

**BS 7527 :
Part 1 : 1991
IEC 721-1 :
1990**

Classification of environmental conditions

Part 1. Environmental parameters and their severities

Classification des conditions d'environnement
Partie 1. Agents d'environnement et leurs
sévérités

Klassifizierung von Umweltbedingungen
Teil 1. Einflußgrößen; Vorzugswerte

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the General Electrotechnical Standards Policy Committee (GEL/-) to Technical Committee GEL/15, upon which the following bodies were represented:

- Directorate of Telecommunications
- EEA (the Association of Electronics, Telecommunications and Business Equipment Industries)
- Electronic Components Industry Federation
- Ministry of Defence
- National Supervising Inspectorate
- Society of Environmental Engineers
- Society of Motor Manufacturers and Traders Limited

This British Standard, having been prepared under the direction of the General Electrotechnical Standards Policy Committee, was published under the authority of the Standards Board and comes into effect on 29 November 1991

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The following BSI references relate to the work on this standard:
Committee reference GEL/15
Special announcement in *BSI News* July 1991

ISBN 0 580 20164 3

Amendments issued since publication

Amd. No.	Date	Text affected

Contents

	Page
Committees responsible	Inside front cover
National foreword	ii
Introduction	iii
Classification	
1 Scope	1
2 Normative references	1
3 Definitions	1
4 Environmental factors and parameters	2
Table	
1: Climatic conditions	4
Biological conditions	7
Chemically active substances	7
Mechanically active substances	10
Contaminating fluids	11
Mechanical conditions	11
Electromagnetic disturbance	14
Notes to table 1	15
Figures	
1 Model spectra for sinusoidal vibration	15
2 Model spectra for random vibration	16
3 Model shock response spectra	17

National foreword

This Part of BS 7527 has been prepared under the direction of the General Electrotechnical Standards Policy Committee. It is identical with IEC Publication 721-1 : 1990 'Classification of environmental conditions Part 1 : Environmental parameters and their severities', published by the International Electrotechnical Commission (IEC).

For the purposes of this British Standard, any references to IEC page numbers in the text should be ignored. In particular, the many references to 'the notes to table 1 on pages 37 to 41' should be read as 'the notes to table 1 on pages 15 to 17'.

Other Parts of this British Standard are as follows.

- Part 2 Environmental conditions appearing in nature
 - Section 2.1 Temperature and humidity
 - Section 2.2 Precipitation and wind
 - Section 2.3 Air pressure
 - Section 2.4 Solar radiation and temperature
 - Section 2.5 Dust, sand, salt mist
 - Section 2.6 Earthquake vibration and shock
 - Section 2.7 Fauna and flora
- Part 3 Classification of groups of environmental parameters and their severities
 - Section 3.0 Introduction
 - Section 3.1 Storage
 - Section 3.2 Transportation
 - Section 3.3 Stationary use at weatherprotected locations
 - Section 3.4 Stationary use at non-weatherprotected locations
 - Section 3.5 Ground vehicle installations
 - Section 3.6 Ship environment
 - Section 3.7 Portable and non-stationary use

Cross-references

International standard	Corresponding British Standard
IEC 68-2-27 : 1987	BS 2011 Environmental testing Part 2.1Ea : 1988 Test Ea. Shock (Identical)
IEC 721-2-2 : 1988	BS 7527 Classification of environmental conditions Section 2.2 : 1991 Precipitation and wind (Identical)
IEC 721-3-6 : 1987	Section 3.6 : 1991 Ship environment (Identical)

The Technical Committee has reviewed the provisions of IEC 79-0 and ISO 2041, to which reference is made in the text, and has decided that they are acceptable for use in conjunction with this standard. Related British Standards to IEC 79-0 and ISO 2041 are BS 5501 'Electrical apparatus for potentially explosive atmospheres' Part 1 : 1977 'General requirements' and BS 3015 'Glossary of terms relating to mechanical vibration and shock', respectively.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

INTRODUCTION

This part of IEC 721 contains a list of environmental parameters and their severities. It replaces the first edition of IEC 721-1, which was issued as an IEC Report pending the results of work in IEC Technical Committee No. 75 and other IEC Technical Committees on defining the environmental conditions to which products will be subjected while being transported, stored, installed and used.

The modifications made have been mainly concerned with the list of severities.

The severities in this part are given without reference to their application. Sufficient guidance on application is available in IEC 721-2 and IEC 721-3.

Technical Committees preparing environmental condition specifications for products should apply IEC 721-3 but if, in exceptional cases, severity values of IEC 721-3 are not appropriate, the list in this part should be considered for the selection of values.

CLASSIFICATION OF ENVIRONMENTAL CONDITIONS

Part 1: Environmental parameters and their severities

1 Scope

This part of IEC 721 lists environmental parameters and a limited number of their severities within the range of conditions met by electrotechnical products when being transported, stored, installed and used.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of IEC 721. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of IEC 721 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 68-2-27: 1987, Environmental testing. Part 2: Tests – Test Ea and Guidance: Shock.

IEC 79-0: 1983, Electrical apparatus for explosive gas atmospheres – Part 0: General requirements.

IEC 721-2-2: 1988, Classification of environmental conditions – Part 2: Environmental conditions appearing in nature – Precipitation and wind.

IEC 721-3-6: 1987, Classification of environmental conditions – Part 3: Classification of groups of environmental parameters and their severities – Ship environment.

ISO 2041: 1975, Vibration and shock – Vocabulary.

3 Definitions

For the purposes of this part of IEC 721, the following definitions apply:

3.1 environmental condition: Physical, chemical or biological condition, external to a product, to which it is subjected at a certain time.

NOTE – Environmental conditions are generally composed of environmental conditions appearing in nature and environmental conditions generated by the product itself or by external sources.

3.2 environmental factor: A physical, chemical or biological influence which, either singly or in combination with other influences, produces an environmental condition (e.g. heat, vibration).

3.3 environmental parameter: One or more physical, chemical or biological properties characterizing an environmental factor (e.g. temperature, acceleration).

EXAMPLE – The environmental factor vibration is characterized by the parameters: type of vibration (sinusoidal, random), acceleration and frequency.

3.4 severity of environmental parameter: A value of each quantity, characterizing the environmental parameter.

EXAMPLE – The severity of sinusoidal vibration is defined by values of the acceleration (in m/s^2) and frequency (in Hz).

3.5 application, product application: A condition or a situation met by a product.

EXAMPLES of applications – Office working rooms, steelworks, ground transport. Applications *do not refer* to a class of products (e.g. computers).

3.6 group of environmental parameters and their severities: A set of environmental conditions characteristic for a specific use or purpose.

4 Environmental factors and parameters

4.1 General

The actual environmental conditions to which a product is exposed are normally complex and composed of a number of environmental factors and corresponding parameters. When defining the environmental conditions for a certain product application, it is therefore necessary to:

- list the environmental factors involved;
- select appropriate severities for each parameter.

The environmental influences on a product in a certain application is a result of:

- conditions of the surrounding medium, normally air or water (in certain cases, soil);
- conditions of the structure to which the product is connected;
- influences from external sources or activities.

When selecting environmental factors and parameters for a certain product application it is therefore necessary to check these conditions and influences for single, combined and sequential environmental factors as they occur.

The terms for the environmental factors and parameters correspond in general to those used in IEC 68, as far as applicable.