

INTERNATIONAL STANDARD

NORME INTERNATIONALE

AMENDMENT 1 AMENDEMENT 1

**Electric cables – Calculation of the current rating –
Part 1-1: Current rating equations (100 % load factor) and calculation of losses –
General**

**Câbles électriques – Calcul du courant admissible –
Partie 1-1: Equations de l'intensité du courant admissible (facteur de charge
100 %) et calcul des pertes – Généralités**



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FOREWORD

This amendment has been prepared by IEC technical committee 20: Electric cables.

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

FDIS	Report on voting
20/1499/FDIS	20/1547/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.

The committee has decided that the contents of this amendment and the base publication will remain unchanged until the stability 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- withdrawn,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.

1.4.3.1 AC cables

Replace the existing equation by the following:

$$I = \left[\frac{\Delta\theta_x - nW_d T_4}{nRT_4(1 + \lambda_1 + \lambda_2)} \right]^{0,5}$$

2.1.2 Skin effect factor y_s

Replace the existing subclause by the following:

The skin effect factor y_s is given by the following equations:

For $0 < x_s \leq 2,8$

$$y_s = \frac{x_s^4}{192 + 0,8 x_s^4}$$

For $2,8 < x_s \leq 3,8$

$$y_s = -0,136 - 0,017 7 x_s + 0,056 3 x_s^2$$

For $x_s > 3,8$

$$y_s = 0,354 x_s - 0,733$$

where

$$x_s^2 = \frac{8\pi f}{R'} 10^{-7} k_s$$

f is the supply frequency in hertz.

Values for k_s are given in Table 2.

In the absence of alternative formulae, it is recommended that the above formula should be used for sector and oval-shaped conductors.

2.3 Loss factor for sheath and screen

In paragraph 5 replace "large segmental" by "Milliken".

Replace the equation for the maximum operating temperature of the sheath or screen by the following:

$$\theta_{sc} = \theta - (I^2 R + 0,5 W_d) T_1 \text{ (}^\circ\text{C)}$$

2.3.1 Two single-core cables, and three single-core cables (in trefoil formation), sheaths bonded at both ends of an electrical section

In the final line replace "having large conductors of segmental construction" by "having Milliken conductors".

2.3.2 Three single-core cables in flat formation, with regular transposition, sheaths bonded at both ends of an electrical section

In the penultimate line, replace "having large conductors of segmental construction" by "having Milliken conductors".

2.3.3 Three single-core cables in flat formation, without transposition, sheaths bonded at both ends of an electrical section

In the explanation for λ_1 ", replace "having large conductors of segmental construction" by "having Milliken conductors".

2.3.5 Effect of large segmental type conductors

Replace the existing title by the following new title:

2.3.5 Effect of Milliken conductors

Replace the first paragraph by the following new paragraph:

Where the conductors are subject to a reduced proximity effect, as with Milliken conductors, the sheath loss factor λ_1'' of 2.3.1, 2.3.2 and 2.3.3 cannot be ignored, but shall be obtained by multiplying the value of λ_1'' , obtained from 2.3.6 for the same cable configuration, by the factor F given by the formula:

2.4 Loss factor for armour, reinforcement and steel pipes (applicable to power frequency a.c. cables only)