INSULATED POWER CABLE ENGINEERS ASSOCIATION


TO: All Members of Rubber and Thermoplastic Insulated Power Cable Sections

DATE: November 10, 1959

PROJECT: #444

FROM: H. A. Schilling

SUBJECT: HIGH TEMPERATURE CABLES AND CONNECTORS - JOINT SECTIONS COMMITTEE

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At the Joint Sections meeting held November 4, 1959 Mr. G. J. Crowdes requested an expression of opinion as to whether or not special Committee DG shall continue its work on high temperature cables and connectors. It was generally agreed that the work of Committee DG should continue.

In the way of background, at the July 9, 1957 meeting of the NEMA-IPCEA Coordinating Committee it was stated that NEMA had decided to form a Joint Sections Committee between the Wire and Cable Section and the Pressure Connector Group. NEMA had requested that IPCEA appoint three of its members to represent the NEMA Wire and Cable Section in this activity. On September 11, 1957 the Codes and Standards Committee advised the following members would comprise the committee:

Pressure Connector Group
- Fred Heller, Chairman, Burndy Corporation, Norwalk, Conn.
- M. D. Bergan, The Thomas & Betts Co., Elizabeth, N.J.
- J. H. Hopkins, AMP Inc., Harrisburg, Pa.

Wire and Cable Section
- H. A. Schilling, Chairman, Kaiser Aluminum & Chemical Corp., Newark, Ohio
- D. A. Silver, General Cable Corp., New York City
- J. F. McClelland, Jr., Rockbestos Products Corp., New Haven, Conn.

At that time the Pressure Connector Group had noted that the recognition and test program of Underwriters' Laboratories involved a 75°C limit for connectors used with aluminum wire and cable, and that there was a need for connectors for temperatures higher than 75°C. On November 12, 1957 Chairman Heller had called the first meeting of this new Joint Sections Committee; copy of the minutes attached. Since the meeting of November 12, 1957 and the present date, the Joint Sections Committee has been inactive, however, U/L has approved connectors with aluminum cable at a temperature of 90°C.

On September 10, 1959 H. P. Michener discussed the work of the Joint Sections Committee with Mr. Bergan, the newly appointed chairman of the Pressure Connector Group. Mr. Bergan did not believe that from the Pressure Connector viewpoint there was any problem with respect to higher temperatures and he would, therefore, be inclined with the suggestion of the Codes and Standards Committee that the Joint Sections Committee be disbanded unless there is a feeling on the part of the other representatives that there is some further task that can and should be done.

It was for this reason that our President, Mr. Crowdes, asked for an expression of opinion as to whether or not Special Committee DG should continue its work. As a result of IPCEA's decision, Mr. H. P. Michener was advised by letter on November 6, 1959 of our decision. It is expected that the Codes and Standards Committee will probably discuss this subject at the November meeting of NEMA.

Very truly yours,

H. A. Schilling, Chairman
Committee DG

cc: G. J. Crowdes
G. M. Haskell
G. W. Zink

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NEMA Y

National Electrical Manufacturers Association
155 East 44th Street New York 17, N. Y.
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MINUTES: JOINT SECTIONS COMMITTEE ON HIGH TEMPERATURE CABLE AND CONNECTORS

PLACE OF MEETING: TRAYMORE HOTEL, ATLANTIC CITY, N.J.

DATE AND TIME: TUESDAY, NOVEMBER 12, 1957 - 3:00 PM

MEMBERS PRESENT:

Wire and Cable Section
H. A. Schilling - Kaiser Chemical & Aluminum Co.

Pressure Connector Group
M. D. Bergan - Thomas & Betts Co.
J. H. Hopkins - AMP, Inc.

MEMBERS ABSENT:

Wire and Cable Section
J. F. McClelland, Jr. - Rockbestos Products Corp.
D. A. Silver - General Cable Corp.

Pressure Connector Group
Fred Heller - Burndy Corporation

OTHERS PRESENT:

H. P. Michener - NEMA Staff

PRESIDING OFFICER:

In the absence of the Chairman, Mr. Heller, the Committee elected M. D. Bergan chairman for the meeting.

LACK OF QUORUM

It was noted that there was not a quorum present at the meeting and that any actions would need to be subject to approval by sufficient of the absent members to constitute a majority.

PROPOSED UNDERWRITERS' LABORATORIES' TEST PROCEDURE

For the benefit of the Committee members, Mr. Bergan reviewed the outcome of a conference which had been held the previous week at Underwriters' Laboratories with representatives of Kaiser Chemical and Aluminum Company, Burndy Corporation and the Thomas and Betts Company.

Mr. Bergan related that at that meeting, the Laboratories representatives - Messrs. Neumer and Maplethorpe -- had agreed with the manufacturers on the outline for a test program. It is expected that the Laboratories will, within

the near future, embody the points covered in a set of proposed requirements to be circulated to the industry.

The points mentioned as being covered included the following:

1. The immediate program and requirements will cover a 90 C rating.

2. Only connectors having aluminum bodies were covered.

3. The discussion was limited to compression type connectors.

4. It was understood that the program will be limited to #12 AWG minimum and one million circular mils maximum.

5. The test will be applied with conductor temperatures controlled between 90 and 95 C (for approval at a 90 C rating) and whatever the current is which provides such a temperature will be the current for the test. It was understood that it is the cable temperature which is the control temperature not that of the lug.

6. The cables actually used in the test may have 75 C insulation since 90 C insulation might not be readily available and would not affect the test results.

7. The connectors will be bolted back to back with steel bolts and plain washers.

8. Lengths of cable for the test have not been decided on and the appropriate lengths may be determined during the course of the investigation. The Joint Sections Committee members indicated a belief that lengths somewhat longer than those in the existing Underwriters' Laboratories' standard might turn out to be necessary.

9. It was understood that neutralizers will be used. Mr. Bergan explained that such neutralizers would consist of bars of metal welded to the conductors at the ends of the conductors opposite those to which the connectors are attached. He said that such neutralizers were essential in obtaining consistent results in testing connectors applied to aluminum cables because of the effective insulation between the strands of aluminum. If connectors which conduct current into only a percentage of the strands were connected to both ends of the same conductor, the fact that the two connectors were not making contact with the same strands would provide erratic results.

10. It was understood that Underwriters' Laboratories may set up limits on millivolt drop although no decision had been reached.

11. The Laboratories may decide to increase the on and off cycling beyond the 42 cycle figure which has previously been employed. Mr. Bergan said that manufacturers felt that the 42 cycle value may be inadequate and this seemed to be also the consensus of the Joint Sections Committee.

12. Mr. Bergan reported that each of the manufacturers present at the Laboratories conference were requested to submit to the Laboratories the data which they have accumulated with the expectation that this will assist the Laboratories in minimizing the further tests necessary.

DISCUSSION

Upon studying this information, the members of the Joint Sections Committee who were present were unanimous in the feeling that the program outlined at the Underwriters' Laboratories' meeting is good as a preliminary step. Accordingly, it was decided that there will apparently be no need for this Joint Sections Committee to meet with Underwriters' Laboratories at the present time.

However, there may be need for further activity of the Joint Sections Committee depending on the development of the details by the Laboratories and the outcome of the tests.

Moreover, it was recognized that further work will be needed at some future time in connection with possible later recognitions at temperatures higher than 90 C. The Committee agreed however that this program for proceeding at 90 C rather than immediately working on some higher temperature was appropriate.

Mr. Schilling indicated that he will report to the Insulated Power Cable Engineers Association on the results of the discussion at the Laboratories and at this meeting.

TIME AND PLACE OF NEXT MEETING

The time and place of the next meeting were left to the call of the Chair with the suggestion that some time in May might be appropriate with the expectation that by then there would be available results of the Laboratories' test work.

ADJOURNMENT

There being no further business to come before the Committee, the meeting was adjourned at 4:50 P.M.

H. P. Michener
Secretary

HPM:AR

MAILED FROM NEMA HEADQUARTERS: December 13, 1957
Approved by Counsel