

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

**Power cables with extruded insulation and their accessories for rated voltages above 150 kV ( $U_m = 170$  kV) up to 500 kV ( $U_m = 550$  kV) – Test methods and requirements**

**Câbles d'énergie à isolation extrudée et leurs accessoires pour des tensions assignées supérieures à 150 kV ( $U_m = 170$  kV) et jusqu'à 500 kV ( $U_m = 550$  kV) – Méthodes et prescriptions d'essai**



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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**POWER CABLES WITH EXTRUDED INSULATION AND THEIR ACCESSORIES  
FOR RATED VOLTAGES ABOVE 150 kV ( $U_m = 170$  kV)  
UP TO 500 kV ( $U_m = 550$  kV) –  
TEST METHODS AND REQUIREMENTS**

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International Standard IEC 62067 has been prepared by IEC technical committee 20: Electric cables.

This consolidated version of IEC 62067 consists of the first edition (2001) [documents 20/482/FDIS and 20/489/RVD] and its amendment 1 (2006) [documents 20/784/FDIS and 20/802/RVD].

The technical content is therefore identical to the base edition and its amendment and has been prepared for user convenience.

It bears the edition number 1.1.

A vertical line in the margin shows where the base publication has been modified by amendment 1.

Annexes A, B, C and D form an integral part of this standard.

The committee has decided that the contents of the base publication and its amendments will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

Withdrawn

## INTRODUCTION

As a result of major developments in cable systems with extruded insulation for voltages above 150 kV, CIGRE Study Committee 21 set up Working Group (WG) 21.03 in 1990. The terms of reference of WG 21.03 were *"to prepare recommendations for electrical type tests, sample and routine tests, based on extending IEC 60840 (1988) up to 400 kV and to make proposals for prequalification/development tests which, as a minimum, should be performed"*.

WG 21.03 reported that the extension of IEC 60840 to voltages above 150 kV needed extra consideration because of the following factors:

- such cables form part of the backbone of the transmission system and, therefore, reliability considerations are of the highest priority;
- these cables and their accessories operate with higher electrical stresses than cables up to 150 kV and, as a result, have a smaller safety margin with respect to the intrinsic performance boundaries of the cable system;
- such cables and accessories have a thicker insulation wall than those up to 150 kV and, as a result, are subjected to greater thermomechanical effects;
- the design and coordination of the cables and accessories become more difficult with increasing system voltage levels.

The recommendations of the WG 21.03 were published in Electra No. 151 in December 1993 and taken into account by IEC in 1995 in the preparation of this standard for cable systems with extruded insulation for voltages above 150 kV. IEC considered that this new standard should also cover the 500 kV level. Thus, at its meeting in September 1996, CIGRE Study Committee 21 set up a Task Force 21.18 to study the extension of the initial recommendations to the 500 kV level. The updated recommendations were cited in Electra No. 193 in December 2000 and again taken into account by IEC in the preparation of this standard.

Compared with IEC 60840, first edition (1988), revised and published in 1999 as IEC 60840 edition 2, there is a major difference: CIGRE advised that, in order to gain some indication of the long term reliability of a cable system, it is necessary to carry out a long term accelerated ageing test. This test, known as the "prequalification test", is to be performed on the complete system comprising the cable, joints and terminations in order to demonstrate the performance of the system.

In addition, CIGRE WG 21.09, given the task to study tests after installation on high-voltage extruded insulation cable systems, published its recommendations in Electra No 173 in August 1997. In the preparation of this International Standard, account has also been taken of these recommendations which state, among others, that d.c. tests should be avoided on the main insulation, as they are both ineffective and dangerous. On the other hand, d.c. tests are recommended on the oversheath.

A list of relevant CIGRE references is given in the bibliography.