

LEAD INDUSTRIES ASSOCIATION

480 LEXINGTON AVENUE

NEW YORK 17, N. Y.

SUBJECT TO REVISION

CERAMICS TECHNICAL COMMITTEE MEETING

Bedford Springs, Pa.

September 28, 1955

A meeting of the Ceramics Technical Committee of the Lead Industries Association was held on Wednesday, September 28, 1955, at the Hotel Bedford, Bedford Springs, Pa.

PRESENT

Willard Midgett
Wm. Wilke, III
John S. Nordyke
H. W. Talbot, Jr.
John W. Ayers, Jr.
Fred Leake, Jr.
William J. Baldwin

REPRESENTING

Eagle-Picher Co.
Hammond Lead Products Co.
do
National Lead Co.
do Evans Lead Division
do do
do Titanium Alloys Manufacturing Division

Dr. John H. Koenig, Consultant

Director, School of Ceramics,
Rutgers University

Robert L. Ziegfeld, Secretary-Treasurer

The meeting was called to order at 2:00 P.M.

The minutes of the previous meeting of July 26, 1955 were approved.

CERAMIC FUND APPROPRIATION

The secretary explained that since the previous meeting the Association's Industry Development Committee and Executive Committee had approved an appropriation of \$18,000 to the end of 1956 to carry out the program outlined by this group, namely to engage a consultant in the ceramic field, to prepare a manual on all phases of the use of lead in ceramics, and to prepare and issue supplements to this manual as required to keep it up to date, the manual and supplements to be circulated as widely as possible throughout the ceramics industries.

APPOINTMENT OF CONSULTANT

The secretary reported that on the recommendation of the Committee, the services of Dr. John H. Koenig, director, School of Ceramics, Rutgers University, had been engaged as a consultant for the Committee.



Ceramics Technical
Committee Meeting

-2-

September 28, 1955

ELECTION OF CHAIRMAN

The secretary suggested that the Committee proceed to elect a chairman. Dr. Koenig was duly nominated and unanimously elected chairman of the Ceramics Technical Committee.

MANUAL OUTLINE AND TASK ASSIGNMENTS

Dr. Koenig then presented a proposed outline which he had prepared for a manual on lead in ceramics and the Committee went over this proposed outline section by section, making certain revisions and suggesting authors to be responsible for the various sections. The result of these discussions follows:

1. General Discussion of Properties Imparted by Lead Compounds to Ceramic Products - This section will stress the general advantages imparted by lead compounds. This will be an expansion of the material in J. S. Nordyke's "Lead Products in the Ceramic Industry" and will be prepared by J. S. Nordyke. This section will include the economic advantages.

2. Description and Data on Principal Lead Compounds Including Pyrochemical Behavior - This will include litharge, red lead, lead silicates, lead aluminum silicate and white lead. Data will be compiled and submitted by Messrs. Ayers, Wilke, Midgette and Knight. Composition range, particle-size distribution, melting and other pertinent data. Pertinent phase diagrams.

3. Lead Frits and Colors - This section to be prepared by Messrs. Leake and Cabot. Information to be obtained also from frit and color producers (Penco, Ferro, O. Hessel, Brakenfeld, etc.) Other color palette and livelier colors imparted by lead.

4. Use of Lead in Ceramic Products -

A. Glasses - William J. Baldwin - Various types of glasses and specific advantages from use of lead, e.g. glass, low alkali population, low melting, wide firing range and fool-proofness.

B. Glasses - Willard Midgette - J. S. Nordyke - High quality glass. Stew-ware. High P. I. Optical Glass. Protective Glass. Electrical Glass. Some of the more outstanding and/or recent applications of lead compounds in glass may be included here or under special applications, e.g., electronic applications.

C. Enamels -

I. Present commercial enamel for aluminum and advantages over leadless enamels. - B. C. Bricker

II. Other enamels for cast iron, steels, etc., and potential wider use in enameling of other metals. - William J. Baldwin

D. Bodies - John Koenig -

I. Low temperature art ware using lead frits.

II. Low temperature, fast fired white ware bodies using lead frits. Departures from classical type bodies using lead as flux.

III. Low dielectric loss bodies for high frequency applications (L-6 or better) through use of lead chemicals or frits in steatite, wollastonite, and other applications. Lead imparts stability.

Ceramics Technical
Committee Meeting

-3-

September 24, 1955

IV. Use in high K ceramic dielectrics. - William J. Baldwin

V. Use in other special bodies, zero-shrinkage, etc.

2. Miscellaneous Applications of Lead Compounds and Frits

I. Lead glaze for cement aggregates - John Ayers

II. Use of lead in roofing granule coatings - Fred Leake
(Koenig will see if he can assist Leake on this)

III. Reflectance Beads - Willard Midgette

IV. Use of lead compounds in soldered seals (glass-to-glass, glass-to-metal, ceramic-to-metal, etc.) - Willard Midgette
(John S. Nordyke will contact Hood of Wamoc and Burch of Owens-Illinois for information on this.)

V. Shielding glasses for X-rays and other irradiations. To be noted under glass.

VI. Use of lead in vitreous bonds for abrasive wheels (Not assigned)

VII. Glazes for sewer pipe. Otis Everhart, Eng. Exp. Stat. Ohio State is to be contacted on this.

5. Availability of Lead Chemicals and Dependability of Future Lead Supplies - Robert L. Ziegfeld

6. Materials Handling - Mr. Wilke, III - Each committee member will send information on this to Mr. Ziegfeld.

Proper care in handling raw lead compounds, plant hygiene, and fritting considerations. Pertinent references from industrial experience and toxicology texts showing how lead chemicals can be handled safely. Examples of other industrial chemicals (some more toxic than lead) which require proper handling.

The difficulties encountered with the leadless counterparts can be noted which favor the use of lead properly handled. Leadless glazes or enamels can be used but they lack brilliance, smoothness, and the fool-proofness of the comparable lead glazes or enamels. Positive statements in text as to what lead will impart to ceramic products that other materials will not do as well.

7. Bibliography - Each committee member will include pertinent literature references with text material submitted to Mr. Ziegfeld.

One general reference which includes abstracts of all articles on lead glazes up to 1950 is Literature Abstracts on Ceramic Glazes, Koenig and Earhart.

It was agreed that all assigned material would be submitted to Mr. Ziegfeld by November 15, 1955 and that the drafts would then be circulated to the entire Committee.

Ceramics Technical
Committee Meeting

-4-

September 28, 1955

MAILING LIST FOR MANUAL ON CERAMICS

It was agreed that the American Ceramic Society's membership list, which would be published in October, 1955, should be used as a basis for a mailing list for the manual and other material. Dr. Koenig also agreed to supply the Association with a list of the members of the Ceramic Technical Council and the list of state associations. The latter would be used to obtain additional names of interested people who are members of state associations but not members of ACS.

Meeting adjourned at 5:00 P.M.

Arthur L. Zenger
Secretary.