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VISIT REPORT

H. B. FULLER CO.
GREENSBORO, NORTH CAROLINA

DATE OF CALL: February 10, 1977

FOR H. B. FULLER: Bill Roberts, TD
Bill Young, Plant Mgr.

FOR MONSANTO: J. M. D'Angelo
J. H. Orem

SUMMARY:

Benzoflex 50 consumption is 1.2-1.5M pounds; DBP use is 100-200M pounds. Both Santicizer 738M and Santicizer 160 have been used but neither is equivalent to B50 on initial viscosity and viscosity build characteristics. The higher initial viscosity of B-50 enables the use of 5% more water than can be used with S-738M.

Benzoflex 50 pricing is 34¢/lb. in bulk.

There appears to be a desire for a second source of supply. Velsicol has done a good job selling and servicing this location.

Specific laboratory work will be done in an effort to design a plasticizer based upon S-160 to duplicate B-50's viscosity and performance characteristics.

Evaluation and approval is the responsibility of Bill Roberts. Before purchasing, Greensboro management would consult with HBF headquarters in St. Paul.

DETAILS:

They produce adhesives for the cigarette industry for everything from filter assembly to case sealing. Lorilard is one of their major customers.

According to Bill Young, when S-738M was being used he had to rework 50% of the batches. With B-50 there is very little re-work. Viscosity build is the problem. Batches are cut with water to the desired viscosity immediately after mixing. Santicizer 738 appears to be slower in its initial penetration and swelling of the PVAc, but it continues to build over 24 hours to the point where the viscosity is too high. With S-738 the initial viscosity may be 400-500 cps after mixing but it builds to an unacceptable viscosity in 24 hours. Benzoflex 50 has an initial viscosity of 700-800 and its 24 hour viscosity build is not a problem.

Bill Roberts said S-738M's use created a deviation from standard. Today, he felt it would be possible to change to S-160 without encountering any insurmountable problems. Manufacturing procedures would have to be changed to accommodate S-160. He, and certainly Bill Young, prefer we develop a plasticizer giving manufacturing and performance characteristics similar to those obtained with Benzoflex 50.

TESTS & TESTING:

They use Fuller PD 360 PVAc emulsion. This is similar to Gelva S-55VH. Roberts and Young have no hesitancy in accepting data we develop using S-55VH. Suggested formulations and tests are:

Gelva S-55VH	80	90
Plasticizer	20	10

Mix for 15 minutes @ room temperature; the 80:20 system should then have a viscosity of ca 5000 cps.

Age for 24 hrs. @ 85°F. (HBF ages in a water bath) and measure viscosity.

Cut with water to 1000 cps and to 1500 cps; record additional percentage of water that is used; age 24 hrs. at 85°F. and record viscosity.

A resin (wet):plasticizer of 100:7 is okay for bag seams and other less demanding applications; 85:15 is a good packaging standard today; this higher plasticizer level is needed for tack.

HBF testing shows B-50 and B9-88 to be more water resistant than S-160 which is better than DBP. The test utilizes two 1 inch wide pieces of light weight (15-20 lb.) bleached paper that is lapped over an 1/8 inch wide, 1 mil thick adhesive bead. One end of the paper is anchored; the other end is bent 90° over a bar and a 1 ounce weight is attached. Water is applied over the lap and the time for the adhesive bond to fail is recorded.

Additional tests are:

1. Film of plasticized PVAc emulsion is cast on a glass plate, allowed to dry and then observed for clarity and softness.

2. A drop of water is placed on this dry film and observed for blushing and re-dispersion.

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3. Dirtiness - tendency of the adhesive for stringing, slinging, and viscosity use on the machine's applicator roll; this is seen at the end of the roll just beyond the doctor blade. A "Pot Devin", which is a small label paster consisting of a pot, roller, and doctor, is used for machinability testing in the lab.

4. Speed of set is determined using an inclined plane set-up they developed. This is a wet strength test.

John H. Orem

JHO/cc

2/11/77