IEC 60721-3-9

Edition 2.0 2024-04

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Classification of environmental conditions – Part 3-9: Classification of groups of environmental parameters and their severities – Microclimates inside products

Classification des conditions d'environnement – Partie 3-9: Classification des groupements des agents d'environnement et de leurs sévérités – Microclimats à l'intérieur des produits

Documents
Document Sharing Hub

IEC 60721-3-9:2024-04(en-fr)

Full document details: IEC 60721-3-9-2024

THIS PUBLICATION IS COPYRIGHT PROTECTED
Copyright © 2024 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de l'IEC ou du Comité national de l'IEC du pays du demandeur. Si vous avez des questions sur le copyright de l'IEC ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de l'IEC de votre pays de résidence.

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

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

About the IEC
The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications
The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigendum or an amendment might have been published.

IEC publications search - webstore.iec.ch/advsearchform
The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee, …). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished
Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

IEC Customer Service Centre - webstore.iec.ch/csc
If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: sales@iec.ch.

IEC Products & Services Portal - products.iec.ch
Discover our powerful search engine and read freely all the publications previews, graphical symbols and the glossary. With a subscription you will always have access to up to date content tailored to your needs.

Electropedia - www.electropedia.org
The world's leading online dictionary on electrotechnology, containing more than 22 500 terminological entries in English and French, with equivalent terms in 25 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

A propos de l'IEC
La Commission Electrotechnique Internationale (IEC) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

A propos des publications IEC
Le contenu technique des publications IEC est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

Recherche de publications IEC - webstore.iec.ch/advsearchform
La recherche avancée permet de trouver des publications IEC en utilisant différents critères (numéro de référence, texte, comité d'études, …). Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

IEC Just Published - webstore.iec.ch/justpublished
Restez informé sur les nouvelles publications IEC. Just Published détaille les nouvelles publications parues. Disponible en ligne et une fois par mois par email.

Service Clients - webstore.iec.ch/csc
Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: sales@iec.ch.

IEC Products & Services Portal - products.iec.ch
Découvrez notre puissant moteur de recherche et consultez gratuitement tous les aperçus des publications, symboles graphiques et le glossaire. Avec un abonnement, vous aurez toujours accès à un contenu à jour adapté à vos besoins.

Electropedia - www.electropedia.org
Le premier dictionnaire d'électrotechnologie en ligne au monde, avec plus de 22 500 articles terminologiques en anglais et en français, ainsi que les termes équivalents dans 25 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

AVA Documents
Document Sharing Hub

Full document details: IEC 60721-3-9-2024

IEC 60721-3-9

Edition 2.0 2024-04

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Classification of environmental conditions – Part 3-9: Classification of groups of environmental parameters and their severities – Microclimates inside products

Classification des conditions d'environnement – Partie 3-9: Classification des groupements des agents d'environnement et de leurs sévérités – Microclimats à l'intérieur des produits

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 19.040

ISBN 978-2-8322-8626-5

Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.

® Registered trademark of the International Electrotechnical Commission
Marque déposée de la Commission Electrotechnique Internationale

Documents
Document Sharing Hub

Full document details: IEC 60721-3-9-2024

CONTENTS

FOREWORD 3
1 Scope 5
2 Normative references 5
3 Terms and definitions 5
4 General 6
5 Classification of microclimatic conditions 6
6 Types and marking of microclimatic classes 7
Annex A (informative) Graphical representation and preferred microclimatic classes 8
A.1 Graphical representation of the microclimatic classes 8
A.2 Tables of preferred microclimatic classes 9
Annex B (informative) Constitutional diagram for humid air 14
B.1 General 14
B.2 Application 14
B.3 Description 14
Bibliography 17

Figure A.1 – Example of a climatogram for a microclimate: Microclimatic class 3K22/X2/Y1 9
Figure B.1 – Constitutional diagram for humid air 16

Table 1 – Classification of microclimatic conditions 7
Table A.1 – Characteristic parameters and severities of microclimatic classes – Weatherprotected locations: Corner points A’, B’, C’, D’, E’ and F’ 10
Table A.2 – Characteristic parameters and severities of microclimatic classes – Weatherprotected locations: Corner points B_{Y1} to B_{Y4} and C_{Y1} to C_{Y4} 11
Table A.3 – Characteristic parameters and severities of microclimatic classes – Non-weatherprotected locations: Corner points A’, B’, C’, D’, E’ and F’ 12
Table A.4 – Characteristic parameters and severities of microclimatic classes – Non-weatherprotected locations: Corner points B_{Y1} to B_{Y4} and C_{Y1} to C_{Y4} 13

Documents
Document Sharing Hub
Full document details: IEC 60721-3-9-2024

INTERNATIONAL ELECTROTECHNICAL COMMISSION

CLASSIFICATION OF ENVIRONMENTAL CONDITIONS –

Part 3-9: Classification of groups of environmental parameters and their severities – Microclimates inside products

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.
2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
6) All users should ensure that they have the latest edition of this publication.
7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
9) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at https://patents.iec.ch. IEC shall not be held responsible for identifying any or all such patent rights.

IEC 60721-3-9 has been prepared by IEC technical committee 104: Environmental conditions, classification and methods of test. It is an International Standard.

This second edition cancels and replaces the first edition published in 1993, Amendment 1:1994 and Corrigendum 1:1995. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) Clause 2 has been updated;
b) Clause 4 has been re-edited and simplified;
c) Annex A has been revised and updated;

Documents
Document Sharing Hub
Full document details: IEC 60721-3-9-2024

d) a new Annex B has been added and gives the origin of the constitutional diagram for humid air, which is the basis of drawing the climatogram for a microclimate.

The text of this International Standard is based on the following documents:

Draft	Report on voting
104/1041/FDIS	104/1050/RVD

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts in the IEC 60721 series, published under the general title *Classification of environmental conditions*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

IMPORTANT – The "colour inside" logo on the cover page of this document 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.

Documents
Document Sharing Hub

Full document details: IEC 60721-3-9-2024

CLASSIFICATION OF ENVIRONMENTAL CONDITIONS –

Part 3-9: Classification of groups of environmental parameters and their severities – Microclimates inside products

1 Scope

This part of IEC 60721 classifies groups of microclimatic conditions, to which components (basic parts, assemblies, built-in units) can be subjected inside products, which are used under the climatic conditions as classified in IEC 60721-3-3 and IEC 60721-3-4.

Characteristic parameters for the microclimates are high air temperature and high relative air humidity. Further parameters of the climatic classes, for example low temperature, can affect the components additionally, but have not been considered here.

A limited number of microclimatic classes is specified taking into consideration typical limiting high air temperatures of components.

NOTE The term "microclimate" can, for example in meteorology or buildings, have a different meaning than those discussed in this document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. 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, *Classification of environmental conditions − Part 1: Environmental parameters and their severities*

IEC 60721-3-0:2020, *Classification of environmental conditions – Part 3-0: Classification of groups of environmental parameters and their severities – Introduction*

IEC 60721-3-3:2019, *Classification of environmental conditions – Part 3-3: Classification of groups of environmental parameters and their severities – Stationary use at weatherprotected locations*

IEC 60721-3-4:2019, *Classification of environmental conditions – Part 3-4: Classification of groups of environmental parameters and their severities – Stationary use at non-weatherprotected locations*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60721-1 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- IEC Electropedia: available at https://www.electropedia.org/
- ISO Online browsing platform: available at https://www.iso.org/obp

Documents
Document Sharing Hub

Full document details: IEC 60721-3-9-2024

3.1
microclimate
climatic condition at the place where a component is installed in the product

Note 1 to entry: Only air temperature and air humidity are taken into account.

3.2
microclimatic class
classified microclimate designated by:

a) the climatic class as specified in IEC 60721-3-3:2019 or IEC 60721-3-4:2019;

b) the class of high air temperature;

c) the optional class of limited relative air humidity, in relation to the climatic class severity

Note 1 to entry: For items b) and c), see Table 1.

4 General

Microclimates at the place where the components are installed in a product can differ significantly from the climatic conditions to which the product is subjected.

The microclimates describe the climatic conditions at the place where the component is installed in a product, for example inside an enclosure. These are essentially the climatic classes specified in IEC 60721-3-3:2019 or IEC 60721-3-4:2019 but with the addition of severities of high air temperature and limited relative air humidity to account for external or appreciable self-generated heating during operation. Microclimates can also be used to designate the operational conditions for components.

When temperatures in excess of those of the environment itself occur inside a product, the relative air humidity and, therefore, also the humidity stress on the components is reduced. Even in an environment with a relative air humidity as high as 100 %, the relative air humidity inside the product is reduced below 60 % by an excess temperature of 10 K. Below this humidity level, the corrosion effect of chemically active substances is low.

The microclimates described concern the case of placing of components in enclosures with comparatively free access to the surrounding atmosphere. Difficult access of air (e.g. presence of non-tight seal of the enclosure) can produce more severe conditions as a result of suction of moisture into the enclosure and subsequent accumulation of water. This can result from frequent switching on and off of the product or rapid changes of temperature inside the product due to external climatic conditions, for example rain, irradiation.

Components in products without external heating or self-generated heating or in the non-operational state for a significant period of time are affected directly by the conditions of the climatic class appropriate for a location.

When there is a change in the climatic conditions, with and without external heating or self-generated heating, the time for which the component is subjected to the climatic conditions shall be taken into consideration. Details on duration and frequency of occurrence shall be referred to IEC 60721-3-0:2020, and details on change of climatic conditions, such as the rate of change of temperature, shall be referred to IEC 60721-3-3:2019 and IEC 60721-3-4:2019.

Further guidance shall be referred to IEC 60721-3-0:2020.

5 Classification of microclimatic conditions

The severities of high air temperature and of limited relative air humidity for a number of microclimatic classes are specified in Table 1.

AVA Documents
Document Sharing Hub

Full document details: IEC 60721-3-9-2024

Table 1 – Classification of microclimatic conditions

Environmental parameter	Class	Unit	Severity
a) High air temperature	X1	°C	55
	X2		70
	X3		85
	X4		100
	X5		125
	X6		155
	X7		200
b) Limited relative air humidity	Y1	%	65
	Y2		75
	Y3		85
	Y4		95

Examples for the designation and marking of microclimatic classes are given in Clause 6. Exceptional conditions may call for severities different from those of the classes; these should be selected from the values specified in IEC 60721-1.

The graphical representation of a microclimatic class is given in Clause A.1 from which six characteristic corner points can be determined. For a selection of preferred microclimatic classes, paired values of air temperature and relative air humidity are stated in Table A.1 and Table A.2.

The method described in Annex A applies to the period of time when microclimatic conditions have reached a steady state.

6 Types and marking of microclimatic classes

A microclimatic class is marked with the appropriate class designation of the climatic class of the product and the appropriate class designation of Table 1.

EXAMPLE 1 – Increased air temperature only

Microclimatic class 3K22/X2

Class of high air temperature

Climatic class

IEC

EXAMPLE 2 – Increased air temperature and limited relative air humidity

Microclimatic class 3K22/X2/Y1

Class of limited relative air humidity

Class of high air temperature

Climatic class

IEC

Documents
Document Sharing Hub

Full document details: IEC 60721-3-9-2024

Annex A
(informative)

Graphical representation and preferred microclimatic classes

A.1 Graphical representation of the microclimatic classes

Figure A.1 is an example of the climatogram of microclimatic class 3K22/X2/Y1.

The characteristic points and lines of the climatogram are obtained in the following manner:

– Draw the climatogram of climatic class 3K22.
– Mark the corner points by A, B, C, D, E and F:
  - A is the high air temperature at high absolute air humidity;
  - B is the high relative air humidity at high absolute air humidity;
  - C is the low air temperature at high relative air humidity;
  - D is the low air temperature at low absolute air humidity;
  - E is the low relative air humidity at low absolute air humidity;
  - F is the high air temperature at low relative air humidity.
– Determine the difference between the air temperature of the microclimate (70 °C) and the high air temperature of the climatic class (40 °C) i.e. 30 °C.
– Shift the corner points A to F by the value of this difference between the high air temperatures of the microclimate and the climatic class on the lines of constant absolute air humidity.
– Mark the obtained corner points by A’ to F’.
– Draw the boundary line for the limitation of the relative air humidity at 65 % with high/low absolute air humidity, marking the intersection with B_{65} and C_{65}.
– Draw the resulting climatogram A’, B_{65}, C_{65}, D, E’ and F’.

NOTE This method of transformation on lines of constant absolute air humidity is physically correct only for closed systems. For open systems, the transformation on the lines of constant partial water vapour pressure can be used. Since the error in the given temperature range is not significant, for the transformation, the lines of constant absolute air humidity as specified in Annex B were used also for open systems.

The climatogram of the microclimatic class 3K22/X2/Y1 is the envelope line A’, B_{65}, C_{65}, D, E’ and F’.

The microclimate during permanent external or self-generated heating complies with the area within the line A’, B’, C’, D’, E’ and F’. The two corner points A’ and B’ of a climatogram such as Figure A.1 represent:

– A' is the high air temperature and related high absolute air humidity of the microclimate with external heating or self-generated heating;
– B' is the high relative air humidity and related high air temperature of the microclimate with external heating or self-generated heating;

  These corner points indicate the range of maximum stress on components by relative air humidity during external heating or self-generated heating. They can be suitably described by pairing values of air temperature and relative air humidity for the points in question from climatograms. The paired values for the remaining corner points of a climatogram are generally of minor importance.

Documents
Document Sharing Hub
Full document details: IEC 60721-3-9-2024

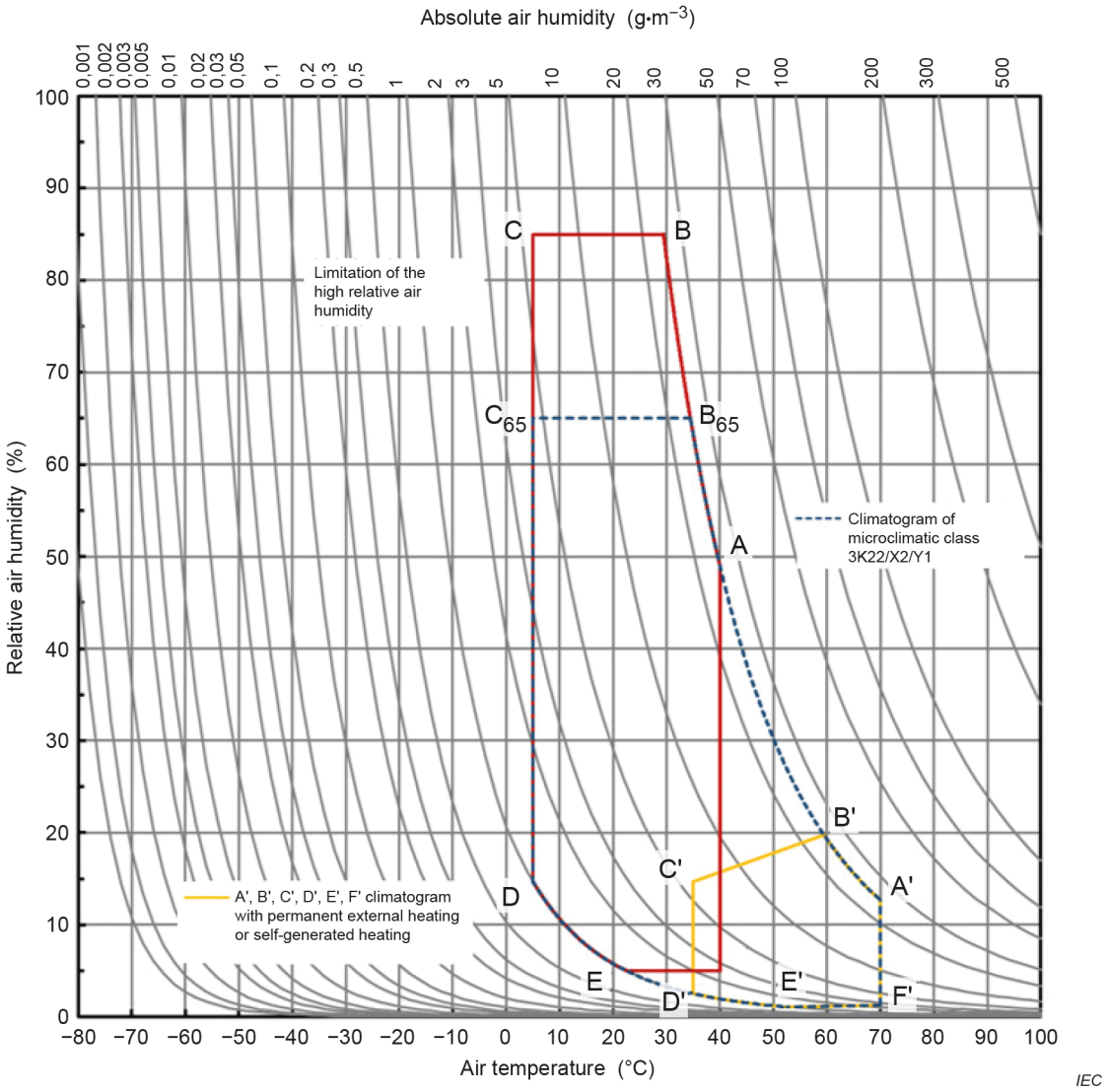

Figure A.1 – Example of a climatogram for a microclimate: Microclimatic class 3K22/X2/Y1

A.2 Tables of preferred microclimatic classes

Table A.1 and Table A.2 give paired values for air temperature/relative air humidity at the corner points of the climatograms (such as Figure A.1) of the most usual microclimatic classes with weatherprotected locations. Table A.1 gives the value of corner points A’, B’, C’, D’, E’ and F’, and Table A.2 gives the value of corner points B_{Y1} to B_{Y4} and C_{Y1} to C_{Y4}.

NOTE The corner points A’, B’, C’, D’, E’ and F’ are not affected by the change of limited relative air humidity; they are determined by the high air temperature and the climatic class. The corner points B_{Y1} to B_{Y4} and C_{Y1} to C_{Y4} are not affected by the change of high air temperature; they are determined by the limited relative air humidity and the climatic class.

Documents
Document Sharing Hub
Full document details: IEC 60721-3-9-2024

Table A.1 – Characteristic parameters and severities of microclimatic classes – Weatherprotected locations: Corner points A’, B’, C’, D’, E’ and F’

Limited relative air humidity	Class of high air tempera-ture	Corner point	Parameter	Unit	Corner point severities for				
					3K20	3K21	3K22	3K23	3K24
Y1 to Y4 (65 % to 95 %)	X1 (55 °C)	A'	Air temperature/ relative air humidity	°C / %	55,0 / 14,4	55,0 / 21,2	55,0 / 24,0	55,0 / 27,9	55,0 / 27,9
		B'			52,5 / 16,1	52,4 / 23,8	44,4 / 39,4	29,2 / 100	29,2 / 100
		C'			50,0 / 15,7	38,0 / 20,8	20,0 / 33,4	−5,0 / 100	−25,0 / 100
		D'			50,0 / 4,8	38,0 / 4,3	20,0 / 5,8	−5,0 / 15,4	−25,0 / 90,6
		E'			52,5 / 4,3	45,5 / 3,0	37,5 / 2,2	0,5 / 10,0	11,0 / 5,0
		F'			55,0 / 4,4	55,0 / 3,2	55,0 / 2,5	55,0 / 10,0	55,0 / 5,0
	X2 (70 °C)	A'			70,0 / 7,6	70,0 / 11,2	70,0 / 12,7	70,0 / 14,7	70,0 / 14,7
		B'			67,5 / 8,4	67,4 / 12,4	59,4 / 19,8	44,1 / 46,2	44,2 / 46,2
		C'			65,0 / 8,1	53,0 / 10,1	35,0 / 14,6	10,0 / 34,5	−10,0 / 25,8
		D'			65,0 / 2,5	53,0 / 2,1	35,0 / 2,5	10,0 / 5,3	−10,0 / 23,4
		E'			67,5 / 2,2	60,5 / 1,5	52,5 / 1,1	15,5 / 3,8	26,0 / 2,1
		F'			70,0 / 2,3	70,0 / 1,7	70,0 / 1,3	70,0 / 5,3	70,0 / 2,6
	X3 (85 °C)	A'			85,0 / 4,3	85,0 / 6,3	85,0 / 7,1	85,0 / 8,3	85,0 / 8,3
		B'			82,5 / 4,7	82,4 / 6,9	74,4 / 10,7	59,2 / 23,2	59,2 / 23,2
		C'			80,0 / 4,5	68,0 / 5,3	50,0 / 7,0	25,0 / 14,1	5,0 / 8,2
		D'			80,0 / 1,4	68,0 / 1,1	50,0 / 1,2	25,0 / 2,2	5,0 / 7,4
		E'			82,5 / 1,3	75,5 / 0,8	67,5 / 0,6	30,5 / 1,6	41,0 / 0,9
		F'			85,0 / 1,3	85,0 / 1,0	85,0 / 0,7	85,0 / 3,0	85,0 / 1,5
	X4 (100 °C)	A'			100,0 / 2,5	100,0 / 3,7	100,0 / 4,2	100,0 / 4,9	100,0 / 4,9
		B'			97,5 / 2,8	97,4 / 4,1	89,4 / 6,1	74,2 / 12,5	74,2 / 12,5
		C'			95,0 / 2,6	83,0 / 3,0	65,0 / 3,6	40,0 / 6,4	20,0 / 3,2
		D'			95,0 / 0,8	83,0 / 0,6	65,0 / 0,6	40,0 / 1,0	20,0 / 2,9
		E'			97,5 / 0,7	90,5 / 0,5	82,5 / 0,3	45,5 / 0,7	56,0 / 0,5
		F'			100,0 / 0,8	100,0 / 0,6	100,0 / 0,4	100,0 / 1,8	100,0 / 0,9
	X5 (125 °C)	A'			125,0 / 1,2	125,0 / 1,7	125,0 / 2,0	125,0 / 2,3	125,0 / 2,3
		B'			122,5 / 1,3	122,4 / 1,9	114,4 / 2,7	99,2 / 5,1	99,2 / 5,1
		C'			120,0 / 1,2	108,0 / 1,3	90,0 / 1,4	65,0 / 2,0	45,0 / 0,8
		D'			120,0 / 0,4	108,0 / 0,3	90,0 / 0,2	65,0 / 0,3	45,0 / 0,8
		E'			122,5 / 0,3	115,5 / 0,2	107,5 / 0,1	70,5 / 0,2	81,0 / 0,2
		F'			125,0 / 0,4	125,0 / 0,3	125,0 / 0,2	125,0 / 0,8	125,0 / 0,4
	X6 (155 °C)	A'			155,0 / 0,5	155,0 / 0,8	155,0 / 0,9	155,0 / 1,1	155,0 / 1,1
		B'			152,5 / 0,6	152,4 / 0,9	144,4 / 1,2	129,2 / 2,0	129,2 / 2,0
		C'			150,0 / 0,5	138,0 / 0,5	120,0 / 0,5	95,0 / 0,7	75,0 / 0,2
		D'			150,0 / 0,2	138,0 / 0,1	120,0 / 0,1	95,0 / 0,1	75,0 / 0,2
		E'			152,5 / 0,2	145,5 / 0,1	137,5 / 0,1	100,5 / 0,1	111,0 / 0,1
		F'			155,0 / 0,2	155,0 / 0,1	155,0 / 0,1	155,0 / 0,4	155,0 / 0,2
	X7 (200 °C)	A'			200,0 / 0,2	200,0 / 0,3	200,0 / 0,3	200,0 / 0,4	200,0 / 0,4
		B'			197,5 / 0,2	197,4 / 0,3	189,4 / 0,4	174,2 / 0,7	174,2 / 0,7
		C'			195,0 / 0,2	183,0 / 0,2	165,0 / 0,2	140,0 / 0,2	120,0 / 0,1
		D'			195,0 / 0,1	183,0 / 0,0	165,0 / 0,0	140,0 / 0,0	120,0 / 0,0
		E'			197,5 / 0,1	190,5 / 0,0	182,5 / 0,0	145,5 / 0,0	156,0 / 0,0
		F'			200,0 / 0,1	200,0 / 0,0	200,0 / 0,0	200,0 / 0,1	200,0 / 0,1

Documents
Document Sharing Hub
Full document details: IEC 60721-3-9-2024