Irish Standard
I.S. EN 60721-2-1:2014

Classification of environmental conditions - Part 2-1: Environmental conditions appearing in nature - Temperature and Humidity

I.S. EN 60721-2-1:2014

Incorporating amendments/corrigenda/National Annexes issued since publication:

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NSAI	T +353 1 807 3800	Sales:
1 Swift Square,	F +353 1 807 3838	T +353 1 857 6730
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Údarás um Chaighdeáin Náisiúnta na hÉireann

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60721-2-1

June 2014

ICS 19.040

Supersedes HD 478.2.1 S1:1989

English Version

Classification of environmental conditions - Part 2-1: Environmental conditions appearing in nature - Temperature and Humidity (IEC 60721-2-1:2013)

Classification des conditions d'environnement - Partie 2-1: Conditions d'environnement présentes dans la nature - Température et humidité (CEI 60721-2-1:2013)

Klassifizierung von Umgebungsbedingungen - Teil 2-1: Natürliche Umgebungsbedingungen - Temperatur und Feuchte (IEC 60721-2-1:2013)

This European Standard was approved by CENELEC on 2013-07-30. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Foreword

The text of document 104/610/FDIS, future edition 2 of IEC 60721-2-1, prepared by IEC/TC 104 "Environmental conditions, classification and methods of test" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60721-2-1:2014.

The following dates are fixed:

• latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2014-12-20
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2016-07-30

This document supersedes HD 478.2.1 S1:1989.

EN 60721-2-1:2014 includes the following significant technical changes with respect to HD 478.2.1 S1:1989:

The main changes with respect to HD 478.2.1 S1:1989 are in the definitions of climate types.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 60721-2-1:2013 was approved by CENELEC as a European Standard without any modification.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu

Publication	Year	Title	EN/HD	Year
IEC 60721-1	1990	Classification of environmental conditions - Part 1: Environmental parameters and their severities	EN 60721-1[1)]	1995
IEC/TR 62130	-	Climatic field data including validation	-	-
MIL210		Extreme and Percentile Environmental Reference Tables (ExPERT) database (Version 1.0 July 1997)		
PEARCE, E.A., and SMITH, C.G.		The Hutchinson World Weather Guide by Helicon Publishing Ltd (ISBN 1-85986-342-6, 2000)		
KOTTEK, M., GRIESER, J., BECK, C., RUDOLF, B. and RUBEL, F.		World Map of the Köppen-Geiger climate classification updated: 2006, Meteorol. Z., 15, 259-263		

[1)] EN 60721-1 includes A1:1992 to IEC 60721-1.

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IEC 60721-2-1

Edition 2.0 2013-06

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Classification of environmental conditions – Part 2-1: Environmental conditions appearing in nature – Temperature and humidity

Classification des conditions d'environnement – Partie 2-1: Conditions d'environnement présentes dans la nature – Température et humidité

IEC 60721-2-1:2013

IEC Central Office
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

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IEC 60721-2-1

Edition 2.0 2013-06

INTERNATIONAL STANDARD

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colour inside

Classification of environmental conditions – Part 2-1: Environmental conditions appearing in nature – Temperature and humidity

Classification des conditions d'environnement – Partie 2-1: Conditions d'environnement présentes dans la nature – Température et humidité

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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CLASSIFICATION OF ENVIRONMENTAL CONDITIONS –

Part 2-1: Environmental conditions appearing in nature – Temperature and humidity

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 60721-2-1 has been prepared by IEC technical committee 104: Environmental conditions, classification and methods of test.

This second edition cancels and replaces the first edition published in 1982 and its amendment 1 (1987), and constitutes a technical revision.

The main changes with respect to the previous edition are in the definitions of climate types.

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

FDIS	Report on voting
104/610/FDIS	104/617/RVD

Full information on the voting for the approval of this standard 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.

A list of all the parts in the IEC 60068 series, under the general title *Classification of environmental conditions,* can be found on the IEC website.

The committee has decided that the contents of this 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.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

Electrotechnical products are used in almost all areas of the world under varying climatic conditions and have to meet the stresses imposed by these climatic conditions with the necessary reliability. A detailed knowledge of the climatic conditions to which the product will be subjected is necessary in the design stage to ensure that reliability is met.

Data on open-air temperature and humidity have been collected and statistically processed for many years throughout the world. Such data is represented in this part of IEC 60721.

In addition to open-air temperature, temperature stresses on a product depend on a number of other environmental parameters, for example solar radiation, air velocity or heating from adjacent equipment.

The effects of humidity depend on temperature, temperature changes and impurities in the humid air.

In many cases the extremes of temperature and humidity are of great importance even if they occur for a short time. In other cases, where large time constants for heat or water penetration are involved, the mean values of temperature and humidity over a certain period may be more important.

It has therefore been considered useful to present here both the mean value over many years of the annual extreme values of temperature and humidity, which will occur only for short periods (a few hours), and the mean value over many years of the extreme daily mean values of temperature and humidity, which will occur for longer periods.

In order to cover cases where rare events need to be taken into account, the absolute extreme temperatures and humidity levels, observed over a period of many years, have also been presented.

CLASSIFICATION OF ENVIRONMENTAL CONDITIONS –

Part 2-1: Environmental conditions appearing in nature – Temperature and humidity

1 Scope

This part of IEC 60721 presents classifications of open-air climates in terms of temperature and humidity. It is intended to be used as part of the background material when selecting appropriate temperature and humidity severities for product testing and application.

The climates cover all areas of the world, excluding the central Antarctic and high altitudes (above 5 000 m).

This presentation may be used as background material when issuing climatic environmental classes for product applications.

This standard defines a limited number of open-air climate classifications, in terms of temperature and humidity, which represent the conditions most frequently met by products while being transported, stored, installed and used.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60721-1:1990, *Classification of environmental conditions – Part 1: Environmental parameters and their severities*

IEC/TR 62130, *Climatic field data including validation*

MIL210 *Extreme and Percentile Environmental Reference Tables (ExPERT) database* (Version 1.0 July 1997)

PEARCE, E.A., and SMITH, C.G., *The Hutchinson World Weather Guide* by Helicon Publishing Ltd (ISBN 1-85986-342-6, 2000)

KOTTEK, M., GRIESER, J., BECK, C., RUDOLF, B. and RUBEL, F., *World Map of the Köppen-Geiger climate classification updated*: 2006, Meteorol. Z., 15, 259-263

3 Terms and definitions, abbreviations, quantities and units

Terms and definitions are defined, in context, throughout the present standard.

4 General information regarding data collection and analysis

Climatic data was collected and validated in IEC/TR 62130. The two principle data sources were the MIL210 ExPERT and The Hutchinson World Weather Guide.