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CE marking – A guide for window and door fabricators

This guide provides essential information that will help you with your preparations for CE marking. A flowchart is included at the end.

What is CE marking?



CE marking indicates that a product conforms to specific European technical standards known as harmonised European Norms ('hEN').

It enables a product to be placed legally on the market in any European member state. The CE marking symbol is placed on either the product or the documentation accompanying the product.

Why is it necessary?

From 1st July 2013, the Construction Products Regulation 2011 (CPR) will replace the Construction Products Directive (CPD).

An effect of this change is that it will become mandatory in the EU and the UK for manufacturers of construction products to apply CE marking to any of their products which are covered by a hEN.

The most significant implication for you is that CE marking will become a legal requirement from 1st July 2013 for the products you manufacture.

What do you need to do to comply with CE marking requirements?

The following checklist will guide you through the CE marking process:

1. Define your product(s)
2. Review Annex ZA within the relevant Product Standard(s)
3. Identify the essential characteristics of your product(s)
4. Identify the system(s) for demonstrating performance of your product(s)
5. Determine your and third party responsibilities within these systems
6. Undertake product testing and classify your product types
7. Set up factory production control (fpc)
8. Produce a Declaration of Performance
9. Apply CE Marking





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The CE marking process is the same irrespective of the Product Standard to which you will be referring.

1. Define your product(s)

Your products will be windows and/or doorsets. They are covered by a series of technical standards for windows and pedestrian doorsets:

- BS EN 14351-1, Windows and doors – Product standard, performance characteristics – Part 1: Windows and external pedestrian doorsets without resistance to fire and/or smoke leakage characteristics (Published hEN)
- BS EN 16034, Pedestrian doorsets, industrial, commercial, garage doors and windows – Product standard, performance characteristics – Fire resistance and/or smoke control characteristics (hEN in development)
- prEN 14351-2, Windows and doors – Product standard, performance characteristics – Part 2: Internal pedestrian doorsets without resistance to fire and/or smoke leakage characteristics (Draft hEN)
- BS EN 14600, Doorsets and openable windows with fire resisting and/or smoke control characteristics – Requirements and classification (Published standard)

The approved method for demonstrating compliance with the CPR for external doors and windows is described in the European Standard EN 14351-1. Currently this product standard is the only published harmonised standard (hEN) for windows and doors, and therefore the requirement to apply CE marking to your products is limited to the products covered by it.

Reference to BS EN 14351-1 will be made throughout this document to help you understand the CE marking process as applied to windows and external pedestrian doorsets without resistance to fire and/or smoke leakage.

Within the definition of ‘window’ (excluding roof windows) you may want to break down the product into styles, e.g. casement, tilt/turn, fixed, multilight, etc., and similarly for doors. This is because product testing could well generate different performance levels of essential characteristics, which you may choose to declare separately. (More detail in sections 6 and 8 below.)

Annex F, Table F.1 in BS EN 14351-1 gives guidelines on window styles and the selection of representative test samples.

2. Review Annex ZA within the relevant Product Standard(s)

Annex ZA within any harmonised standard is essentially a checklist for CE marking; it lists the requirements and relevant test methods that collectively address the provisions of the CPR.

Annex ZA enables you to identify:

- the product performance characteristics which need to be determined and declared by you
- which tasks leading to the declaration of performance are your responsibility and which are the responsibility of an independent third party (**‘notified body’**)
- the information that needs to accompany the CE marking symbol



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Annex ZA of BS EN 14351-1 provides information on:

- the performance characteristics that are relevant to windows and external pedestrian doorsets used for communication in domestic and commercial locations (Table ZA.1)
- the systems for demonstrating the declared performance of windows and external pedestrian doorsets in accordance with their intended uses (Table ZA.2)
- how the tasks under the responsibility of the notified body and the manufacturer are assigned across the characteristics in accordance with the requirements of the performance-demonstrating systems (Tables ZA.3a-c)
- the contents of the Declaration of Performance (ZA 2.2)
- CE marking and labelling (ZA.3)

3. Identify the essential characteristics of your product(s)

The '**essential characteristics**' of the construction product are those characteristics which relate to the basic requirements for construction works. All of the essential characteristics must be considered, although you will only have to gather performance evidence for those characteristics that are applicable to your product(s).

Table ZA.1 in BS EN 14351-1 identifies the relevant essential characteristics for your product(s).

The rule is that you must determine and declare the performance of any characteristic in the product standard that:

- has an identified threshold value
- is a requirement under UK building regulations

Based on these criteria, for windows and doors not on escape routes there are only three that must be determined:

- Dangerous substances (REACH requirement)
- Load bearing capacity of safety devices (Threshold requirement)
- Thermal transmittance (UK building regulations requirement)

For locked doors on escape routes this list includes one other characteristic:

- Ability to release (UK building regulations requirement)



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4. Identify the system(s) for demonstrating performance of your product(s)

Having determined which essential characteristics need to be determined, you need to identify which system(s) for demonstrating the performance of those characteristics is applicable for the intended use of your product(s).

The systems differ according to the level of your involvement and that of notified bodies in demonstrating appropriate end-use performance and consistency of manufacture.

The CPR defines five systems within the Assessment and Verification of Constancy of Performance (AVCP); the lower the number, the higher the involvement of the notified body:

- 1+, 1, 2+, 3, 4.

Table ZA.2 in BS EN 14351-1 lists the AVCP systems relevant to external pedestrian doorsets and windows.

- System 1 applies to external pedestrian doors on escape routes.
- System 3 applies to external pedestrian doors and windows not on escape routes.
- Roof windows are covered by systems 1, 3 or 4 according to intended use and classification.

5. Determine your and third party responsibilities within these systems

The CPR breaks down demonstration of performance (AVCP) into five main elements:

- Factory production control (fpc), based on documented, permanent and internal control of production in the factory, in accordance with the relevant product standard – this includes sample testing
- Initial inspection of the manufacturing plant and fpc
- Continuous surveillance, assessment and evaluation of fpc
- Determination of product type on the basis of type testing (ITT), type calculation, tabulated values or descriptive documentation of the product
- Audit testing of samples taken before placing the product on the market

The responsibilities of the manufacturer (M) and notified bodies (NB) in demonstrating the performance of products under systems 1, 3 and 4 are summarised in the table below.

TASK	System 1	System 3	System 4
FPC	M	M	M
Sample testing	M	-	-
Initial FPC inspection	NB	-	-
FPC surveillance	NB	-	-
ITT	NB	NB	M
Certification	NB	-	-
Notified body (NB)	Product certification body	Test laboratory	None





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Once all the appropriate performance assessment tasks have been carried out for the product, the manufacturer is required to complete a Declaration of Performance which is kept with the product technical file. (More detail in section 8 below.)

This will be supported by a certificate of constancy of performance, certificate of conformity of FPC, test laboratory reports or certificates and/or a manufacturer's own test results, depending on the AVCP system.

Tables ZA.3a, ZA.3b and ZA.3c of BS EN 14351-1 list the respective responsibilities of manufacturer and notified body by product and essential characteristic for each of the systems 1, 3 and 4.

For windows (excluding roof windows) and doors not on escape routes (System 3):

- appropriate authorised test lab(s) are responsible for conducting initial type testing to determine the three essential characteristics
- the manufacturer has responsibility for consistency of performance of these characteristics through fpc in accordance with the standard

For locked doors on escape routes (System 1):

- an approved product certification body is responsible for initial type testing and product certification, as well as initial inspection of the factory and fpc, and continuous surveillance, assessment and approval of fpc
- the manufacturer has responsibility for consistency of performance of these characteristics through fpc, as well as the testing of samples to a test plan to ensure that all of the characteristics related to 'ability to release' are maintained

6. Undertake product testing and classify your product types

Product testing requirements

The harmonised standards for construction products refer to the test methods that must be used to determine the performance of the essential characteristics.

In BS EN 14351-1, the relevant test and calculation standards are listed in Section 2.2, and Tables E.1 and E.2 in Annex E provide greater detail for windows and doors respectively.



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The four essential characteristics and relevant test standards are listed below:

- **Dangerous substances**

This is a requirement under REACH regulations.

The British Plastics Federation have issued the following statement:

“We declare that the PVC-U profiles used in the fabrication of windows and doors are safe in use and that there are no potential emissions of dangerous substances to the internal atmosphere of a building. PVC-U profiles are inert and all ingredients are locked into the polymer matrix.”

Similar statements will be required from your glass, hardware and other component suppliers.

Contact **Profile 22** in the first instance as we may already have procured these statements.

Where applicable, COSHH sheets for the product and elements should be retained which demonstrate that in normal use toxic or radioactive materials are not emitted by the door or window.

- **Load bearing capacity of safety devices**

Where a safety device (e.g. retaining and reversing catches, restrictors, fixing devices for cleaning procedures) is present it should have been tested on the window as described in BS EN 14351-1.

You will need to have evidence of performance in the form of written test reports to demonstrate compliance with the relevant standards. These will normally be provided by your hardware supplier(s).

Contact **Profile 22** if you purchase your hardware from us.

- **Thermal transmittance**

Thermal transmittance is a requirement within the UK building regulations. This normally consists of calculations based on EN ISO 10077-1 and EN ISO 10077-2. Sometimes, ‘Hot Box’ testing is required. This testing is carried out to EN ISO 12567-1 or EN ISO 12567-2.

You will need to have evidence of performance in the form of a written technical report to demonstrate compliance with the relevant standard(s).

Contact **Profile 22** for evidence in support of this requirement.

- **Ability to release**

Any emergency exit and panic devices fitted must have been tested and CE marked (by the hardware manufacturer) to relevant standards EN 179, EN 1125, EN 1935, prEN 13633 or prEN 13637.

You will need to have evidence of performance in the form of written test reports to demonstrate compliance with the relevant standards. These will normally be provided by your hardware supplier(s).



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Classification of product type

Within the CPR, '**product type**' means that set of representative performance values or ranges of values of the essential characteristics of a product that has been manufactured from constituent materials and/or components in a specific production process.

In other words, it is the collection of characteristics and their performance values applicable to a specifically-produced product that defines the product type.

By definition therefore, a door for normal communication purposes and a door for use on an escape route (differing characteristics) would qualify as two product types.

For windows, the essential characteristics as listed above may be sufficient on their own to define the product type, allowing the entire range of window styles to be rationalised under a single product type.

However, the testing of additional characteristics across a range of window styles may result in different performance values being determined for a characteristic(s) and as a consequence the need to create additional product types.

This could be the case where additional characteristic(s) within the product standard have been determined through a product certification scheme e.g. Kite mark, or determined for other business reasons and documented in company literature.

Tables 1 and 2 in BS EN 14351-1 list all of the performance characteristics covered by this standard and the values and value ranges that are to be selected for inclusion in the Declaration.

7. Set up factory production control

General

It is the manufacturer's responsibility to establish, document and maintain a fpc system to ensure that the products placed on the market conform to the stated performance characteristics.

The fpc system needs to consist of procedures, regular inspections and tests and/or assessments and the use of recorded results to control raw and other incoming materials or components, equipment, the production process and the product.

You may already meet this requirement if you have an existing ISO 9001 (or equivalent) quality management system in place. If so, you will simply need to ensure that all relevant paperwork is complete and organised correctly.





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The key components of a fpc system are described below.

Personnel

The responsibility, authority and relationship between personnel that manage, perform or verify work affecting product performance are to be defined.

Equipment

Weighing, measuring and testing equipment is to be calibrated and inspected regularly, and manufacturing equipment is to be regularly inspected and maintained.

Raw materials and components

The specifications and inspection regime for incoming raw materials and components are to be documented.

Production process

Production is to be planned and carried out under controlled conditions. The various stages of production, the checking procedure and responsible persons need to be identified. All checks, results and corrective actions are to be recorded.

Product testing and evaluation

Procedures will be in place to ensure that the declared values of all of the characteristics are maintained, through testing during production and/or of finished products following a test plan and in accordance with the requirements of relevant test standards.

Traceability and marking

Individual products or product batches are to be identifiable and traceable with regard to their production origin, and processes for affixing traceability codes and/or markings are to be inspected regularly.

Non-conforming products

Documented procedures will be in place, which specify how non-conforming products are dealt with.

Corrective action

Documented procedures will be in place, which instigate action to eliminate the causes of non-conformities in order to prevent recurrence.

More information relating to fpc is contained in 7.3 of BS EN 14351-1.



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8. Produce a Declaration of Performance

By making a Declaration you are assuming legal responsibility for the conformity of the product with its declared performance.

Together with the hEN, the Declaration should give all the information needed by specifiers and regulators to judge whether the product meets all relevant regulations in whichever member state it is to be marketed.

Those essential characteristics that are applicable to your products (identified in Section 3 above) must be included in the Declaration of Performance along with any other characteristics you have determined e.g. acoustic performance, wind resistance, etc.

In those circumstances where a relevant essential characteristic has not been determined, the option “no performance determined” (npd) is to be used in the Declaration and information accompanying the CE marking.

‘npd’ cannot be declared against any of the characteristics identified in Section 3, or against any other characteristic(s) which you publicise in your marketing literature.

Your Declaration of Performance will contain the following:

- Description of the product (type identification, batch or serial number, intended use)
- Name and address of the manufacturer and the manufacturing site
- Name of the person empowered to sign the Declaration on behalf of the manufacturer
- System(s) of demonstrating product performance
- Applicable harmonised standard
- Name and identification number of the notified body(ies), tasks carried out by them and reference to documentation issued
- A list of the performance characteristics and classes achieved for the product from relevant evidence
- A dated signature by the manufacturer’s designated representative

Further information on the contents of the Declaration of Performance (and Certificate of Constancy of Performance under System 1) is provided in ZA.2.2 of BS EN 14351-1.

An example Declaration of Performance for a casement sash window is on Page 11.





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9. Apply CE Marking

The manufacturer or his authorised representative is responsible for affixing the CE marking.

The following information will accompany the CE marking symbol:

- Identification number of the certification body (only for products under System 1)
- Name and registered address or identifying mark of the manufacturer
- The last two digits of the year in which the marking symbol was affixed
- Number of the Certificate of Constancy of Performance (for products under System 1)
- Number of the Product Standard
- Description of the product
- Information on relevant essential characteristics

An example CE marking for the casement sash window example above is on Page 12.

The CE marking and accompanying information is to be affixed visibly, legibly and indelibly on one or more of the following locations:

- Any suitable part of the product
- On an attached label
- On packaging
- On accompanying commercial documentation e.g. delivery note

If you choose to affix only the CE marking symbol to the product, the additional information is to be contained in document(s) accompanying the product.

The support you can expect from Profile 22

Type Testing

Type testing will be carried out by **Profile 22** and we will retain the test reports for reference as required under the CPR.

Relevant test reports held by us will be made available to you on request.

Factory Production Control

Profile 22 will provide you with a template fpc suited to your needs if you are not certified to ISO 9001 or do not have an equivalent quality management system.

Further information

Through updates of this guide, **Profile 22** will provide you with further information on CE marking and its application as it becomes available.





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Declaration of Performance

[W01-CPR-2012-09-05]

1. Product type: **Double-glazed PVCu casement sash window**
2. Product type number: **[ABC-001-WIN]**
3. Intended use: **Not on escape route**
4. Manufacturer: **[Name, address]**
5. Authorised representative: **[Name] – address as in point 4**
6. System of assessment of performance: **3**
7. Reference harmonised standard: **BS EN 14351–1:2006 + A1:2010**
BSI 0086 performed [tasks] and issued [certificate..., report 1234]
¹From statement issued by British Plastics Federation
²Report [3456] issued by [notified body 6789]
³By calculation using EN ISO 10077-1
8. European Technical Assessment: **Not applicable**
9. Declared performance:

Essential Characteristic		Performance	Harmonised Technical Specification
9.1	Resistance to wind load	Class E (2400 Pa)	BS EN 14351-1:2006 + A1:2010
9.2	Watertightness	Class 7A (300 Pa)	
9.3	Dangerous substances ¹	None	
9.4	Load-bearing capacity of safety device ²	350 N	
9.5	Acoustic performance	npd	
9.6	Thermal transmittance ³	< 2.7 W/(m².K)	
9.7	Radiation properties	npd	
9.8	Air permeability	Class 2 (300 Pa)	

10. The performance of the product identified in points 1 and 2 is in conformity with the declared performance in point 9. This declaration of performance is issued under the sole responsibility of the manufacturer identified in point 4.

Signed for and on behalf of the manufacturer by:

.....
(name & title)


.....
(place and date of issue)

.....
(signature)



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Example CE Marking

	
<i>[Name & address of manufacturer]</i>	
<i>[Last 2 digits of year of CE marking]</i>	
BS EN 14351-1:2006 + A1:2010	
Double-glazed PVCu casement sash window type <i>[ABC-001-WIN]</i> intended for use not on escape route	
Resistance to wind load	Class E (2400 Pa)
Watertightness	Class 7A (300 Pa)
Dangerous substances	None
Load-bearing capacity of safety device	350 N
Acoustic performance	npd
Thermal transmittance	< 2.7 W/(m².K)
Radiation properties	npd
Air permeability	Class 2 (300 Pa)



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CE MARKING FLOWCHART

