National Standards Authority of Ireland

IRISH STANDARD

I.S. EN 50356:2002

ICS 29.060.20

National Standards
Authority of Ireland
Dublin 9
Ireland

Tel. (01) 807 3800
Tel (01) 807 3838

METHOD FOR SPARK TESTING OF CABLES

This Irish Standard was published under the authority of the National Standards Authority of Ireland and comes into effect on June 28, 2002

Price Code G

Údarás um Chaighdeáin Náisiúnta na hÉireann

EUROPEAN STANDARD **EN 50356**

NORME EUROPÉENNE

EUROPÄISCHE NORM April 2002

ICS 29.060.20

English version

Method for spark testing of cables

Essai diélectrique au défilement à sec des câbles électriques

Durchlaufspannungsprüfung an elektrischen Kabeln und Leitungen

This European Standard was approved by CENELEC on 2002-03-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Ref. No. EN 50356:2002 E

Foreword

This European Standard was prepared by the Technical Committee CENELEC TC 20, Electric cables.

The text of the draft was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 50356 on 2002-03-01.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2003-03-01

- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2005-03-01

Contents

Introduction

The practice of using spark-testers to detect defects in the insulation or sheathing layers of electric cables has been developed over many years of practical experience.

The operation of the equipment using the verification method described in this document has proved to be satisfactory. This method employs an artificial fault simulator and its performance has been shown to be comparable to that using operational efficacy tests involving the detection of artificially prepared defects (i.e. faults in the insulation/sheathing material) in lengths of cable.

1 Scope

The spark-test method specified in this standard is intended for the detection of defects in the insulation or sheathing layers of electric cables. For single core cables with no outer metallic layer, the general process is accepted as being equivalent to subjecting samples of those cables to a voltage test in water.

This standard specifies the operational requirements for the spark-test equipment, as well as the principal characteristics, functional parameters and calibration procedures for each type of test equipment.

2 Types of voltage waveform

For the purposes of this standard, the types of voltage waveform used for spark-testing are divided into the following groups:

a.c. an alternating current (a.c.) voltage of approximately sine-wave form, at the industrial frequency of 40 Hz to 62 Hz;

d.c. a direct current (d.c.) voltage;

h.f. an alternating current (a.c.) voltage of approximately sine-wave form, at frequencies between 500 Hz and 1 MHz;

pulsed a voltage waveform comprising a fast rise time and highly damped wave-tail, as defined in 4.2.

NOTE Provided the manufacturer can demonstrate equivalent effectiveness, h f voltages at frequencies below 500 Hz may be used.

3 Procedure

The insulated conductor or sheathed cable shall be passed through an electrode energised at the test voltage. The method detailed in this standard provides for the application of a.c., d.c., h.f. and pulsed voltages.

The requirements for voltage waveform, frequency and test voltage are given in 4.2 and clause 5. The maximum speed at which the cable shall pass through the electrode is determined by the minimum residence time specified in 4.6.

When used as an alternative to a voltage test in water, it is recommended that the test be restricted to layer thicknesses not greater than 2,0 mm and to a.c. and d.c. test voltages.

The requirements are not applicable to cable insulation having a rated voltage (U_0) greater than 3 kV.

Annex A provides recommended voltages for each voltage waveform, to be used in the absence of any alternative voltages in the relevant cable standard.

4 Equipment

4.1 Safety

To limit the effect of electrical shock to personnel, for all types of voltage source, the equipment shall be constructed such that the short-circuit current is limited to less than 10 mA r.m.s. or equivalent.

This requirement is additional to, or may be superseded by, any national regulation that prevails at the time.

NOTE Guidance on the limiting of shock currents can be found in IEC 60479-1 and IEC 60479-2.