

# INTERNATIONAL STANDARD

# IEC 60287-3-2

1995

AMENDMENT 1  
1996-09

---

---

Amendment 1

**Electric cables –  
Calculation of the current rating –**

**Part 3-2:  
Sections on operating conditions –  
Economic optimization of power cable size**

*This **English-language** version is derived from the original **bilingual** publication by leaving out all French-language pages. Missing page numbers correspond to the French-language pages.*

© IEC 1996 Copyright - all rights reserved

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

International Electrotechnical Commission, 3, rue de Varembe, PO Box 131, CH-1211 Geneva 20, Switzerland  
Telephone: +41 22 919 02 11 Telefax: +41 22 919 03 00 E-mail: inmail@iec.ch Web: www.iec.ch



Commission Electrotechnique Internationale  
International Electrotechnical Commission  
Международная Электротехническая Комиссия

PRICE CODE

**B**

*For price, see current catalogue*

## FOREWORD

This amendment has been prepared by subcommittee 20A: High-voltage cables, of IEC technical committee 20: Electric cables.

The text of this amendment is based on the following documents:

FDIS	Report on voting
20A/308/FDIS	20A/322/RVD

Full information on the voting for the approval of this amendment can be found in the report on voting indicated in the above table.

Page 13

## 1 Scope

*Replace the first paragraph of this clause by the following:*

This International Standard sets out a method for the selection of a cable size taking into account the initial investment costs and the future costs of energy losses during the economic life of the cable.

*Replace the second paragraph of this clause by the following:*

Matters such as maintenance, energy losses in forced cooling systems and time of day energy costs have not been included in this standard.

Page 27

### 5.2.2 Linear cost function for cable costs

*Add, after this subclause, the following new subclause 5.2.3:*

### 5.2.3 Dielectric losses

Dielectric losses occurring in some cable types can be significant (see IEC 287-1-1, table 3). For such cables the dielectric losses shall be considered when a selection of the most economic conductor cross-section is made. Dielectric losses are calculated using formulae given in IEC 287-1-1.

For a given voltage level and insulation thickness, an increase in conductor diameter results in an increase in cable capacitance and, as a result of this, an increase in voltage dependent losses. Because of this, when dielectric losses are included in the analysis, these losses will tend to decrease the conductor diameter as opposed to the effect of current dependent losses.

When dielectric losses are considered the installed costs  $CI$ ,  $CI_1$  and  $CI_2$  shall include the total cost of dielectric losses over the economic life.

Since an analytic expression for the computation of the optimum conductor cross-section including the effect of dielectric losses would be complex, the following procedure shall be applied. First, the economic conductor size without consideration of dielectric losses is obtained from equation (18). Then, the cost of this and two adjacent smaller standard sizes is calculated including the cost of dielectric losses and the most economical one chosen.