

Classification of environmental conditions —

**Part 4-0: Guidance for the correlation
and transformation of the
environmental condition classes of
IEC 60721-3 to the environmental tests
of IEC 60068 — Introduction**

ICS 19.040

National foreword

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Cross-references

The British Standards which implement international publications referred to in this document may be found in the *BSI Catalogue* under the section entitled “International Standards Correspondence Index”, or by using the “Search” facility of the *BSI Electronic Catalogue* or of British Standards Online.

Summary of pages

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Classification des conditions d'environnement –

Partie 4-0:

**Guide pour la corrélation et la transformation
des classes de conditions d'environnement
de la CEI 60721-3 en essais d'environnement de
la CEI 60068 – Introduction**

Classification of environmental conditions –

Part 4-0:

**Guidance for the correlation and transformation
of environmental condition classes of IEC 60721-3
to the environmental tests of IEC 60068 –
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FOREWORD

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Technical reports do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful by the maintenance team.

IEC 60721-4-0, which is a technical report, has been prepared by IEC technical committee 104: Environmental conditions, classification and methods of test.

The text of this technical report is based on the following documents:

Enquiry draft	Report on voting
104/143/CDV	104/173A/RVC

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

This document which is purely informative is not to be regarded as an International Standard.

The committee has decided that the contents of this publication will remain unchanged until 2006. At this date, the publication will be

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- withdrawn;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

INTRODUCTION

The environment to which products are typically exposed consists of a number of conditions. These are specified in IEC 60721-3 as climatic, dynamic, biological and other effects due to chemically and mechanically active substances. In IEC 60721-4 only climatic and dynamic conditions have been considered.

Throughout this technical report, reference is made to

- the IEC 60721-3 series (parts 3-1 to 3-7),
- the IEC 60721-4 series (parts 4-1 to 4-7),
- the IEC 60068-2 series (various parts).

These will hereinafter be called IEC 60721-3, IEC 60721-4 and IEC 60068-2, respectively unless a specific reference is being made.

It is essential to emphasize the guidance nature of IEC 60721-4 since it is virtually impossible to specify mandatory requirements for worldwide use. However, for those cases not necessarily covered by IEC 60721-4, this technical report (IEC 60721-4-0) does establish principles and methodology to determine alternative tests. Neither IEC 60721-3 nor IEC 60721-4 address issues such as safety margins, acceleration factors, etc., which are best left to the judgement of the designer, manufacturer, test consultant or end user.

Transformation guidance is provided where the parameters used to define conditions in IEC 60721-3 differ from those used to define the tests and/or the severities in IEC 60068-2.

The reasons for correlation are given in IEC 60721-4 to enable specification writers to modify a test if their application warrants it. Where differences in values of parameters exist between IEC 60721-3 and IEC 60068-2, the severities of the IEC 60068-2 test procedures are used. If it is recommended to deviate from an IEC 60068-2 severity, the reasons are detailed and alternative tests recommended.

IEC 60721-4 deals with climatic and mechanical conditions (hereinafter known as dynamic conditions) for the most commonly used classes of IEC 60721-3. A database of validated environmental severities is being developed. The severities currently given in IEC 60721-3 will, in time, therefore, be either confirmed or updated which will result in an update to IEC 60721-4.

CLASSIFICATION OF ENVIRONMENTAL CONDITIONS –

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1 Scope and object

This part of IEC 60721 is a technical report dealing with the correlation and transformation of the conditions given in IEC 60721-3 to the environmental tests defined in IEC 60068-2. It is an introduction to the series of publications IEC 60721-4 which aims at providing the specification writer with guidance together with a set of easy-to-use tables to help correlate and transform these conditions.

The purpose of this technical report is to recommend the environmental tests which may be chosen to demonstrate the capability of a product to function or survive satisfactorily as specified in the relevant specification when subjected to the climatic and dynamic conditions given by IEC 60721-3. These test severities, including their suggested duration, are not intended to demonstrate the reliability of the product, guidance for which should be sought from the publications concerning the field of availability, reliability, maintainability and maintenance support.

Whilst it may not be possible to recommend severities for all types of product, locations and applications, it is possible to suggest tests which are adequate for the majority. Guidance information has been included with the suggested tests which describes how the severities have been chosen. The rationale contained in this guidance may also be used to help modify test severities when the conditions found in IEC 60721-3 do not adequately describe a particular environment or application.

2 Reference documents

IEC 60068-1:1988, *Environmental testing – Part 1: General and guidance*

IEC 60068-2 (all parts), *Environmental testing – Part 2: Test methods*

IEC 60068-2-5:1975, *Environmental testing – Part 2: Tests. Test Sa: Simulated solar radiation at ground level*

IEC 60068-2-6:1995, *Environmental testing – Part 2: Tests. Test Fc: Vibration (sinusoidal)*

IEC 60068-2-64:1993, *Environmental testing – Part 2: Test methods – Test Fh: Vibration, broadband, random (digital control) and guidance*

IEC 60721-2 (all parts), *Classification of environmental conditions – Part 2: Environmental conditions appearing in nature*

IEC 60721-2-1:1982, *Classification of environmental conditions – Part 2-1: Environmental conditions appearing in nature – Temperature and humidity*