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CERAMICS (Miscellaneous)

Publications by Members of the Staff of the National Bureau of Standards, together with a list of Federal Specifications and Standard Samples.

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GENERAL INFORMATION

Some of the publications in this list have appeared in the regular series of publications of the Bureau and others in various scientific and technical journals. Unless specifically stated, papers are not obtainable from the National Bureau of Standards.

Where the price is stated, the publication can be purchased from the Superintendent of Documents, Government Printing Office, Washington, D. C. The prices quoted are for delivery to addresses in the United States and its territories and possessions and in certain countries which extend the franking privilege. In the case of all other countries, one-third the cost of the publication

should be added to cover postage. Remittances should be made either by coupons (obtainable from the Superintendent of Documents in sets of 20 for \$1.00 and good until used), or by check or money order payable to the "Superintendent of Documents, Government Printing Office" and sent to him with order. Letter Circulars are obtainable, without charge, from the Bureau. Publications marked "OP" are out of print, but, in general, may be consulted at technical libraries.

For papers in other scientific or technical journals, the name of the journal or of the organization publishing the article is given in abbreviated form with the volume number (underscored), page and year of publication, in the order named. In general, the Bureau cannot supply copies of these journals, or reprints from them, and it is unable to furnish information as to the availability or price. However, in a few cases (publications preceded by a single asterisk (*)) a very limited supply of reprints is available for distribution, and copies will be sent free upon request to the Bureau. They, too, can usually be consulted at technical libraries.

Serial letters are used to designate the several series of Bureau publications:

- S = "Scientific Paper." S1 to S322 are "Reprints" from the "Bulletin of the Bureau of Standards." S330 to S572 were published as "Scientific Papers of the Bureau of Standards." This series was superseded by the "Bureau of Standards Journal of Research" in 1928.
- T = "Technologic Paper." T1 to T370. This series was superseded by the "Bureau of Standards Journal of Research" in 1928.
- RP = "Research Paper." These are reprints of articles appearing in the "Bureau of Standards Journal of Research" and the "Journal of Research of the National Bureau of Standards," the latter being the title of this periodical since July 1934 (volume 13, number 1).
- CS = "Commercial Standard."
- LC = "Letter Circular."
- R = "Simplified Practice Recommendation."

Circular C24 and supplements, the complete list of the Bureau's publications (1901-1936), is sold by the Superintendent of Documents for 55 cents. Announcement of new publications is made each month in the Technical News Bulletin which is obtainable by subscription at 50 cents per year.

PART I - TECHNOLOGIC PAPERS

<u>Title</u>	<u>Series</u>	<u>Price</u>
Effect of preliminary heat treatment upon the drying of clays. A. V. Bleininger. Tech. Pap. BS <u>1</u> , (1910-12).	T1	OP
The function of time in the vitrification of clays. G. H. Brown and G. A. Murray. Tech. Pap. BS <u>2</u> , (1912-14).	T17	OP
The dehydration of clays. G. H. Brown and E. T. Montgomery. Tech. Pap. BS <u>3</u> , (1911-16).	T21	OP
The effect of overfiring upon the structure of clays. A. V. Bleininger and E. T. Montgomery. Tech. Pap. BS <u>3</u> , (1911-16).	T22	OP
Technical control of the colloidal matter of clays. H. E. Ashley. Tech. Pap. BS <u>3</u> , (1911-16).	T23	OP
The veritas firing rings. A. V. Bleininger and G. H. Brown. Tech. Pap. BS <u>4</u> , (1913-14).	T40	OP
Use of sodium salts in the purification of clays and in the casting process. A. V. Bleininger. Tech. Pap. BS <u>5</u> , (1914-15).	T51	OP
The properties of American bond clays and their use in graphite crucibles and glass pots. A. V. Bleininger. Tech. Pap. BS <u>13</u> , (1919-20).	T144	.10
Cements for spark plug electrodes. H. F. Staley. Tech. Pap. BS <u>13</u> , (1919-20).	T155	OP

PART I - TECHNOLOGIC PAPERS - Cont'd

<u>Title</u>	<u>Series</u>	<u>Price</u>
Methods of measuring the plasticity of clays. F. P. Hall. Tech. Pap. BS <u>17</u> , 345 (1922-24).	T234	.10
Comparison of American and foreign clays as paper fillers. M. B. Shaw and G. W. Bicking. Tech. Pap. BS <u>18</u> , 337 (1924-25).	T262	OP
A comparative study of paper fillers. M. B. Shaw and G. W. Bicking. Tech. Pap. BS <u>19</u> , 733 (1924-25).	T301	OP

PART II - SCIENTIFIC PAPERS

An investigation of laws of plastic flow. E.C. Bingham. Sci. Pap. BS <u>13</u> , 309 (1916-17).	S278	OP
Thermal expansion of insulating materials. W. Souder and P. Hidnert. Sci. Pap. BS <u>15</u> , 387 (1919-20).	S352	.10
Application of the interferometer to measurements of the thermal dilatation of ceramic materials. G. E. Merritt. Sci. Pap. BS <u>19</u> , 357 (1923-24).	S485	.05
Measurements on the thermal expansion of fused silica. W. Souder and P. Hidnert. Sci. Pap. BS <u>21</u> , 1 (1926-27).	S524	.10

PART III - RESEARCH PAPERS

Analysis of bauxite and of refractories of high alumina content. G. E. F. Lundell and J. I. Hoffman. BS J. Research <u>1</u> , 91(1928).	RP5	OP
Use of 8-hydroxyquinoline in separations of aluminum. G. E. F. Lundell and H. B. Knowles. BS J. Research <u>3</u> , 91(1929).	RP86	.05
Effect of water on expansions of ceramic bodies of different compositions. H. G. Schurecht and G. R. Pole. BS J. Research <u>3</u> , 331(1929).	RP96	.05
Determination of fluorine and of silica in glasses and enamels containing fluorine. J.I. Hoffman and G. E. F. Lundell. BS J. Research <u>3</u> , 581(1929).	RP110	.05

PART III - RESEARCH PAPERS - Cont'd

<u>Title</u>	<u>Series</u>	<u>Price</u>
On a method for decomposing aluminous silicates for chemical analysis. A. W. Finn and J.F. Klekotka. BS J. Research <u>4</u> , 809(1930).	RP180	.05
Method of measuring strains between glazes and ceramic bodies. H. G. Schurecht and G. R. Pole. BS J. Research <u>5</u> , 97(1930).	RP189	.05
Determination of magnesium in portland cement and similar materials by the use of 8-hydroxyquinoline. J. C. Redmond and H. A. Bright. BS J. Research <u>6</u> , 113(1931).	RP265	.05
The thermal expansion of some silicates of elements in group II of the periodic system. R.F. Geller and H. Insley. BS J. Research <u>9</u> , 35(1932).	RP456	.05
The precipitation and titration of magnesium oxyquinolate in the presence of calcium oxalate, and its application in the analysis of portland cement and similar silicates. J. C. Redmond. BS J. Research <u>10</u> , 823(1933).	RP569	.05
Some optical and crystallographical properties of the alkali zinc uranyl acetates. H. Insley and F. W. Glaze. BS J. Research <u>12</u> , 471(1934).	RP672	.05
Wear of dies for extruding plastic clay. R. T. Stull. BS J. Research <u>12</u> , 501(1934).	RP675	.05
The system: $PbO-SiO_2$. R. F. Geller, A. S. Creamer and E. N. Bunting. J. Research NBS <u>13</u> , 237(1934).	RP705	.05
Colloidal nature and related properties of clays. W. W. Meyer. J. Research NBS <u>13</u> , 245(1934).	RP706	.05
Thermal behavior of the kaolin minerals. H. Insley and R. H. Ewell. J. Research NBS <u>14</u> , 615(1935).	RP792	.05
Performance of a hollow-ware extrusion machine with different combinations of augers, spacers, and dies. P. V. Johnson and R. T. Stull. J. Research NBS <u>14</u> , 711(1935).	RP798	.05
Hydrothermal synthesis of kaolinite, dickite, beidellite and nontronite. H. Insley and R. H. Ewell. J. Research NBS <u>15</u> , 173(1935).	RP819	.05

PART III - RESEARCH PAPERS - Cont'd

<u>Title</u>	<u>Series</u>	<u>Price</u>
Thermal decomposition of talc. R. H. Ewell, E. N. Bunting and R. F. Geller. J. Research NBS <u>15</u> , 551(1935).	RP848	.05
The system $K_2O-PbO-SiO_2$. R. F. Geller and E.N. Bunting. J. Research NBS <u>17</u> , 277(1936).	RP911	.05
The system $PbO-B_2O_3$. R. F. Geller and E. N. Bunting. J. Research NBS <u>18</u> , 585(1937).	RP995	.05
Relation between moisture content and flow pres- sure of plastic clay. R. T. Stull and P.V. Johnson. J. Research NBS <u>22</u> , 329(1939).	RP1186	.05
The system $PbO-B_2O_3-SiO_2$. R. F. Geller and E. N. Bunting. J. Research NBS <u>23</u> , 275(1939).	RP1231	.05
Length changes of flint and aluminous clays dur- ing heating. R. A. Heindl and L. E. Mong. J. Research NBS <u>23</u> , 427(1939).	RP1243	.05
X-ray studies of compounds in the system $PbO-SiO_2$. H. F. McClurdie and E. N. Bunting. J. Research NBS <u>23</u> , 543(1939).	RP1251	.05

PART IV - LETTER CIRCULARS

<u>Title</u>	<u>Series</u>
Publications covering NBS work on spark plugs. (list)	LC459
Bibliography on spark plugs.	LC476
Artificial abrasives and abrasive products.	LC540

PART V - COMMERCIAL STANDARDS

	<u>Series</u>	<u>Price</u>
Staple porcelain (all-clay) plumbing fixtures	CS4-29	.10
Staple vitreous china plumbing fixtures.	CS20-30	.10
Feldspar	CS23-30	.05
Colors for sanitary ware.	CS30-31	.20

PART VI - SIMPLIFIED PRACTICE RECOMMENDATIONS

	<u>Series</u>	<u>Price</u>
Hotel chinaware	R5	.05
Chinaware (cafeteria and restaurant)	R33	.05
Dining car chinaware	R39	.05
Hospital chinaware	R40	.05
Grinding wheels	R45-39	.10
Clay tiles for floors and walls	R61-30	.10
Coated abrasive products	R39-36	.05
Hospital plumbing fixtures	R106-30	.10
Abrasive grain sizes	R118-36	OP

PART VII - FEDERAL SPECIFICATIONS

(Issued by the Federal Specifications Executive Committee, Washington, D. C., and obtainable from the Superintendent of Documents, Government Printing Office, Washington, D. C., at the prices stated.)

<u>Title</u>	<u>Series</u>	<u>Price</u>
Chimneys and Globes (lamp and lantern); glass	DD-C-311	.05
Glass; flat (for) glazing purposes	DD-G-451	.05
Glass; flat, glazing (for) transmitting not less than 25% of ultra-violet radiation at wave length 302 millimicrons	DD-G-476	.05
Tableware; glass	DD-T-101a	.05

PART VIII - OUTSIDE PUBLICATIONS

Papers which have appeared in the Transactions of the American Ceramic Society, 2525 North High Street, Columbus, Ohio.

The relation between the porosity and crushing strength of clay products. A. V. Bleininger. Trans. Am. Ceramic Soc., 12, 564(1910).

Note on the viscosity of clay slips as determined by the Clark apparatus. A. V. Bleininger and H. H. Clark. Trans. Am. Ceramic Soc., 12, 383(1910).

Notes on the preheating treatment of clays. A. V. Bleininger. Trans. Am. Ceramic Soc., 12, 504(1910).

The relation between the crushing strength and porosity of clay products. G. H. Brown. Trans. Am. Ceramic Soc., 14, 292(1912).

The effect of overburning on the structure of clays. A. V. Bleininger and E. T. Montgomery. Trans. Am. Ceramic Soc., 15, 71(1913).

The electrical conductivity of clays and clay suspensions. A. V. Bleininger and C. S. Kinnison. Trans. Am. Ceramic Soc., 15, 523(1913).

Note on the electrical separation of clay. A. V. Bleininger. Trans. Am. Ceramic Soc., 15, 338(1913).

Study of some calcareous and magnesian slags. A. V. Bleininger, G. H. Brown and C. S. Kinnison. Trans. Am. Ceramic Soc., 15, 547(1913).

The temperature-porosity relations of a clay prepared in the plastic and in the moist condition. A. V. Bleininger. Trans. Am. Ceramic Soc., 15, 570(1913).

The compression, tensile and transverse strength of some clays in the dried state. A. V. Bleininger and W. L. Howat. Trans. Am. Ceramic Soc., 16, 273(1914).

The flow of clays under pressure. A. V. Bleininger and D. W. Ross. Trans. Am. Ceramic Soc., 16, 392(1914).

A laboratory oven provided with recording attachments for the study of drying clays. A. V. Bleininger. Trans. Am. Ceramic Soc., 16, 409(1914).

Viscosity of some shales at furnace temperature. G. H. Brown. Trans. Am. Ceramic Soc., 16, 571(1914).

A note on the reduction of Fe_2O_3 . C. S. Kinnison. Trans. Am. Ceramic Soc., 16, 136(1914).

Note on thermal electric phenomena observed in some silicates. A. V. Bleininger. Trans. Am. Ceramic Soc., 17, 218(1915).

The relation between the modulus of elasticity and the porosity of burned clay. A. V. Bleininger and G. H. Brown. Trans. Am. Ceramic Soc., 17, 464(1915).

Notes on casting. A. V. Bleininger and M. R. Hornung. Trans. Am. Ceramic Soc., 17, 330(1915).

The use of deflocculating agents in the washing of clays and the effect of the process upon the color. G. H. Brown and W. L. Howat. Trans. Am. Ceramic Soc., 17, 81(1915).

A study of fire clay, shale, and surface clay mixtures with reference to their porosity-temperature relations. G. H. Brown. Trans. Am. Ceramic Soc., 17, 451(1915).

The deformation of plastic bodies under compression as a measure of plasticity. W. E. Emley. Trans. Am. Ceramic Soc., 17, 612(1915).

The effect of saturated sodium sulphate solution upon the structure of clay burned to different temperatures. W. L. Howat. Trans. Am. Ceramic Soc., 17, 249(1915).

Microscopic investigation of some compounds noted in the systems soda-zinc oxide-silica and soda-zinc oxide-titanic oxide-silica. A. A. Klein and G. H. Brown. Trans. Am. Ceramic Soc., 17, 745(1915).

Softening points of potash, feldspar-steatite mixtures. W. L. Howat. Trans. Am. Ceramic Soc., 18, 488(1916).

*On the attainment of reliable temperature measurements in the ceramic industries by means of thermocouples. W. A. Hull. Trans. Am. Ceramic Soc., 18, 365(1916).

Properties of some American bond clays. A. V. Bleininger and G. A. Loomis. Trans. Am. Ceramic Soc., 19, 601(1917).

An instrument for measuring plasticity. W. E. Emley. Trans. Am. Ceramic Soc., 19, 523(1917).

Heat balance of a continuous tunnel kiln. C. B. Harrop. Trans. Am. Ceramic Soc., 19, 216(1917).

Papers which have appeared in the
Journal of the American Ceramic
Society, 2525 North High Street,
Columbus, Ohio.

Special pots for the melting of optical glass. A. V. Bleininger. J. Am. Ceramic Soc., 1, 15(1918).

Test of a producer gas-fired periodic kiln. C. B. Harrop. J. Am. Ceramic Soc., 1, 35(1918).

Tests of clays and lines by the Bureau of Standards plasticimeter. F. A. Kirkpatrick and W. B. Orange. J. Am. Ceramic Soc., 1, 170(1918).

Applications of the polarizing microscope in ceramics. A.E. Peck. J. Am. Ceramic Soc., 2, 695(1919).

The equipment of a casting plant for the manufacture of glass pots. F. H. Riddle. J. Am. Ceramic Soc., 2, 647(1919).

Note on the casting of porcelain glass pots. J. W. Wright and D. H. Fuller. J. Am. Ceramic Soc., 2, 659(1919).

The testing of clays for concrete aggregate. D. H. Fuller. J. Am. Ceramic Soc., 3, 256(1920).

Notes on porcelain glass pot mixtures. D. H. Fuller. J. Am. Ceramic Soc., 3, 569(1920).

Effect of aluminum chloride upon clays. H. P. Reinecker and J. S. George. J. Am. Ceramic Soc., 3, 994(1920).

Study of some bond clay mixtures. D. H. Fuller. J. Am. Ceramic Soc., 4, 902(1921).

Note on the effect of time on the drying shrinkage of clays. R. F. Geller. J. Am. Ceramic Soc., 4, 282(1921).

The watersmoking of clays. R. F. Geller. J. Am. Ceramic Soc., 4, 375(1921).

The plasticity of clays. F. P. Hall. J. Am. Ceramic Soc., 5, 346(1922).

Further studies on cast glass pots. R. F. Geller and A. N. Finn. J. Am. Ceramic Soc., 6, 865(1923).

Effect of hydrogen ion concentration upon clay suspensions.
F. P. Hall. J. Am. Ceramic Soc., 6, 989(1923).

Thermal expansion of fused quartz. G. E. Merritt. J. Am.
Ceramic Soc., 7, 803(1924).

*A machine for transverse tests of clay and glass laboratory speci-
mens. A. C. Harrison. J. Am. Ceramic Soc., 8, 774(1925).

*Some observations on the drying properties of clays. D. C. Lindsay
and W. H. Wadleigh. J. Am. Ceramic Soc., 8, 677(1925).

An electric furnace for softening point determinations.
W. L. Pendergast. J. Am. Ceramic Soc., 8, 319(1925).

Characteristics of pyrometric cones. C. O. Fairchild and
M. F. Peters. J. Am. Ceramic Soc., 9, 700(1926).

*A comparison of the softening points of some foreign and American
pyrometric cones. R. F. Geller and E. E. Pressler. J. Am.
Ceramic Soc., 9, 744(1926).

Several gas porosimeters. A. E. MacGee. J. Am. Ceramic Soc.,
9, 814(1926).

Some observations on the dehydration and firing behavior of clays.
R. F. Geller and W. H. Wadleigh. J. Am. Ceramic Soc., 10,
925(1927).

*The effect of various sodium silicates and other electrolytes on
clay slips. S. J. McDowell. J. Am. Ceramic Soc., 10, 225(1927).

Analysis of soda-lime glass. G. E. F. Lundell and E. B. Knowles.
J. Am. Ceramic Soc., 10, 829(1927).

The determination of iron in glass sand. G. E. F. Lundell and
H. B. Knowles. J. Am. Ceramic Soc., 11, 119(1928).

Vanadium and molybdenum compounds in clays. L. A. Palmer. J. Am.
Ceramic Soc., 12, 37(1929).

Effects of autoclave treatment on ceramic bodies and clays.
H. H. Folscher. J. Am. Ceramic Soc., 14, 207(1931).

A compilation of phase rule diagrams of interest to the ceramist
and silicate technologist. F. P. Hall and K. Insley. J. Am.
Ceramic Soc., 16, 463(1933).

*Reprints available for free distribution at the National
Bureau of Standards.

The nature of the glass phase in heated clay materials. I. Common clays. G. R. Shelton. J. Am. Ceramic Soc., 18, 289(1935).

Supplement to "A compilation of phase rule diagrams of interest to the ceramist and silicate technologist." F. P. Hall and H. Insley. J. Am. Ceramic Soc., 21, 113(April 1938).

*An electric furnace for determination of pyrometric cone equivalent. W. L. Pendergast. Bul. Am. Ceramic Soc., 18, 1(Jan.1939).

*Reprints available for free distribution at the National Bureau of Standards.

S T A N D A R D S A M P L E S

Standard samples of certain materials which are recommended for control work may be obtained from the National Bureau of Standards by prepayment of the indicated price. Such samples were prepared for checking the accuracy of methods of analysis, and those of particular interest to the ceramic industry are listed below. The Supplement to Circular C398, which can be obtained from this Bureau without charge, contains a complete list of our standard samples.

<u>Standard Sample Number</u>	<u>Name</u>	<u>Constituents determined or intended use</u>	<u>Weight of sample in grams</u>	<u>Price</u>
1a	Argillaceous limestone	Complete analysis	50	\$2.00
39e	Benzoic acid	Acidimetric and calorimetric values	30	2.00
40c	Sodium oxalate	Oxidimetric value	60	2.00
69	Bauxite	Complete analysis	60	2.00
70	Feldspar	" "	40	2.00
76	Burnt refractory (40% Al ₂ O ₃)	" "	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
79	Fluorspar	" "	60	2.50
80	Glass, soda-lime	" "	45	2.00
81	Glass sand	Fe ₂ O ₃ , Al ₂ O ₃ , TiO ₂ , ZrO ₂ , CaO, MgO	60	2.00
83	Arsenious oxide	Oxidimetric value	75	2.00
84	Acid potassium phthalate	Acidimetric value	60	3.00
88	Dolomite	Complete analysis	50	2.00
89	Glass, lead-barium	" "	60	2.00
91	Glass, opal	" "	45	2.00
92	Glass, low boron	B ₂ O ₃ only	60	2.00
93	Glass, high boron	Complete analysis	60	2.00
97	Flint clay	" "	60	2.00
98	Plastic clay	" "	60	2.00
99	Soda feldspar	" "	40	2.00
102	Silica brick	" "	60	2.00
103	Chrome refractory	" "	60	2.00
104	Burned magnesite	" "	60	2.00
112	Silicon carbide	" "	85	2.00

