

WATER SUPPLIES DEPARTMENT

STANDARD SPECIFICATION E-30-04

HEAT SHRINKABLE POWER CABLE TERMINATION KIT

1. **GENERAL**

This specification covers the manufacture, type of materials and technical requirements for heat shrinkable cable termination kit for use in electrical installations up to 11 kV.

2. **REQUIREMENTS**

The cable termination kit and components supplied shall meet the following requirements:-

- (a) Testing standards – IEC 60502-4 for high voltage heat shrinkable termination kits and BS EN 50393 for low voltage heat shrinkable termination kits.
- (b) Application – Indoor use unless otherwise specified.
- (c) Cable connection – Suitable for terminating XLPE insulated cables to IEC 60502 or PVC insulated cables to IEC 60227 as specified in the Particular Specification.
- (d) Maximum temperature condition:-
 - (i) No heat distress for continuous operation at a conductor temperature of 90°C for XLPE insulated cables and 70°C for PVC insulated cables.
 - (ii) No heat distress for 30 minutes operation at a conductor temperature of 160°C.
- (e) Performance requirements:-

Property	Minimum Requirement
(i) Dielectric strength	♦ 10 kV/mm for components other than stress control tubing.
(ii) Heat shock	♦ No slitting, cracking, dripping or melting at 250°C for 30 minutes.
(iii) Tensile strength	♦ For stress control tubing – 10 N/mm ² ♦ For three-core breakout– 9 N/mm ² ♦ For other components – 8 N/mm ²

Property	Minimum Requirement
(iv) Insulation strength	<p>A.c. voltage withstand 15 min (phase/earth)</p> <ul style="list-style-type: none"> ♦ 600/1000V cables – 4kV ♦ 3.3 & 6.6kV cables – 27kV ♦ 11kV cables – 35 kV <p>Impulse voltage withstand 1.2/50μs (phase/earth)</p> <ul style="list-style-type: none"> ♦ 600/1000V cables – 8kV peak ♦ 3.3 & 6.6kV cables (Indoor) – 60kV ♦ 3.3 & 6.6kV cables (Outdoor) – 70kV ♦ 11kV cables (Indoor) – 75kV ♦ 11kV cables (Outdoor) – 95kV

3. TERMINATION KIT

3.1 General

The termination shall provide electrical stress relief, environmental sealing and anti-tracking protection. Three-core breakouts provided for multi-core cables shall be heat-shrinkable to seal the cable crotch against the effects of moisture and dirt from the environment.

Components shall be of heat recoverable polymeric type, factory manufactured and assembled in kit form. Each set of cable termination kit shall include the following items:-

- (i) 3-core cable
 - ♦ void filling compound
 - ♦ stress control tubings (3.3kV and above)
 - ♦ sealant tape
 - ♦ three-core breakout
 - ♦ sealing and anti-tracking sleeves
 - ♦ rain skirts (for outdoor application only)

- (ii) 1-core cable
 - ♦ void filling compound
 - ♦ stress control tubing (3.3kV and above)
 - ♦ sealant tape
 - ♦ sealing and anti-tracking sleeve
 - ♦ rain skirts (for outdoor application only)

3.2 Specific Requirements

The components for the termination kit shall comply with the following requirements:-

(a) Stress Control Tubing

The stress control tubing shall provide electrical stress control over the insulated cores in high voltage cables.

(b) Three-core Breakout

The three-core breakout shall be distinguishable from the non-anti-track material. It shall possess anti-track and erosion-resistant properties for sealing the prepared crotch of a three-core cable.

(c) Sealing and Anti-tracking Sleeve

The sealing and anti-tracking sleeve(s) shall be distinguishable from the non-anti-track material. They shall possess anti-track and erosion-resistant properties for enclosing and sealing the prepared cable-core(s) for termination.

(d) Rain Skirt for Outdoor Application

The rain skirt shall be distinguishable from the non-anti-track material. It shall possess anti-track and erosion-resistant properties for installation over the anti-tracking sleeve.

3.3 Type Test Requirement

Upon request, type test reports to confirm compliance with the performance requirements shall be submitted for assessment.

3.4 Storage

Components shall be capable of being stored without deterioration within the temperature range -10°C to +45°C.

Components or materials shall have an unlimited shelf life under normal storage conditions.

- End of this Specification -