



Classification of environmental conditions

**Part 3. Classification of groups of environmental
parameters and their severities**

Section 3.3 Stationary use at weatherprotected locations

The European Standard EN 60721-3-3 : 1993 has the status of a
British Standard

Classification des conditions d'environnement
Partie 3. Classification des groupements des
agents d'environnement et leurs sévérités
Section 3.3 Utilisation à poste fixe, protégé
contre les intempéries

Klassifizierung von Umweltbedingungen
Teil 3. Klassen von Einflußgrößen
Abschnitt 3.3 Ortsfester Einsatz,
wettergeschützt

UDC 621.3 : 620.193.001.4

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Directorate of Telecommunications
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Ministry of Defence
National Supervising Inspectorate
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'Annex ZA (normative) Other international publications quoted in this standard with the references of the relevant European publications'

National foreword



This Section of BS 7527 has been prepared under the direction of the General Electrotechnical Standards Policy Committee. It is identical with IEC Publication 721-3-3 : 1987 'Classification of environmental conditions Part 3 : Classification of groups of environmental parameters and their severities. Stationary use at weatherprotected locations', including Corrigendum April 1988, published by the International Electrotechnical Commission (IEC).

In 1993 the European Committee for Electrotechnical Standardization (CENELEC) accepted IEC 721-3-3 : 1987, together with Amendment 1 : 1991, as European Standard EN 60721-3-3 : 1993. As a consequence of implementing the European Standard this British Standard is renumbered as BS EN 60721-3-3 and any reference to BS 7527 : Section 3.3 should be read as a reference to BS EN 60721-3-3.

The changes added by Corrigendum April 1988 are indicated by a single vertical lined in the margin.

This Section of BS 7527 implements CENELEC Harmonization Document (HD) 478.3.3 S1.

Other Parts of this British Standard are as follows.

- Part 1 Environmental parameters and their severities
- 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 3.4 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 721-1 : 1990	BS 7527 Classification of environmental conditions Part 1 : 1991 Environmental parameters and their severities (Identical)
IEC 721-2-1 : 1982	Section 2.1 : 1991 Temperature and humidity (Identical)
IEC 721-3-0 : 1984	Section 3.0 : 1991 Introduction (Identical)

The title of figure 1 includes the note 'For explanation see Sub-clause 5.3 of IEC Publication 721-1.' This should be read as 'For explanation see note 6 relating to table 1 of IEC 721-1 (1990).'

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

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Classification of environmental conditions
Part 3: Classification of groups of environmental parameters and
their severities
Stationary use at weatherprotected locations

(IEC 721-3-3 : 1987 + A1 : 1991)

Classification des conditions d'environnement
Troisième partie: Classification des groupements
des agents d'environnement et de leurs sévérités
Utilisation à poste fixe, protégé contre les
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Klassifizierung von Umweltbedingungen
Teil 3: Klassen von Umwelteinflußgrößen und
deren Grenzwerte
Ortsfester Einsatz, wettergeschützt
(IEC 721-3-3 : 1987 + A1 : 1991)

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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 CENELEC member.

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Foreword

At the request of the 72 Technical Board, the text of the International Standard IEC 721-3-3 : 1987 and its amendment 1 : 1991 was submitted to the CENELEC members for formal vote.

The text of the reference document was approved by CENELEC as EN 60721-3-3 on 9 March 1993.

This European Standard replaces HD 478.3.3 S1 : 1989.

The following dates were fixed:

- latest date of publication of
an identical national standard (dop) 1994-03-01
- latest date of withdrawal of
conflicting national standards (dow) 1994-03-01

Annexes designated 'normative' are part of the body of the standard. In this standard, annex ZA is normative.

CLASSIFICATION OF ENVIRONMENTAL CONDITIONS

Part 3: Classification of groups of environmental parameters and their severities

Stationary use at weatherprotected locations

1. Scope

This standard classifies groups of environmental parameters and their severities to which products are subjected when mounted for stationary use at weatherprotected locations.

Weatherprotected locations, where products may be mounted for stationary use permanently or temporarily, include land-based and offshore enclosed and sheltered locations. Use in and on vehicles is excepted.

The environmental conditions specified in this standard are limited to those which may directly affect the performance of products. Only environmental conditions as such are considered. No special description of the effects of these conditions on the products is given.

Environmental conditions directly related to fire or explosion hazards and conditions related to ionizing radiation are excluded. Any other unforeseen incidents are also excluded. The possibility of their occurrence should be taken into account in special cases.

Microclimate within a product is not included.

Conditions of stationary use at non-weatherprotected locations, portable and non-stationary use, use in vehicles and ships, and conditions of storage and transportation are given in other parts of IEC Publication 721.

2. Object

To classify environmental parameters and their severities to which a product may be exposed under its use conditions, including periods of erection work, down time, maintenance and repair, when mounted for stationary use at weatherprotected locations.

A limited number of classes of environmental conditions is given, covering a broad field of application. The user of this standard should select the lowest classification necessary for covering the conditions of the intended use.

3. General

For further general guidance, see IEC Publication 721-3-0.

During periods of erection work, which are often connected with down time, the user should be aware that conditions might differ from those experienced during the period of

operation. Therefore the selection of another class may be necessary for this period, unless special precautions have been taken.

The severities specified are those which will have a low probability of being exceeded. All specified values are maximum or limit values. These values may be reached, but do not occur permanently. Depending on the local situation there may be different frequencies of occurrence related to a certain period of time. Such frequencies of occurrence should be considered for any environmental parameter. They should additionally be specified if applicable. Information on duration and frequencies of occurrence is given in Amendment No. 1 to IEC Publication 721-3-0 as Clause 6.

Attention is drawn to the fact that combinations of the environmental parameters given may increase the effect on a product. This applies especially to the presence of high relative humidity in addition to biological conditions or to conditions of chemically or mechanically active substances.

The environmental conditions present at a location may be affected by other influences, e.g. heat dissipation sources, special process conditions, etc.

Measurements of the environmental conditions present at a location should be made at a representative point in the vicinity of the product.

It is recognized that extreme or special environmental conditions may exist. Specifications for products to operate under such special conditions are a matter for negotiation between supplier and user.

4. Definitions

In addition to the definitions in Clause 3 of IEC Publication 721-1, the following definitions apply to this standard:

4.1 *stationary use*

The product is mounted firmly on the structure or on mounting devices or it is permanently placed at a certain site. It is not intended for portable or non-stationary use, but short periods of handling during erection work, down time, maintenance and repair at the location are included.

4.2 *weatherprotected location*

A location at which the product is protected from weather influences:

- *totally weatherprotected location*: direct weather influences are totally excluded; (enclosed location)
- *partially weatherprotected location*: direct weather influences are not totally excluded. (sheltered location)

5. Classification of groups of environmental parameters and their severities

A number of classes for climatic conditions (K), special climatic conditions (Z), biological conditions (B), chemically active substances (C) and mechanically active substances (S) and mechanical conditions (M) are specified in Tables I to VI.

This classification allows a number of possible combinations of environmental conditions, which bear upon products wherever used. It represents the real situation in respect of world-wide conditions of use, due to local influences of open-air climate, construction of buildings, mounting, process conditions, etc.

A class of conditions normally includes classes with lower severity digits.

For certain parameters it has not yet been possible to specify quantitative severities.

For a given location or product, reference should be made to the total set of classes, e.g.:

3K2/3Z1/3Z4/3B1/3C2/3S1/3M4.

Appendix A explains the basis of the classes. It contains a summary of the conditions covered by each class and gives a survey of conditions affecting the choice of environmental parameters and their severities.

Appendix B contains climatograms showing the interdependence of air temperature, relative humidity and absolute humidity for the climatic classes specified in Table I.

Appendix C gives two examples for practical application of this classification.

5.1 *Climatic conditions*

The climatic conditions specified for classes 3K1 to 3K8 represent the conditions at weatherprotected locations. They have been experienced world-wide over long periods of time, taking into account all the parameters that can influence them, e.g. external (open-air) climatic conditions, type of building construction, temperature/humidity controlling systems and internal conditions, e.g. heat dissipation from mounted equipment, presence of humans, etc. The conditions should cover all normal cases, but not exceptional events, e.g. failure of air-conditioning systems.

When selecting appropriate classes attention should be paid to the fact that the climatic conditions inside buildings depend on the outside (open-air) conditions, especially air temperature and solar radiation, and the type of building construction. Walls with good thermal insulation or high thermal capacity can consistently smooth the peaks of outside air temperature variations between day and night, or exceptionally for a longer period. Walls with poor thermal insulation or low thermal capacity cannot have that effect, and peaks can be magnified due to the effect of solar radiation during the day and the effect of building radiation at night. The effect of solar radiation can be increased by either heat-trap or greenhouse effects.

The actual interdependence of air temperature and humidity cannot be shown by stating severities only. Therefore climatograms are given in Appendix B.

5.2 *Special climatic conditions*

As the parameters heat radiation, movement of surrounding air and water from sources other than rain may in practice occur with any of their severities in combination with

any of the other climatic conditions, these special conditions are specified in Table II. In this case an assumption of the coincidence of events of increasing severity would lead to unnecessary overdesign.

5.3 *Biological conditions*

No quantitative severities have been specified for these conditions. The specified parameters of Table III are typical, but may not be complete.

5.4 *Chemically active substances*

Contamination of natural atmosphere is mainly caused by chemical emissions from industrial activities, motor-driven vehicles and heating systems. A further chemical influence is caused by aerosols of sea salts. The contamination may affect the function and the materials of products.

The values given in this classification have been experienced in surveys for several years. Maximum values are given, because direct influence of higher concentrations over a short period normally causes more damage to material, which cannot regenerate. Mean values are given additionally, because their influence may be important for the long-term effect on the internal parts of the products.

In practice not all contaminants (parameters) classified in this standard are present simultaneously. Furthermore, the probability is low that the concentrations of those contaminants really present increase simultaneously and homogeneously. Depending on the local situation, there are often higher values of one contaminant only. The values specified for class 3C1 will normally be experienced in rural areas and areas with low industrial activities. The values specified for class 3C2 are experienced in urban areas. Therefore the severity of each of these two classes should be considered as the requirements for the combined effect of all parameters stated. The severities of classes 3C3 and 3C4, however, cannot be considered as the requirements for the combined effect of all parameters stated in order to avoid any uneconomical overdesign. For these classes it is possible to select only the severities of those single parameters, which might be relevant to the case of application. If single parameters of the classes 3C3 or 3C4 are selected for the description of the chemically active substances present at a location, for all other parameters which are not specially named, the severities of class 3C2 are valid.

Note. — Chemically active liquids and chemically active solids other than sea salts are not considered in this standard.

5.5 *Mechanically active substances*

Sand and dust are classified together, as the effects caused by these environmental conditions are similar.

5.6 *Mechanical conditions*

The conditions of vibration (sinusoidal) are classified by severity levels of acceleration and displacement amplitudes in high and low frequency ranges respectively.

Random vibration is not considered in this standard. It may be included when sufficient information is available.

Non-stationary vibration including shock is classified by using the first order undamped maximax shock response spectrum. See Sub-clause 5.3.1 of IEC Publication 721-1.

TABLE I
Classification of climatic conditions

Environmental parameter	Unit	Class										
		3K1	3K2	3K3	3K4	3K5	3K6	3K7	3K7L	3K8	3K8H	3K8L
a) Low air temperature	°C	+20 ¹⁾	+15	+5	+5	-5	-25	-40	-40	-55	-25	-55
b) High air temperature	°C	+25 ¹⁾	+30	+40	+40	+45	+55	+70	+40	+70	+70	+55
c) Low relative humidity	%	20	10	5	5	5	10	10	10	10	10	10
d) High relative humidity	%	75	75	85	95	95	100	100	100	100	100	100
e) Low absolute humidity	g/m ³	4	2	1	1	1	0.5	0.1	0.1	0.02	0.5	0.02
f) High absolute humidity	g/m ³	15	22	25	29	29	29	35	35	35	35	29
g) Rate of change of temperature ¹⁾	°C/min	0.1	0.5	0.5	0.5	0.5	0.5	1.0	1.0	1.0	1.0	1.0
h) Low air pressure	kPa	70	70	70	70	70	70	70	70	70	70	70
i) High air pressure ²⁾	kPa	106	106	106	106	106	106	106	106	106	106	106
j) Solar radiation	W/m ²	500	700	700	700	700	1120	1120	None	1120	1120	1120
k) Heat radiation	None	No	e)	e)	e)	e)	e)	e)	e)	e)	e)	e)
l) Movement of surrounding air ⁴⁾	m/s	0.5	1.0 ⁵⁾	1.0 ⁵⁾	1.0 ⁵⁾	1.0 ⁵⁾	1.0 ⁵⁾	5.0 ⁵⁾	5.0 ⁵⁾	5.0 ⁵⁾	5.0 ⁵⁾	5.0 ⁵⁾
m) Condensation	None	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
n) Wind-driven precipitation (rain, snow, hail, etc.)	None	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
o) Water from sources other than rain	None	No	No	No	e)	e)	e)	e)	e)	e)	e)	e)
p) Formation of ice	None	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes

¹⁾ Averaged over a period of time of 5 min.

²⁾ Conditions in mines are not considered.

³⁾ These are air-conditioned locations with a tolerance of ± 2 °C on stated temperature values.

⁴⁾ A cooling system based on non-assisted convection may be disturbed by adverse movement of surrounding air.

⁵⁾ If applicable, a special value may be selected from Table II.

⁶⁾ Conditions occurring at the locations concerned to be selected from Table II.

TABLE II
Classification of special climatic conditions

Environmental parameter	Class	Unit	Special condition Z
k) Heat radiation	3Z1	None	Negligible
	3Z2	None	Heat radiation, e.g. in the vicinity of room heating systems
	3Z3	None	Heat radiation, e.g. in the vicinity of room heating systems or commercial ovens or industrial furnaces
l) Movement of surrounding air ¹⁾	3Z4	m/s	5
	3Z5	m/s	10
	3Z6	m/s	30
o) Water from sources other than rain ²⁾	3Z7	None	Dripping water
	3Z8	None	Spraying water
	3Z9	None	Splashing water
	3Z10	None	Water jets

¹⁾ A cooling system based on non-assisted convection may be disturbed by adverse movement of surrounding air.

²⁾ Underwater conditions are not included.

TABLE III
Classification of biological conditions

Environmental parameter	Unit	Class		
		3B1	3B2	3B3
a) Flora	None	No	Presence of mould, fungus, etc.	Presence of mould, fungus, etc.
b) Fauna	None	No	Presence of rodents and other animals harmful to products, excluding termites	Presence of rodents and other animals harmful to products, including termites



TABLE IV

Classification of chemically active substances

Environmental parameter	Unit ¹⁾	Class ²⁾								
		3C1R	3C1L	3C1	3C2		3C3 ³⁾		3C4 ³⁾	
		Maximum value	Maximum value	Maximum value	Mean value	Maximum value	Mean value	Maximum value	Mean value	Maximum value
a) Sea salts	None	No	No	No ⁴⁾	Salt mist		Salt mist		Salt mist	
b) Sulphur dioxide	mg/m ³ cm ³ /m ³	0,01 0,0037	0,1 0,037	0,1 0,037	0,3 0,11	1,0 0,37	5,0 1,85	10 3,7	13 4,8	40 14,8
c) Hydrogen sulphide	mg/m ³ cm ³ /m ³	0,0015 0,001	0,01 0,0071	0,01 0,0071	0,1 0,071	0,5 0,36	3,0 2,1	10 7,1	14 9,9	70 49,7
d) Chlorine	mg/m ³ cm ³ /m ³	0,001 0,00034	0,01 0,0034	0,1 0,034	0,1 0,034	0,3 0,1	0,3 0,1	1,0 0,34	0,6 0,2	3,0 1,0
e) Hydrogen chloride	mg/m ³ cm ³ /m ³	0,001 0,00066	0,01 0,0066	0,1 0,066	0,1 0,066	0,5 0,33	1,0 0,66	5,0 3,3	1,0 0,66	5,0 3,3
f) Hydrogen fluoride	mg/m ³ cm ³ /m ³	0,001 0,0012	0,003 0,0036	0,003 0,0036	0,01 0,012	0,03 0,036	0,1 0,12	2,0 2,4	0,1 0,12	2,0 2,4
g) Ammonia	mg/m ³ cm ³ /m ³	0,03 0,042	0,3 3,42	0,3 0,42	1,0 1,4	3,0 4,2	10 14	35 49	35 49	175 247
h) Ozone	mg/m ³ cm ³ /m ³	0,004 0,002	0,01 0,005	0,01 0,005	0,05 0,025	0,1 0,05	0,1 0,05	0,3 0,15	0,2 0,1	2,0 1,0
i) Nitrogen oxides (expressed in the equivalent values of nitrogen dioxide)	mg/m ³ cm ³ /m ³	0,01 0,005	0,1 0,052	0,1 0,052	0,5 0,26	1,0 0,52	3,0 1,56	9,0 4,68	10 5,2	20 10,4

¹⁾ The values given in cm³/m³ have been calculated from the values given in mg/m³ and refer to a temperature of 20 °C and a pressure of 101,3 kPa. The table uses rounded values.

²⁾ Mean values are expected long-term values. Maximum values are limit or peak values, occurring over a period of time of not more than 30 min per day.

³⁾ It is not mandatory to consider each of classes 3C3 and 3C4 as a requirement for the combined effect of all parameters stated. If applicable, values of single parameters may be selected from these classes. In this case the severities of class 3C2 are valid for all parameters not especially named.

⁴⁾ Salt mist may be present in sheltered locations of coastal areas and in offshore sites.

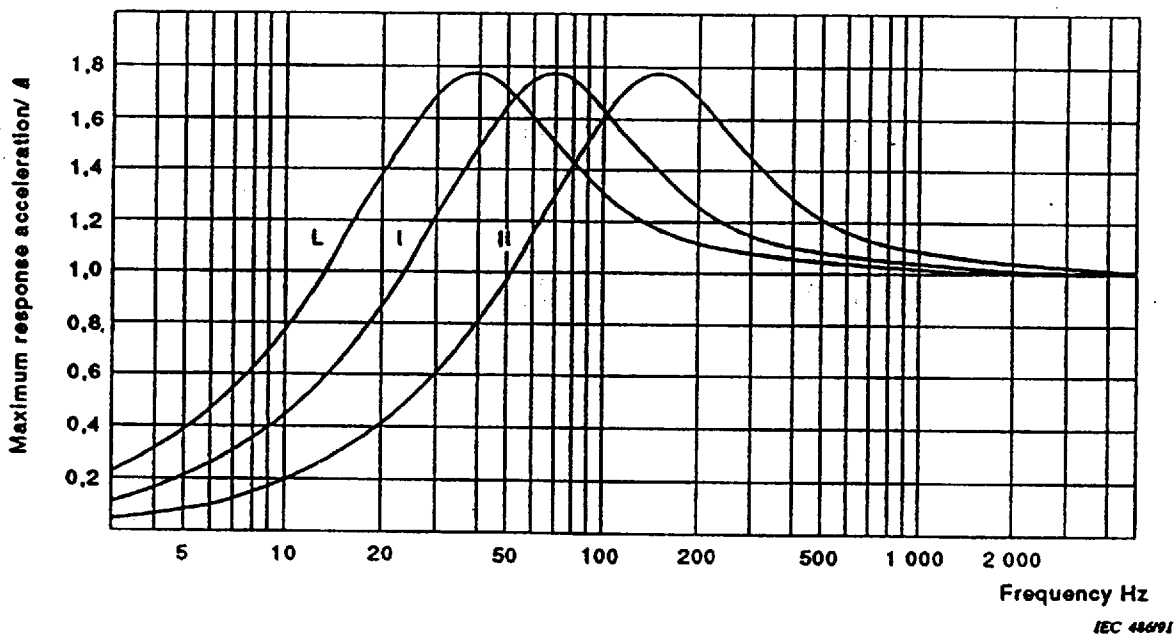
TABLE V

Classification of mechanically active substances

Environmental parameter	Unit	Class			
		3S1	3S2	3S3	3S4
a) Sand	mg/m ³	None	30	300	3 000
b) Dust (suspension)	mg/m ³	0,01	0,2	0,4	4,0
c) Dust (sedimentation)	mg/(m ² ·h)	0,4	1,5	15	40

TABLE VI
Classification of mechanical conditions

Environmental parameter	Unit	Class							
		3M1	3M2	3M3	3M4	3M5	3M6	3M7	3M8
a) Stationary vibration, sinusoidal:									
displacement amplitude	mm	0.3	1.5	1.5	3.0	3.0	7.0	10	15
acceleration amplitude	m/s ²	1	5	5	10	10	20	30	50
frequency range	Hz	2-9 9-200	2-9 9-200	2-9 9-200	2-9 9-200	2-9 9-200	2-9 9-200	2-9 9-200	2-9 9-200
b) Non-stationary vibration including shock:									
(see Figure 1)									
shock response spectrum type L, peak acceleration $\dot{a}$	m/s ²	40	40	70	None	None	None	None	None
shock response spectrum type I, peak acceleration $\dot{a}$	m/s ²	None	None	None	100	None	None	None	None
shock response spectrum type II, peak acceleration $\dot{a}$	m/s ²	None	None	None	None	250	250	250	250



Example of durations for half-sine pulse:

Spectrum type L: duration 22 ms

Spectrum type I: duration 11 ms

Spectrum type II: duration 6 ms

Figure 1 - Model shock response spectra
(first order maxmax shock response spectra).
For explanation see note 6 relating to table I
of IEC 721-1 (1990)

APPENDIX A

SURVEY OF CONDITIONS AFFECTING THE CHOICE OF ENVIRONMENTAL PARAMETERS AND THEIR SEVERITIES

A1. General

In this appendix the basis of the classes is explained. It gives a survey of conditions affecting the choice of environmental parameters and their severities, and it contains a summary of the conditions covered by each class.

A2. Survey of conditions

For each environmental parameter the various possible conditions, which will result in different levels of environmental conditions, are presented. The conditions are arranged in order of increasing severities.

The first column of the tabulated Sub-clauses A2.1 to A2.5 on pages 25 to 43 describes the conditions. In the vertical columns headed "Class", an × indicates the conditions covered by the class. The lowest class covering a certain condition may be found by reading horizontally from that condition to the first × encountered.

The procedure of finding an appropriate class as described above is valid for all the sub-clauses, but Sub-clause A2.1 (pages 25 to 37) contains the additional factor of type of climate given in columns 2 to 10, to which attention has to be paid.

The lowest class covering a certain condition can thus be found by reading vertically down to the relevant type of climate column to the first × in the horizontal line of the relevant condition, then reading horizontally to the right to the first × encountered as previously described.

The types of climate are described in IEC Publication 721-2-1, and are:

Extremely Cold (except the Central Antarctic)

Cold

Cold Temperate

Warm Temperate

Warm Dry

Mild Warm Dry

Extremely Warm Dry

Warm Damp

Warm Damp, Equable

It should be noted that, if a certain condition referred to in this appendix is covered by a certain class, it does not necessarily mean that the class describes, for each single parameter, the lowest environmental severity needed to cover the condition.

A2.1 K. Climatic conditions

Condition of stationary use	Type of climate								Class											
	Extremely Cold	Cold	Cold Temperate	Warm Temperate	Warm Dry	Mild Warm Dry	Extremely Warm Dry	Warm Damp	Warm Damp, Equable	3K1	3K2	3K3	3K4	3K5	3K6	3K7	3K7L	3K8	3K8H	3K8L
a) Low air temperature °C										+20	+15	+5	+5	-5	-25	-40	-40	-55	-25	-55
Fully air-conditioned locations	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Continuously temperature-controlled locations	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x
Temperature-controlled locations. Heating or cooling may be switched off for periods, but occurrence of extremely low temperature is prevented	x	x	x	x	x	x	x	x	x			x	x	x	x	x	x	x	x	x
Locations without temperature control. Heating may be used, where necessary, to avoid extremely low temperatures	x	x	x	x	x	x	x	x	x					x	x	x	x	x	x	x
Locations without temperature control. The building construction provides protection from daily variations in outside (i.e. open-air) climate									x		x	x	x	x	x	x	x	x	x	x
	x	x	x	x	x	x	x	x	x							x	x	x		x
Locations without temperature control. The building construction provides minimal protection from daily variations in outside (i.e. open-air) climate									x			x	x	x	x	x	x	x	x	x
									x			x	x	x	x	x	x	x	x	x
									x			x	x	x	x	x	x	x	x	x
									x			x	x	x	x	x	x	x	x	x
									x			x	x	x	x	x	x	x	x	x
									x			x	x	x	x	x	x	x	x	x
									x			x	x	x	x	x	x	x	x	x
									x			x	x	x	x	x	x	x	x	x
									x			x	x	x	x	x	x	x	x	x
									x			x	x	x	x	x	x	x	x	x
									x			x	x	x	x	x	x	x	x	x
									x			x	x	x	x	x	x	x	x	x
									x			x	x	x	x	x	x	x	x	x
									x			x	x	x	x	x	x	x	x	x
									x			x	x	x	x	x	x	x	x	x
									x			x	x	x	x	x	x	x	x	x
									x			x	x	x	x	x	x	x	x	x
									x			x	x	x	x	x	x	x	x	x
									x			x	x	x	x	x	x	x	x	x
									x			x	x	x	x	x	x	x	x	x
									x			x	x	x	x	x	x	x	x	x
									x			x	x	x	x	x	x	x	x	x
									x			x	x	x	x	x	x	x	x	x
									x			x	x	x	x	x	x	x	x	x
									x			x	x	x	x	x	x	x	x	x
									x			x	x	x	x	x	x	x	x	x
									x			x	x	x	x	x	x	x	x	x
									x			x	x	x	x	x	x	x	x	x
									x			x	x	x	x	x	x	x	x	x
									x			x	x	x	x	x	x	x	x	x
									x			x	x	x	x	x	x	x	x	x
									x			x	x	x	x	x	x	x	x	x
									x			x	x	x	x	x	x	x	x	x
									x			x	x	x	x	x	x	x	x	x
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									x			x	x	x	x	x	x	x	x	x
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									x			x	x	x	x	x	x	x	x	x
									x			x	x	x	x	x	x	x	x	x
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									x			x	x	x	x	x	x	x	x	x
									x			x	x	x	x	x	x	x	x	x
									x			x	x	x	x	x	x	x	x	x
									x			x	x	x	x	x	x	x	x	x
									x			x	x	x	x	x	x	x	x	x
									x											

¹⁾ These are air-conditioned locations with a tolerance of $\pm 2^\circ\text{C}$ on stated temperature values.

A2.1 K. Climatic conditions (continued)

Condition of stationary use	Type of climate									Class										
	Extremely Cold	Cold	Cold Temperate	Warm Temperate	Warm Dry	Mild Warm Dry	Extremely Warm Dry	Warm Damp	Warm Damp, Equable	3K1	3K2	3K3	3K4	3K5	3K6	3K7	3K7L	3K8	3K8H	3K8L
Locations without temperature control. The building construction provides protection from daily variations in outside (i.e. open-air) climate	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x	x x x x			x	x	x	x	x	x	x	x	x
Locations without temperature control. The building construction provides minimal protection from daily variations in outside (i.e. open-air) climate	x x	x x	x x	x x	x x	x x		x x	x x						x	x		x x	x x	x
c) Low relative humidity %										20	10	5	5	5	10	10	10	10	10	10
Fully air-conditioned locations	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Continuously temperature-controlled locations. Additional humidification may be used, where necessary, to avoid extremely dry conditions	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x
Temperature-controlled locations. Heating or cooling may be switched off for periods. Additional humidification may be used, where necessary, to avoid extremely dry conditions	x	x	x	x	x	x	x	x	x			x	x	x						
Locations without temperature control. The building construction provides protection from daily variations in outside (i.e. open-air) climate	x x	x x	x x	x x	x x	x x	x x	x x	x x		x	x x	x x	x x	x x	x x	x x	x x	x x	x x
Locations without temperature control. The building construction provides minimal protection from daily variations in outside (i.e. open-air) climate						x		x	x		x	x	x	x	x	x	x	x		