Department of Commerce

# Bureau of Standards

## Certificate of Analyses

OF

## STANDARD SAMPLE No. 37b

## SHEET BRASS

FURNISHED BY BRIDGEPORT BRASS COMPANY, BRIDGEPORT, CONN.

| ANALYST.* | Copper. | Zinc. | Tin. | Lead as $PbSO_4$. | Lead as $PbO_2$. | Nickel. | Iron. |
|---|---|---|---|---|---|---|---|
| 1 | 70.34 | 27.07 | 1.00 | 0.89 | 0.90 | 0.45 | 0.22 |
| 2 | 70.36 | 27.12 [a] | .99 | .90 [b] | .89 | .46 | .19 |
| 3 | 70.31 [c] | 27.10 | .98 [d] | | .92 [c] | .43 | .20 [e] |
| 4 | 70.38 | 27.23 | .91 | .87 | .88 | .43 | .20 |
| 5 | 70.35 [c] | 27.10 [f] | .99 [g] | | .91 [c] | .48 | .26 [h] |
| 6 | 70.34 [c] | 27.06 [i] | 1.01 [j] | | .91 [c] | .46 | .22 [h] |
| 7 | 70.45 [c] | 27.00 [k] | .97 [j] | | .93 [c] | .43 [l] | .22 |
| 8 | 70.35 [c] | 26.98 [m] | .99 [j] | .88 [c] | .95 [c] | .45 | .18 [n] |
| 9 | 70.36 [c] | 27.06 [o] | 1.02 [p] | .89 | .89 [q] | .45 [r] | .19 [e] |
| 10 | 70.34 [c] | 27.16 | .98 [j] | | .90 [c] | .44 | .18 [h] |
| | 70.33 | 27.11 [s] | 1.03 [t] | | .91 | .44 | .21 [u] |
| AVERAGES | 70.36 | 27.09 | .99 | .89 | .91 | .45 | .21 |
| General Averages | 70.36 | 27.09 | .99 | 0.90 | | .45 | .21 |

[a] Sulphide precipitated in formic acid solution and ignited to oxide; adhering sulphide dissolved, electrolyzed with solenoid in sodium acetate-acetic acid solution and weighed.

[b] Weighed as lead molybdate.

[c] Copper, lead, and iron in metastannic acid recovered by sodium carbonate-sulphur fusion.

[d] As in Bureau method, except that antimony was used to reduce tin.

[e] 5 g sample dissolved in aqua regia, twice precipitated by ammonia, lead separated as sulphate, tin as sulphide, final reduction by zinc.

[f] Precipitated as phosphate and weighed as pyrophosphate.

[g] As in A. S. T. M. Standards, 1921, pp. 512–513.

[h] Reduced and titrated with permanganate.

[i] By ferrocyanide method in glyoxime filtrate after fuming with sulphuric acid, neutralizing with ammonia, and adding hydrochloric acid.

[j] Separated as metastannic acid and weighed oxide corrected by a carbonate-sulphur fusion.

[k] Electrolytically in filtrate from nickel after adding sodium hydroxide and Rochelle salts.

[l] Nickel separated from zinc by sodium hydroxide and bromine and then precipitated with glyoxime.

[m] Precipitated as sulphide in weak hydrochloric acid solution and either ignited to oxide (26.99%) or dissolved and titrated with ferrocyanide (26.97%).

[n] By reduction with zinc and permanganate titration after removal of copper by electrolysis, tin by hydrogen sulphide, and residual lead as sulphate after prior separation of iron and lead by ammonia.

[o] Sulphide separated in formic acid solution and titrated by Breyer's ferrocyanide method (Eighth Int. Cong. App. Chem., *20*, 7-37; "Analysis of Copper," by G. L. Heath, pp. 249-250).

[p] Essentially as in g except that the weighed tin oxide was corrected for impurities by fusion with carbonate and sulphur.

[q] Deposit corrected for its tin and iron content.

[r] Solution of the weighed glyoxime precipitate and electrolysis gave a slightly higher value (0.49).

[s] Zinc precipitated as sulphide as in Bureau method in glyoxime filtrate after fuming with sulphuric acid; zinc finally weighed as oxide and also titrated with ferrocyanide.

[t] Tin separated as metastannic acid, impurities recovered by $(NH_4)_2S$ treatment, and tin then precipitated as sulphide and ignited to oxide.

[u] Iron determined by Bureau method and also by method *e*.

### *LIST OF ANALYSTS

1. J. A. Scherrer, Bureau of Standards.
2. J. P. Virchow, Chicago, Burlington & Quincy Railroad Co., Aurora, Ill.
3. J. B. Mosley, The Ajax Metal Co., Philadelphia, Pa.
4. S. A. Weigand, The Lunkenheimer Co., Cincinnati, Ohio.
5. W. E. Baulieu, Bridgeport Brass Co., Bridgeport, Conn.
6. R. E. Maeder, The National Cash Register Co., Dayton, Ohio.
7. Pennsylvania Railroad Co., Dr. M. E. McDonnell, chief chemist, Altoona, Pa.
8. A. Craig and N. L. Peterson, Ledoux & Co., New York, N. Y.
9. H. A. Bedworth and A. P. Bliss, The American Brass Co., Waterbury, Conn.
10. B. Woyski, Lumen Bearing Co., Buffalo, N. Y.
11. F. M. Barry and L. E. Lougee, Scovill Manufacturing Co., Waterbury, Conn.

*Washington, D. C.*
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F. C. BROWN,
*Acting Director.*

(SEE OTHER SIDE)