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Reuse of building materials - Guide to documentation

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Teknologi for et bedre samfunn

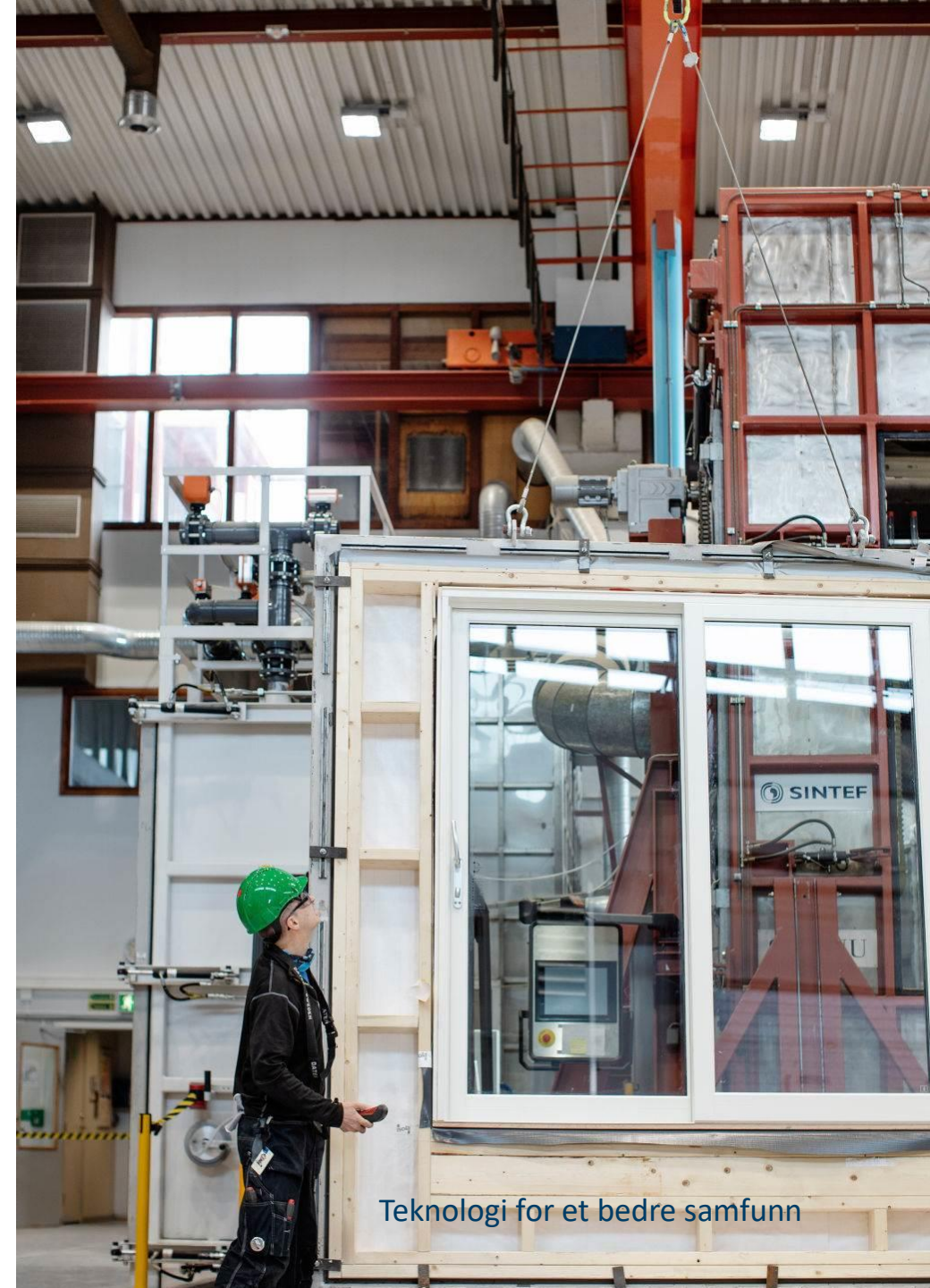


Reuse of Construction Products

Essential question that must be addressed:

How do we know if a reuse construction product is suitable for its intended purpose?

- Strength
- Durability
- Absence of hazardous substances
- And many more - depending on the construction product itself and its intended use





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New Construction Products - Documentation


- Construction Products Regulation (EU) Regulation No 305/2011
- Norway - implemented in: Forskrift om omsetning og dokumentasjon av produkter til byggverk



- Product standards - harmonised



- CE-marking of construction products
- Declaration of Performance
- Quality Assurance



CE marking

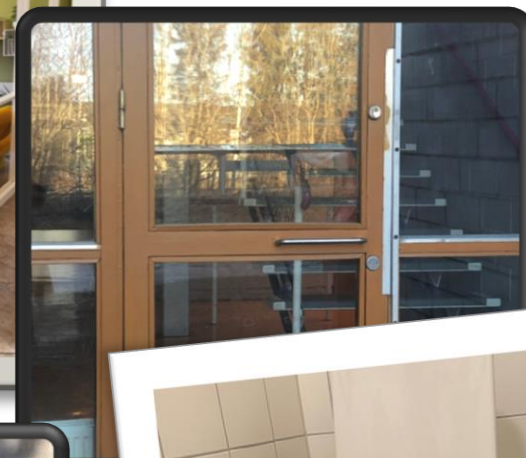
Essential Characteristics	Declaration of Performance	Harmonised technical specification
EN Classification		EN 15283-1:2008
Longitudinal flexural strength - 12.5mm board		EN 15283-1:2008
Transverse flexural strength - 12.5mm board		EN 15283-1:2008
Longitudinal flexural strength - 6mm board	258N	EN 15283-1:2008
Transverse flexural strength - 6mm board	101N	EN 15283-1:2008
Reaction to fire	A1	EN 13501-1:2007
Water vapour resistance factor	$\mu=10$	EN 15283-1:2008
Thermal conductivity	0.30 W/mK	EN 15283-1:2008
Shear strength	NPD	



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Reused Construction Products - Product documentation

Task of work package 2 in REBUS:
Can we repurpose the system for documentation of new construction products to fit reuse construction products?





Re-cycled clay masonry units - Reuse of bricks

- European Technical Assessments (ETA)
 - Documentation and CE-marking of construction products without a harmonised standard
 - Described in the Construction Product Regulation
 - Voluntary
 - ETA can be issued for reuse construction products
- European Assessment Document (EDA) for reuse of bricks
 - Based on EN 771-1 - harmonised product standard for clay bricks



EAD 170005-00-0305

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RE-CYCLED CLAY
MASONRY UNITS



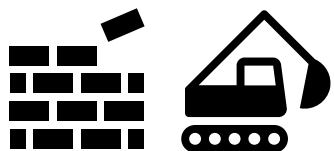
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Manufacturing of reuse construction products





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REBUS Reuse Guideline



Glass Partition Walls



Doors and Windows



Ventilation



Sanitary equipment



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REBUS Reuse Guideline - Structure

- Assessment for reuse
 - Materials
 - Ageing
 - Repair of damage
- List of essential properties
 - Not all properties are important for every type of use
- Suggestions on documentation
 - Starting point for further work

Materials, ageing and repair of damage

COMPONENT	MATERIAL	AGEING AND REPAIR OF DAMAGE
Profiles and frames	Profiles and frames of interior glass partition walls are usually made of wood or aluminium.	Impact or other mechanical loading can damage the frames and window pane. If the window pane is broken, it must be replaced. In the case of minor damage to the frames, the damaged part may be replaced or repaired. A plastic frame may have become brittle.
Glass	The glass may be homogeneous or consist of several layers separated by laminating film.	The physical properties of float glass and tempered glass do not change over time. <i>Soundproof glass</i>

Documentation of properties in connection with reuse

PROPERTY ¹⁾	DOCUMENTATION METHOD	COMMENTS
Year of manufacture	Information from initial purchase	
Materials and construction	<ul style="list-style-type: none"> • Visual examination • Original documentation 	Must include: <ul style="list-style-type: none"> • Glass: Tempered glass (NS-EN 12150-2) and fire-resistant glass are often labelled. • Laminated glass (NS-EN 12543-2): two glass layers can be seen. • Profiles and frames: wood or aluminium • Format and layout of glass panes
Colour, surface treatment and decoration	<ul style="list-style-type: none"> • Visual examination • Colour code 	Description of glass decoration: sandblasted, acid-etched, silk printed (thermally hardened ceramic inks) or foil (plastic film attached to glass). Decorating foils can be removed by heating and pulling off. Sandblasted, acid-etched and silk printed glass can easily be restored to an untreated glass surface.
Dimensions	Tape measure or similar	Height and width of frames and glass panes.
Fire rating	Certificate	Fire resistance shall be certified. Classification according to NS-EN 13501-2. Reuse without retesting requires verification by the manufacturer or certifying body that the property is unchanged.
Sound reduction	<ul style="list-style-type: none"> • Original documentation 	Reuse without retesting requires verification by, for example, the



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REBUS Reuse Guideline

Reuse of building materials

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Guide to the documentation of performance



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REBUS Reuse of Building materials - a User perspective



Ombruk av byggematerialer

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Veileder for dokumentasjon av ytelser



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REBUS Reuse of Building materials - a User perspective



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Reuse of paving setts

- Product standard: NS-EN 1342:2012
 - Testing demonstrated that old paving setts perform well
- Reuse is good for the environment
 - Transport over long distances comes at a high environmental cost
- Reuse is more expensive than buying new paving setts
 - Economic analysis shows potential for reducing costs

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Ombruk av gatestein

KARTLEGGING, PRØVING, LCA OG KOSTNADSANALYSER



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