

Publications of the
DEPARTMENT OF COMMERCE
BUREAU OF STANDARDS

Letter
Circular
LC 131

WASHINGTON, D. C.

PUBLICATIONS BY THE BUREAU OF STANDARDS RELATING TO CERAMICS

(These publications may be consulted in the various Government depository libraries throughout the United States. Publications starred thus (*) are no longer available for distribution or sale. Copies of the other publications may be purchased from the Office of the Superintendent of Documents, Government Printing Office, Washington, D. C., at the prices appended).

Scientific Papers

Number		Price
*S 212	Melting Points of Some Refractory Oxides	
S 278	An Investigation of Laws of Plastic Flow	\$0.10
S 358	Concerning the Annealing and Characteristics of Glass	.10
S 373	Characteristics of Striae in Optical Glass	.05
S 393	Measurements of Thermal Dilatation of Glass at High Temperatures	.10
S 485	Application of the Interferometer to Measurements of the Thermal Dilatation of Ceramic Materials	.05
S 524	Measurements on the Thermal Expansion of Fused Silica	.10
S 352	Thermal Expansion of Insulating Materials	.05

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NOTE: The appendix, page 16, lists all papers issued since March 15, 1927.

T e c h n o l o g i c P a p e r s

Number	Title	Price
T 1	Effect of Preliminary Heat Treatment Upon the Drying of Clays	\$0.10
* T 7	The Testing of Clay Refractories, with Special Reference to Their Load-Carrying Ability at Furnace Temperatures	
T 10	The Melting Point of Fire Brick	.05
* T 17	The Function of Time in the Vitrification of Clays	
T 21	The Dehydration of Clays	.95
* T 22	The Effect of Overfiring Upon the Structure of Clays	
* T 23	The Technical Control of the Colloidal Matter of Clays	
* T 30	Viscosity of Porcelain Bodies	
* T 31	Some Leadless Boro-Silicate Glazes Maturing at About 1100°C.	
T 40	The Veritas Firing Rings	.05
* T 46	A Study of the Lutterberg Plasticity Method	
T 50	The Viscosity of Porcelain Bodies High in Feldspar	.05
* T 51	Use of Sodium Salts in the Purification of Clays and in the Casting Process	
T 79	Properties of Some European Plastic Fire Clays	.10
T 80	Constitution and Microstructure of Porcelain	.25
T 85	Manufacture and Properties of Sand-Lime Brick	.10
T 104	The Effect of Size of Grog in Fire Clay Bodies	.10

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T 105	Comparative Tests of Porcelain Laboratory Ware	.05
T 107	Comparative Tests of Chemical Glassware	.10
T 111	The Compressive Strength of Large Brick Piers	.10
T 116	Silica Refractories - Factors Affecting Their Quality and Methods of Testing the Raw Materials and Finished Ware	.20
T 120	Tests of Hollow Building Tile	.05
T 124	Constitution and Microstructure of Silica Brick and Changes Involved Through Repeated Burnings at High Temperatures	.10
T 142	Materials and Methods Used in the Manufacture of Enamelled Cast-Iron Ware	.20
T 144	The Properties of American Bond Clays and Their Use in Graphite Crucibles and Glass Pots	.10
T 155	Cements for Spark Plug Electrodes	.05
T 159	Porosity and Volume Changes of Clay Fire Bricks at Furnace Temperatures	.05
T 165	Enamels for Sheet Iron and Steel	.15
T 196	High-Fire Porcelain Glazes	.05
T 220	Test of Hollow Tile and Concrete Floor Slabs Reinforced in Two Directions	.25
T 227	American and English Ball Clays	.10
T 234	Methods of Measuring the Plasticity of Clays	.10
T 236	Loading Test of a Hollow Tile and Reinforced Concrete Floor of Arlington Building, Washington, D. C.	.15
T 238	Some Compressive Tests of Hollow Tile Walls	.05
T 246	Wet-Process Enamels for Cast Iron	.10
T 262	Comparison of American and Foreign Clays as Paper Fillers	.15

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T 279	Testing of Fire-Clay Brick With Special Reference to Their Use in Coal-Fired Boiler Settings	.20
T 291	Tests of Hollow Tile and Concrete Slabs Reinforced in One Direction	.25
T 310	Properties of Potter's Glints and Their Effects in White-Ware Bodies	.15
T 311	Compressive and Transverse Strength of Hollow Tile Walls	.15

Circulars

C 118	Recommended Specification for Limestone, Quicklime and Hydrated Lime for Use in the Manufacture of Glass	.05
C 119	Specifications for Lime-Flint Glass Tumblers	.05
C 152	Recommended Specification for Ceramic Whiting	.05
C 153	Recommended Specification for Quicklime and Hydrated Lime for the Manufacture of Silica Brick	.05
C 164	Specification for Flat Glass for Glazing Purposes	.05
C 202	Specification for Vitrified Chinaware	.05
C 282	Fire-clay Brick: Their Manufacture, Properties, Uses and Specifications	.25
C 297	Plastic Fire-Clay Refractories (2d ed.)	.05
C 298	Fire-Clay (2d ed.)	.05
C 299	Fire-Clay Brick (2d ed.)	.05
C 314	Soda Ash	.05

PUBLICATIONS OF THE BUREAU OF MINES

References to literature on ceramics, published by Bureau of Mines, may be found in Bureau of Mines Serial No. 264b.

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SPECIFICATIONS ISSUED BY FEDERAL SPECIFICATIONS BOARD

Copies can be obtained free of charge from the Chairman, Federal Specifications Board, Bureau of Standards, Washington, D. C.

Specification 121a Glass Tableware
Specification 122 Glass lantern Globes and Lamp Chimneys
Specification 243a Vitrified Chinaware
Specification 268 Fire-Clay Brick
Specification 334 Fire-Clay
Specification 335 Plastic Fire-Clay Refractorics
Specification 268a Fire-Clay Brick
Specification 334a Fire-Clay
Specification 335a Plastic Fire-Clay Refractorics

RECOMMENDATIONS ISSUED BY THE DIVISION OF SIMPLIFIED PRACTICE

R 1	Paving Bricks, 4th revision	0.05
R 5	Hotel Chinaware	.05
R 7	Face Brick and Common Brick	.05
R 10	Milk and Cream Bottles and Bottle Caps	.05
R 12	Hollow Building Tile	.05
R 33	Cafeteria and Restaurant Chinaware	.05
R 38	Sand-Lime Brick	.05
R 39	Dining Car Chinaware	.05
R 40	Hospital Chinaware	.05
R 45	Grinding Wheels	.05
R 49	Sidewalk, Floor and Roof Lights	.05

REPORTS OF BUILDING CODE COMMITTEE

Recommended Minimum Requirements for Small Dwelling Construction	0.15
Recommended Minimum Requirements for Masonry Wall Construction	.15

PUBLICATIONS APPEARING IN THE TRANSACTIONS AND JOURNALS OF THE AMERICAN CERAMIC SOCIETY

(Copies of the Transactions and Journals may be consulted at leading libraries or may be obtained from the Secretary, American Ceramic Society, 2525 North High Street, Columbus, Ohio).

Porcelain, Whiteware and Allied Products

A Study of the Vitrification Range and Di-Electric Behavior of Some Porcelains. Trans. 12:1910.

The Measurement of Color of Whiteware and Whiteware Materials. Trans. 13:1911.

High Voltage Insulators and High Potential Testing. Trans. 14:1912.

The Viscosity of Porcelain Bodies. Trans. 15:1913.

The Clark Viscosimeter. Trans. 15:1913.

The Veritas Firing Rings. Trans. 16:1914.

Study of the Lutterberg Plasticity Method. Trans. 16:1914.

Some of the Properties of White Porcelain Cement. Trans. 16:1914.

The Viscosity of Porcelain Bodies. Trans. 17:1915.

The Bureau of Standards Contrast Method for Measuring Transparency. Trans. 17:1915.

Electrical Conductivity of a Porcelain Mixture and a Shale Upon Heating. Trans. 17:1915.

Notes on the Manufacture of Porcelain Pyrometer Tubes. Trans. 18:1916.

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The Constitution and Microstructure of Porcelain.
Trans. 18:1916.

Notes on the Production of Special Refractories - Marquardt
Porcelain and Magnesium Aluminate. Trans. 19:1917.

Note on the Temperature, Porosity, Volume Changes of Some
Porcelain Bodies. Trans. 19:1917.

Some Types of Porcelain. Jour. 1, No. 9.

Note on Certain Characteristics of Porcelain. Jour. 1, No. 10.

Effect of Time and Temperature on the Microstructure of
Porcelain. Jour. 2, No. 3.

Impact Tests and Porosity Determinations on Some American
Hotel China and Semi-Porcelain Plates. Jour. 2, No. 3.

Some Physical Properties of American Commercial Porcelain Bodies.
Jour. 2, No. 4.

Special Spark Plug Porcelains. Jour. 2, No. 7.

Relation Between the Composition and the Thermal Expansivity
of Porcelain. Jour. 2, No. 10.

Further Studies of porcelain. Jour. 2, No. 10.

The Solubility of Boric Acid Frits. Jour. 3, No. 2.

The Rate of Vitrification of Porcelain Molded Under Different
Conditions. Jour. 3, No. 10.

Solubility and Fusibility of Some Feldspar Frits. Jour. 4, No. 6.

High-Fire Porcelain Glazes. Jour. 4, No. 9.

Note on the Hardness of Glazes. Jour. 4, No. 11.

Earthenware Bodies and Glazes. Jour. 4, No. 12.

Comparative Tests of American and Foreign Tableware. Jour. 5, No. 6.

Impact Tests on Tableware. Jour. 6, No. 2.

The Effect of Variation in Firing on the Physical Properties of
Vitreous China Bodies. Jour. 6, No. 8.

Department of Chemistry

Chicago, Illinois

February 10, 1954

Dr. J. H. Goldstein

University of Chicago

Chicago, Ill.

Dear Dr. Goldstein:

I received your letter of

January 28, 1954, regarding the

question of the

possibility of a

collaboration

between our

departments.

I am sorry that

we cannot

at present

undertake

such a

collaboration

at this

time.

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The Bonding Effect of Ball Clays in Fired Bodies.
Jour. 7, No. 2.

An Apparatus for Measuring the Abrasive Hardness of Glazes.
Jour. 7, No. 5.

Interferometer Measurements of the Thermal Dilatation of
Glazed Ware. Jour. 9, No. 6.

A Preliminary Study of the Resistance to Abrasion of
Ceramic Glazes, Its Control and Methods of Determination.
Jour. 10, No. 2.

Characteristics of Pyrometric Cones. Jour. 9, No. 11.

The Effect of Calcined Cyanite in Porcelain Bodies.
Jour. 10, No. 1.

A Comparison of the Softening Points of Some Foreign and
American Pyrometric Cones. Jour. 9, No. 11.

Refractories and Heavy Clay Products

The Relation Between the Porosity and Crushing Strength
of Clay Products. Trans. 12:1910.

The Behavior of Fire Bricks Under Load Conditions at a
Temperature of 1300°C. Trans. 12:1910.

The Behavior of Fire Bricks Under Load Conditions. Trans.
13:1911.

The Relation Between the Crushing Strength and Porosity
of Clay Products. Trans. 14:1912.

Note on Load Tests Made on Magnesite, Chrome, and Silica
Brick. Trans. 14:1912.

The Melting Points of Refractory Materials. Trans.
15:1913.

The Development of Special Refractory Bodies. Trans. 15:1913.

Report on Rattler Tests Made on Brick Obtained from Paved
Streets. Trans. 16:1914.

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The Relative Thermal Conductivities of Silica and Clay Refractories. Trans. 16:1914.

Effect of Saturated Sodium Sulphate Solution Upon the Structure of Clay Burned to Different Temperatures. Trans. 17:1915.

Notes on Casting. Trans. 17:1915.

A Method of Testing the Corrosive Action of Slag on Fire Brick. Trans. 18:1916.

Note on the Volume Changes of Silica Brick Mixtures. Trans. 18:1916.

Volume Changes of Some Commercial Silica Bricks on Heating. Trans. 19:1917.

The Effect of Size of Grog in Fire Clay Bodies. Trans. 19:1917.

Special Pots for the Melting of Optical Glass. Jour. 1, No. 1.

Porosity and Volume Changes of Clay Fire Brick at Furnace Temperatures. Jour. 1, No. 6.

Silica Refractories. Jour. 1, No. 7.

The Equipment of a Casting Plant for the Manufacture of Glass Pots. Jour. 2, No. 8.

Note on the Casting of Porcelain Glass Pots. Jour. 2, No. 8.

Siliceous Sagger Mixtures. Jour. 3, No. 1.

Note on the Load Behavior of Aluminous Refractories. Jour. 3, No. 2.

Notes on Porcelain Glass Pot Mixtures. Jour. 3, No. 7.

The Transverse Strength of Fire-Clay Tiles at Furnace Temperatures. Jour. 4, No. 7.

Possibilities of Terra Cotta Castings. Jour. 4, No. 11.

Study of Some Bond Clay Mixtures. Jour. 4, No. 11.

Effectiveness of Different Methods of Making Absorption Determinations as Applied to Hollow Building Tile. Jour. 5, No. 11.

Capping for Compression Specimens. Jour. 6, No. 5.

Effect of Grog Additions on Fire Resistance of Hollow Tile. Jour. 6, No. 6.

Further Studies on Cast Glass Pots. Jour. 6, No. 8.

Progress Report on Specifications for Refractories. Jour. 6, No. 10.

Strength, Absorption and Freezing Resistance of Hollow Building Tile. Jour. 7, No. 3.

Notes on the Behavior of Refractories in Glass Melting Furnaces. Jour. 7, No. 8.

The Laboratory Testing of Aluminous Refractories. Jour. 7, No. 8.

An Electric Furnace for Softening Point Determinations. Jour. 8, No. 5.

The Laboratory Testing of Plastic Refractories. Jour. 8, No. 7.

Progress Report on Investigation of Sagger Clays. Jour. 9, No. 3.

A Study of Müllite Refractories Formed by Calcining Cyanite, Their Industrial Application. Jour. 9, No. 5.

Comparative Tests of Some American and German Fire-Clay Brick. Jour. 9, No. 6.

Progress Report on Investigation of Sagger Clays - Some Observations as to the Significance of their Thermal Expansions.-II. Jour. 9, No. 9.

Some Observations of Surface Deposits Formed in Glass Furnace Regenerators. Jour. 9, No. 10.

Vitreous Enamels

Ground Coat Enamels for Cast Iron. Jour. 1, No. 2.

Preparation and Application of Enamels for Cast Iron.
Jour. 1, No. 3.

Control of Luster of Enamels. Jour. 1, No. 9.

Enamels for Cast Iron. Jour. 1, No. 10.

The Cleaning of Sheet Steel and Iron for Enameling Purposes.
Jour. 2, No. 11.

Classification of Enamels for Sheet Steel. Jour. 3, No. 12.

The Cause and Control of Fish Scaling of Enamels for Sheet
Iron and Steel. Jour. 4, No. 8.

Some Relations of Composition to Solubility of Enamels in
Acids. Jour. 4, No. 9.

The production of Some White Enamels for Copper. Jour. 4,
No. 10.

Wet Process Enamels for Cast Iron. Jour. 5, No. 10.

The Effect of Some Substitutes for Tin Oxide on the Opacity
of White Enamels for Sheet Steel. Jour. 6, No. 5.

The Relations Between Composition and Properties of
Enamels for Sheet Steel. Jour. 6, No. 10.

Factors Affecting the Warpage of Sheet Iron and Steel in
Enameling. Jour. 7, No. 5.

The Development of Some Jewelry Enamels. Jour. 7, No. 12.

Effects of Composition on the Properties of Sheet Steel
Enamels. Jour. 8, No. 11.

Effects of Composition on the Properties of Ground Coat
Enamels for Sheet Steel. Jour. 10, No. 3.

Glass

Variation in Soda, Lime, and Magnesia Content of a Class of the Type $2O_3SiO_2$. Trans. 17:1915.

Observations on the Formation of Seeds in Optical Glass. Jour. 1, No. 2.

Strength Tests of Plain and Protective Sheet Glass. Jour. 2, No. 6.

Production of Selenium Red Glass. Jour. 2, No. 11.

Comparison Tests for Striae in Optical Glass by the Brannecer Converging Light, Direct View Method, the Bureau of Standards Tank Immersion Method, and the Short Range Projection Method. Jour. 2, No. 12.

Disintegration of Soda-lime Glasses in Water. Jour. 5, No. 8.

Weathering of Glass Containers. Jour. 5, No. 8.

Tests on the Resistive Qualities of Soda-lime Glasses to Water. Jour. 6, No. 4.

A Study of the Origin and Cause of Stones in Glass. Jour. 6, No. 6.

The Mechanical Strength of Glazing Glass. Jour. 6, No. 9.

The Microscopic Identification of Stones in Glass. Jour. 7, No. 1.

Variations in Glass Caused by Heat Treatment. Jour. 8, No. 1.

The Density and Index of Refraction of Glass Versus Its Composition. Jour. 8, No. 8.

The Failure of Thermocouple Protection Tubes in Glass Melting Furnaces. Jour. 8, No. 9, Part 1.

A Non-actinic Cobalt-Blue Glass. Jour. 9, No. 7.

The Annealing of Glass - A Non-Technical Presentation. Jour. 9, No. 8.

Miscellaneous

Note on the Viscosity of Clay Slips as Determined by the Clark Apparatus. Trans. 12:1910.

Notes on the preheating Treatment of Clays. Trans. 12:1910.

The Dehydration of Clays. Trans. 14:1912.

The Effect of Overburning on the Structure of Clays. Trans. 15:1913.

Function of Time in the Vitrification of Clays. Trans. 15: 1913.

The Electrical Conductivity of Clays and Clay Suspensions. Trans. 15:1913.

Study of Some Calcareous and Magnesium Slags. Trans. 15:1913.

The Temperature Porosity Relations of a Clay Prepared in the Plastic and in the Moist Condition. Trans. 15:1913.

A Note on the Reduction of Fe_2O_3 . Trans. 16:1914.

The Compression, Tensile, and Transverse Strength of Some Clays in the Dried State. Trans. 16:1914.

The Flow of Clays Under Pressure. Trans. 16:1914.

A Laboratory Oven Provided with Recording Attachments for the Study of Drying Clays. Trans. 16:1914.

Viscosity of Some Shales at Furnace Temperatures. Trans. 16:1914.

The Use of Deflocculating Agents in the Washing of Clays and the Effect of the Process Upon the Color. Trans. 17:1915.

Note on Thermal Electric Phenomena Observed in Some Silicates. Trans. 17:1915.

A Study of Fire Clay, Shale, and Surface Clay Mixtures with Reference to Their Porosity Temperature Relations. Trans. 17:1915.

The Relation Between the Modulus of Elasticity and the Porosity of Burned Clay. Trans. 17:1915.

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Deformation of Plastic Bodies Under Compression as a Measure of Plasticity. Trans. 17:1915.

Microscopic Investigation of Some Compounds Noted in the Systems Soda-Zinc Oxide-Silica and Soda-Zinc Oxide-Titanic Oxide-Silica. Trans. 17:1915.

On the Attainment of Reliable Temperature Measurements in the Ceramic Industries by Means of Thermocouples. Trans. 18:1916.

Softening Points of Potash, Feldspar-Steatite Mixtures. Trans. 18:1916.

Heat Balance of a Continuous Tunnel Kiln. Trans. 19:1917.

An Instrument for Measuring Plasticity. Trans. 19:1917.

Properties of Some American Bond Clays. Trans. 19:1917.

Test of a Producer Gas-Fired Periodic Kiln. Jour. 1, No. 1.

Tests of Clays and Limes by the Bureau of Standards Plasticimeter. Jour. 1, No. 3.

Applications of the Polarizing Microscope in Ceramics. Jour. 2, No. 9.

The Use of American Raw Materials in the Manufacture of Whiteware Pottery. Jour. 3, No. 2.

The Testing of Clays for Concrete Aggregate. Jour. 3, No. 3.

Effect of Aluminum Chloride Upon Clays. Jour. 3, No. 12.

Use of American Raw Materials in the Manufacture of Whiteware Pottery. Jour. 3, No. 12.

Note on the Effect of Time on the Drying Shrinkage of Clays. Jour. 4, No. 4.

The Water Smoking of Clays. Jour. 4, No. 5.

Absorption of Sodium Hydroxide by Kaolins. Jour. 4, No. 6.

Use of Special Oxides in Porcelain Bodies. Jour. 4, No. 10.

The Plasticity of Clays. Jour. 5, No. 6.

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Comparative Tests of Foreign and Domestic Whiting.
Jour. 5, No. 12.

Effect of Hydrogen Ion Concentration Upon Clay Suspensions.
Jour. 6, No. 9.

Thermal Expansion of Fused Quartz. Jour. 7, No. 11.

Some Observations on the Drying Properties of Clays.
Jour. 8, No. 11.

A Machine for Transverse Tests of Clay and Glass Laboratory
Specimens. Jour. 8, No. 11.

Several Gas Porosimeters. Jour. 9, No. 12.

Bureau of Standards,
March 15, 1927.

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Appendix

T e c h n o l o g i c P a p e r s

Number		Price
T 356	Controlling the Consistency of Enamel Slips	\$0.15

C i r c u l a r s

C 325	Ceramic Properties of Some White-Burning Clays of the Eastern United States	.20
C 342	Clay Hollow Load-Bearing Wall Tile	.05
C 343	Clay Hollow Fireproofing, Partition, and Furring Tile	.05
C 344	Clay Hollow Floor Tile	.05
C 345	Common Clay Brick	.05

SPECIFICATIONS ISSUED BY FEDERAL SPECIFICATIONS BOARD

F.S.B.
No.

504 Brick, Clay, Common.
506 Tile, Hollow, Clay, Floor.
507 Tile, Hollow, Clay, Load-Bearing Wall.
508 Tile, Hollow, Clay, Fireproofing, Partition and Furring

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Papers Published in Journal of the American Ceramic Society.

Notes on Cyanite and Diaspore Refractories. Vol. 10, No. 10.

III. Progress Report on Investigation of Sagger Clays: Their Elasticity and Transverse Strength at Several Temperatures. Vol. 10, No. 7.

IV. Progress Report on Investigation of Sagger Clays. Their Elasticity, Transverse Strength, and Plastic Flow at 1000°C. Vol. 10, No. 12.

Strength of Brick in Tension. Vol. 11, No. 2.

A Preliminary Study of Ceramic Colors and Their Use in Vitreous Enamels. Vol. 10, No. 10.

Vitreous Enamel Slips and Their Control. Vol. 10, No. 12.

The Microstructure of Earthenware. Vol. 10, No. 5.

The Quantitative Microscopic Analysis of Commercial Feldspar. Vol. 10, No. 9.

Some Observations on the Dehydration and Firing Behavior of Clays. Vol. 10, No. 12.

A Petrographic Study of Some Slags from Boiler Furnaces. Vol. 11, No. 1.

Bureau of Standards Investigation of Feldspar - Second Progress Report. Vol. 10, No. 8.

The Effect of Various Sodium Silicates and Other Electrolytes on Clay Slips. Vol. 10, No. 4.

