GEORGIA INSTITUTE OF TECHNOLOGY
Engineering Experiment Station

PROJECT INITIATION

Date: July 9, 1970

Project Title: **Engineering Survey and Evaluation of Technical Data**

Project No.: **A-1270**

Project Director: **Mr. Rudy L. Yobs**

Sponsor: **Roy A. Martin Associates, Inc.**

Effective . . . . . **July 1, 1970** . . . . . Estimated to run until: . . . . **Indefinite** . . . . . .

Type Agreement: . . **Standard Research Agreement** . . . . . Amount: $ **Open** . . . . . .

Reports: As appropriate - by task assignment

Contact Person: Mr. Roy A. Martin
Suite 1618
Atlanta Gas Light Tower
Atlanta, Georgia 30303

Assigned to . . . . **Office of the Director** . . . . . Division

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A-1270-003

GEORGIA INSTITUTE OF TECHNOLOGY
EXPERIMENT STATION 225 North Avenue, Northwest · Atlanta, Georgia 30332

SR 177

December 18, 1970

Roy A. Martin Associates Inc.
1618 Atlanta Gas Light Tower
Atlanta, Georgia 30303

Attention: Mr. Roy F. Gottschalk

Subject: Report of the Identification of Unknown Plastic Samples
Project A-1270-003

Gentlemen:

The following plastic samples received from you on December 1, 1970 have been examined by infra-red and GC analytical techniques:

1. (white)
2. (white)
2A. (black)
2B. (black)

It has been established by infrared analysis that each of the above samples have identical polymer composition characteristic spectra. It was also established that this spectrum resembles very closely the spectrum of a styrene-butadiene copolymer, very similar to that of a proprietary product called Pliolite S-5 manufactured by Goodyear. The classes of polymers that have been ruled out by virtue of infrared analysis are as follows:

Polyolefins	Urethanes	Epoxies
Polyesters	Silicones	Melamines
Acrylonitriles	Alkyds	Vinyl Acetate
Cellulosics	Phenolics	Vinyl Chloride
Polysulfides	Polyethers	

In addition, pyrolysis of each of these sample materials yields a clear volatile monomer whose infrared spectrum resembles that of styrene. The gas chromatographic analysis of these pyrolysis products at 420° C or 788° F is similar to the analysis of the pyrolysis products of a styrene-butadiene copolymer under similar conditions.

A simple thermal analysis procedure revealed that approximately 0.4% of the material will vaporize in 10 seconds at 600° F. This vaporized material was analyzed and determined to be 90% monomeric styrene.

Respectfully submitted,

D. R. Hurst
Principal Research Technician

DRH/sc

APPROVED:

W. R. Tooke, Jr., Head
Industrial Products Branch