GUIDE FOR ESTABLISHING COMPATIBILITY OF SEALED CONDUCTOR FILLER COMPOUNDS WITH CONDUCTING STRESS CONTROL MATERIALS

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INSULATED CABLE ENGINEERS ASSOCIATION, Inc.

FOREWORD

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Guide for Establishing Compatibility of Sealed Conductor Filler Compound with Conducting Stress Control Material

1.0 INTRODUCTION

1.1 PURPOSE

This guide provides for testing of conductor filling compounds with overlaying extruded conducting material for sealed conductor designs.

1.2 SCOPE

The strand filler compound compatibility test is designed to verify that the electrical properties of a conducting material used as a conductor stress control layer are not adversely affected when exposed to strand filler material. It describes a test method of demonstrating that the volume resistivity and volume resistivity stability remain within their specified limits when the conducting material is exposed to the strand filler material at the emergency operating temperature of the cable.

2.0 TEST SPECIMENS

2.1 The combination of filler compound and conductor stress control material are to be prepared as per the appropriate Specimen Preparation Procedure provided in Appendices A and B for pumpable and extrudable filler compounds, respectively. Alternate methods of specimen preparation may be permitted provided the final test specimens fully comply with paragraph 2.3 and that Appendices A and B, as applicable, would serve as a referee method.

2.2 Two 0.125 inch (3.18 mm) minimum width bands of silver conductive paint are applied 2.0 inches (50.8 mm) apart on both sides of each specimen. The silver paint shall be Micro-Circuits Silver Paint SC-12 or equivalent and applied with a suitable small paintbrush. After the paint has been allowed to dry for at least one hour at room temperature, copper wires are applied around each silver paint band and twisted to form a tail. These copper wires are to be extended to allow resistance measurements of the specimens while at 130°C in an oven.

Four electrodes may be used if needed and shall be applied with the separation specified in 2.2.1 to an exposed surface of the stress control material strip.

2.2.1 The two electrodes placed 2 inches (50.8 mm) apart shall be used for potential measurements. Two additional electrodes shall be placed one inch (25.4 mm) beyond each potential electrode and shall be used for passage of current.

2.3 The final test specimens shall be as shown in Figures 1 or 2 based upon the number of electrodes used.