The Reuse of Doors

Design for Reuse: A summary for door manufacturers

Make today's doors tomorrow's reusable assets

Reuse should not just be an end-of-life strategy. It should influence how doors are designed and manufactured today – starting with the end in mind.

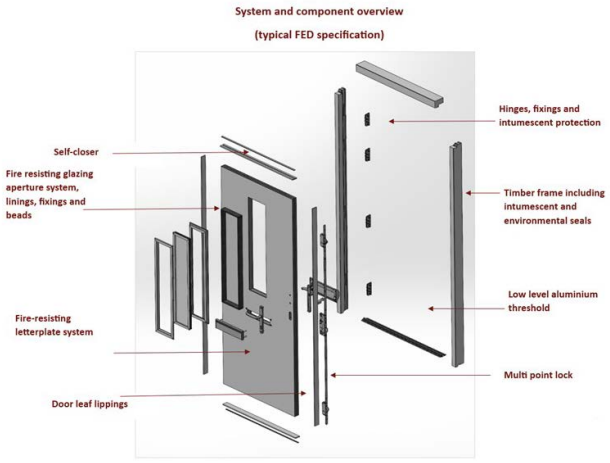
Doors are often removed from buildings because of refurbishment and changing layouts rather than because they have reached the end of their technical life. Approximately, 470,000 doors are removed from offices each year in England and Wales. Even if only 10% were reused, the potential avoided A1–A3 emissions could be approximately 6,570–24,220 tCO_2e per year, depending on the mix of door types.

Manufacturers have a critical role in making reuse easier, safer and more commercially viable.

Higher quality products may cost more initially, but durable, repairable and traceable doors are more likely to support second and third uses. The sector should resist designing for shorter lives simply because current refurbishment cycles remove products early. Instead, manufacturers should focus on quality, durability, repairability, data retention and reuse potential – maximising resources, minimising waste and reducing carbon emissions.

A reusable doorset should be designed to:

- Be durable – be robust enough to support more than one life.
- Be maintained and repaired – allow worn or damaged components to be replaced.
- Be disassembled – enable the door, frame and hardware to be separated without unnecessary damage.
- Be adaptable – provide opportunities for future changes in configuration or application where technically appropriate.
- Be identifiable – carry a persistent identity that links the physical product to its information.
- Be traceable – retain information about manufacture, specification, installation, maintenance and performance.
- Be compatible – use standardised dimensions and component interfaces wherever possible.
- Have a clear future pathway – through reuse, take-back, remanufacture, component recovery or repurposing.



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Standardised door sizes, consistent hardware positioning and systems designed for disassembly are important enablers of future reuse. Key recommendations include:

1. Standardise where you can

Standardisation is one of the biggest opportunities for manufacturers and the wider industry. Whilst more standardisation may be restrictive in some ways it brings opportunities around the need for higher quality products that last longer, to work with Clients over the long term across multiple projects, to offer a service that extends beyond the initial sale and that may bring in additional income into the future.

Common door heights and widths, consistent frame dimensions and standardised hardware positions can make it easier for a door removed from one building to fit an opening in another. Where possible, manufacturers should also consider compatible hinges, closers, locks and other ironmongery, alongside components that can be replaced without damaging the doorset. Systems should accommodate future replacement components wherever technically feasible.

2. Design for repair and disassembly

Manufacturers should think beyond the first installation and consider how a doorset could be maintained, repaired and eventually removed, including whether components can be separated and individually identified. Worn components should be replaceable, ironmongery should be removable without damaging the leaf or frame, and finishes should be capable of repair or replacement where appropriate. Frames and other components should be capable of being dismantled, while doors should be removable without destructive methods.

For timber doors, understanding the internal construction is particularly important. Resizing or re-lipping may be technically possible for some products but not others. Making the construction and limitations clear can prevent unnecessary damage during reclamation and reuse.

3. Give every door a digital identity

A digital product passport can provide the information needed to support a door throughout its life. At manufacture, this could include the unique product or doorset ID, manufacturer and product code, date of manufacture, dimensions, materials, core construction, frame specification and ironmongery set. It should also capture fire, smoke and acoustic performance, test and certification information, installation requirements, EPD/environmental data, repair and maintenance requirements, permitted modifications, and guidance for disassembly and reuse.

A QR code or equivalent can connect the physical door to this information. The report proposes an interoperable approach in which manufacturer information forms the baseline and further data is added by contractors, installers, building owners, facilities managers and inspectors throughout the product's life.

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The principle is simple: information should travel with the door.

Reuse information should include guidance on repair, maintenance, remanufacture and reinstallation, replacement components, and approved partners or procedures. Manufacturer take-back, remanufacturing and re-warranty also have significant potential, particularly where a reliable information trail exists.

Fire doors: design for evidence as well as performance

Fire doors are safety critical systems and cannot be treated in the same way as non-fire doors. Designing for future reuse should therefore include consideration of how evidence of performance can be retained.

Manufacturers should maintain clear identification and traceability, retain full doorset test evidence, document compatible ironmongery and seals, identify permitted modifications, record installation requirements and tolerances, and support inspection and maintenance. Future repair and refurbishment should remain within tested configurations wherever possible.

A fire door label alone is not sufficient evidence for reuse; it is important to also have supporting evidence for the complete doorset, including components such as ironmongery and intumescent seals.

A manufacturer's circularity checklist:

- **Design:** Standardise dimensions and interfaces where possible; design for durability and multiple lifecycles, repair and component replacement and non-destructive disassembly.
- **Data:** Give every doorset a unique identity and provide a digital product passport containing transferable - and interoperable - test, certification, installation, maintenance and performance information.
- **Reuse:** Publish reuse and repair guidance, define acceptable modifications, develop take-back and remanufacturing routes, explore re-warranty options, and work with contractors, designers and reuse organisations.

Design the door so that its next life is as important as its first.




Image credits:
H Mansell

This summary forms part of a larger guidance document on the reuse of doors.
We'd like to thank all those who have been involved in both the guidance and summary documents.