

# Mat 05 Material efficiency

(All buildings)

## Aim

To recognise and encourage measures to optimise material efficiency to minimise the environmental impact of material use and waste without compromising on structural stability, durability or service life of the building.

## Overview

Assessment type	Available credits	Applicable assessment criteria
Fully fitted	3	All
Shell and core	3	All
Shell only	3	All
Residential: Fully fitted	3	All
Residential: Partially fitted	3	All
EU Taxonomy	-	None

## Minimum standards

Rating level	Criteria
-	None

## Assessment type specific notes

Reference	Assessment type specific note
-	None

## Building type specific notes

Reference	Building type specific note
2.0	<p><b>For refurbishment projects</b></p> <p>For criteria 1-3: the material efficiency strategy have to include an analysis of how materials in the existing building can be re-used, on- or off-site, or re-cycled.</p> <p>For criteria 4-7: Percentages shall be calculate based only on products newly installed within the scope of works.</p>

# Assessment criteria

This issue is split into two parts:

- Material efficiency – one credit
- Re-used construction products – two credits

## Material efficiency – one credit

- 1 At the Preparation and Brief and Concept Design stages, set targets and report on opportunities and methods to optimise the use of materials. This must be done for each of the following stages (see Table 83):
  - 1.a Preparation and Brief
  - 1.b Concept Design
  - 1.c Developed Design
  - 1.d Technical Design
  - 1.e Construction.
- 2 Develop and record the implementation of material efficiency, see Table 83, during:
  - 2.a Developed Design
  - 2.b Technical Design
  - 2.c Construction.
- 3 Report the targets and actual material efficiencies achieved

## Re-used construction products – two credits

### One credit

- 4 One credit is awarded where either:
  - 4.a At least two product categories with at least 10% re-used construction product by weight (see M2)OR
  - 4.b At least one product category with at least 20% re-use construction product by weight (see M2)
- 5 The re-used construction products shall be recorded in a project logbook (see M3).

### Two credits

- 6 Two credits is awarded where either:
  - 6.a At least three product categories each incorporate a minimum of 10% re-used construction products by weight (See M2);OR
  - 6.b Re-used construction products represent at least 10% of the total installed material quantity by weight in the project (See M2).
- 7 The re-used construction products shall be recorded in a project logbook see M3.

# Checklists and tables

Table 83: Material and efficiency strategy

<b>Work stages and efficiencies</b>	
<b>Preparation and brief</b>	
Objective	To set requirements that inform decisions throughout the design and construction of the project.
Participants	Client or client's agent with input from the design team if appointed.
Action	Assess the site, the likely project scale, and the client's functional and aesthetic requirements to set material efficiency objectives for the project.
Evidence	Dedicated report that sets out a clear framework to guide material efficiency activities throughout the design and construction of the project. The report should set out aims, objectives, targets, performance indicators, opportunities, constraints and responsibilities to guide material efficiency activities.
<b>Concept design</b>	
Objective	Develop strategies to implement or action the materials efficiency requirements set under the Preparation and Brief stage.
Participants	Design team including at least: <ul style="list-style-type: none"> <li>• Architect</li> <li>• Structural Engineer</li> <li>• Building Services Engineer</li> </ul>
Action	Hold workshops with the project team to identify design opportunities to reduce or optimise materials use through design, specification, construction techniques etc.
Evidence	Minutes of the workshops held. Documentation demonstrating how the feedback from the workshop has been incorporated in the concept design of the project, for example: outline specifications for materials selection, report on approximate predicted reductions in material quantities.
<b>Developed design and technical design</b>	
Objective	Develop design proposals based on learning from the concept design.
Participants	All relevant members of the design team.
Action	Incorporate material efficiency measures and strategies identified in concept design into architectural, structural and building services design as appropriate. Review performance against previous stages and identify deviations.
Evidence	Report on deviations from previous stages and additional actions to be taken. Documentation demonstrating the incorporation of the outcomes from the concept stage and additional actions, for example: design drawings or specifications demonstrating materials efficiency measures undertaken.
<b>Construction</b>	
Objective	Implement material efficiency measures in construction.
Participants	Principal contractor.
Action	Implement material efficiency measures and strategies identified in previous stages in building construction and identify deviations. Identify further efficiencies as appropriate for this stage.
Evidence	Report on deviations from previous stages. Documented evidence of activity to further identify efficiencies at this stage, for example: meeting minutes, training events, waste reduction documentation etc.
This table is based on the principles set out in Parts 1 and 2 of the BS 8895 series of standards	

# Methodology

## M1: Material efficiencies

Examples of how material efficiency can be considered at each work stage are provided in table 83. As a minimum, the measures listed in the “evidence” row must be met to show compliance with the issue.

The strategy should include both reused materials, on- and off-site, and new materials.

The publication “Byggutmaning: Optimering” by Byggföretagen i väst and Lindholmen Science Park published 2024 can be used as guide.

## M2: Calculation of weight percentage

The weight percentage shall be calculated as:

$$\text{Weight percentage} = \frac{\text{Weight of re – used proucts (kg)}}{\text{Total installed weight (kg)}} \times 100$$

Calculations shall be based on installed quantities.

Where exact weights are unavailable, documented estimates may be derived from product data sheets, EPDs or other verifiable technical documentation.

## M3: Logbook

There are no specific format requirements for the logbook. The logbook developed under Mat 07 may be used to demonstrate compliance with this issue.

As a minimum, the logbook shall include the following information for each re-used construction product:

- Origin of the product;
- Quantity (kg);
- Location of the product within the new building;
- Condition/status of the product at the time of installation.

## Compliance notes

Reference	Terms	Description
<b>Material efficiency</b>		
CN1	Pre-demolition audit in Wst 01	The pre-demolition audit in Wst 01 could be adapted and used as basis for criterion 1 in this issue
CN2	Retention of existing elements	Retention of existing building elements in situ shall not be considered re-used construction products under this issue.
CN3	Permanently installed products	Only permanently installed construction products forming part of the assessed asset shall be included. Temporary works and loose furniture are excluded unless permanently fixed.
CN4	Condition and compliance	Re-used products shall meet applicable functional, structural and safety requirements at the time of reinstallation.

# Evidence

Criteria	Interim design stage	Post construction stage
<b>Material efficiency</b>		
1-3	<p>For design stage actions (criteria 1.a to 1.d and 2.a to 2.b): The evidence required to demonstrate compliance will vary according to the work stage. Examples of how material efficiency could be considered together with the minimum evidence requirements to be provided, at each project stage, are set out in Table 83 on the previous page.</p> <p>For post-construction stage actions (criteria 1.e and 2.c): Relevant section of the building specification or contract clauses or letter of commitment to report material efficiencies at post-construction</p>	Examples of how material efficiency could be considered together with the minimum evidence requirements to be provided at postconstruction are set out Table 83 on the previous page.
4-7	<p>Drawings or other document showing products that will be re-used.</p> <p>Calculations demonstrating compliance</p> <p>Draft of logbook or confirmation that a logbook will be developed.</p>	<p>As-built confirmation of installed products.</p> <p>Assessors report with picture confirming re-used products</p> <p>Completed logbook</p>

## Definitions

### Material efficiency

The process of undertaking a building project to enable the most efficient use of materials over the life cycle of the building and its components. This includes using fewer materials, reusing existing demolition and strip-out materials and, where appropriate, procuring materials with higher levels of recycled content. It may also include the adoption of alternative means of design or construction that result in lower materials usage and lower wastage levels including off-site manufacture and use of preassembled service pods.

### Product category

A defined group of construction products fulfilling a similar function within the building, classified according to BSAB at two-letter code level.

### Re-used construction products

A construction product previously used for its intended purpose and used again without reprocessing that alters its original function. Products recycled into raw materials are excluded.

The re-used construction product shall meet applicable requirements relating to function, performance, content and safety at the time of reinstallation, equivalent to those applicable to new construction products.



### Construction product

Any permanently installed material, component or assembly incorporated into the building during construction.

## Additional information

None