JIS

JAPANESE INDUSTRIAL STANDARD

The code number of this Standard changed from JIS C 0116 to the following from 20 March 2004.

JIS C 60721-3-3:1997

Translated and Published by
Japanese Standards Association

JIS C 0116 : 1997

(IEC 60721-3-3 : 1994)

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

ICS 19.040

Descriptors : electrical equipment, electrically-operated devices, electrical components, electronic equipment and components, environmental testing, electrical testing, indoor electric equipment

Reference number : JIS C 0116 : 1997 (E)

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Foreword

This translation has been made based on the original Japanese Industrial Standard established by the Minister of International Trade and Industry through deliberations at Japanese Industrial Standards Committee in accordance with the Industrial Standardization Law:

Date of Establishment: 1997-11-20

Date of Public Notice in Official Gazette: 1997-11-20

Investigated by: Japanese Industrial Standards Committee
Divisional Council on Electricity

JIS C 0116:1997, First English edition published in 2000-06

Translated and published by: Japanese Standards Association
4-1-24, Akasaka, Minato-ku, Tokyo, 107-8440 JAPAN

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Printed in Japan

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JAPANESE INDUSTRIAL STANDARD

JIS C 60721-3-3:1997
(IEC 60721-3-3 : 1994)

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

Introduction

This Japanese Industrial Standard has been prepared based on the second edition issued in 1994 of "IEC 60721-3-3, *Classification of environmental conditions Part 3: Classification of groups of environmental parameters and their severities Section 3: Stationary use at weatherprotected locations,*" Amendment 1 (1995) and Amendment 2 (1996) without changing the technical contents. The contents of these Amendments are compiled into this text.

The IEC standard number is based on the new numbering system implemented since January 1, 1997. The numbers of the standards issued prior to the date have also been changed to those with 60000 added. This means that only the numbers have been changed with the same contents of the standards.

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 under use conditions, including periods of erection work, down time, maintenance and repair.

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, conditions of storage and transportation, and microclimates inside products are given in other sections of IEC 60721-3.

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Informative reference IEC 60721-3 means a series of IEC 60721-3 (*Classification of environmental conditions Part 3: Classification of groups of environmental parameters and their severities*).

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.

2 Normative references

The following normative references contain provisions which, through reference in this text, constitute provisions of this Standard. At the time of publication, the editions indicated are valid.

JIS C 0110: 1995 *Classification of environmental conditions Part 1: Classification of environmental parameters and their severities.*

Note JIS C 0110 : 1995 is identical to IEC 60721-1 : 1990, Classification of environmental conditions Part 1 : Environmental parameters and their severities.

JIS C 0111: 1995 *Classification of environmental conditions Part 2: Environmental conditions appearing in nature Temperature and humidity.*

Note JIS C 0111 : 1995 is identical to IEC 60721-2-1 : 1982, Classification of environmental conditions Part 2 : Environmental conditions appearing in nature Section 1 : Temperature and humidity.

JIS C 0112: 1995 *Classification of environmental conditions Part 3: Classification of groups of environmental parameters and their severities Introduction.*

Note JIS C 0112 : 1995 is identical to IEC 60721-3-0 : 1984, Classification of environmental conditions Part 3 : Classification of groups of environmental parameters and their severities Section 0: Introduction.

IEC 721-2-8: 1994 Classification of environmental conditions Part 2: Environmental conditions appearing in nature Section 8: Fire exposure
ISO/IEC Guide 52: 1990 Glossary of fire terms and definitions

3 Definitions

In addition to the definitions in clause 3 (Definitions) of **JIS C 0110** and **ISO/IEC Guide 52**, the following definitions apply to this standard :

3.1 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.

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

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

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4 General

For further general guidance, see JIS C 0112.

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 JIS C 0112 clause 6 (Duration and frequency of occurrence).

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.

5 Classification of groups of environmental parameters and their severities

A number of classes are specified in tables 1 to 6 and 8 to 12 for:

- climatic conditions (K);
- special climatic conditions (Z);
- biological conditions (B);
- conditions of chemically active substances (C);
- conditions of mechanically active substances (S);
- mechanical conditions (M);
- conditions during the initial phase of a fire (T, P, F, V, H).

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. (see also clause 6.)

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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 and 3T1/3P3/3F2/3V2/3H3.

(see also clause 6.)

Annex 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.

Annex B contains climatograms showing the interdependence of air temperature, relative humidity and absolute humidity for the climatic classes specified in Table 1.

Annex 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. (Annex A classifies the climatic conditions.) 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.

Climatic conditions in tropical areas as specified in classes 3K9 and 3K10 are explained in Annex E.

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 Annex B.

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5.2 *Special climatic conditions*

As the parameters heat radiation, movement of surrounding air, water from sources other than rain, high air temperature, and low air pressure 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 2. 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 3 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 vibrations (sinusoidal) are classified by severity levels of acceleration and displacement amplitude in high and low frequency ranges respectively.

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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 6.1.3 of **JIS C 0110**, Table 1).

5.7 *Conditions during the initial stage of a fire*

The environmental fire conditions are described in IEC 60721-2-8. Their relation to the initial phase of a fire in a compartment has been the bese for the selection of the parameters and their severities applied for the classes covering the pertinent conditions. The main parameters are:

a) *for pre-flashover fire conditions:*

– time to flashover (Table 8);

– heat flux to various surfaces and items in the location;

– gas temperature of the upper gas layer in the location;

– rate of heat release (RHR), related to the rate of heat release causing flashover in the location (RHR_{fo}) and, accordingly, given by the ratio RHR/RHR_{fo} (Table 9).

b) for post-flashover fire conditions:

– maximum gas temperature, combined with the duration of the heating phase of the location fire development (Table 10).

c) *for conditions of smoke and chemically active substances:*

– optical density (Table 11);

– concentration of hydrogen chloride (Table 12).

All the parameters listed contribute towards a description of the environmental fire conditions. Some of the parameters specify fire exposure characteristics. This applies to the classes of Table 9 concerning the reaction to fire of materials and products during the pre-flashover fire condition, and to the parameters connected to the classes of Table 10 with respect to the fire behaviour and resistance of, for instance, load-supporting and separating structures, doors, ventilation systems during the post-flashover fire condition. Without being direct fire exposure characteristics, parameters such as the heat release ratio of the classes in Table 9 and the times in Table 8 are decisive for the risk of flashover and, if flashover occurs, for the safe escape of people from the fire. The gas temperatures of the classes of Table 9 and the parameters of Tables 11 and 12 are all fire exposure characteristics of importance for the functioning of optical detectors and for the probability of people to survive during evacuation or to remain within safe areas of refuge during the fire. The concentration of hydrogen chloride resulting from a fire is important for evaluating the risk of contamination of electric products by subsequent corrosion.

6 Sets of environmental condition class combinations

As indicated in clause 5 the classification allows a number of possible combinations of environmental conditions bearing on products wherever used. The number of possibilities, and thus the flexibility, is therefore very great. In practice, however, this flexibility is not always an advantage when, for instance, environmental condition specifications for a certain location are drawn up by different parties, invariably producing small but disturbing divergencies.

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In order to limit the possibilities to general cases, standard sets of class combinations may be selected from Table 7. For a given location or product, reference may then be made to this standard, for example IE32. Only when conditions are not considered to be covered by this specification, is reference made to each class as indicated in clause 5. Alternatively, if some severities of parameters deviate from that or those of the class combination, this should be expressed by the addition to the set designation of the following phrase: "but ... (parameter) ... (severity and unit)", for example IE32 but sand 30 mg/m³.

Annex D gives a summary of conditions covered by the sets of class combinations.

Table 1 – Classification of climatic conditions

Environmental parameter	Unit	Class												
		3K1	3K2	3K3	3K4	3K5	3K6	3K7	3K7L	3K8	3K8H	3K8L	3K9 [8]	3K10 [8]
a) Low air temperature	°C	+20 [3]	+15	+5	+5	−5	−25	−40	−40	−55	−25	−55	+5	−20
b) High air temperature [5]	°C	+25 [3]	+30	+40	+40 [5]	+45 [5]	+55	+70	+40	+70	+70	+55	+40	+55
c) Low relative humidity	%	20	10	5	5	5	10	10	10	10	10	10	30	4
d) High relative humidity	%	75	75	85	95	95	100	100	100	100	100	100	100	100
e) Low absolute humidity	g/m³	4	2	1	1	1	0.5	0.1	0.1	0.02	0.5	0.02	6	0.9
f) High absolute humidity	g/m³	15	22	25	29	29	29	35	35	35	35	29	36	27
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	1.0	1.0
h) Low air pressure [7]	kPa	70	70	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	106	106
j) Solar radiation	W/m²	500	700	700	700	700	1120	1120	None	1120	1120	1120	1120	1120
k) Heat radiation	None	No	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]
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]	5.0 [5]	5.0 [5]
m) Condensation	None	No	No	No	Yes	Yes	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	Yes	Yes
o) Water from sources other than rain	None	No	No	No	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]
p) Formation of ice	None	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	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 2.

6) Conditions occurring at the locations concerned to be selected from Table 2.

7) Severity value of 70 kPa covers worldwide application (altitudes up to 3 000 m). For some restricted applications, a value may be selected from Table 2.

8) Further information on classes 3K9 (tropical damp) and 3K10 (tropical dry) is given in Annex E.

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Table 2 – Classification of special climatic conditions

Environmental parameter	Class	Unit	Special condition Z
b) High air temperature	3Z11	°C	+55
h) Low air pressure[3]	3Z12	kPa	84
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.

[3] Class 3Z12 corresponds to an altitude of approximately 1 400 m.

Table 3 – 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

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Table 4 – 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/m³	0.01	0.1	0.1	0.3	1.0	5.0	10	13	40
	cm³/m³	0.0037	0.037	0.037	0.11	0.37	1.85	3.7	4.8	14.8
c) Hydrogen sulphide	mg/m³	0.0015	0.01	0.01	0.1	0.5	3.0	10	14	70
	cm³/m³	0.001	0.0071	0.0071	0.071	0.35	2.1	7.1	9.9	49.7
d) Chlorine	mg/m³	0.001	0.01	0.1	0.1	0.3	0.3	1.0	0.6	3.0
	cm³/m³	0.00034	0.0034	0.034	0.034	0.1	0.1	0.34	0.2	1.0
e) Hydrogen chloride	mg/m³	0.001	0.01	0.1	0.1	0.5	1.0	5.0	1.0	5.0
	cm³/m³	0.00066	0.0066	0.066	0.066	0.33	0.66	3.3	0.66	3.3
f) Hydrogen fluoride	mg/m³	0.001	0.003	0.003	0.01	0.03	0.1	2.0	0.1	2.0
	cm³/m³	0.0012	0.0036	0.0036	0.012	0.036	0.12	2.4	0.12	2.4
g) Ammonia	mg/m³	0.03	0.3	0.3	1.0	3.0	10	35	35	175
	cm³/m³	0.042	0.42	0.42	1.4	4.2	14	49	49	247
h) Ozone	mg/m³	0.004	0.01	0.01	0.05	0.1	0.1	0.3	0.2	2.0
	cm³/m³	0.002	0.005	0.005	0.025	0.05	0.05	0.15	0.1	1.0
i) Nitrogen oxides (expressed in the equivalent values of nitrogen dioxide)	mg/m³	0.01	0.1	0.1	0.5	1.0	3.0	9.0	10	20
	cm³/m³	0.005	0.052	0.052	0.26	0.52	1.56	4.68	5.2	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.

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Table 5 – Classification of mechanically active substances

Environmental parameter	Unit	Class			
		3S1	3S2	3S3	3S4
a) Sand	mg/m³	None	30	300	3 000
b) Dust (suspension)	mg/m³	0,01	0,2	0,4	4,0
c) Dust (sedimentation)	mg/(m² · h)	0,4	1,5	15	40

Table 6 – Classification of mechanical conditions

Environmental parameter	Unit	Class							
		3M1	3M2	3M3	3M4	3M5	3M6	3M7	3M8
a) Stationary vibration, sinusoidal:									
displacement amplitude (single amplitude)	mm	0,3	1,5	1,5	3,0	3,0	7,0	10	15
acceleration amplitude	m/s²	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 Fig. 1)									
shock response spectrum type I, peak acceleration $\hat{a}$	m/s²	40	40	70	None	None	None	None	None
shock response spectrum type I, peak acceleration $\hat{a}$	m/s²	None	None	None	100	None	None	None	None
shock response spectrum type II, peak acceleration $\hat{a}$	m/s²	None	None	None	None	250	250	250	250

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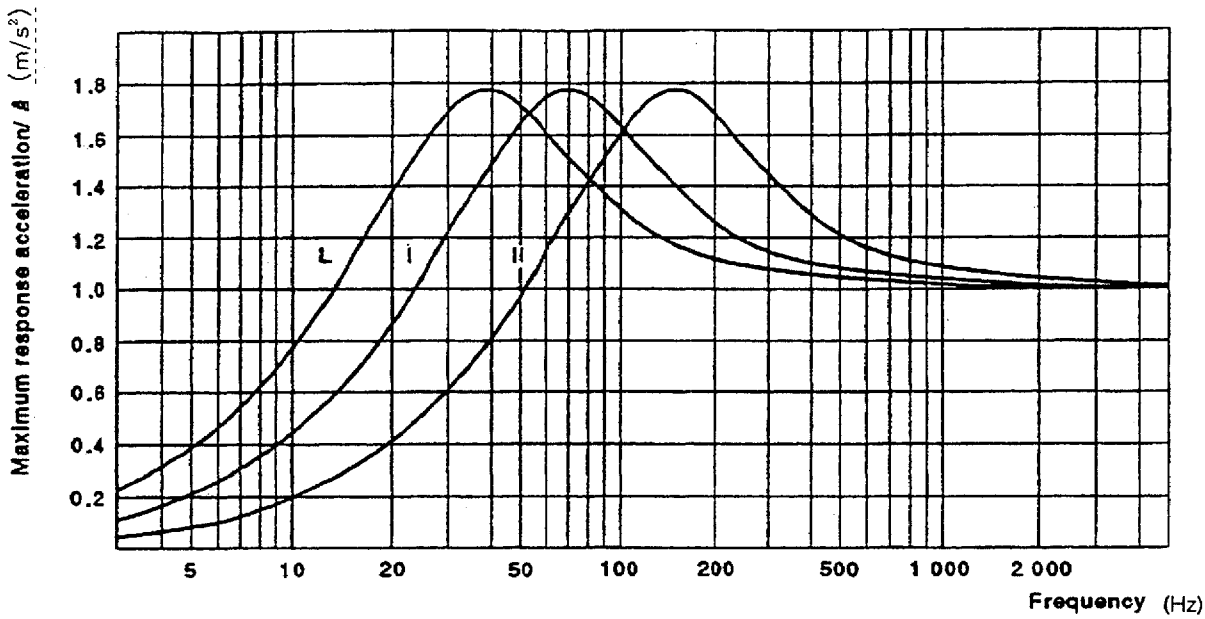

Example of durations for half-sine pulse:

Spectrum type L: duration 22 ms
Spectrum type I: duration 11 ms
Spectrum type II: duration 6 ms

Fig. 1 - Model shock response spectra (first order maximax shock response spectra). For explanation see Note 6 relating to Table 1 of JIS C 0110

Table 7 – Sets of environmental class combinations

Condition	Set of class combinations						
	IE31	IE32	IE33	IE34	IE35	IE36	IE37
Climatic	3K2	3K3	3K3	3K4	3K5	3K6	3K7
Special climatic	–	3Z2	3Z2	3Z2	3Z2	3Z2	3Z2
	–	3Z4	3Z4	3Z4	3Z4	3Z5	3Z5
	–	–	–	3Z8	3Z8	3Z8	3Z8
Biological	3B1	3B1	3B1	3B2	3B2	3B2	3B2
Chemically active substances	3C1	3C1	3C2	3C2	3C2	3C2	3C2
Mechanically active substances	3S1	3S1	3S2	3S2	3S3	3S3	3S3
Mechanical	3M1	3M1	3M2	3M2	3M3	3M3	3M3

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Table 8 – Time to flashover

Environmental parameter	Unit	Class				
		3T1	3T2	3T3	3T4	3T5
Time to flashover	min	20	12	8	4	2

Table 9 – Thermal conditions prior to flashover

Environmental parameter	Unit	Class				
		3P1	3P2	3P3	3P4	3P5
Heat flux to materials and products	kW/m²	10	20	30	50	75
Gas temperature (upper layer of gas)	°C	150	300	400	500	600
Ratio between rate of heat release and rate of heat release causing flashover	–	0.2	0.4	0.6	0.8	1

Table 10 – Thermal conditions following flashover

Environmental parameter	Unit	Class			
		3F1	3F2	3F3	3F4
Maximum gas temperature	°C	600	800	1 000	1 200
Duration of heating phase	min	10	20	30	60

Table 11 – Conditions with respect to visibility through smoke

Environmental parameter	Unit	Class				
		3V1	3V2	3V3	3V4	3V5
Optical density	1/m	0.02	0.05	0.2	0.5	1
Note – For explanation, see Fig. 13 of IEC 60721-2-8.						

Table 12 – Conditions of chemically active substances

Environmental parameter	Unit	Class			
		3H1	3H2	3H3	3H4
Concentration of hydrogen chloride	mg/m³	200	500	1 000	4 000
Duration	min	10			

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Annex A
(informative)

Survey of conditions affecting the choice of environmental parameters and their severities

This Annex A (informative) is not a part of the specification but supplements items related to the Standard.

A.1 General

In this annex 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.

A.2 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 subclauses A.2.1 to A.2.5 describes the conditions. In the vertical columns headed "Class", an x 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 x encountered.

The procedure of finding an appropriate class as described above is valid for all the subclauses, but A.2.1 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 x in the horizontal line of the relevant condition, then reading horizontally to the right to the first x encountered as previously described.

The types of climate are described in **JIS C 0111**, 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 annex 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.

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