WV-0011 #5

TRIP REPORT MEMORANDUM

PLAINTIFF'S EXHIBIT
Union Carbide 86

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Date: December 28, 1964

Author: C. E. Metten

Subject: Visit to Union Carbide Nuclear Division Research Center to Discuss Asbestos Flooring Felts

SUMMARY This visit was made to the Union Carbide Nuclear Division Research Center, Tuxedo, N. Y. to discuss flooring felts made from asbestos with latex binders. Discussions were held with H. F. Reichard, N. J. Setter, G. S. Jordan, Samuel T. Martin, Blair L. Ingalls, and Gordon C. Dickson. The Nuclear Division is trying to develop a flooring felt which could be made by extruding and calendering rather than by papermaking techniques such as that used by Armstrong and Congoleum Nairn. Their present formulation containing 20 per cent Hycar 1572 latex (believed to be 55/45 butadiene/acrylonitrile) needs greater flexibility. UCAR 110 will be evaluated at several concentrations in an effort to improve flexibility. Standard grade and high purity asbestos from the Nuclear Division will be evaluated in our laboratory as blends with longer fiber asbestos in the hope of increasing stiffness of felt for the Congoleum Nairn application.

DISCUSSION The Nuclear Division's short fiber asbestos is unsuitable for making flooring felt by papermaking techniques. They are currently studying the possibility of making this type material by extruding a putty-like mix of asbestos, latex and water and calendering the extruded sheet. A formulation containing 20% Hycar 1572 has good handling properties but is far too stiff and brittle for this application. A neoprene latex was tried but severe agglomeration or "clotting" during mixing prevented proper extrusion of the mix. Mr. G. S. Jordon was shown data from this laboratory on physical properties of felts made with longer fiber asbestos, and several latexes, by a papermaking process. They agreed to try UCAR 110 which could be used in greater amounts to give better flexibility at equal or lower cost. The more flexible 50/50 styrene/butadiene latex should also be tried in this application when it is available in sufficient quantities. It was also suggested that they add small amounts of a wax to their formulation to improve flexibility and water resistance.

The overall properties of their present system have not been determined, and all the advantages or shortcomings are not known. However, Rubberoid has shown an interest in this approach and they are to meet with them again in January for further discussions.

Samples of their standard and high purity grades of asbestos are being sent to this laboratory where they will be tried as blends with longer fiber asbestos in the Congoleum Nairn flooring felt application. It is hoped that small amounts of this material will increase stiffness and reduce elongation of the felt.

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A brief discussion with Mr. Ingalls and Mr. Dickson revealed that their high purity asbestos is an effective retention aid with cellulose and improves wet strength and tear resistance of the paper. Data from these studies have been given to a member of the Paper group.

EXPERIMENTAL At present, the formulation being used at the Nuclear Division laboratory is as follows:

Standard Grade Fiber JT-100	70
Cape Blue Crocidolite Asbestos	5
Hycar 1572 latex	20
Methocel	5

A total charge of 2500 grams is made in a Muller mixer by first mixing the asbestos and Methocel for 15 minutes, adding the latex and mixing an additional 15 minutes. Enough water is added to give a total of about 50 parts per hundred of asbestos. The mix then has a putty-like consistency. This is ram extruded through a 1/4 by 3 inch die at about 600 psi. The 1/4 inch thick sheet is passed through the calender between teflon sheets and thickness is reduced to about 1/32 inches. The material is then oven dried for 30 to 60 minutes at 75°C. Such a sheet has a tensile strength of 1400 to 2000 psi.

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