

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) Application – Suitable for indoor use unless otherwise specified.
- (b) Cable connection – Suitable for terminating impregnated paper-insulated cables to BS 6480, XLPE insulated cables to BS 6622 or PVC insulated cables to BS 6346 as specified in the Particular Specification.
- (c) Maximum temperature condition -
 - (i) No heat distress for continuous operation at a normal cable conductor temperature of 80°C for paper-insulated cables and 70°C for XLPE/PVC insulated cables.
 - (ii) No heat distress for 30 minutes operation at a cable conductor temperature of 160°C.
- (d) Performance requirements :-

Property	Minimum Requirement
(i) Dielectric strength (Not applicable to stress control tubing and conducting glove)	10 kV/mm
(ii) Heat shock	No slitting, cracking, dripping or melting <ul style="list-style-type: none">♦ For internal insulating tubing at 200°C for 30 minutes♦ For other components at 250°C for 30 minutes

Property	Minimum Requirement
(iii) Tensile strength	<ul style="list-style-type: none"> ♦ For stress control tubing – 10 N/mm² ♦ For conducting glove – 9 N/mm² ♦ For other components – 8 N/mm²
(iv) Insulation strength	<p>For 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>For 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 non-tracking tubing as specified below:-

- (a) For multi-core cables, a heat-shrinkable cable crutch sealing device (glove) to seal against the effects of moisture, dirt from the environment shall be provided.
- (b) For belted cables, the heat-shrinkable cable crutch sealing device (glove) shall be made of conductive material for electrically connecting the cable sheath to the stress control tubing.

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

- (a) Termination kit for 3.3kV - 11kV Power Cables
 - (i) 3-core cable
 - ♦ internal insulating tubings for belted type cable
 - ♦ stress control tubings
 - ♦ stress control wedge
 - ♦ insulating profile
 - ♦ glove
 - ♦ anti-track tubings
 - ♦ shroud (sealing boot)
 - ♦ weather shed for outdoor application

- (ii) 1-core cable
 - ♦ stress control tubing
 - ♦ anti-tracking tubing
 - ♦ sealant tape
 - ♦ shroud (sealing boot)
 - ♦ weather shed for outdoor application

(b) Termination kit for 600/1000V Power Cables

- ♦ anti-track tubing
- ♦ glove for 3-core cable
- ♦ shroud (transition boot)

3.2 Specific Requirements

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

(a) Internal Insulating Tubing for Belted Cable

The internal insulating tubing shall be either transparent or coloured white. It shall be used in the internal construction of cable joints and terminations.

(b) Stress Control Tubing

The stress control tubing shall be coloured black. It shall provide electrical stress control over the insulated cores in cable joints and terminations. This tubing shall be placed between cable core and anti-track tubing.

(c) Anti-track Tubing

The anti-track tubing shall be distinguishable from the non-anti-track material and be coloured brown. It shall possess anti-track and erosion-resistant properties for use as an external covering of insulated cores in cable joints and terminations.

(d) Insulating Glove for 3-core Screened Cable

The insulating glove shall be distinguishable from the non-anti-track material and be coloured brown. It shall possess anti-track and erosion-resistant properties for sealing a prepared crotch in cable joints and terminations.

(e) Conducting Glove for 3-core Belted Cable

The conducting glove shall be coloured black. It shall possess electrical conducting properties for sealing a prepared crotch in cable joints and terminations.

(f) Shroud

The shroud shall be distinguishable from the non-anti-track material and be coloured brown. It shall possess anti-track and erosion-resistant properties for enclosing and sealing the prepared cable-core connections at indoor switchgear termination.

(g) Weather Shed for Outdoor Application

The weather shed shall be distinguishable from the non-anti-track material and be coloured red. It shall possess anti-track and erosion-resistant properties for application over the prepared cable cores.

3.3 Type Test Requirement

Upon request, type test reports for showing the components being in compliance with the performance requirements specified shall be submitted by the supplier.

3.4 Storage

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

Components or materials, if subject to a shelf life limitation, shall have the final date of use shown on all packaging.

- End of this Specification -