B.Met., Ph.D.*, Dorman Long (Steel) Ltd., Central Research Dept., Middlesbrough
6. HARRISON, T. S., *B.Sc., Ph.D., B.Met., F.R.I.C.*, Appleby-Frodingham Steel Company, Scunthorpe.
7. KIDMAN, L., *A.Met., A.I.M., A.M.Inst.F.*, English Steel Corporation Ltd., Sheffield.
8. KYLE, J. H., *A.I.M.*, W. Beardmore & Co. Ltd., Glasgow.

ANALYSES

Analyst No.	C %	S %	P %	Si %	Mn %	Ni %	Cr %	Mo %
1	0·40	0·039	0·024	..	..	..	..	..
2	0·41	0·039	0·025	*0·25*	*0·91*	*0·12*	*0·06*	*0·03*
3	0·41	0·039	0·024	*0·25*	*0·89*	*0·11*	*0·06*	..
4	0·41	0·039	0·025	*0·25*	*0·90*	*0·11*	..	*0·04*
5	0·41	0·038	0·026	..	*0·87*	..	..	..
6	0·41	0·039	0·024	..	..	..	..	..
7	0·41	0·039	0·024	..	..	..	..	..
8	0·41	0·041	0·025	..	..	..	..	..
Average	**0·41**	**0·039**	**0·025**	..	..	..	..	..

The above figures are those which each Analyst has decided upon after careful verification

Figures in bold type standardized, figures in small italic type only approximate

The following information was also supplied: Analyst No. 2, V <0·01%, Sn 0·012%; Analyst No. 4, Cu 0·10%.

If this steel is required for determining sulphur by evolution, ask for special freshly prepared turnings which will yield the full sulphur content as sulphide if used within the prescribed time.

[P.T.O.

B.C.S. No. 240/2 0·4% CARBON STEEL

NOTES ON METHODS USED

CARBON

Analysts Nos. 1 and 7 determined carbon conductimetrically using the Wösthoff apparatus. Nos. 2, 4, 6 and 8 used the Standard gravimetric method B.S. 1121: Part 11: 1948. No. 3 used a low pressure method (Cook and Speight, Analyst, 1956, **81**, 144). No. 5 determined carbon volumetrically by the Ströhlein method.

Analyst No. 3 also used the Standard gravimetric method and found 0·41%. No. 6 also used a Leco Carbon Analyzer and found 0·41%.

SULPHUR

Analyst No. 1 determined sulphur by combustion and completed conductimetrically using the Wösthoff apparatus. The other Analysts determined sulphur gravimetrically using the Standard method B.S. 1121: Part 1A: 1957.

Analysts Nos. 3, 4 and 7 also used combustion methods and found 0·040%, 0·038% and 0·040% respectively.

PHOSPHORUS

Analysts Nos. 1 and 7 determined phosphorus colorimetrically. No. 1 used a molybdenum-blue method in conjunction with an Autoanalyzer No. 7 used a method in which the phosphorus was converted to phosphovanadomolybdic acid and extracted into *iso*-butyl methylketone. Nos. 2, 4 and 8 determined phosphorus volumetrically after precipitation as phosphomolybdate. No. 2 used the Analoid method No. 21. No. 4 precipitated the phosphomolybdate according to the Standard gravimetric method B.S. 1121: Part 9: 1948 but dissolved the precipitate in sodium hydroxide solution and completed volumetrically. Nos. 3, 5 and 6 used the Standard gravimetric method without modification.

Analysts Nos. 3 and 6 also determined phosphorus colorimetrically as phosphovanadomolybdic acid and found 0·024% in each case.

SILICON

Standard gravimetric method B.S. 1121: Part 10: 1948.
Analyst No. 4 also found 0·24% by a colorimetric molybdenum-blue method.

MANGANESE

Analysts Nos. 2, 4 and 5 determined manganese volumetrically. No. 2 used the Analoid method No. 53. Nos. 4 and 5 used the Standard method B.S. 1121: Part 16: 1949. No. 3 used the Standard absorptiometric method B.S. 1121: Part 23: 1951.

Analysts Nos. 4 and 5 also used the Standard absorptiometric method and found 0·91% and 0·87% respectively.

NICKEL

Analysts Nos. 2 and 4 determined nickel colorimetrically with dimethylglyoxime; No. 2 used the Analoid method No. 44, No. 4 used the Standard method B.S. 1121: Part 6: 1957. No. 3 determined nickel volumetrically by the Standard method B.S. 1121: Part 37: 1961.

CHROMIUM

Both Analysts determined chromium volumetrically. No. 2 used the Analoid method No. 37, No. 3 used the Standard method B.S. 1121: Part 13: 1954.

MOLYBDENUM

Both Analysts determined molybdenum as oxythiocyanate after extraction of the coloured complex with butyl acetate.

VANADIUM

Analoid method No. 34.

TIN

Reduction with aluminium and titration with iodide/iodate.

COPPER

bis-Cyclohexanone oxalyldihydrazone method (Haywood and Sutcliffe, Analyst, 1956, **81**, 651).

BUREAU OF ANALYSED SAMPLES, LTD.
per P. D. Ridsdale,
Managing Director,
December, 1964

Newham Hall,
Middlesbrough,
England.

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