Report of The Technical Committee
of
ASBESTOS TEXTILE INSTITUTE

ATI-58

Charlotte, N. C.
September 16, 1949

Mr. President, Members and Guests:

The Technical Committee of the Asbestos Textile Institute has held two meetings since reporting to the Institute at Philadelphia on June 16, 1949. The first meeting was held July 15, 1949 at the Johns-Manville Research Center, Manville, N. J. The second was held at the Warwick Hotel in Philadelphia on August 12, 1949. The transactions of the Committee's work at those meetings are recorded in the Minutes which are attached to and made part of this report.

The high lights of the Technical Committee's activities have been a review and re-statement of projects for fellowship work, as set forth in the minutes of the meeting held July 15.

The Committee's report of June 16 mentioned that the Navy had requested the asbestos textile industry to make recommendations on and to submit samples of asbestos reinforced yarn to be used for sewing purposes. At the time of the Institute meeting samples prepared by Southern Asbestos Company and Raybestos-Manhattan had been sent to the Bureau of Ships, Navy Department. Since that meeting samples have been prepared by Keasbey & Mattison Company and Johns-Manville Corp. They were sent to your Chairman and forwarded to the Navy Department with a letter describing the various samples. No further word has been received regarding the Navy's selection from the samples submitted.

The Westinghouse Electric Corp. specifications 2060-M for asbestos cloth are in course of revision with regard to the heat test at 300°C. for 5 minutes. The Technical Committee has under investigation in the various laboratories of members of the Institute the results disclosed by Dr. Shaw in his thermal studies of asbestos cloth. It is desired that each company shall make tests of cloth at 300° ± 5°C. for 20 minutes ±30 seconds to see if there is general agreement in reproducing Dr. Shaw's results, which show that specimens of cloth reach maximum strength in 20 minutes at 300°C. and are at the lowest strength in 5 minutes after samples are placed in the oven at 300°C.

The Committee believes that this test, which is also required in a government specification for asbestos tape, should be carried out in an oven that will hold the necessary number of test specimens without crowding and shield them from radiant heat and from contact with oven walls. The use of muffles and an extra number of samples to shield the 5 test specimens have been discussed. The matter is receiving attention and the Westinghouse Electric Company has been requested to defer promulgation of the revision until the Technical Committee has completed its tests and made recommendations.

Further details on this matter will be found in the Minutes of the Technical Committee Meeting held August 12, 1949, hereto attached.

Respectfully submitted,

Jesse M. Weaver, Chairman

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PROGRESS REPORT

THE RESEARCH ACTIVITIES

OF THE

ASBESTOS TEXTILE INSTITUTE FELLOWSHIP

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PROGRESS REPORT OF THE RESEARCH ACTIVITIES

OF THE

ASBESTOS TEXTILE INSTITUTE FELLOWSHIP

INTRODUCTION

The work during the past quarter has been devoted in great part to the preparation of formal reports covering some of the investigations carried out under the Fellowship. The Technical Committee in meeting on July 15 reviewed the past work of the Fellowship and restated many of the problems which are to be continued in the future. At the same time the Fellow was directed to write and present to the Technical Committee and the News Release Committee of the Institute, for editing prior to publication, progressive and complete reports covering the following investigations:

1a. Determine the comparative abrasive resistance of various grades, weights and weave constructions of asbestos cloths.

1b. Determine the comparative flexural strength of various grades, weights and weave constructions of asbestos cloths.

2. Determine the comparative strengths of various grades, weights and weave constructions of asbestos cloth by

a) The grab method
b) The strip method

3. Determine the time-temperature relationship which, with reasonable laboratory facilities will result in a sample of cloth attaining constant weight.

4. Investigate methods of determining the fire or flaming resistance of the several grades of asbestos cloth.

All of these reports are in the process of preparation and it is hoped that most of this work can be completed before the next meeting so that authorization for publication release of some of the material can be given at that time.

Reference to the Minutes of the meeting herebefore mentioned will indicate the future course of the Fellowship work as proposed by the Technical Committee. The several projects are essentially the same as originally proposed, however in many instances the statements of the problems were clarified and some problems were expanded to include work considered to be essential in light of recent developments. Most of these projects have received some consideration, however the more fundamental studies have been pursued to a much lesser extent than those problems bearing commercial implications. It is hoped that it may be possible to give some of the fundamentals more attention in the months ahead.

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REVIEW OF WORK

Heat Aging Test

During recent months much attention has been directed toward the so-called "heat aging tests". Fellowship Report #12 served to review this problem and the work there reported is being checked by the interested parties in an effort to arrive at a basis upon which a reasonable set of specifications covering the test can be established. The Technical Committee in preliminary discussion made several recommendations in this connection and has directed the Fellow to proceed in the procurement of data pertaining to the furnace and the control of furnace conditions wherein the most suitable test conditions can be attained and maintained. It has been further suggested that a speciman clamp or holder be devised by which the individual cloths may be supported in the furnace in such a way that curling may be eliminated.

As a result of the attention which this work has directed upon this test there should evolve a set of specifications which will have more meaning and significance than has been possible in the past. Previous test work in this vein has obviously been unfair to both the producer and consumer and it is difficult to see how any correlation of data under these conditions was possible. The writer does not know the reaction of those who purchase asbestos textiles on the basis of this test, to the work we have undertaken and it is felt that their views in the matter should be given full consideration before a final analysis on our part is consumated. The test appears to be of a simulative service character and if such is the case a full recognition of all the conditions to be so encountered should be incorporated in the specifications. For this reason, the cooperation of the consumers of cloths meeting these specifications will be necessary if the most satisfactory specifications are to be developed.

Fiber Length Classification

In previous reports some mention has been made of work on the problem of classifying asbestos fibers on the basis of fiber length. The problem is to develop a method or technique which may serve as a substitute or at least a complement for the classifications now resulting from the Quebec Standard Testing Machine. In the Fellowship work fiber classifications are being affected in a water suspension where the rate and extent of settling are so determined to establish a classification criteria. The possibilities of such a method appear to be quite promising and certain classifications seem to yield much more critical values than are indicated by the Quebec Standard Testing Machine.

However, certain conditions have been encountered which make the problem somewhat difficult of solution. In the work considered thus far only opened carded fibers have been investigated and the extent and degree of opening critically influence the results of such separations. For example, in a recent test samples of Bell and Johnson 3R fibers which had been opened and carded by two member companies of the Institute were investigated. In the case of Company A there was less than 2% settling in both the Bell and

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Johnson fibers while the samples received from Company B showed settlings of approximately 30% for the same two carded fibers. This difference may be attributed to variations in the efficiency of the opening and carding operations or variations in fibers as received from the mines. It would appear however that the carding operation is largely responsible for the differences here observed. In light of these conditions it may be necessary when evaluating fibers from the mine to utilize a standard opening and preparation technique prior to testing. However, for purposes of checking opening and carding operations at a given plant the suspension test may well prove to be an accurate control measure.

Further work on this problem is being continued and more specific information should be available in the near future.

Fundamental Studies

During recent months two projects of a fundamental character have been included in the work of the Fellowship.

First, the Ceramics Department has just recently installed an elaborate thermal analysis unit and this equipment is to be available for some of our work. Our initial efforts in this field as reported some month ago were responsible for the procurement of this equipment and the installation and operation has fallen in great part upon our shoulders for guidance. Through the use of this equipment much fundamental data on the asbestiform minerals should be obtainable, increasing our knowledge of the complex structures involved.

Secondly, a project has been set up in the Ceramics Department in which hydrothermal synthesization processes are to be investigated. The equipment is so constructed that work at temperatures up to 1000°C and pressures up to 30,000 psi may be investigated. The asbestiform minerals are to receive prime attentions at this time and the writer has been designated to direct this work. Progress in this endeavor will be reported from time to time in the Fellowship Reports.

CONCLUSION

The Technical Committee in reviewing the work of the Fellowship felt that some of the information which has been developed should be written up in a form that will permit utilization either for publication purposes or as a source of general information for the Institute membership. The projects covering wearability or serviceability of asbestos textiles and the flamability of such materials have been quite thoroughly investigated and the approach and techniques here utilized have been somewhat different than is usually encountered in the evaluation of such characteristics. This work will be presented in the form of a scientific report which may, at the direction of the Institute, be published in some acceptable journal or may be confined to intra-association distribution. Other phases of the research work such as constant weight drying and the evaluation of properties of comparative textiles will also be prepared in report form, however these reports will be, for the most part, of interest only to the Institute membership

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and will not at this time be a subject for general publication by the Institute.

It is our understanding that the Fellowship carries the dual purpose of advancing the interests of the Institute through the development of useful scientific information and through the proper distribution of the information so that the Institute may receive favorable attention by allied and competative interests and the general public. We have endeavored to promote both of these purposes but to date the major concern has been directed to research work and the accumulation of data with little or no concern being given to the utilization of such information for promotive purposes. The Technical Committee now proposes to release certain elements of this work and we will welcome suggestions from the membership as to what information can best serve the promotional efforts and through what mediums of circulation such publications will be most effective.

The Fellowship is now in its fourth year and while progress has been noted in many cases our efforts have merely scratched the surface of the many problems still confronting the industry. It is hoped that all members will feel free to avail themselves of the facilities and information of the Fellowship and that we in turn can enjoy the full cooperation of the membership as we have in the past.

MYRIL C. SHAW

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