

The deflection and strain equations of a circular plate under various hydrostatic pressures were derived and computerized. The plate is made of a BFG rubber-composite and expected to be used as the underwater acoustic window. (EPG - S. Caprette)

I have used NASTRAN to model three different off-road tire molds. Stress distributions in these three molds were found under several different loading conditions. The objective of the work is to improve the curing productivity thru new stacking techniques which have never been tried by BFG. (Corporate Engineering - H. Owen)

The acoustical transfer function, bearing error and delay time of a BFG acoustic rubber-composite panel were studied analytically. This was done to simulate the acoustical performance of the sonar dome rubber windows of W. Germany's Fl22 frigates.

I made a trip to Bremer-Vulkan Company to assist its engineering staff to design the pressure plate to which the sonar dome rubber window will be attached. In the meeting there, we discussed the justification of using a thin pressure plate.

The techniques of the Practical Technology Forecast were reviewed. These techniques were used to forecast the demand for engineering thermoplastics during the next decade. (Technology Assessment & Planning - C. E. Wilkes)

Corporate Environmental Lab - O. S. Kurtz, R. E. Harris, J. W. Born, C. E. Titus, J. C. Riddle and P. M. Zakriski

The OSHA compliance test for acrylonitrile has been critically examined. The work indicates that the current testing method has several problem areas. The flame detector is not specific and we must change to the nitrogen flame detector to increase specificity. The carbon tube washing procedure gives rise to aging losses if not tightly controlled. Therefore, the analysis procedure will be modified to control this problem. The carbon tube solvent wash method seems to be limited to no less than 1.0 ug per tube. As testing requirements change and it becomes important to become more sensitive, other methods will need to be developed.

As part of the methods work on acrylonitrile, we conducted round robin testing with the plant laboratories. We find considerable variation between the plant labs. The variation will be addressed by a) updating and reissuing the analysis method and b) closely monitoring the labs by including acrylonitrile in our program of plant lab quality assurance.

The Environmental Lab is increasing its program of quality assurance for OSHA compliance testing. The program will focus on quarterly distribution of blind standards to the plants analyzing OSHA compliance tests. Five pollutants will be included in the program this year. Acrylonitrile, vinyl chloride, benzene, carbon tetrachloride and chloroform.

Preparations are under way to start up the genetic toxicology group. Dr. James C. Riddle began work in March and his first task is to bring the lab into operation (hopefully by Sept. 1). Sue Kurtz has completed her masters program in cellular biology and is about ready to spend full time in genetic toxicology and clinical chemistry. Ed Harris will soon take over the laboratory operations for routine

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OSHA testing while he continues as the OSHA methods specialist.

We have completed a statistical review of our urinary BNA (8-naphthylamine) procedure. We have shown that the procedure is seriously prone to losses and interferences. Modification in the procedure will be made.

The Environmental Lab has recently acquired a mobile facility. We are hopeful that this mobile laboratory will be available for use at the Fort Wayne plant in our effort to measure volatile organic emissions from undertread cementing operations.

We have been quite successful at adapting gas chromatographic and thin layer chromatographic procedures for our plant site work on the Cure-Rite 18 process in Akron. We intend to measure the methylene chloride and methanol by gas chromatography. The carbon disulfide emissions will be measured colorimetrically while the morpholine will be analyzed by a thin layer chromatography procedure. The aqueous concentration of product and major impurities can be conveniently measured by thin layer chromatography. Although, we are about ready to move our testing to the plant, we have postponed plant work until the completion of work at Fort Wayne related to volatile organics from undertread cementing.

We have completed preparations to measure volatile organics from the 9 inch flexible PVC compound-pelletizing line at Louisville. However, this work will also be delayed until the completion of the Fort Wayne study.

This past quarter we completed our Hycar process service to the Chemical Group engineering department. Our final work consisted of air velocity and volume measurements for the design of the vent gas delivery system. This system is part of the vent gas incineration project.

The lab also participated in the March compliance test of the Akron Chemical plant boiler. We met with the consultant, helped set up the test, reviewed and followed the testing and critiqued the test results. The test indicated that the boiler was still out of compliance on particulates.

The routine analytical service for this month required the following measurements:

174	blood lead
111	urine mercury
158	metal dust personnel exposure
744	organic vapor personnel exposure

Polymer Processing and Physical Testing - F. S. Myers, S. R. Keyser

We have completed the mixing of a natural rubber recipe and an SBR-BR recipe in the BR Banbury to a designed protocol. DSR test results from these batches were evaluated to establish DSR versus unit work processing profiles against which mixing of these same recipes in our other mixers can be compared. The analysis showed that there were no day to day differences in the mixing of either recipe. The DSR results showed that the mixing of the natural rubber recipe was more repeatable than was the mixing of the SBR-BR recipe. When we mixed the natural rubber recipe in the 1D Banbury to the same unit work as calculated from the power

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