

Letter Circular 350.

DEPARTMENT OF COMMERCE
BUREAU OF STANDARDS

WASHINGTON, D. C.

Publications on Glass Technology and Standard
Samples of Interest to the Glass Industry

November 25, 1932.

The publications listed in this Letter Circular refer specifically to reports on glass which relate to manufacturing processes and physical properties. References to publications on electrical and other properties not mentioned herein may be had on application.

A star (*) indicates a Bureau publication, and if a price is added, a copy may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C. Such publications may be consulted in the various Government depository libraries throughout the United States.

Publications not marked were printed in the indicated technical journal and a very limited number of reprints are available at this Bureau for free distribution if the title is followed by a cross (+).

In listing publications the following abbreviations are used:

- (BSJR) = Bureau of Standards Journal of Research.
- (RP) = Research Paper from Bureau of Standards Journal of Research.
- (S) = Scientific Paper of the Bureau of Standards.
- (T) = Technologic Paper of the Bureau of Standards.
- (J) = Journal of the American Ceramic Society, Columbus, Ohio.
- (Trans) = Transactions of the American Ceramic Society, Columbus, Ohio.

Rand, C. C., Variation in soda, lime, and magnesia content of a glass of the type RO_3SiO_2 . (Trans) vol. 17, p. 236, 1915.

* Walker, P. H., and Smither, F. W., Comparative tests of chemical glassware. (T 107, 10¢), 1918.

Williams, A. E., Observations on the formation of seeds in optical glass. (J) vol. 1, no. 2, p. 134, 1918.

Sorey, T. L., Strength tests of plain and protective sheet glass. (J) vol. 1, no. 11, p. 801, 1918.

Hirkpatrick, F. A., and Roberts, G. G., Production of selenium red glass. (J) vol. 2, no. 11, p. 895, 1919.

Dodd, L. E., Comparison tests for striae in optical glass by the Brashear converging light, direct view method, the Bureau of Standards tank immersion method, and the short range projection method. (J) vol. 2, no. 12, p. 977, 1919.

* Tool, A. C., and Valasek, J., Concerning the annealing and characteristics of glass. (S 358, 10¢), vol. 15, p. 537, 1919.

* Smith, T. T., Bennett, A. H., and Merritt, G. E., Characteristics of striae in optical glass. (S 373, 5¢), vol. 16, p. 75, 1920.

* Peters, C. G., and Cragoe, C. H., Measurements of thermal dilatation of glass at high temperatures. (S 393, 10¢), vol. 16, p. 449, 1920.

Tool, A. C., and Valasek, J., Annealing of glass. A symposium on pyrometry, held in 1919 by the Am. Inst. of Mining and Metallurgical Engineers. Special volume, p. 475, 1920.

Tool, A. C., and Eichlin, C. G., The absorption of heat in glass, Jour. Opt. Soc. of Am., vol. 4, p. 340, 1920.

Williams, A. E., Disintegration of soda-lime glasses in water. (J) vol. 5, no. 8, p. 504, 1922.

Ford, K. L., Weathering of glass containers. (J) vol. 5, no. 12, p. 837, 1922.

Palmer, L. A., Tests on the resistive qualities of soda-lime glasses to water. (J) vol. 6, no. 4, p. 579, 1923.

Insley, H., A study of the origin and cause of stones in glass. (J) vol. 6, no. 6, p. 706, 1925. +.

Williams, A. E., The mechanical strength of glazing glass. (J) vol. 6, no. 9, p. 980, 1923.

Insley, H., The microscopic identification of stones in glass. (J) vol. 7, no. 1, p. 14, 1924.

Tool, A. Q., and Eichlin, C. G., Certain effects produced by chilling glass. Journal of the Optical Society of America and Review of Scientific Instruments (Geo. Banta Publishing Co., Menasha, Wisconsin); vol. 8, no. 3, p. 419, 1924.

Tool, A. Q., and Eichlin, C. G., Variations in glass caused by heat treatment. (J) vol. 8, no. 1, p. 1, 1925. +.

Tool, A. Q., and Hill, E. E., On the constitution and density of glass. Journal of the Society of Glass Technology, Sheffield, England; vol. 9, p. 185, 1925.

Finn, A. N., and Thomson, H. G., The density and index of refraction of glass versus its composition. (J) vol. 8, no. 8, p. 505, 1925. +.

Insley, H., The failure of thermocouple protection tubes in glass melting furnaces (J) vol. 8, no. 9, part 1, p. 605, 1925. +.

Coblentz, W. W., and Finn, A. N., A non-actinic cobalt blue glass. (J) vol. 9, no. 7, p. 423, 1926. +.

Finn, A. N., The annealing of glass - a non-technical presentation. (J) vol. 9, no. 8, p. 493, 1926. +.

Insley, H., Some Observations of surface deposits formed in glass furnace regenerators. (J) vol. 9, no. 10, p. 635, 1926.

Insley, H., Tank control and devitrification, The Glass Industry (Glass Industry Publishing Co., New York, N. Y.); vol. 7, no. 1, p. 1, 1926.

Lundell, G. E. F., and Knowles, H. B., The analysis of soda-lime glass. (J) vol. 10, no. 11, p. 829, 1927. +.

- Lundell, G. E. F., and Knowles, H. E., The determination of iron in glass sand. (J) vol. 11, no. 3, p. 119, 1928. +.
- Tilton, L. W., Finn, A. N., and Tool, A. Q., Some effects of carefully annealing optical glass. (J) vol. 11, no. 5, p. 292, 1928. +.
- Insley, H., The petrographic microscope as an instrument for the glass technologist. (J) vol. 11, no. 11, p. 803, 1928. +.
- Tool, A. Q., and Lloyd, D. B., The effect of heat treatment on the physical properties of glass; Fuels and Furnaces (F. C. Andresen and Associates, 709 House Building, Pittsburgh, Pa.), vol. 6, no. 3, p. 353, 1928.
- * Tilton, L. W., Finn, A. N., and Tool, A. Q., Cause and removal of certain heterogeneities in glass. (S 572, 10¢), vol. 22, p. 719, 1928.
- * Finn, A. N., Making the glass disk for a 70-inch telescope reflector. (BSJR) vol. 3, p. 315, 1929 (RP 97, 10¢). Industrial and Engineering Chemistry, Easton, Pa., vol. 21, p. 744, 1929. +.
- * Insley, H., Determination of the source and the means of prevention of stones in glass. (BSJR) vol. 2, no. 6, p. 1077, 1929 (RP 71, 5¢). (J) vol. 12, no. 3, p. 143, 1929. +.
- * Hoffman, J. I., and Lundell, G. E. F., Determination of fluorine and of silica in glasses and enamels containing fluorine. (BSJR) vol. 3, no. 4, p. 581, 1929 (RP 110, 5¢).
- * Tool, A. Q., Lloyd, D. B., and Merritt, G. E., Dimensional changes caused in glass by heating cycles. (BSJR) vol. 5, no. 3, p. 627, 1930 (RP 219, 10¢). (J) vol. 13, no. 9, p. 632, 1930. +.
- * Redmond, J. C., and Bright, H. A., Determination of magnesium in portland cement and similar materials by the use of 8-Hydroxyquinoline. (BSJR) vol. 6, no. 1, p. 113, 1931 (RP 265, 5¢).
- * Tool, A. Q., and Eichlin, C. G., Variations caused in the heating curves of glass by heat treatment. (BSJR) vol. 6, no. 4, p. 523, 1931 (RP 292, 10¢). (J) vol. 14, no. 4, p. 276, 1931. +.
- * Tool, A. Q., and Stair, R., The restoration of solarized ultra-violet transmitting glasses by heat treatment. (BSJR) vol. 7, no. 2, p. 357, 1931 (RP 345, 10¢).

* Faick, C. A., and Finn, A. N., The index of refraction of some soda-lime-silica glasses as a function of the composition. (BSJR) vol. 6, no. 6, p. 993, 1931 (RF 320, 5¢). (J) vol. 14, no. 7, p. 518, 1931.+.

Glaze, F. W., On the direct determination of soda in soda-lime glasses by precipitation as uranyl zinc sodium acetate. (J) vol. 14, no. 6, p. 450. 1931.+.

*Glaze, F. W., Young, J. C., and Finn, A. N., The density of some soda-lime-silica glasses as a function of the composition. (BSJR) vol. 9, no. 6, p. 799, 1932 (RF 507, 5¢).

Standard Samples

Standard samples of certain materials which are recommended for control work may be obtained from the Bureau of Standards by prepayment of the indicated price. Such samples have been prepared for checking the accuracy of methods of chemical analysis, and those of interest to the glass industry are as follows:

Standard Sample Number	Name	Constituents determined or intended use	Weight of sample in grams	Price
88	Dolomite	Complete analysis	50	\$2.00
70	Feldspar	" "	40	2.00
80	Glass, soda-lime	" "	45	2.00
89	Glass, lead-barium	" "	50	2.00
91	Glass, opal	" "	45	2.00
81	Glass sand	Fe ₂ O ₃ , Al ₂ O ₃ , TiO ₂ , ZrO ₂ , CaO, MgO	60	2.00
76	Burnt refractory (40% Al ₂ O ₃)	Complete analysis	60	2.00
77	Burnt refractory (60% Al ₂ O ₃)	" "	60	2.00
78	Burnt refractory (70% Al ₂ O ₃)	" "	60	2.00
84	Acid potassium phthalate	Acidimetric value	60	3.00
39c	Benzoic acid	Acidimetric and cal- orimetric values	30	2.00
40b	Sodium oxalate	Oxidimetric value	60	2.00
83	Arsenious oxide	" "	75	2.00
79	Fluorspar	Complete analysis	60	2.50
97	Flint clay	" "	60	2.00
98	Plastic clay	" "	60	2.00

Provisional Standards.

These samples may be used for the same purpose as the standard samples above, but the reported results are subject to revision when more complete data have been obtained.

92	Glass, low boron	B ₂ O ₃ only	45	2.00
93	Glass, high boron	Complete analysis	45	2.00
102	Silica brick	" "	60	2.00
104	Burnt magnesite	" "	50	2.00

