

### A Practical Guide To Understanding Fire Ratings & Selecting The Appropriate Level Of Fire Performance

#### Overview

Once it's been established that fire-rated glazing is required, the next question is usually:

#### *"What fire rating do I need?"*

Drawings and specifications often refer to E30, EW60 or EI60, yet these classifications are frequently misunderstood. Many assume the letters simply represent increasing levels of protection, or that specifying the highest rating is always the safest option.

In reality, each classification measures a different aspect of fire performance and should only be specified where it supports the building's fire strategy.

Understanding the differences helps avoid unnecessary cost, over-specification and compliance issues.

#### How Fire Classifications Are Determined

Fire resistance classifications used throughout the UK are assigned in accordance with BS EN 13501-2.

The classifications are based on recognised fire resistance tests carried out under controlled conditions using standards such as:

- **BS EN 1364-1** – Glazed screens and partitions.
- **BS EN 1634-1** – Doorsets and openable windows. Intumescent components.
- **BS EN 1363-1** – General fire resistance testing principles.

The classification relates to the complete tested system rather than the glass alone.

#### E – Integrity

E stands for Integrity.

An integrity-rated system prevents flames and hot gases passing from one side of the glazing to the other for a specified period.

Its primary purpose is to maintain fire compartmentation by containing the fire within the affected area.

However, an E-rated system does not significantly restrict radiant heat. Although flames are contained, the surface of the glass can become extremely hot.

Integrity-only glazing is typically used where preventing fire spread is the primary objective and the fire strategy does not require protection from heat transfer.

#### EW – Integrity and Radiation Control

EW combines integrity with limited control of radiant heat.

As well as preventing flames and hot gases passing through the glazing, EW-rated systems reduce the amount of radiant heat transmitted to the non-fire side.

This can help reduce the likelihood of combustible materials igniting close to the glazing and improve conditions for occupants passing nearby.

It's important to remember that EW is not an insulated system. Heat still passes through the glass, but within the limits defined by the relevant test standard.

#### EI – Integrity and Insulation

EI provides the highest level of fire performance of the three classifications.

In addition to maintaining integrity, an EI-rated system limits the temperature rise on the unexposed face of the glazing.

By controlling heat transfer, EI glazing helps protect escape routes, neighbouring compartments and people

on the safe side of the fire.

Because of these additional performance requirements, EI systems often use more complex fire-resistant glass and more substantial framing systems.

### What Do the Numbers Mean?

The number following the classification indicates the period, in minutes, for which the system achieved the required performance during fire resistance testing.

Examples include:

- **E30** – Integrity for 30 minutes.
- **EW60** – Integrity and radiation control for 60 minutes.
- **EI60** – Integrity and insulation for 60 minutes.
- **EI120** – Integrity and insulation for 120 minutes.

These classifications relate to controlled fire resistance tests and should not be interpreted as predicting how long a product will survive in every real fire.

### Choosing the Right Classification

The correct fire classification should always be determined by the project's fire strategy.

Factors influencing the specification include:

- Building use.
- Occupancy type.
- Escape strategy.
- Location of the glazed element.
- Compartmentation requirements.
- The level of protection required from heat transfer.

Specifying a higher classification than necessary may increase costs, glass weight and lead times without providing any additional compliance benefit.

Conversely, specifying a lower classification than required could result in a non-compliant installation.

### In Practice

A common enquiry received by specialist suppliers is for EI60 glazing, simply because it is perceived to be the safest option.

In reality, the correct specification should always be driven by the fire strategy rather than assumption. Many projects require EI performance, while others are entirely compliant with E or EW classifications.

Confirming the required fire rating at the beginning of a project almost always saves time, cost and redesign later.

### Key Points

- Fire classifications are assigned in accordance with **BS EN 13501-2**.
- **E, EW and EI measure different aspects of fire performance.**
- The number indicates the period, in minutes, achieved during testing.
- The correct classification should always follow the building's fire strategy.
- Over-specifying a system rarely improves compliance and can increase project costs.

### Relevant Standards

- BS EN 13501-2 – Fire classification of construction products and building elements.
- BS EN 1363-1 – Fire resistance tests – General requirements.
- BS EN 1364-1 – Fire resistance testing for non-loadbearing glazed elements.
- BS EN 1634-1 – Fire resistance testing for doorsets, shutters and openable windows.
- Approved Document B – Fire Safety.

### Disclaimer

This guide provides general technical information based on recognised UK standards and accepted industry practice. It should not replace project-specific fire strategies, manufacturer fire test evidence, engineering assessments or statutory guidance. Fire-rated glazing systems should always be specified and installed in accordance with the manufacturer's tested details and the requirements of the individual project.