



AZI-LIA EXPANDED RESEARCH PROGRAM



AMERICAN ZINC
INSTITUTE, INC.

LEAD INDUSTRY
ASSOCIATION

60 EAST 42nd STREET
NEW YORK 17, N. Y.
MU 3-2888

SCHRADE F. RADTKE
Director of Research

September 10, 1958

To All Members of the:

Technical Steering Committee of LIA and AZI
Metallurgical Subcommittees of LIA and AZI
Electrochemical Subcommittees of LIA and AZI
Chemical Subcommittee of AZI
Lead Pigments Technical Committee of LIA

Gentlemen:

Subject: Lead and Zinc Fiber and Filament

Attached herewith is a communication which I received from the American Viscose Corporation concerning a development which they have made for the production of zinc filament and fiber. It discusses the process, the properties of the fiber, the licensing agreement and a photomicrograph of the fiber and filament. Also attached will be samples of the lead and zinc materials. I hope that we shall have enough samples to go around to everyone but in the event that you do not receive a sample, you will at least receive the communication.

Personally, I believe these fibers may have extensive use once we put our minds to work and do some long range imagining. Because of the rusting problem in Brillo pads and the like, it has been suggested that zinc filament be used for this application. Certainly there is a good deal of potential for the use of these lead fibers for storage battery plates. We could consider the zinc fiber mats for the silver zinc battery. There is also the possibility of utilization of high strength zinc fibers for reinforcing plastics and we have in our own office filaments of Zamak alloy which certainly should have potential for this application. There are any number of ideas which we can come up with and, as I suggested above, a little imagining may suggest many uses. We would certainly like to hear from you and in turn would also like to have you bring this to the attention of your marketing and sales people for their ideas and suggestions. It was felt that this information would be of interest to you and we look forward to your suggestions and recommendations as to research or potential market exploitation.

Very sincerely yours,
Schrade F Radtke

SFR:EM
Attachments

cc: To All Members of the Industry Development
Committees of LIA and AZI.

AMERICAN VISCOSE CORPORATION
1617 Pennsylvania Boulevard, Philadelphia 3, Pa.

(COPY)

September 18, 1939

Dr. Schrader F. Radtke
Director of Research
Axi-Lia Expanded Research Program
60 East 42nd Street
New York 17, N. Y.

Dear Dr. Radtke:

We appreciate your interest in developing new uses for zinc and lead as a result of our recently developed technique for melt spinning of metal fibers of small cross section. To acquaint your members with the appearance of these fibers we are supplying samples of lead filament, zinc filament and zinc staple. Photographs are attached which characterize the filament and staple forms.

The filaments are semi-continuous and would be supplied commercially in a mat form since production speed is too high to permit spooling. The diameters of the filaments in which we are interested are from 3 mils to 13 mils, since above this range similar products are actually available, though expensive.

The staple type of fiber is a ribbon which ranges in thickness from 0.25 mils to 1.0 mils, with a width of 8-30 mils, and in lengths from 0.25 inches up.

At the present time our pilot equipment operates up to 2100° F. (i.e. aluminum alloys), but shortly we expect to operate at temperatures up to 3500° F. (i.e. stainless steel).

A unique feature of this type of fiber is that the conversion from liquid to solid state occurs in milliseconds or fractions, providing great uniformity in a solid state, with no work being done on the metal, as compared with drawing, scraping or cutting.

We believe that the promise of low conversion cost with our new technique will open large new markets for a wide variety of metals and alloys, including lead and zinc. We are also confident that scale-up operations to commercial volume present no technical obstacles.

Our Company holds a number of applications and patents covering process as well as end uses, including rights to sub-licenses under applications or patents held by the Armour Institute and the S.O.S. Corporation. It is our policy to encourage the development of these fibers, and licenses or sub-licenses are, in general, available on a non-exclusive as well as nominal royalty basis.

The possible end uses which we have discussed are most interesting and we shall be glad to work with you in providing experimental quantities of fibers within the general specifications which we have indicated. We shall look forward with interest to further meetings and believe that we will find several valuable areas of actual interest.

Yours very truly,

(Signed) F. M. PARKER
Director of Marketing



Photo M-782-3
Sample 165-39-C

300 X magnification of a transverse cross-section of 1100 aluminum ribbon staple filament. The metal was formed into this ribbon shape when in the liquid state and then solidified. The forming and solidification occurred within a period of .000016 seconds.



Photo M-705-4A
Sample 185-22-C

50 X magnification of the surface of a 6 mil diameter round filament of 1100 aluminum. The metal was extruded into air and quenched from 1230° F. to less than 150° F. within 0.0026 seconds.