

Timber Window and Door Frames

Introduction

This knowledge management article provides additional guidance on the use of timber window and door frames. It is important that all workmanship carried out during construction is completed in accordance with the relevant tolerances.

Timber window and door frames

Where timber windows and doors are proposed for use within a new build or conversion project, the frames must be robustly constructed and protected to ensure they perform to meet the minimum service life requirements for building components of at least 15 years as detailed within 'Appendix C' of the Technical Manual.

Currently CE marked products will be accepted in UK until 30th June 2025. For timber window and door frames, the applicable harmonized standard is BS EN 14351-1:2006+A2:2016.

UKCA marking is a new GB product marking that is to be used for goods being placed on the market in England, Wales and Scotland and it applies to most goods previously subject to CE marking. All construction products in circulation in the England, Wales and Scotland markets must change their CE marking to the UKCA mark by 1st July 2025. There are separate requirements for the Northern Ireland market.

Guidance on our Warranty requirements can be found in the 'External Windows and Doors' section of the Technical Manual.

Quality of the frames

The number of claims for defective timber framed windows and doors have continued to increase not only in conversion projects but also in new build housing. The cost to remediate can in some cases result in complete replacement being the most economical solution.

The failures range from:

- Inadequate finishing of the frames; e.g. lack of primer coat to rebates prior to glazing installed (causing the potential for early deterioration of the frame as well as water ingress).
- Poorly constructed frames made from individual pieces of untreated soft wood timber just pinned together, instead of using machined standard sections out of whole timber to make up the head, jambs, transom's, sills and opening lights of the frame assembly.
- Frames / opening lights warping due to inadequately sourced and treated timbers, or frames that have been left exposed and unprotected for long periods before installation.

External window and door frames form part of the external envelope and therefore must achieve an expected service life of at least 15 years to meet our Warranty requirements. To achieve that ongoing maintenance is expected, but the quality of construction and initial protection must be adequate.

Workmanship should follow the recommendations of BS 1186-2 - Timber for and Workmanship in Joinery, Specification for Workmanship. The design and construction of factory assembled external windows must meet BS 644 - Timber windows and door sets. Non factory assembled units and 'bespoke' units are also expected to meet the same standard.

Timber used for external joinery should be a species classified as suitable in BS EN 942 - Timber in joinery. General requirements and preservative treated. If treatment is not provided, use a moderately durable species or better (sapwood excluded). Guidance on selection is provided in TRADA Wood Information Sheets 3.10 and 4.16.

External joinery should be designed and constructed in accordance with the requirements of relevant parts of the following British Standards:

- BS 4787 - Internal and external wood door sets, door leaves and frames.
- BS 6262 - Glazing for buildings.
- BS 6375 - Performance of windows and doors.
- BS 644 - Timber windows and door sets.
- BS 8213 - Windows, doors and roof lights.

Weather tightness

Doors and windows should be selected to withstand the design weather conditions and be classified and tested in accordance with the following weather performance standards:

- BS 6375-1 - Performance of windows and doors. Classification of weather tightness and guidance on selection and specification
- BS EN 12207 – Air permeability - Classification & BS EN 1026 Test method
- BS EN 12208 – Water resistance - Classification & BS EN 1027 Test method
- BS EN 12210 – Wind resistance - Classification & BS EN 12211 Test method

Bespoke / handmade window and door units must be designed and constructed to meet the same level of weather tightness as factory made tested units. Where these are proposed, there must be a detailed specification of the design, construction and durability of the proposed units submitted to the Warranty provider before installation on site (see more below in CE marking).

Additionally for bespoke / handmade windows, on-site testing at completion of the installation will be required. For guidance on site testing for water penetration reference should be made to CWCT test methods e.g. Technical Note No. 41 for guidance on site hose testing methodology.

Roof lights should be proprietary components, fixed within prepared openings in accordance with the manufacturer's instructions and have effective weather sealing. A third party product approval for these roof lights will be required as proof of durability and weather tightness.

Performance and security

Doors and windows should be constructed to have suitable strength and appropriate operation characteristics as required. Aspects relating to strength and operation are covered by BS6375-2 Performance of windows and doors - Classification for operation and strength characteristics and guidance on selection and specification. This includes tests to measure the level of deflection in frame components when subjected to opening and closing cycles.

The design and specification of doors and windows which provide access into a dwelling or into a building containing a dwelling should take into account the requirements of current regional Building Regulations to ensure the system is classified and tested to the appropriate security resistance class.

Design and installation should ensure:

- The frames of secure door sets and windows are mechanically fixed to the building structure in accordance with the manufacturer's tested specifications.
- Where a door set is installed in a lightweight framed wall, a resilient layer should be incorporated to reduce the risk of anyone breaking through the wall to access the locking systems. The resilient layer should be for the full height of the door and 600mm either side of the door set, 9mm timber sheathing or expanded metal may be used.
- Any glazing which if broken in an attempt to gain access to the locking device on a door must be a minimum class of P1A in accordance with BS EN 356 Glass in building. Security glazing. Testing and classification of resistance against manual attack.
- A means of caller identification is provided at the main door to the dwelling to allow means of observing callers. The same door sets should also have a securely fixed door chain or door limiter fitted.

CE Marking

Currently CE marked products will be accepted in UK until 30th June 2025. For timber window and door frames, the applicable harmonized standard is BS EN 14351-1:2006+A2:2016.

The CE marking requirement for windows and doors applies to frames which require a 'U-value'. This doesn't apply to certain 'one off windows' e.g. a genuine one of a kind window for a conservation reason using non-standard sections of timber as a replacement to match other existing frames. This is opposed to a batch of several replacement windows being made that require a U-value e.g. for a Barn conversion project to suit the existing masonry openings (these are not one-offs as they are made using the same section size albeit to different opening dimensions).

The CE marking will be in the form of labelling that should be present when delivered to site. The CE marking will require that a factory production control system is in place and that the following 'Declaration of Performance' (DOP) is made for:

- Whole item U-value (not centre pane)
- Safety devices (the operating fittings installed to the frame)
- Dangerous substances (e.g. harmful substances used in the preservative treatment)

The CE marking will not identify weather resistance or durability performance. Separate evidence will be required to establish this; e.g. a UKAS third party product approval.

The validity of CE Marking is left to the Trading Standards officers to enforce in England, Scotland and Wales. This has implications for manufacturers to ensure information is made available. In the case of frames made by smaller joinery workshops (those having fewer than 10 employees) the Construction products Regulation allow for a simpler version of type testing regime to be allowed.

In these situations, the Warranty Surveyors will require:

- Evidence of the experience of the company in the production of frames,
- What production controls are in place,
- A full specifications of the species of timber used and provision of preservatives (if required),
- A detailed specification of the make-up of the frames, joints, etc. and,
- Clarification on how the frames have been produced to meet the relevant standards.

Please note, UKCA marking is a new GB product marking that is to be used for goods being placed on the market in England, Wales and Scotland and it applies to most goods previously subject to CE marking. All construction products in circulation in the England, Wales and Scotland markets must change their marking to UKCA mark by 1st July 2025. There are separate requirements for the Northern Ireland market.

Recommendations

For our Warranty purposes; timber windows and doors must be checked to ensure they are:

- Adequately manufactured to meet BS 644 - Timber windows and door sets.
- Have evidence of declared weather tightness testing.
- Have CE or UKCA marking and labelling details present.
- If the window or door is a 'one of a kind' frame for a conservation project and a CE/UKCA marking is determined as not required; full specifications (as described above) are required to determine how the frame will be manufactured to meet the durability and weather resistance requirements of our Warranty Technical Manual.
- In the case where the frames are made by a small joinery work shop; that adequate verification of meeting the standards is obtained (e.g. full specification as described above).
- The timber frames are adequately preservative treated and properly decorated. Details of on-going maintenance should also be identified for the particular environment exposure of the project.