

LEAD INDUSTRIES ASSOCIATION

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REVIEW OF LEAD IN THE CERAMIC INDUSTRIES

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The ceramic industry is a relatively small but important consumer of lead chemicals; small, in terms of metal consumed, because circumstances have not permitted it to reach a level of consumption anywhere near its full potential; important because a vast potential exists if it should ever become possible for us to assure a steady supply of lead chemicals at attractive prices.

The field of ceramics is much broader and is larger in our total national economy than is generally supposed. In 1950, it accounted for a gross dollar volume of approximately $\frac{3}{4}$ billion dollars. It includes all of the many types of glass products, refractories, vitreous enamel products, chinaware and porcelain products of many kinds, and structural clay products. Time does not permit even a casual inventory of the many individual items involved. The number runs into the thousands and we use many of them every day of our lives.

According to a preprint from the Bureau of Mines Mineral Yearbook for 1950, the ceramic industry used a total of 30,567 tons of lead pigments during that year. With litharge reported as 27,771 tons, the ceramic industry ranked second to storage batteries in litharge consumption. Complete figures are not yet available for 1951, but it seems apparent that the total tonnage was considerably less than in 1950. Even with the prospect for improved supply of pig lead this year, we are not expecting 1952 sales of lead chemicals to the ceramic industry to increase materially.

The principal reason for the 1951 decline was, of course, shortage of pig lead and our consequent inability to fill the demand. Of lesser importance in the 1951 figures, but a source of considerable concern for the future, is the changing technology which is bringing about a reduction in the use of lead per unit of product in the ceramic industry.

High lead prices, repeated shortage and constant fear of recurring shortage have stimulated a great deal of research among glass manufacturers who in recent years have accounted for a very large part of the total use of lead products in ceramics. This research had the goal of reducing or eliminating their dependency on lead, or of making

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possible the manufacture of a greater volume of product with a limited supply of lead. Unfortunately for us, it has succeeded far beyond their first hopes. Newly developed types of leadless glass and glass of reduced lead content have recently gone into production for such items as television picture tube bulbs, neon sign tubing and other types of electrical glass. If the glass manufacturers had not been forced to make these changes, we would not now be facing the danger of even further reduction in lead requirement. It is not easy or pleasant to watch new markets develop to major importance and then see them dry up largely because of real fears concerning availability and price.

These changes have not put us out of the glass business by any means, nor are they likely to do so. They are, however, now beginning to hurt in the loss of business which they represent now that the supply of lead is again relatively free. We have a great deal of hope for the future in the phenomenal growth in production of all kinds of glass and the prospect that growth in demand for those glasses still requiring lead will sustain demand for lead near its present levels. We are, in addition, always hopeful for the development of new uses for lead glasses, which have a way of appearing from time to time.

In a somewhat similar way, we have lost ground in the porcelain enamel field. The use of lead chemicals in enamel for cast iron bathtubs and sinks has dwindled to a relatively minor tonnage. We have reason to hope that we may be able to promote a moderate return to use of lead products not only in cast iron ware, but in enamelled sheet metal. A concerted effort in this field might produce some interesting results.

On the brighter side of the picture is the new and lively interest in vitreous enamels of high lead content for application at 1000°F. While it is too early to say how soon and to what extent the use of these enamels will develop, there is reason to believe that this use for lead will eventually develop to be of considerable importance to us. It is certainly worthy of our very close attention.

Use of lead compounds in chinaware and wall tile glazes is not seriously threatened so far, although shortage has forced many producers to cut the lead content of their glazes more than they would wish in order to spread the supply over more ware. Manufacturers of glass frits are therefore expected to continue as substantial consumers. Color frit manufacturers similarly are dependent on lead chemicals for the production of low melting color frits used in fused labels for beer, milk and soft drink bottles and for decoration of beverage glasses and so forth.

The Lead Industries Association is taking a step in the right direction in including ceramics in the program of the Pigment and Chemical Division. We cannot say with any certainty what if any miracles will result from this. It does seem reasonable though to believe that a more complete understanding of the problems of the ceramic users of lead by the Association may well produce results of benefit to all of us.