SLOVENSKI STANDARD
SIST EN 2591-209:2001

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Aerospace series - Elements of electrical and optical connection - Test methods - Part 209: Current temperature derating

Aerospace series - Elements of electrical and optical connection - Test methods - Part 209: Current temperature derating

Luft- und Raumfahrt - Elektrische und optische Verbindungselemente - Prüfverfahren - Teil 209: Bestimmung der Strom-Temperatur-Belastungsminderung

Série aérospatiale - Organes de connexion électrique et optique - Méthodes d'essais - Partie 209: Taux de réduction de l'intensité en fonction de l'échauffement du au courant

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English version

Aerospace series - Elements of electrical and optical connection - Test methods - Part 209: Current temperature derating

Série aérospatiale - Organes de connexion électrique et optique - Méthodes d'essais - Partie 209: Taux de réduction de l'intensité en fonction de l'échauffement dû au courant

Luft- und Raumfahrt - Elektrische und optische Verbindungselemente - Prüfverfahren - Teil 209: Bestimmung der Strom-Temperatur-Belastungsminderung

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

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CEN

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

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Foreword

This European Standard has been prepared by the European Association of Aerospace Manufacturers (AECMA).

The alphanumerical designation of the parts of EN 2591 has been abandoned for a numerical designation in line with the Internal Regulations of CEN/CENELEC. This European Standard is the integral reproduction of the European Standard EN 2591-B9 after application of this decision, without any other modification than the change in numbering.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 1996, and conflicting national standards shall be withdrawn at the latest by August 1996.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom

1 Scope

This standard specifies a method for establishing current-temperature derating curves [1] for elements of connection depending on the various contact arrangements.

It shall be used together with EN 2591.

2 Normative references

This European Standard incorporates by dated or undated reference provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

IEC 50(302) International electrotechnical vocabulary - Chapter 302 : Electrical measuring instruments

EN 2591 Aerospace series - Elements of electrical and optical connection - Test methods - General

3 Preparation of specimens

3.1 Specimens shall be wired, contacts connected in series and mated.

The cross-section and the type of wires connecting the contacts together shall be appropriate to the expected test current and temperature.

The length of wire between two contacts shall be between 250 mm and 300 mm. The length of the supply cable shall be appropriate to the test set-up.

The freely hanging specimen shall be fitted with temperature sensors.

3.2 Unless indicated in the technical specification, the following details shall be specified :

- cross section and type of wires;
- points for measurement of the specimen temperature;
- maximum operating temperature ($T_{max.}$);
- number of specimens;
- housing (shell) size and contact arrangement.

1) These curves can only give mean values, considering the high number of factors involved.

4 Apparatus

The class of apparatus to be used shall be at least equal to 0,5 (see IEC 50(302)).

A regulated power supply shall be capable of delivering the specified current to ± 1 % during the whole test.

5 Method

The test shall be performed with :

- direct current
or
- alternating current r.m.s., 40 Hz to 60 Hz.

The sensors used shall not affect the temperature rise in the specimen or lead to errors in measurement.

During the test, the specimen shall be protected from draughts by four non-heat-reflecting screens which shall not affect the temperature rise. They shall be so installed as to allow a 250 mm to 300 mm clearance around the specimen.

The ambient temperature (T_u) shall be measured in the vicinity of the test set-up outside the screens.

After the current has been maintained for one hour at each current value (I_1, I_2, I_3 ... I_N) the temperature of the specimen (T_1, T_2, T_3 ... T_N), which shall be $T_{max.}$ and the ambient temperature T_u, shall be recorded.

The temperature of the specimen may be recorded after less than one hour if it has stabilised.

The current curve shall be plotted as follows :

a) Plot along the X-axis the maximum operating temperature of the specimen ($T_{max.}$) (figure 1).

b) Plot along Y-axis the test currents I_1, I_2, I_3, (figure 2).

c) Starting from the maximum operating temperature ($T_{max.}$) plot the temperature rises calculated (ΔT_1, ΔT_2, ΔT_3) for each test current I_1, I_2, I_3 (figure 3).

$$\Delta T = T_{max.} - T_u$$

d) Connect the points of intersection (1, 2, 3) of the current curve which ends at $T_{max.}$ along the X-axis (figure 4).

This curve is the basic curve for plotting the current derating curve.

The current derating curve is obtained by reducing the current value of the basic curve to 0,8 I (generally agreed experimental coefficient) (figure 5).

In no case shall the rated current for the contact or the cable be exceeded.

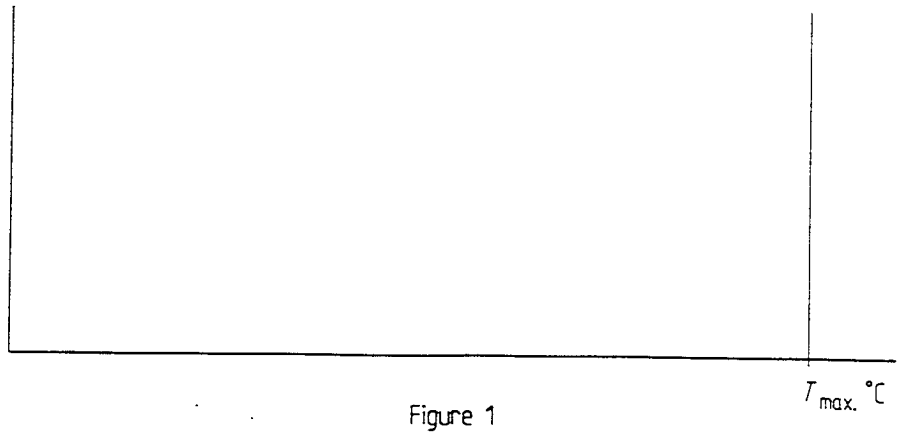

Figure 1

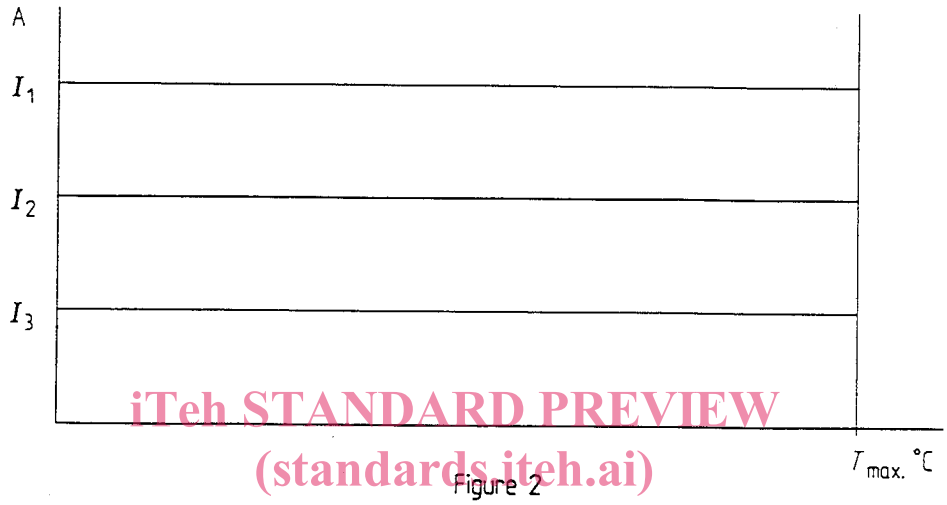

Figure 2

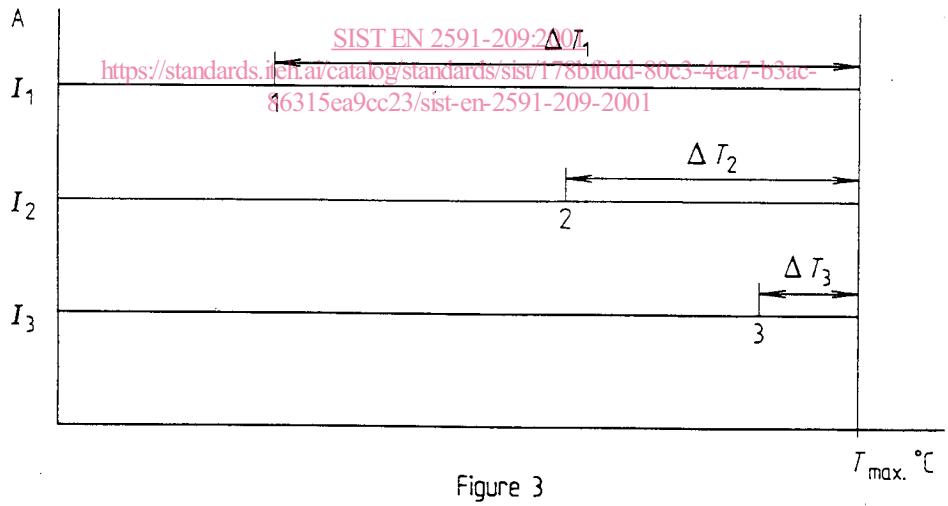

Figure 3

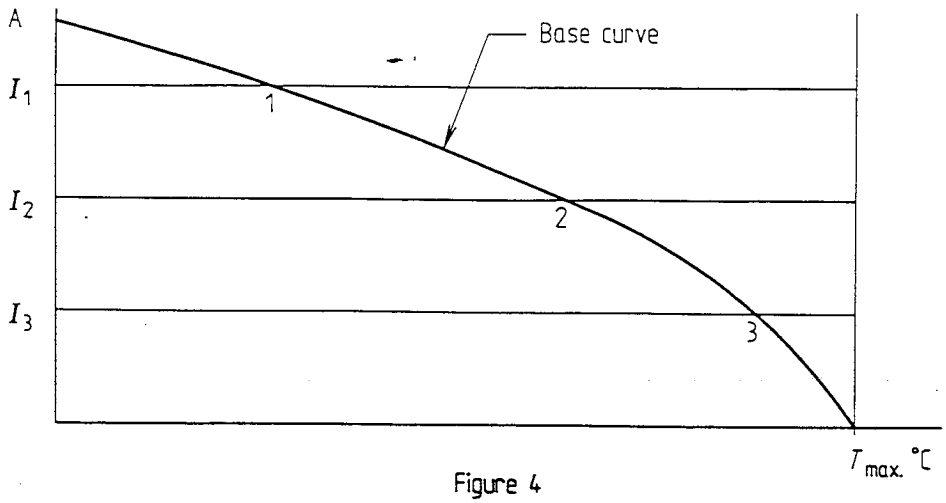

Figure 4

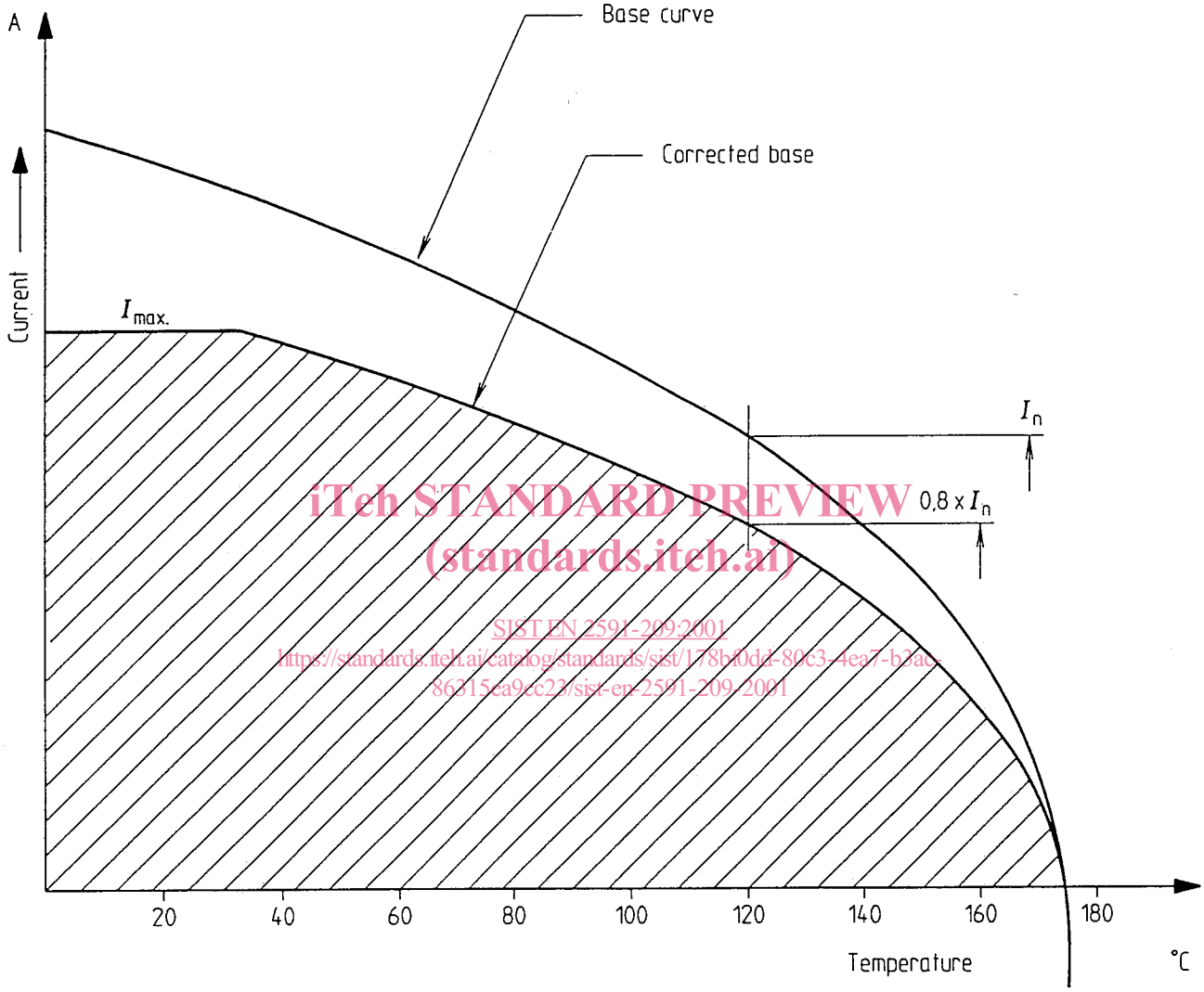

Figure 5