TECHNICAL UPDATE

TIMBER WINDOW AND DOOR FRAMES

Timber window and door frames

Introduction

This technical 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.

Where timber windows and doors, in particular softwood units, 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 warranty requirements for durability and weather resistance of at least 15 years.

From 1st July 2013 the Construction Products Regulation (CPR) made it compulsory for all construction products in the EU which fall under the scope of a harmonized standard to carry a CE mark. In this case, the applicable harmonized standard is BS EN 14351-1:2006 + A1: 2010).

Guidance on our warranty requirements can be found in Section 8 – Windows and Doors.

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 wood to make up the head, jambs, transoms, cill 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 durability of 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.

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

Workmanship should follow the recommendations of BS 1186: 2. The design and construction of factory assembled windows must meet BS 644:2009. Where non factory assembled units and bespoke units are proposed, these are also expected to meet the same standard. Bay, oriel and dormer windows require particular care in detailing and fitting so that they are stable, weather tight and reasonably air tight.

Preservative-treated joinery cut or adjusted on-site should be brushed liberally with an appropriate and coloured preservative. Where the colour of the preservative will adversely affect the final appearance of the joinery, an appropriate clear preservative should be used. Where a painted finish is proposed to the window / door frame and opening units, the primer coat should be applied to all final exposed parts, including rebates prior to glazing installed or bottoms of doors.

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 Weather tightness
- Air permeability - BS EN 12207 – Classification & BS EN 1026 - Test method
- Water resistance - BS EN 12208–Classification & BS EN 1027 - Test method
- Wind resistance - BS EN 12210–- 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).

For bespoke/handmade windows, site testing for water penetration of the joints to windows and doors in accordance with the CWCT test methods may be necessary to check the site workmanship of the building envelope as constructed. See CWCT Technical Note No. 41 for guidance on site hose testing.

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.

Security

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 burglar resistance class.

In addition:

- The frames of secure door sets and windows should be 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 356:2000
- A means of caller identification should be provided at the main door to the dwelling to allow means of seeing callers. The same door sets should also have a securely fixed door chain or door limiter fitted

CE Marking

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' i.e. 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 specification 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, CE marking is acceptable until 1st January 2022. From 1st January 2022 UKCA marking in accordance with UK Construction Product Regulation and design standards will be required.

Recommendations

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

- Adequately manufactured to meet BS 644
- Have evidence of declared weather tightness testing
- Have CE marking and labelling details present (or UKCA marking from 1st of January 2022)
- If the window or door is a 'one-of-a-kind' frame for a conservation project and a CE marking is 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 (eg 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

Every care was taken to ensure information in this article was correct at the time of writing (January 2022). Guidance provided does not replace the reader's professional judgement and any construction project should comply with the relevant building regulations or applicable technical standards. For the most up to date LABC Warranty technical guidance please refer to your risk management surveyor and the latest version of the LABC Warranty Technical Manual.