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Service life estimation of PVC-U windows

Executive Summary

PVC-U window suppliers have increasingly found that housing associations and registered social landlords are becoming reluctant to specify their products on the basis of their perceived capital and whole life costs, and environmental impacts. By and large this is as a direct result of the rating reflected in BRE publications such as the Green Guide to Specification\(^1\) where the relative environmental performance of PVC-U products is compared against competing products and how this is used within schemes such as BREEAM\(^2\) and EcoHomes.

Undertaking whole life costing\(^3\) and environmental assessments\(^4\) requires data on the service life of the product being considered. This information is fundamental in that it provides data on replacement intervals and instances of interventions such as maintenance and replacements of components. For whole life costing the replacement and other interventions trigger a cost when they happen. For environmental assessments, the replacements and maintenance actions trigger new environmental burdens.

The Green Guide uses 25 years as a typical service life for PVC-U windows which translates into the environmental burdens from initial installation and two further replacements during the 60 year life cycle assessment period. The service life was based on information available at the time of the publication of the guide.

The British Plastics Federation (BPF) commissioned BRE to examine new evidence and to review the service life of 25 years for PVC-U windows.

With the help of BPF, BRE identified a representative sample of PVC-U window manufacturers that together provide some 80% of the manufactured product in the UK. These were sent a questionnaire requesting evidence of the service lives of their products.

BRE has found strong evidence, provided by the BPF and its member manufacturers that PVC-U windows should now expect to have a (reference\(^5\)) service life at least 35 years under normal urban and non-aggressive conditions. This conclusion has been supported by a desk analysis of common service life data sources.

\(^1\) See Appendix A for a description of the Green Guide
\(^2\) See Appendix A for a description of BREEAM
\(^3\) See Appendix A for definitions for whole life costing
\(^4\) See Appendix A for a description of life cycle assessment
\(^5\) Reference Service Life is the service life that a building or parts of a building would expect (or is predicted to have) in a certain set (reference set) of in use conditions. (ISO 15686-1 clause 3.1.2)
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This service life data will be used in future Green Guide, a new web version of which is due in autumn 2006, and other BRE publications, as appropriate. It will also be used in whole life cost analyses undertaken by BRE in the future.

The double glazing units, gaskets, weatherstripping and the mastic seals may need to be replaced within the life of the window. Ironmongery should be cleaned and lubricated periodically.

General assumptions include installation should be in accordance with manufacturers' instructions and the use of good practice detailing and that the window has been manufactured in accordance with relevant BS including BS EN 12608, BS 7722 and BPF Selecting the Standard 2005.