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Performance of windows and doors

Part 1: Classification for weathertightness and guidance on selection and specification

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Contents

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 18, an inside back cover and a back cover.

Foreword

Publishing information

This part of BS 6375 is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 31 March 2015. It was prepared by Subcommittee B/538/1, *Windows*, under the authority of Technical Committee B/538, *Doors, windows, shutters, hardware and curtain walling*. A list of organizations represented on this committee can be obtained on request to its secretary.

Supersession

This part of BS 6375 supersedes BS 6375-1:2009, which is withdrawn.

Relationship with other publications

BS 6375 is published in three parts:

- Part 1: *Classification for weathertightness and guidance on selection and specification*;
- Part 2: *Specification for operation and strength characteristics*;
- Part 3: *Additional performance characteristics*.

It is related to the European product standard for windows and external pedestrian doorsets, BS EN 14351 [1)] (see also *Information about this document*).

Information about this document

This is a full revision of the standard, and introduces the following principal change:

The method of calculating wind load in Annex A has been revised. It is now required to use either the method specified in BS EN 1991-1-4:2005 and the National Annex to BS EN 1991-1-4, or the abbreviated method which has been recalculated in accordance with BS EN 1991-1-4.

BS 6375 has been prepared to provide guidance on the selection of performance characteristics for windows and doorsets intended for the UK market. The full range of characteristics is provided in the various parts of BS EN 14351.

BS EN 14351 is the harmonized European Standard for windows and external doorsets and is the standard to be referenced if the product is to be CE marked. Not all the characteristics listed in BS EN 14351 are required for CE marking, and of those that are required, only those mandated (i.e. covered by national building regulations) in the UK need be declared.

The majority of characteristics identified in BS EN 14351 have a number of performance levels. BS 6375 provides guidance to the specifier and the manufacturer on an appropriate level for the UK market. This can be by a single value for a product characteristic or by a value for a particular service condition. For example, a doorset in a public building might need to meet a more severe level of performance for some characteristics than a doorset in a dwelling.

Specifiers are not obliged to use a particular performance level but need to be aware that unnecessarily selecting a more severe performance level can incur a cost penalty out of proportion to the performance advantage.

[1)] Only the first part of BS EN 14351 has been published to date. Part 2 (Internal doors) is still in preparation.

BS EN 14351 and BS 6375 cover a range of products and characteristics and are therefore divided into parts. BS EN 14351 is divided into product groups and BS 6375 is divided into performance characteristics. Not all characteristics will be applicable to all product groups or to all end uses. In addition, BS 6375 may be used for product groups not covered by BS EN 14351.

BS 6375 does not identify a recommended performance level for any characteristic that is recommended in national regulations (e.g. U values for windows); these levels are subject to statute.

If a manufacturer wishes to declare a CE marked performance this has to be declared against the appropriate part of BS EN 14351. Manufacturers wishing to CE mark products are advised to seek advice from the relevant national regulatory authority.

Text introduced or altered by Corrigendum No. 1 is indicated in the text by tags [C1⟩ ⟨C1]. Minor editorial changes are not tagged.

Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its requirements are expressed in sentences in which the principal auxiliary verb is "shall".

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

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1 Scope

BS 6375 is the national application document for BS EN 14351. This part of BS 6375 specifies the exposure categories related to test pressure levels for air permeability, watertightness and wind resistance for external windows and doorsets. It is applicable to all types of vertical windows and doorsets, and includes windows in which the opening lights are not fully framed, e.g. adjustable glass louvres. It is applicable to both factory-glazed and site-glazed products.

The standard excludes patent glazing (see Note) and curtain walls that span across horizontal structural members of floors, but includes the opening lights within a vertical patent glazing or curtain walling system.

NOTE Recommendations for the design and installation of patent glazing are given in BS 5516.

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.

BS EN 1026, *Windows and doors – Air permeability – Test method*

BS EN 1027:2000, *Windows and doors – Watertightness – Test method*

BS EN 1991-1-4:2005, *Eurocode 1 Actions on structures – Part 1-4: General actions – Wind actions*

NA to BS EN 1991-1-4:2005, *UK National Annex to Eurocode 1 Actions on structures – Part 1-4: General actions – Wind actions*

BS EN 12207:2000, *Windows and doors – Air permeability – Classification*

BS EN 12208, *Windows and doors – Watertightness – Classification*

BS EN 12210, *Windows and doors – Resistance to wind load – Classification*

BS EN 12211, *Windows and doors – Resistance to wind load – Test method*

BS EN 14351 (all parts), *Windows and doors – Product standard, performance characteristics*

3 Terms and definitions

For the purposes of this part of BS 6375, the following terms and definitions apply.

3.1 design height (*h*)
maximum height of a wall in which a window or doorset occurs

NOTE In the case of a dormer window, this is the building ridge height.

3.2 doorset
complete unit, as installed, comprising door leaf, door frame, any associated side panels and/or top lights, and any operating hardware, locks and accessories

NOTE This is also known as a door assembly.

3.3 ventilation device
ventilator other than an opening light incorporated in a window or doorset

NOTE The "permanent" type provides continuous ventilation. The "controlled" type is adjusted to provide a range of ventilation.

3.4 water penetration
continuous or repeated wetting of the internal surface of the test specimen or parts which are not designed to be wetted when water drains back to external face

NOTE Retention of water within the window or doorset system is not defined as leakage.

[SOURCE: BS EN 1027]

3.5 weathertightness
performance in respect of air permeability, watertightness and wind resistance

3.6 wind load
peak gust wind pressure that can be expected on a surface of a building window or doorset

4 Exposure category and classification

The exposure category of a window or doorset shall be classified in accordance with Table 1. For a window or doorset to be included in an exposure category, the test pressure for each relevant characteristic shall be attained or exceeded.

NOTE The classifications given in Table 1 are those suitable for the UK selected from BS EN 12207, BS EN 12208 and BS EN 12210.

Doorsets that are tested and classified with a wind load greater than 1 200 shall be classified in accordance with BS EN 12207, BS EN 12208 and BS EN 12210.

5 Sequence of test

The tests shall be performed on a single sample in the following sequence:

a) air permeability (see Clause **6**);

b) watertightness (see Clause **7**);

c) resistance to wind – deflection measurement at pressure P1 (see Clause **8**);

d) resistance to wind – pulsating test to pressure P2 (see Clause **8**); and

e) resistance to wind – safety test to pressure P3 (see Clause **8**).

NOTE A flow chart indicating the sequence of test is given in Annex B.

Table 1 **Exposure categories and classifications**

UK exposure categories[A) B)]	Air permeability (see Clause 6)		[C1] Watertightness [C1] (see Clause 7)		Resistance to wind load (see Clause 8)			
	Class [C)]	Maximum test pressure	Class	Maximum test pressure	Class [D)]	P1	P2 [E)]	P3
Doorsets								
800 U	Class 0	No test	Class 0	No test	Class A2	800 Pa	400 Pa	1 200 Pa
800 X	Class 1	150 Pa	Class 2A	50 Pa	Class A2	800 Pa	400 Pa	1 200 Pa
800	Class 2	300 Pa	Class 3A	100 Pa	Class A2	800 Pa	400 Pa	1 200 Pa
1 200	Class 2	300 Pa	Class 3A	100 Pa	Class A3	1 200 Pa	600 Pa	1 800 Pa
Windows								
800	Class 2	300 Pa	Class 3A	100 Pa	Class A2	800 Pa	400 Pa	1 200 Pa
1 200	Class 2	300 Pa	Class 3A	100 Pa	Class A3	1 200 Pa	600 Pa	1 800 Pa
1 600	Class 2	300 Pa	Class 5A	200 Pa	Class A4	1 600 Pa	800 Pa	2 400 Pa
2 000	Class 2	300 Pa	Class 5A	200 Pa	Class A5	2 000 Pa	1 000 Pa	3 000 Pa
2 000 +	Class 2	300 Pa	Class 7A	300 Pa	Class AE	(xxxx)	(xxxx) × 0.5	(xxxx) × 1.5

For the purpose of selecting the appropriate exposure category the following procedure should be used.
a) Calculate the wind load for the given location (see Annex A).
b) Select the exposure category (see Table 1) equal to or exceeding the determined wind load.

NOTE Specimens tested with wind load above Class 5 are classified Class E xxxx – where xxxx is the actual test pressure P1 (e.g. when P1 = 2 350 Pa this is classified as Class E 2 350, etc.).

[A)] UK exposure category is specified by the design wind load, calculated in accordance with Annex A.

[B)] Products designed to meet the accessibility requirements of UK building regulations are unlikely to exceed category 800 X.

[C)] Air permeability test pressures above Class 2 (up to 600 Pa) are available when stringent levels of performance are required, for example when exceptionally airtight windows or doorsets are necessary, as in air-conditioned buildings.

[D)] Combination of test pressure and frame deflection (see BS EN 12210).

[E)] This pressure having been repeated 50 times.

6 Test for air permeability

6.1 For classification purposes, permanent and controlled ventilation devices (including letterplates) shall be taped over, except when it is required to determine the amount of air flow through such devices.

NOTE To establish air leakage through the window or doorset and controllable vent (in the closed position), the air permeability test can be repeated with the vent closed but not taped. This information should be included in the test report.

6.2 The specimen shall be tested in accordance with BS EN 1026 and the test shall be conducted with both positive and negative pressures. The test result, defined as the numerical average of the positive and negative air permeability values (m^3/h) at each pressure step, shall be expressed and classified in accordance with BS EN 12207. Classification levels applicable in the UK shall be in accordance with Table 1.

6.3 The air flow passing through the specimen, at each pressure difference applied in accordance with BS EN 1026, shall be expressed as an average leakage rate per m length of opening joint visible on the inner face of the specimen and average leakage per m^2 of window or door area.

6.4 A graph of air permeability rate against test pressure difference shall be constructed, including positive, negative and average results. The average values shall not exceed those in the appropriate graph in Figure 1. Fixed lights alone shall be classified by air permeability based on overall area.

6.5 If the second test for air permeability (following the application of test pressure P2 in Clause **8**) results in air permeability that would place the window or doorset in a lower classification, that lower classification shall be used to define the final classification of the window or doorset. A second graph shall then be constructed in accordance with **6.4**, and the average values shall not exceed those in the appropriate graph in Figure 1.

7 Test for watertightness

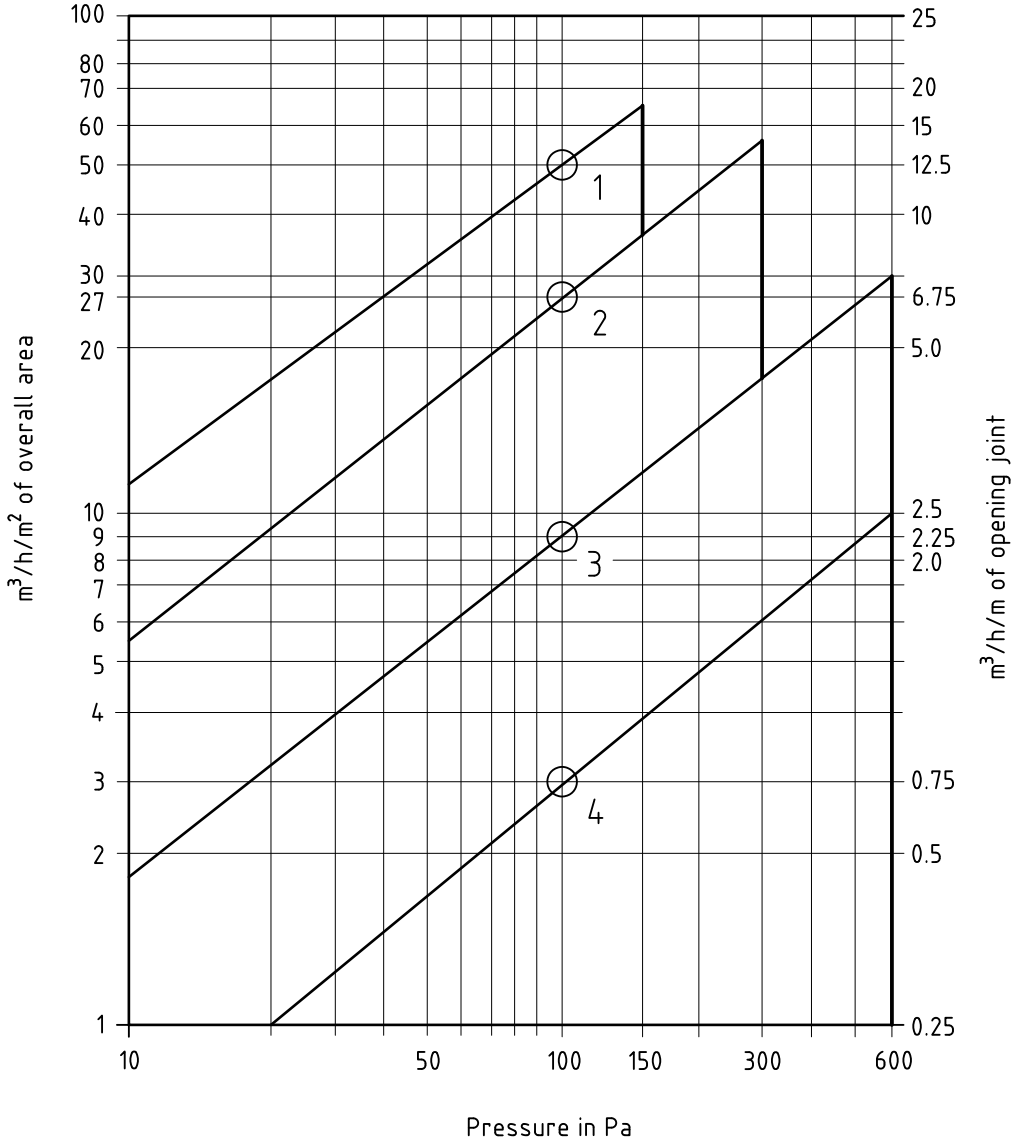
7.1 For classification purposes, permanent and controlled ventilation devices (including letterplates) shall be taped over.

NOTE To establish whether the ventilation device is watertight, the test can be repeated with the vent closed but not taped. This information should be included in the test report.

7.2 The specimen shall be tested in accordance with BS EN 1027:2000, test procedure A and classified in accordance with BS EN 12208. Classification levels applicable in the UK shall be in accordance with Table 1.

7.3 There shall be no water penetration during the test, up to and at, the required test pressure class given in Table 1.

Figure 1 **Air permeability classifications**



Key

1	Class 1	3	Class 3
2	Class 2	4	Class 4

NOTE 1 Maximum test levels are: Class 1 = 150 Pa; Class 2 = 300 Pa; Classes 3 and 4 = 600 Pa.

*NOTE 2 The classification graph has been generated from the equation and details in BS EN 12207:2000, Clause **4**.*

8 Test for resistance to wind

8.1 The specimen shall be tested in accordance with BS EN 12211 and classified in accordance with BS EN 12210. Classification levels applicable in the UK shall be in accordance with Table 1. Wind loading shall be calculated in accordance with Annex A.

NOTE 1 For the purpose of the tests, three sets of test pressure are defined:

- *P1 applied to measure the deflection of parts of the test specimen;*
- *P2 pulsating pressure applied for 50 cycles to assess performance under repeated wind loads; and*
- *P3 applied to assess the safety of the specimen under extreme conditions.*

The values of P1, P2 and P3 are related as follows: P2 = 0.5 P1, and P3 = 1.5 P1.

NOTE 2 BS EN 1026, which is cited within BS EN 12211, gives the negative pressure test as an option. However, BS 6375 follows the convention of BS EN 14351-1, which requires both positive and negative pressure testing to be undertaken and the results averaged.

NOTE 3 The resistance to wind load test given in BS EN 12211 specifies a repeat air permeability test. This repeat air test is conducted with both positive and negative pressures. The assessment of any increase in air permeability is based on the numerical average of the positive and negative air permeability values (m^3/h) at each pressure step.

8.2 The deflection of any deforming framing member shall be limited to 1/150 of its length (Class A for relative frontal deflection) when subjected to the wind load of P1.

8.3 If glass breakage occurs without damage to the frame members, the unit shall if necessary be re-glazed once and re-tested.

Annex A (normative) Calculating wind load and selecting exposure category

A.1 General

Either the method specified in **A.2** or the method specified in BS EN 1991-1-4:2005 shall be used for determining the design wind loading for low-rise buildings.

*NOTE 1 The method specified in **A.2** is abbreviated; the one specified in BS EN 1991-1-4:2005 is more detailed and less conservative.*

NOTE 2 The designer or specifier should take into account any other forms of loading to which the window or doorset might be subjected.

The exposure category shall be selected in accordance with **A.3**.

A.2 Abbreviated method of determination of wind load for low-rise buildings

A.2.1 Procedure

To find the wind load the procedure below shall be followed.

a) Using the site location, select the basic wind speed $V_{b,map}$ from Figure A.1. (This is used as the site wind speed in Table A.2.)

b) Select the site terrain category (A, B, C, D, E or F) in accordance with **A.2.2**.

c) Determine the design height (h), which is the height of the wall in which the windows or doorsets are to be installed or the ridge height for dormer windows, and select the design height band to be used [see Note a)].

d) Using the basic wind speed $V_{b,map}$, the site terrain category and the design height (h), select the wind load at sea level in accordance with **A.2.3**.

e) Determine the altitude factor (F_A) in accordance with **A.2.4**.

f) Determine the appropriate topographical factor (F_T) in accordance with **A.2.5**.

g) Determine the dormer factor (F_D) (see **A.2.6**).

h) Determine the funnelling factor (F_F) (see **A.2.7**).

i) The wind load is given by Equation A.1:

$$\text{Table A.2 value} \times F_A \times F_T \times F_D \times F_F \quad \text{(A.1)}$$

where:

F_A is the altitude factor;

F_T is the topographical factor;

F_D is the dormer factor;

F_F is the funnelling factor.

NOTE Although the wind load determined might not be identical to a loading derived from BS EN 1991-1-4, it is sufficiently accurate to be used for most low-rise buildings. The limitations in this abbreviated method are:

a) the overall design height (h) is limited to a maximum of 15 m;

b) the method assumes a net pressure coefficient ($C_{P,net}$) of 1.1, which takes into account the worst case that normally occurs. Higher coefficients might be experienced at points adjacent to the corners of the building.

An alternative is to use an appropriate figure provided by the building designer. If a design wind loading figure is not available from the designer, an appropriate figure can be determined by the method described in BS EN 1991-1-4:2005. If the complexities are beyond the scope of that standard, further advice should be sought.

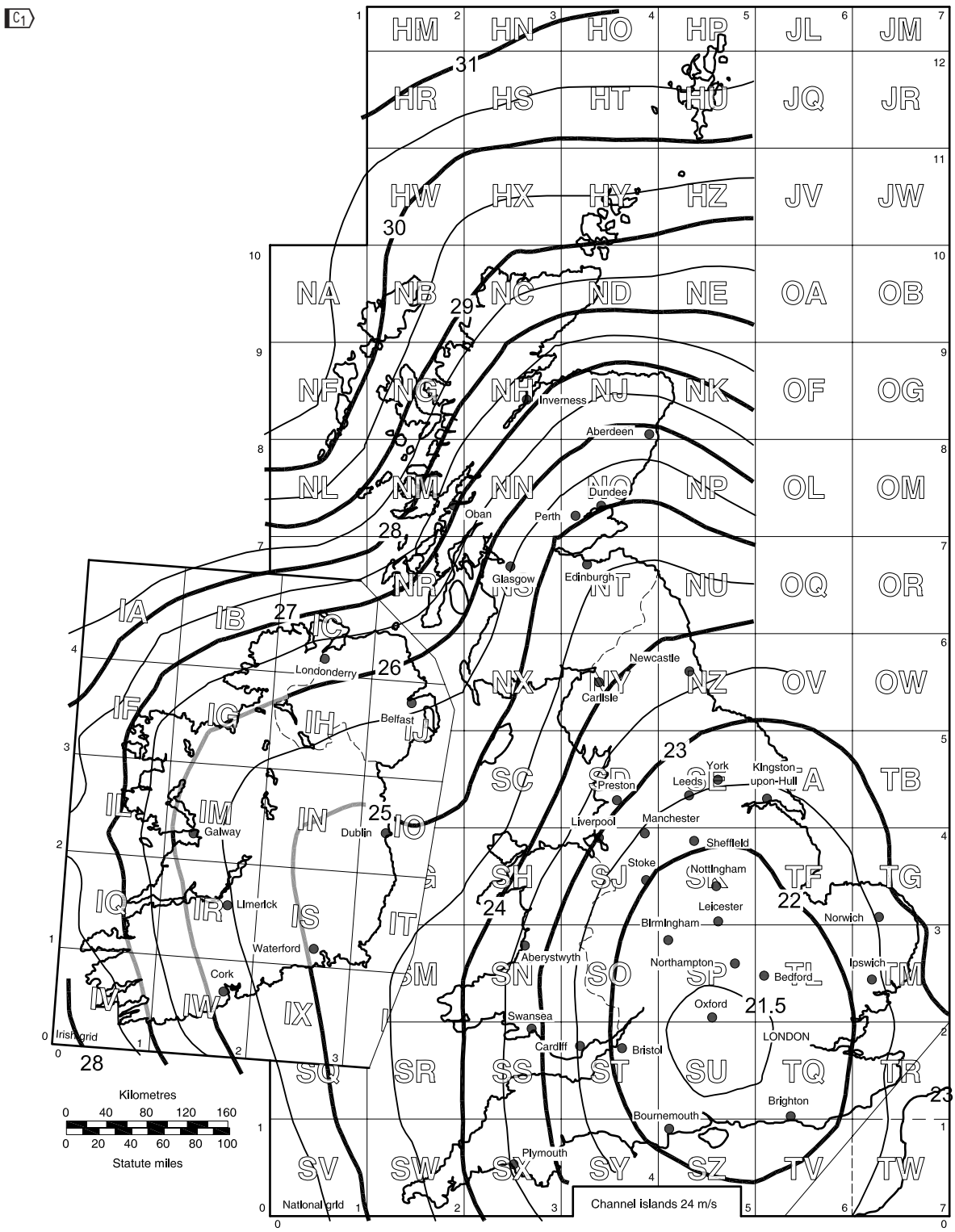
A.2.2 Site terrain categories

Site terrain categories shall be selected from Table A.1.

Table A.1 **Site terrain categories**

	Open country and up to 0.5 km into town	**More than 0.5 km in to town**
Distance from coast up to 1.0 km	A	D
Distance from coast 1 to 10 km	B	E
Distance from coast more than 10 km	C	F

Figure A.1 **Basic wind speed $V_{b,map}$**



NOTE 1 Taken from NA to BS EN 1991-1-4:2005+A1:2010, Figure NA.1.

NOTE 2 This map is intended for sites in the United Kingdom, Isle of Man and Channel Islands only.

NOTE 3 The isopleths in the Republic of Ireland are shown for purposes of interpolation only. C1

A.2.3 Wind load at sea level (0 m altitude)

Wind load at sea level shall be determined using Table A.2.

NOTE Annex C explains how the wind loads in Table A.2 were derived.

Table A.2 **Wind load at sea level**

Basic wind speed ($V_{b,map}$) at sea level	**Design height (*h*)**	**Wind load at sea level for site terrain category (see Table A.1)**					
		A	**B**	**C**	**D**	**E**	**F**
m/s	m	Pa	Pa	Pa	Pa	Pa	Pa
21	≤3	642	568	514	477	460	417
	3–6	752	705	639	666	641	582
	6–10	839	815	740	822	798	726
	10–15	907	904	824	907	904	824
22	≤3	705	623	565	523	505	457
	3–6	826	773	702	731	704	639
	6–10	920	894	813	902	876	796
	10–15	995	992	904	995	992	904
23	≤3	770	681	617	572	552	500
	3–6	902	845	767	799	769	698
	6–10	1 006	977	888	986	958	870
	10–15	1 088	1 084	988	1 088	1 084	988
24	≤3	839	742	672	623	601	544
	3–6	983	921	835	869	838	760
	6–10	1 095	1 064	967	1 073	1 043	948
	10–15	1 185	1 181	1 076	1 185	1 181	1 076
25	≤3	910	805	729	676	652	591
	3–6	1 066	999	906	943	909	825
	6–10	1 188	1 155	1 049	1 165	1 132	1 028
	10–15	1 285	1 281	1 167	1 285	1 281	1 167
26	≤3	985	871	789	731	705	639
	3–6	1 153	1 080	980	1 020	983	892
	6–10	1 285	1 249	1 135	1 260	1 224	1 112
	10–15	1 390	1 386	1 263	1 390	1 386	1 263
27	≤3	1 062	939	850	788	760	689
	3–6	1 244	1 165	1 057	1 100	1 060	962
	6–10	1 386	1 347	1 224	1 358	1 320	1 200
	10–15	1 499	1 494	1 362	1 499	1 494	1 362
28	≤3	1 142	1 010	915	848	818	741
	3–6	1 337	1 253	1 137	1 183	1 140	1 034
	6–10	1 491	1 449	1 316	1 461	1 420	1 290
	10–15	1 612	1 607	1 464	1 612	1 607	1 464
29	≤3	1 225	1 083	981	909	877	795
	3–6	1 435	1 344	1 219	1 269	1 223	1 110
	6–10	1 599	1 554	1 412	1 567	1 523	1 384
	10–15	1 730	1 724	1 571	1 730	1 724	1 571

Table A.2 **Wind load at sea level**

Basic wind speed ($V_{b,map}$) at sea level	Design height (h)	Wind load at sea level for site terrain category (see Table A.1)					
		A	B	C	D	E	F
m/s	m	Pa	Pa	Pa	Pa	Pa	Pa
30	≤3	1 311	1 159	1 050	973	939	850
	3–6	1 535	1 438	1 305	1 359	1 309	1 187
	6–10	1 711	1 663	1 511	1 677	1 630	1 481
	10–15	1 851	1 845	1 681	1 851	1 845	1 681
31	≤3	1 400	1 238	1 121	1 039	1 003	908
	3–6	1 639	1 536	1 393	1 451	1 398	1 268
	6–10	1 827	1 776	1 614	1 791	1 740	1 581
	10–15	1 976	1 970	1 795	1 976	1 970	1 795

NOTE 1 The values are rounded.

NOTE 2 Pa = N/m².

A.2.4 Altitude factor

Altitude factor (F_A) shall be selected from Table A.3 or determined from Equation A.2.

Table A.3 **Table for factor F_A for specific altitudes**

Altitude	Factor F_A	Altitude	Factor F_A
m		m	
0	1.00	225	1.56
25	1.05	250	1.56
50	1.10	275	1.63
75	1.16	300	1.69
100	1.21	325	1.76
125	1.27	350	1.82
150	1.32	375	1.89
175	1.38	400	1.96
200	1.44	425	2.03

$$F_A = \left(1 + \frac{H_A}{1000}\right)^2 \quad \text{(A.2)}$$

where:

H_A is the altitude of the site, in metres (m).

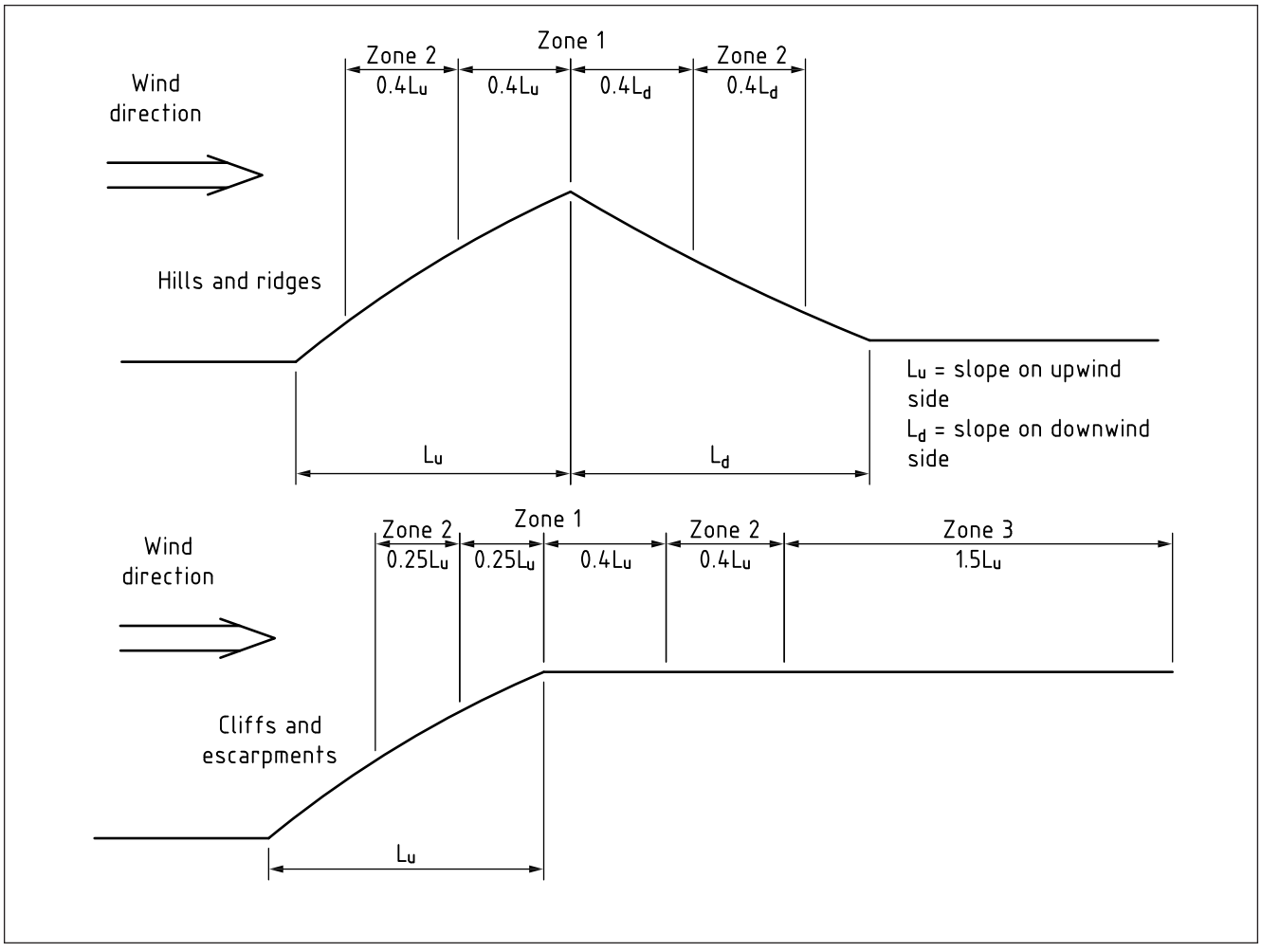
A.2.5 Orography factor

An orography factor (F_O) shall be used where hills, ridges, cliffs and escarpments might have an adverse effect on the wind load on a building. The appropriate orography factor shall be obtained using Table A.4.

Table A.4 **Orography factor**

Orographic category and description	**Factor F_O according to zone from Figure A.2**		
	Zone 1	**Zone 2**	**Zone 3**
Category 1: Nominally flat terrain, average slope < 1/20	1.0	1.0	1.0
Category 2: Shallow terrain, average slope < 1/10	1.25	1.14	1.10
Category 3: Moderately steep terrain, average slope ≤ 1/5	1.54	1.28	1.21
Category 4: Steep terrain, average slope > 1/5	1.85	1.44	1.32

Figure A.2 **Orographic zones**



A.2.6 Dormer factor

To allow for the fact that any form of vertical roof glazing, such as dormer windows, might be subject to higher loads than those on a vertical face, the wind load shall be multiplied by a dormer factor of 1.6 for windows in these locations. For all other situations a dormer factor of 1.0 shall be used.

A.2.7 Funnelling factor

Where the two buildings under consideration are sheltered by upwind buildings that are of similar height (or higher) and spaced at not more than three building heights away then funnelling may be disregarded. Otherwise, where the walls of two buildings face each other and the gap between them is less than either the building width or twice the building height, then the design wind load for doorsets and windows in the facing walls shall be multiplied by a funnelling factor of 1.35.

NOTE NA to BS EN 1991-1-4:2005, NA.2.27 gives more information on funnelling.

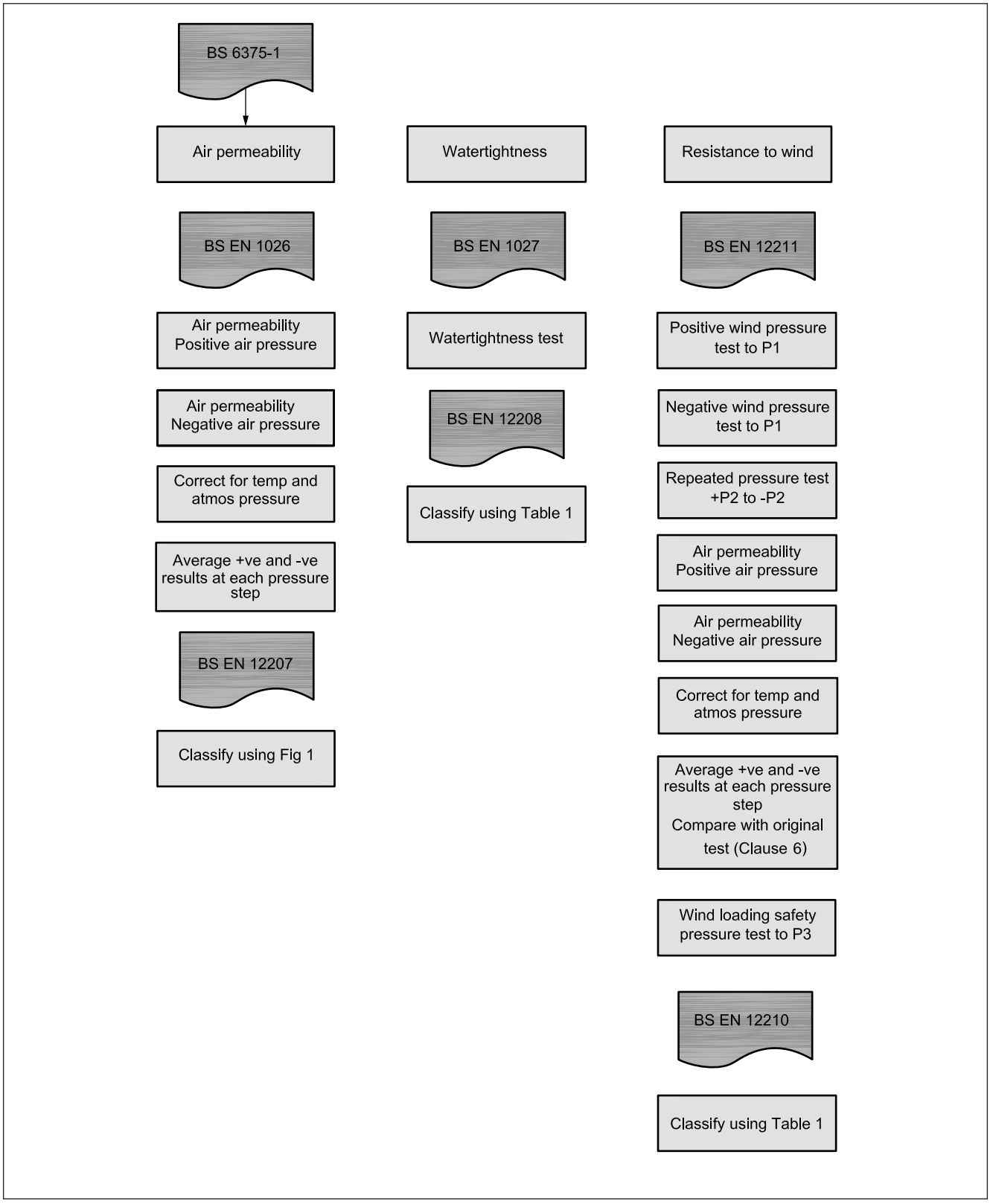
A.3 Selection of the exposure category

Using the wind load determined from BS EN 1991-1-4:2005 or by Equation A.1, round up to the nearest P1 value as detailed in Table 1 and select the appropriate exposure category. Where more than one exposure category is available at a given P1 value, the water tightness and air permeability requirements shall be used to select the exposure category.

Annex B (informative) Flow chart of sequence of test

The sequence of tests specified in Clause **5** is illustrated in Figure B.1.

Figure B.1 **Flow chart of sequence of test**



Annex C (informative)

Derivation of the wind load in Table A.2

The values of wind load have been derived from BS EN 1991-1-4 using the following parameters.

The basic wind speed, $V_{b,map}$, has been derived from site location using Figure A.1.

The site wind speed at sea level, V_s, has been calculated using Equation C.1:

$$V_s = V_{b,map} \times C_{dir} \times C_{season} \times C_{prob} \times C_{alt} \quad (C.1)$$

where:

$V_{b,map}$ is the basic wind speed, in metres per second (m/s);

C_{dir} is the direction factor;

C_{season} is the seasonal factor;

C_{prob} is the probability factor;

C_{alt} is the altitude factor.

In this abbreviated method, factors C_{dir}, C_{season}, C_{prob} and C_{alt} all have a value of 1.0.

Therefore in the abbreviated method, $V_s = V_{b,map}$.

NOTE C_{alt} *is taken as 1.0 because* V_s *is the wind speed at sea level. An altitude factor* F_A *is applied later.*

Peak velocity pressures q_p have been calculated from the equations

$$q_p = c_e(z).q_b \text{ for sites in country} \quad (C.2)$$

and

$$q_p = c_e(z).c_{eT}.q_b \text{ for sites in town} \quad (C.3)$$

where $c_e(z)$ and c_{eT} are the exposure factors given in NA to BS EN 1991-1-4 and q_b is derived from the equation

$$q_b = 0.613\ V_b^2 \quad (C.4)$$

Values of $c_e(z)$ and c_{eT} are taken from NA to BS EN 1991-1-4:2005, Figure NA.7 and Figure NA.8 respectively. The values used are summarized in Table C.1.

The net pressure coefficient, $C_{P,net}$, is 1.1.

Thus the wind load at sea level, P, has been calculated using Equation C.5:

$$P = q_p \times C_{P,net} \quad (C.5)$$

where:

q_p is the peak velocity pressure, in pascals (Pa);

$C_{P,net}$ is the combined pressure coefficient.

If building heights or net pressure coefficients are different from those assumed, an actual wind load, P, can be calculated and used in step A.2.1d).

Table C.1 **Site factors $c_e(z)$ and $c_{e,T}$**

Height above ground (m)	Open country and up to 0.5 km into town						More than 0.5 km into town					
	Distance from coast up to 1.0 km		Distance from coast 1 to 10 km		Distance from coast more than 10 km		Distance from coast up to 1.0 km		Distance from coast 1 to 10 km		Distance from coast more than 10 km	
	A		B		C		D		E		F	
	$c_e(z)$	$c_{e,T}$	$c_e(z)$	$c_{e,T}$	$c_e(z)$	$c_{e,T}$	$c_e(z)$	$c_{e,T}$	$c_e(z)$	$c_{e,T}$	$c_e(z)$	$c_{e,T}$
≤3	2.16	1.00	1.91	1.00	1.73	1.00	1.98	0.81	1.91	0.81	1.73	0.81
3–6	2.53	1.00	2.37	1.00	2.15	1.00	2.46	0.91	2.37	0.91	2.15	0.91
6–10	2.82	1.00	2.74	1.00	2.49	1.00	2.82	0.98	2.74	0.98	2.49	0.98
10–15	3.05	1.00	3.04	1.00	2.77	1.00	3.05	1.00	3.04	1.00	2.77	1.00

NOTE For simplicity no account has been taken of any upwind obstructions and the height, h, has been conservatively taken as the height of the building.

Bibliography

Standards publications

For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS 5516 (both parts), *Patent glazing and sloping glazing for buildings*

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