

**MOISTURE IN PAPER INSULATED CABLES**

Paper insulation is known to be sensitive to moisture hence the application of a lead covering. The majority of paper insulated cable failures are due to the ingress of moisture through the cable ends. This bulletin serves to give some guidelines in the prevention of this problem.

**Handling and storage**

SANS 97 requires that both ends of a paper-insulated cable must be sealed at all times during storage and installation. At African Cables this is done by plumbing robust lead caps on the cable ends. Always replace the end caps using the same plumbing method whenever the cable is cut in the place of storage or during installation.  
Installation

Cables should be handled in accordance with SANS 10198-8. If terminating or jointing is not done directly after cable laying inspect the end caps for damage or cracks that may have occurred during pulling. If there is any doubt the cable end should be resealed by means of the plumbing method.

**Jointing and terminating**

The code of practice for installation of paper-insulated cables prescribes as one of the preliminaries to carry out the jointers' moisture test as briefly described below.

- Heat up clean cable impregnating compound or paraffin wax to a steady temperature of  $130^{\circ}\text{C}\pm 5^{\circ}\text{C}$  and maintain this temperature throughout the test.
- Dip individual paper tapes into the hot medium using pliers or tweezers to ensure not to contaminate the paper tapes with moisture from the hands or surroundings.
- Frothing on the surface of the hot medium AND audible crackling indicates the presence of moisture in the impregnated papers.

If moisture is found to be present, cut the cable and redo the test until it proves to be free of moisture.

**References**

- SANS 10198-8: Cable laying and installation.
- SANS 10198-10: Jointing and termination of paper-insulated cables.
- SANS Method 6281-4: Qualitative test for the presence of moisture in impregnated paper insulation.

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