

What is the Window Energy Rating?

The **Window Energy Rating (WER)** is a standardized performance metric applied to a complete window assembly (frame + glazing + edge seals + ventilation leakage) that summarises its net energy performance, taking into account:

1. **Heat loss** through conduction/convection (U-value)
2. **Solar heat gain** through the glazing (g-value)
3. **Infiltration / air leakage** through the window frame and seals

The rating is expressed on a graded scale (typically from G to A++, or E to A++ depending on scheme) so that consumers, designers, and regulators can compare windows on an objective basis. In essence, the rating converts the combined thermal losses and gains over a notional year into a single class.

In the UK scheme, the principal administering bodies include BFRC (British Fenestration Rating Council), Certass, BSI and related schemes.

Explanation & Use in Practice

- Because the WER is calculated for a “whole window” rather than just glazing, it properly penalises poor performance in the frame, spacer bars, seals, and leakage paths — not just the glass performance.
- The calculation uses a **notional standard window size and orientation** (for example, a typical window area and orientation for an average UK house) so that one can fairly compare different windows. In actual use, real performance may differ depending on orientation, overshadowing, or local microclimate.
- The formula effectively computes a **net energy index** by weighing annual **solar gains minus conductive and leakage losses**. A window that allows useful solar gain in winter may offset some of its losses, improving its rating.
- Manufacturers or test labs submit performance data (U, g, leakage) to a recognised scheme (e.g. BFRC, Certass, BM TRADA) for independent validation and labelling.
- The displayed label (colour-coded, “rainbow” style) shows the band letter (e.g. A, B, C, D...) often alongside numeric values (U-value, g-value, light transmittance).

Example in residential retrofit or new build

- Suppose you are replacing an old double-glazed window in a Victorian terraced house. The new unit you consider is rated **A** (in the WER scheme). The label also shows $U_w = 1.4 \text{ W/m}^2\text{K}$, $g = 0.5$, and air leakage class $L = 4$. When compared to a lower-rated window (say C rating, $U_w = 1.8$, same g), the A-rated window is expected to reduce net annual heat losses and thus lower heating consumption over the year.
- In a new-build extension, specifiers may require a minimum WER band (say C or B) to help the dwelling comply with Part L (Conservation of Fuel & Power) of the Building Regulations. In fact, new or replacement windows in UK Building Regulations must meet at least a C rating (unless in special cases).

Regulatory / Standards Context in the UK

- From October 2010, all replacement windows in England and Wales must meet a minimum WER rating of **C** (unless in a listed building) to satisfy building regulations relating to energy efficiency of dwellings.
- However, it is **not mandatory** to carry the WER label on every window product (i.e. the label scheme is voluntary), though many manufacturers do so to aid consumer choice.
- Under more recent updates (e.g. June 2023 changes to Part L), many replacement windows must have a U-value $\leq 1.4 \text{ W/m}^2\text{K}$, or comply via equivalent WER performance.
- Schemes like BM TRADA Q-Mark provide third-party certification for WER, ensuring consistency and traceability.