

MINUTES of the Meeting of the Technical Committee held on Thursday, April 1, 1949, at the Fellowship Laboratory at Rutgers University.

IN ATTENDANCE:

J. M. Weaver, Chairman
RAYBESTOS-MANHATTAN, INC.

JOHNS-MANVILLE CORP.

E. T. Coss
R. Jacobs
J. T. Robson

KEASBEY & MATTISON CO.

C. R. Frederick
J. T. Morris

RUTGERS UNIVERSITY

M. C. Shaw

PHILADELPHIA ASBESTOS CO.

H. Weaver

SOUTHERN ASBESTOS CO.

J. D. McCluer

ARMED SERVICES ELECTRO

STANDARDS AGENCY

G. W. Steffen

1. The meeting was called to order by the Chairman and the Secretary was directed to omit the reading of the Minutes of the previous meeting so that consideration of the important matters concerning this meeting could be taken up immediately.
2. Roll call was taken and Mr. G. W. Steffen, representing the Armed Services Electro Standards Agency was welcomed by the Chairman.
3. The specific objective of this meeting was to go over specifications of asbestos electrical insulating materials drafted by the Army-Navy Electronic and Electrical Standards Agency, the name of which has been changed to the Armed Services Electro Standards Agency. The Specifications are titled:

"National Military Establishment Specification, for Insulation, Electrical, Asbestos-Fiber, Treated and Untreated."

This specification is actually a revision of the Navy Dept. Specification 17-I-29 for Asbestos Roving, Cloth, Tape, Paper and Braided Sleeving.

4. The Chairman advised the meeting that a task group consisting of Mr. J. T. Robson, Johns-Manville Corp; Mr. C. R. Frederick, Keasbey & Mattison Co; and Mr. J. M. Weaver, Raybestos-Manhattan, Inc., met in Philadelphia on February 10 and 11, for the purpose of considering the subject specification and preparing comments and recommendations for presentation at this meeting. In this endeavor 36 comments were developed and formally offered by the Chairman and many more were presented as the discussion proceeded. As a result of these actions the following recommendations were presented to the Armed Services Electro Standards Agency for adoption as a part of the subject specifications.

EXHIBIT B-16

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a) Par. A-1. Federal Specification CCC-T-191-a should be included in this paragraph.

b) Par. B-1a. After a considerable amount of discussion regarding the proper method of determining magnetic iron content it was agreed that the present specification should be continued until some definite recommendations can be developed.

Table I-Par. B-1a. It was moved by H. T. Coss, seconded by C. R. Frederick and unanimously agreed that the column 2, titled, "Total Iron (maximum) percent," in Table I on page 3 should be eliminated since it has no bearing on the subject here considered.

c) Par. B-1e. This section provoked a considerable amount of discussion and it was initially agreed to recommend the deletion of the entire paragraph. However, further considerations indicated that such action would be unwise and it was finally moved by C. R. Frederick, seconded by J. T. Robson and unanimously agreed that the word "predominantly" should be inserted after the word "fibers" in the descriptions of grades 1 and 2.

d) Par. D-2a and D-2b. It was recommended by Mr. J. M. Weaver and unanimously agreed that the asbestos content should be changed from "not less than 85 percent" to "not less than 80 percent" to conform with Navy Specifications 17-I-29 covering the same subject.

e) Par. D-3. It was agreed that the term "vegetable" should be changed to "organic" and the final sentence should read in the last part, "the asbestos content shall not be less than 80 percent of the weight of untreated, conditioned, and dried test specimen, unless otherwise specified."

f) Par. D-4. It was agreed that the word "special" should precede the word "treatment" at the beginning of the second sentence. It was also agreed that the Air Force statement of recommendation regarding this subject should be adopted, ie, "Specification of treatment in the contract or order should be reserved for cases where special treatments are desired."

g) Par. E-2. It was agreed that the last sentence of this paragraph should be somewhat more specific in terminology and it was therefore recommended that the last sentence should be completed as follows: Change the period to a comma at the end of the sentence and add "except that this shall not be construed as requiring the total elimination of naturally occurring microscopic particles of magnetite."

h) Par. E-2a. It was suggested that perhaps papers of a lesser thickness than 0.010 should be considered in this classification and the Chairman agreed to confer with Mr. S. V. Dillon, Johns-Manville Corp., regarding the tolerances that should be applied to the thinner papers. No other action was promoted at this time.

i) Par. E-2b. It was agreed that the specification should be stated in terms of pounds per roll rather than yards per roll

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since this material is furnished by industry on this basis. The last part of this paragraph will therefore read as follows: "the paper shall be furnished in rolls 36 inches wide weighing 50 or 100 yards $\pm 5\%$ ".

j) Par. E-2c. It was agreed that the term "finished paper" should be changed to read "finished treated paper" since Par. F-4h covers finished treated paper.

k) Par. E-2d. It was moved by H. T. Coss, seconded by C. R. Frederick and unanimously agreed that this paragraph and table therein should be titled "Magnetic Iron Content" and that the Total Iron column should be eliminated from Table IV.

l) Par. E-2e. The table included in this paragraph provoked considerable discussion and further considerations are to be undertaken. It was felt that the Asbestos Content figures should be reduced from 90 percent to 82 percent. The Chairman volunteered to poll the membership further regarding this matter before final actions are recommended.

m) Par. E-2f. It was agreed that the word "black" at the beginning of the second line should be deleted.

n) Pars. E-3, E-4, E-5, and E-6. It was agreed that these sections should be in conformance with Navy Specification 17-I-29 and should include a statement to the effect that "The Asbestos Content shall not be less than 80 percent of the constant dried weight of untreated test specimens."

o) Par. E-3a (1). It was agreed that the last word of the sentence, "roving" should be eliminated and replaced by the words "singles yarn or roving".

p) Par. E-4a. It was agreed that the second sentence of this paragraph should be changed to read "the tape shall be woven of high grade, reasonably uniform asbestos yarn and as free from unsightly defects, irregularities of twist, dirt, lumps, and excessive knots as the best manufacturing practice permits". It was also suggested that the Chairman develop a clarification of the asbestos content section of this paragraph for consideration at a later date.

q) Par. E-4b. It was agreed that the last sentence of this paragraph should read "The tape shall be as free from nap and broken and uneven threads as the best manufacturing practice permits".

r) Par. E-4c. It was agreed that the breaking strength values after heating, as listed in Table VII of this section, are too high and it was recommended that the following values be substituted for those presently specified:

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Thickness	Breaking Strength	
	As received	After oven aging 300°C. for 5 min.
0.015	30	12
0.020	35	15
0.025	50	18
0.030	85	30

In this connection, there developed a considerable amount of discussion related to the procedures and techniques involved in making the determinations of the values here under consideration. It was pointed out that the specifications covering the conditions of testing are not sufficiently clear to assure uniformity of test procedures and that the values attained by present methods may be quite variable due to this lack of uniformity. It was suggested that the Fellow should review the problem and develop a procedure for conducting such tests which might serve as a basis for later formulating a more definite test procedure specification.

s) Par. E-4d. It was agreed that the Caption heading column 3 of Table VIII should be changed from "yards per pound" to "minimum yards per pound".

t) Par. E-4f. It was agreed that the word "strawboard" in the second line of this paragraph should be changed to read "suitable".

u) Par. E-4g. It was agreed that this paragraph should be added to this section and that it should specify the asbestos content shall be not less than 80 percent.

v) Par. E-5. It was moved by C. R. Frederick, seconded by J. T. Robson and unanimously agreed that the three words "in all respects" appearing in the fourth line of the paragraph should be eliminated.

w) Par. E-5a. It was moved by C. R. Frederick, seconded by J. T. Robson and unanimously agreed that since the tolerances established in Table IX are too close to be met by industry, the tolerances should be changed to + 0.016 inch and - .008 inch.

x) Par. E-5b. There was a considerable amount of discussion regarding paragraph E-4e (3) wherein the method for determining the breaking strength and flexibility of asbestos sleeving is specified. It was generally agreed that the method here described is not a fair test of asbestos sleeving since the shellac, its application and conditioning as covered in the subject specification may be of such a variable character as to induce extensive variations in results obtained. It was suggested that the Fellow should investigate this test and endeavor to formulate a more specific procedure wherein the true characteristic of the asbestos sleeving may be established.

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y) Par. E-6. It was agreed that portions of this section should be changed to read as follows: The second sentence should read "The cloth shall be woven of high grade, reasonably uniform yarn, and as free from unsightly defects, irregularities of twist, dirt, lumps, and excessive knots as the best manufacturing practice permits." In the third sentence the words "in all respects" should be eliminated.

z) Par. E-6a. After a considerable amount of discussion it was agreed that the information as set forth in table X was incorrect with respect to the thicknesses specified and the tolerances indicated. It was recommended that the following values be substituted for those now specified.

Nominal (Inch)	Thickness	
	Maximum (Inch)	Minimum (Inch)
.025	.030	.020
.035	.040	.030
.045	.050	.040

aa) Par. E-6d. It was agreed that this paragraph should be more explicit and was changed to read "Winding--Asbestos cloth should be wound on suitable tubes in lengths of 50 or 100 yards and widths of 36 or 40 inches $\pm 1/2$ inch, as specified in the contract or order".

bb) Par. F-1c. It was agreed that some provision should be incorporated in the specification which would permit the replacement of lot samples taken for inspection purposes. To this end the following sentence was recommended for incorporation between the second and third sentences of the paragraph. "The material removed from the roll shall be replaced after the samples have been taken for inspection."

cc) Par. F-4a (1). There was a considerable amount of discussion pertaining to the proper conditions at which untreated asbestos should be treated in order to attain constant dried weight. It was generally agreed that the conditions as specified in this paragraph are not sufficient to attain the desired end and it was therefore recommended that the paragraph should be changed to read "The specimens shall be subjected to a temperature of $110^{\circ}\text{C} \pm 2^{\circ}\text{C}$ for 2 hours ± 10 minutes."

dd) Par. F-4a (2)a. The wording of this paragraph was found to be in error in several instances and it was unanimously agreed that the following corrections should be made. (1) The word "conditioning" in the title should be changed to "preparation". (2) In line 14 the words "the residue" should be placed between the words "and" and "placed". (3) All temperatures should be in the Centigrade scale with the Fahrenheit equivalents in parenthesis following. (4) In the 20th line the wording should be "----dried for 2 hours ± 10 minutes in an electric oven at $110^{\circ}\text{C} \pm 2^{\circ}\text{C}$.-----".

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ee) Par. F-4a (2)b. To facilitate testing under industrial condition it was agreed that the following recommendation by Mr. J. M. Weaver should be proposed as an alternate specification within this paragraph: "Due to the low regain of asbestos fiber, which is approximately 1 percent, strength and flexibility tests are generally made by industry at room temperature and condition and we recommend this procedure as an alternate for the inspector to follow for the saving of time. However, asbestos paper is dried for 2 hours at 212° F."

ff) Par. F-4c (1)b. It was agreed that alternate method No. 2 of Section XII, Federal Specification CCC-T-191a should be added to this section as an alternate provision for application where the subject specification cannot be followed.

gg) Par. F-4d (1). Since reference to "total iron" has been previously considered ill-advised, it is recommended that this entire paragraph be deleted.

hh) Par. F-4d (2). It was agreed that the words "paper only" should be deleted from the title since the section refers to all forms of product.

ii) Par. F-4d (3). It was agreed that the last three words of the paragraph "of the paper", should be deleted for the reason given in the preceeding comment.

jj) Par. F-4e (1). It was agreed that the following three sentences should be inserted in this paragraph following the first sentence: "The test shall be made immediately after the specimens have been dried for 2 hours at 100°C. The specimens shall be tested in full section. The initial length of the test specimens between the jaws shall be 3 inches, and the jaws shall separate at a uniform rate of $12 \pm 1/2$ inches per minute."

kk) Pars. F-4e (4)a, F-4e (4)b, and F-4e (4)c. It was agreed that these paragraphs should be eliminated and that par. F-4e (4) should read: "Cloth--The test shall be performed in accordance with Section VI of Federal Specification CCC-T-191a".

ll) Par. F-4f (4). It was agreed that 5000 volts is too high a value since the sleeving, which has a wall thickness of .031 inch. is only required to withstand 25 volts per mil, as shown in Par. E-5c.

5. At the conclusion of this discussion the Chairman advised the group that he would confer with the several members of the committee regarding the points of question that had been raised in the course of the meeting. On the basis of these contacts further recommendations in connection with these specifications will be offered for consideration at the next meeting of the Technical Committee. At the same time, Mr. G. W. Steffen advised that the recommendations and comments here developed would be offered to the Services for their consideration.

6. There being no further business it was unanimously agreed that the meeting be adjourned.

MYRIL C. SHAW
Secretary

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