

IEEE Standard for Exposed Semiconducting Shields on High-Voltage Cable Joints and Separable Insulated Connectors

Sponsor

**Accessories Subcommittee of the Insulated Conductors Committee
of the
IEEE Power Engineering Society**

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Abstract: IEEE Standard 592-1990, IEEE Standard for Exposed Semiconducting Shields on High-Voltage Cable Joints and Separable Insulated Connectors, provides design tests for shield resistance and a simulated fault-current initiation for exposed semiconducting shields used on cable accessories, specifically joints and separable insulated connectors rated 15 kV through 35 kV.

Keywords: shield resistance, fault-current initiation

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Foreword

(This Foreword is not a part of IEEE Std 592-1990, Standard for Exposed Semiconducting Shields on High-Voltage Cable Joints and Separable Insulated Connectors.)

Cable accessories, specifically separable insulated connectors system and joints, used with extruded dielectric cable rated 5 kV and above, are required to have an outer semiconducting shield covering their insulation surfaces. The shield is intended to protect the insulation, provide voltage stress relief, maintain the accessory surface at or near ground potential under normal operating conditions, and initiate fault-current arcing if the accessory insulation should fail. This standard sets forth tests and requirements to demonstrate that the shield will perform these duties.

One of the requirements in this standard specifies a maximum shield-resistance performance. This requirement is to assure that the accessory shield provides stress relief and that the shield surface is maintained at or near ground potential.

Another requirement in this standard specifies a shield fault-current initiation test. This test is designed to demonstrate the ability of the accessory shield to initiate fault-current arcs to ground that will cause overcurrent protective devices to operate, should the accessory insulation fail. In this test, special connections and procedures are specified to assure that full circuit voltage will be applied to the shield during the test. The test specifications do not, however, attempt to simulate all service conditions nor field assembly.

This revision of IEEE Std 592-1977 reduces the fault initiation time from 3 min to 3 s, reflecting the present day performance. The minimum rating of devices was raised from 5 kV to 15 kV to provide consistency with other applicable standards.

This standard was prepared by a working group of the Accessories Subcommittee of the Insulated Conductors Committee of the IEEE Power Engineering Society. The working group had the following membership at the time this standard was approved:

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