Alvin W. Boese Papers.

Version 3
August 20, 2018

3M TECHNICAL REPORT SUMMARY

TO:
Technical Communications Center, 201-2S

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Title BS&CP **LABORATORY, DEPT. #** 1268

Progress Report for the Third Quarter, 1971

Project: Staff Fiber Research and Development	**#** 192102-003
Supervisor: R.A. Matthews	**Date Received** 9/22/71
Author: D.H. Hogle	**Employee No.** 48465
Objective: To investigate new fiber forming process and materials.	**Notebook Ref.:** 29407, 31537, 26510
	No of Sheets: Page 1 of 1

ABSTRACT and Conclusions.

SPECIFIC PROBLEMS remaining to reach stated objective.

SUMMARY

1. Work continued on curable epoxy fiber systems. A suitable solvent system for a conventionally curable system was sought and optimum conditions were sought for low temperature extrusion of a melt curable latently catalyzed system.

2. The feasibility of producing a 3 dpf undrawn polyester fiber by a vertical melt spinning technique was demonstrated in the laboratory.

3. A prototype heat sealable scrim cloth was fabricated with melt extruded polyvinylidene chloride for Traffic Control Products Division as a candidate for use in cube corner reflective sheeting.

CONCLUSIONS

1. The zinc perfluoromethyl sulfonate catalyst partially cures the epoxy resin during extrusion.

2. An ideal solvent combination has not yet been found for a nylon-epoxy fiber formulation.

3. A binder fiber program is feasible based on internal polyester resin and our present laboratory facilities.

4. The scrim cloth approach to fabricating the cube corner reflective sheeting appears to be feasible from our point of view.

RECOMMENDATIONS

1. Work should be continued on epoxy fiber systems.
2. A joint binder fiber program with the Corp. Innovation Lab should be approved.
3. Traffic Control Div. should evaluate the scrim cloth prototype and set up a development program with our laboratory.

D.H. Hogle

D.H. Hogle

tmw

New 3M Chemicals reported? ☐ Yes ☒ No

No. of Data Sheets:

Security: Open ☒ Closed ☐

KEYWORDS: (include general, specific, and 3M product terms)

Scotchbrite-3M
Epoxy-resin
Binder/Fiber

To Pat Corley

TO L J Hessburg:
Pls attend in my absence - Bill 10/4

Interoffice Correspondence 3M COMPANY

SEP 24 1971

Subject: Fiber Research and Development

irc: C.I. Hause
R.A. Matthews

dcd: E.W. de Zeeuw
9/27/71 A.W. BOESE
A.J. MELBERG

September 20, 1971

SUGGEST WE ALL MEET WITH DON TO DISCUSS. — WJF 9/27

TO: DR. W.S. FRIEDLANDER - NEW BUSINESS VENTURES DIVISION - 218-1

FROM: DR. D.H. HOGLE - BS&CP LABORATORY - 235-C-23

(PLS INDICATE WHETHER YOU WISH TO PARTICIPATE.)

We are currently planning our extra-divisional fiber program for 1972. This year we are attempting to formulate an integrated program which is of interest to as many divisions as possible. In this way we hope that a greater depth of background can be applied to the solution of your fiber problems.

A number of areas have been chosen where there are specific interests in a number of divisions. A brief description of these programs are included with this correspondence. We will, of course, be happy to consider any problem that is unique to your area.

Several of these programs are of current interest to your division. We are presently in a good position to do some original work with the phase separation spinning equipment during the last quarter of this year. L. Hessburg has expressed interest in our epoxy fiber work, not as an independent fiber but rather as a coating for his fiber. Roger Grundman, of course, has a continuing interest in flock fibers.

We should like to arrange a time in the next week or ten days that is mutually agreeable to further discuss this program with you. Please have your secretary contact me on 3-2248.

D.H. Hogle.

DHH:tmw
9/22/71

9:00 Am 10/6 (Wed)

Attachment

Program Proposals for Fiber Research, 1972

1. Phase Separation Spinning:

This is a new solution spinning technology recently made available to us. We have laboratory equipment in-house and personnel available to embark upon a general evaluation program. A number of specialty fibers will be investigated, some of which are mentioned below.

- Filled fibers - Conductive and abrasive filled fibers are examples of a broad capability in this area.

- Composite fibers - Microfibers dispersed in a matrix polymer, core-sheath fibers, alloy fibers and the like are feasible in a much broader range of polymer types than is possible by conventional means.

- Porous fibers - Since fibers may, with the proper system, be tensilized before the solvent is removed, high tenacity porous fibers are possible with this technique.

2. Reactive Fibers:

A number of needs have arisen where a reactive fiber or fiber surface is required. Hence a current exploratory program will be scaled up if there is sufficient interest. The following areas are presently being developed or have been considered in the past:

- Epoxy Fibers - Two systems are under development - a latently curable bonding fiber that melts as it cures and a conventionally catalyzed nonmelting B-staged filament. Both systems will be available in sample quantities in the near future either as macro or microfibers.

- Fibers with Reactive Surfaces - There has been interest in past years in materials which would improve bonding characteristics of fibers to a substrate. We presently hold a patent for this purpose with polyester fibers and will be working in cooperation with an International 3M research group on a new technique during the coming year.

3. Recyclable and/or Disposable Fibers:

Water soluble or disposable fibers in addition to degradable fiber systems would be investigated. There are a number of polymers available that have some potential in this area.

4. Biconstituent, Bicomponent or Alloy Fibers:

Our background in this area is quite extensive. We have had experience with core-sheath, microfiber, and blend formulations in a number of polymer systems. Core-sheath fibers have been of interest for improved bonding and fiber optic applications. Micro fiber containing fibers have been developed for a number of uses such as synthetic leather, improved tensile and/or modulus fibers, upgrading of low quality (scrap) polymers and as a control parameter in fibrillated fiber from film. There appear to be many more applications in this infant area of technology.

5. Upgrading of Waste Materials to Fiber Grade Polymers:

A variety of techniques will be considered with the ultimate goal being a lower cost source of fiber raw materials.

6. Coiled Webs:

This program is an extension of our NOMAD and "Spacer-Web" technology. New materials, processes and applications will be investigated.

7. Binder Fibers:

A program has been proposed in cooperation with the Corporate Innovation Laboratory to develop amorphous fine denier binder fibers superior to those presently available. Our laboratory would develop the fibers and the C.I. Lab will do the development work.

Interoffice Correspondence 3M COMPANY

Subject:

c:
A.W.Boese Corp.Innov.Lab.-53-5
J.M.Pitblado BS & CP DIV. - 224-5NW
J.R.Sjolander Corp.Tech.Plng.-220-11C

November 4, 1971

TO: C. I. HAUSE - BS & CP DIVISION - 235-N103

FROM: R. M. ADAMS - 220-14E

Preliminary forecasts indicate that you are asking for continued support of the Fibers Program in the amount of $50,000 of Corporate funds. I believe this can be allowed subject to the usual consolidated review, but with the provision that at least $7,000 of this money be earmarked for services and materials to assist in projects of the Corporate Innovative Laboratory under the program direction of Al Boese. I am sure Al can provide you with more details of his needs.

Please remember that funds such as these are not intended to be for permanent support and that we may well wish to use such "seed" money in some other way a year from now. From all I hear, you and your staff have done a good job making use of such funds. For this I sincerely thank you.

RMA:va