

**Disclaimer**

This sheet is intended for designers, specifiers and other members of construction project teams wishing to reuse this building material or product. It is part of a collection of sheets aimed at bringing together the available information to date that is likely to facilitate the reuse of building materials and products.

This sheet has been produced by Rotor vzw/asbl within the framework of the Interreg FCRBE project - Facilitating the Circulation of Reclaimed Building Elements, supported by the entire project partnership. Sources of information include the experience of reclamation dealers and involved project partners, lessons learned from exemplary projects, available technical documentation, etc.

The sheets have been produced between 2019 and 2021. As the reclamation sector is evolving, some information, notably regarding pricing and availability, may change over the time. When the text refers to European standards, it is up to the project team to refer, if necessary, to their national implementations and local specificities.

It is important to note that the information presented here is not exhaustive or intended to replace the expertise of professionals. Specific questions are always project related and should be treated as such.

The complete collection of sheets (including the introductory sheet) is freely available from different reference websites (a.o. opalis.eu, nweurope.eu/fcrbe, futureuse.co.uk).

Non-exhaustive directories of dealers in reclaimed building materials are available on www.opalis.eu and www.salvoweb.com.

Interreg FCRBE partnership: Bellastock (FR), the Belgian Building Research Institute / BBRI (BE), Brussels Environment (BE), the Scientific and Technical Center of Building / CSTB (FR), Confederation of Construction (BE), Rotor (BE), Salvo (UK) and University of Brighton (UK).

The information contained in this document does not necessarily reflect the position of all the FCRBE project partners nor that of the funding authorities.

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Material description

The term “structural timber” in fact covers a wide variety of elements, the characteristics of which vary according to the type of wood, the dimensions, the original assembly methods or even the presence of any finishing and preservation treatments.

In this sheet, we are interested in the reclamation of solid structural timber elements with rectangular cross-section. These generally come from multiple sources: frames and floors, structural supports (columns-beams), framework, structural works of art, etc. This timber can be rough sawn, planed and marked by the imprints of time. A specific terminology - and sometimes tinged with regional terms - makes it possible to classify the elements according to their dimensions and/or their use. For example: beams, joists, rafters, planks, battens, etc.

The products commonly available on the reclamation market can be classified into two main categories:

→ **“Technical” timber.** these are timber sections sought after for their technical qualities. They are generally sold as a (greener and cheaper) alternative to new equivalents. Their dimensions sometimes correspond to the standards of new construction timber, but this is not systematic. However, they have a certain regularity. The species are mainly resinous: douglas-fir, spruce, pine, fir, larch, etc.

→ **Old beams.** these are sections that come from old buildings, often centuries old. Usually more expensive, they are sought in the first place for their history and their appearance (generally more irregular than the more recent standardized sections). There are old beams in hardwood (mainly oak) and softwood (fir, spruce, larch, ...).

This sheet does not apply to other timber structural elements: round timber, laminated timber, glued laminated timber, CLT, finger-jointed timber, multi-finger timber, etc.

Wooden elements can have a very long lifespan as evidenced by many examples of ancient constructions around the world: Asian temples, houses in the United States, half-timbered houses in Europe, etc. It is not uncommon for reclaimed elements to have already lived through several lives as wood is such a versatile material that lends itself to multiple uses.

Historically, this versatility has made wood a central material in the pre-industrial European economy, especially in construction. Wood was not just a building material in its own right, available for multiple uses, but it was also an essential component for the installation of other materials, such as stone. It was indeed used for the realization of ribs, formwork, cranes, scaffolding, etc. Numerous archaeological examples attest that it was common to completely dismantle and reassemble timber frame buildings such as barns and houses.

Despite their virtuous nature for the environment, these practices have become less common today in North-western Europe - by comparison, they are flourishing in the United States, no doubt due to a greater persistency in timber construction.

The assessment of the technical qualities of old structures is specific and generally requires a tailor-made approach. Under normal conditions, they are dry and sufficiently stable to limit the phenomena of torsion or shrinkage due to drying when they are reused in buildings. The old structures are often the object of great attention during the restoration of old buildings. Certain methods, used in this context to ensure the fitness for use of structural elements, can also be applied to the case of reclaimed timber.



Reclamation of structural beams
© yr-architecture (USA)



Old oak beams



Softwood uprights used for their technical qualities



Material reclamation

The reclamation of structural timber generally requires good coordination and must be done in compliance with the safety rules applicable to demolition work, in particular when such dismantling involves structural elements.

→ *Preliminary studies.* these aim to assess the general quality of the various elements. They can combine several approaches:

- *Visual inspection.* This generally makes it possible to identify the species of wood and to identify the possible presence of the following aspects, which may limit or even compromise the potential for reclamation:
 - creep (deformation), an indicator of a high loading rate that can lead to a decrease in the mechanical properties of the elements
 - natural defects (knots)
 - sapwood
 - splits (oriented in the direction of the fibres) and cracks (cutting across the fibres)
 - visible fungi, biological agents, xylophagous insects
 - areas of mould, humidity, discolouration (generally located in front of damp rooms, at the level of gutters and in any place likely to have been in prolonged contact with moisture)
 - saw marks
 - oxidation of metal assemblies
 - etc.

This inspection also makes it possible to verify the straightness of the elements (local and global deformation) and to observe the nature of the assemblies, which can influence the dismantling method.

• *Basic tests:*

- “Hardness” test using a resistograph. It allows the detection of superficial areas of rot.
- “Screwdriver” test. Consists in causing a localised splinter using a blunt object. In healthy wood, the breakage occurs along the fibres while rotten wood tends to break in small pieces or in the middle of the fibres.

- “Mallet” test. Consists in gently striking the timber to detect the presence of empty or rotten areas (emitting a hollow sound).
- Humidity measurement using a moisture meter.
- *Additional Tests.* Additional studies can be carried out to establish a more complete diagnosis of the condition of the elements, in particular if they are painted or covered: auscultation by drilling and coring (making it possible to detect internal deterioration of the wood and, if necessary, to determine thickness of residual healthy wood), various laboratory tests to detect the presence of fungi, to precisely identify the species, to measure the density or to detect the presence of dangerous substances (see § “Hazardous substances and precautions”).

- *Complementary studies.* Depending on the new, targeted uses, other studies may be carried out:
 - building history, based on the original documentation (executive plans, assembly method, calculation notes, etc.) and research on the conditions of use (maintenance of long-term occupants, identification of events such as fires, water infiltration, flooding, etc.).
 - geometric profile, based on a survey of the frame or framework by a surveyor to mark the dimensions of the elements and their connections.



“Screwdriver” test
© qualite.bzh



Mallet test
© Romane Lavoine



Hardness test using a resistograph
© qsb.fr



Wood moisture measurement using a moisture meter
© Romane Lavoine



Laboratory analysis - optical microscopy technique, oak (*Quercus Petraea*) - tangential section (left) and transversal microcut (right) © woodanatomy.ch



Wood coring
© Romane Lavoine



→ **Removal.** the careful dismantling of the elements must ensure the safety of the workers and the integrity of the recovered elements. A percentage loss is generally admissible due to potential breakage and cuts. Similar elements are preferably grouped, numbered and correctly identified in order to guarantee the uniformity and traceability of the batches. They are stored on blocks (no contact with the ground), spaced apart and sheltered from bad weather.

→ **Operations.** depending on their condition, reclaimed timber structural elements may go through several operations before being re-installed. Most of the time, specialised suppliers automatically carry out some of these operations. However, sometimes the timber is salvaged or sold in its original condition. It is then up to the buyer to anticipate these stages.

- **Removal of metallic elements.** Nails, screws and other metal parts are removed using suitable tools (pincers, pneumatic nail punch, etc.). This laborious process is essential if woodworking is planned later, at the risk of damaging the machines. Using a metal detector makes it easier to locate metal objects.

- **Superficial cleaning.** By means of a soft or metal brush, by sanding or sandblasting according to requirements.

- **Drying.** According to the hygrometric state of the timber. The elements are generally dried naturally in a shed, taking the necessary storage arrangements (spacing between the elements, no contact with the ground, wedges, etc.). Artificial kiln drying can be used to reduce and stabilise the humidity level. Artificial drying also contributes to the elimination of potential pests (mould, insects).

- **Timber classification.** In order to ensure that the performance of reclaimed timber elements meet the requirements linked to their future use, their specific characteristics should be ascertained (*see § Characteristics and fitness for use*). This is particularly the case for structural uses, governed by a normative framework which requires knowing with sufficient precision the mechanical properties of timber. Each element can be inspected visually by a certified person or by machine to determine the species of wood, the type of wood, the durability class, the mechanical resistance class, the presence of preservative treatments and their influence on the durability, etc. Classification is preferably done when the elements have acquired their final section (for example, after planing). The items are then marked separately or in bundles.



Dismantling of the timber beams of the "Tour à Plomb", Brussels (BE). © BVDA - Bernard Van Damme Architecte



Removal of bark, sapwood and wood chips © yr-architecture



Removing metal parts



Timber cleaning © yr-architecture

Truly Reclaimed Label

As part of the European FCRBE project, to which these sheets are attached, the organisation SALVO Ltd. (UK) is working on the development of a "Truly Reclaimed" label, making it possible to certify the authentically recovered origin of materials (as opposed to artificially used materials). This label should see the light of day very soon for reclaimed timber products.

Timber classification

The harmonised standard EN 14081-1 defines the requirements for new rectangular structural timber classified by their resistance and their CE marking. It defines 2 timber grading methods:

1. **Machine grading** (standard EN 519): common in industrial installations, it enables production samples to be characterised from measurements obtained by approved grading machines. Grading differs according to the species (coniferous or deciduous). The mechanical properties of the elements are assessed using non-destructive tests (continuous 3-point bending test, X-ray, ultrasound, vibration, etc.). A preliminary visual check is necessary to deal with resistance characteristics that are not automatically detected by the machine. It is interesting to note that there are mobile grading machines. Under certain conditions, this application could prove to be useful if it is a question of grading a large batch of reclaimed structural timber. For information, the MTG portable grading machine costs between € 7,000 and € 15,000 depending on the settings and functions required.
2. **Visual method** (standard EN 518): this involves visually identifying the defects on the surface of the part which may lead to a decrease in resistance (dimension of the splits, density, number and size of knots, resin pockets, slope of grain, etc.), but also geometric defects over the entire part (waned (sapwood), longitudinal and transverse deformations, twisting, etc.) and potential biological attacks (fungi, insects, rot, etc.). Many different visual grading rules coexist in Europe, depending on the country, but basic principles have been established. In practice, approved certifiers are able to characterise new timber in order to justify its use as a structural element. A correspondence table of visual classes and mechanical classes is defined by standard EN 1912. This method may be applicable to reclaimed items.



- **Preservation treatment.** If the use requires it, it is possible to treat the timber elements, in order to optimise their durability outdoors and improve their class of use. Several types of preventive treatments exist, for example by soaking, sprinkling, brushing, autoclave, etc. They are governed by standards and use recommendations. Professional advice is recommended, especially if the timber has undergone this type of treatment before or if a topcoat is present. He will also be able to inform you about the possible toxicity of the products.

- **Heat treatment.** This process improves the durability of timber outdoors, but it affects the mechanical properties of the timber. It is more often used for cladding elements.

- **Sawing and cutting.** The timber can be reduced in section and length. Some resellers also offer cutting of structural members, the realisation of trusses or other structures by choosing the appropriate elements in their stock. Others cut old beams to make parquet, floorboards or cladding.

- **Planing.** The timber can also be left raw or planed on one or two sides to obtain flat and constant sections.

- **Finishes.** The timber can be left as it is or receive a finishing coat (varnish, waxes, oils, stains, paint, etc.)

→ **Storage.** Timber is preferably stored on blocks with spacing between each element. It can be stored away from bad weather or in a heated environment to control the moisture content. In certain regions where the climate is not very humid, the beams can be stored outside. They are also placed on large racks, spaced apart from each other.

→ **Transport and delivery.** The necessary precautions must be taken during transport and delivery (strapping, handling method, etc.).



Sorting and selecting beams © yr-architecture



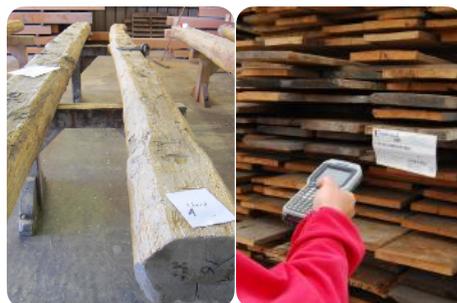
Storage © Opalis / Les ateliers de saint Gaudent



Timber finishing treatment © yr-architecture



Storage © Opalis / Vieux bois des Alpes



Labelling of beams, visual or machine grading © yr-architecture



Storage © Opalis / Atelier de saint Cannat



Storage © Opalis / Europort BVBA



Storage © Opalis / Bloem



Applications and laying

The installation of reclaimed timber elements lends itself to the same diversity of design methods as new materials. They can be reused for structural purposes (traditional frames, framework, mezzanines, awnings, etc.) or for other uses (decorative beams, furniture wood, joinery timber, etc.). Some suppliers cut old beams to make parquet, floorboards or even cladding.

For structural applications, prior involvement of the design office on stability is recommended as well as the control office. They will be able to propose approaches adapted to the elements identified, including adjusting the safety margins to the information available about the elements (prudent assumptions for the calculation of load constraints, oversizing, etc.). It is also possible to reserve the timber elements for less demanding uses. It's a stylish way to extend their lifespan.

Depending on the application, it is necessary in all cases to refer to the European and national standards relating to the product (e.g. N 14081-1, etc.), conception standards (e.g. EN 1995: Eurocode 5 for the design and calculation of timber structures), to the rules of practice in force and to the installation standards. According to the regulations in force, it is also necessary to take into account the seismic, thermal and acoustic requirements, protection against termites, fire resistance, etc.

Despite their extensive knowledge of the materials and the valuable advice they can give, structural timber resellers generally do not certify all of the characteristics of the items they supply. On the other hand, some provide guarantees on aspects such as the uniformity of the batches, the dimensions of the elements, the maximum humidity level, the condition of the timber (without metal parts, mould, cracks, etc.) or even on its origin (some resellers thus affix the *FSC recycled label* which certifies that the wood comes from the dismantling of a building and not from the cutting of trees).

Depending on the intended use, the designer/specifier may need to specify his expectations regarding the following characteristics:

→ *Types and dimensions*. Leaving some latitude on dimensions, species, wood colour and all non-essential characteristics makes it easier to find a batch on the reclamation market. Since the dimensions of reclaimed "technical" timber do not necessarily correspond to the standard dimensions of new timber, this should be taken into account at the design stage. In addition, cautious assumptions when calculating the load conditions of structures (pessimistic data on timber quality) make it possible to compensate for the lack of information or certification of the material. It may also be relevant to carry out compensation measures based on the current conditions of use of the frame (reinforcement of the greatest bending moment, lighter load, shorter centre distance, oversizing of timber sections, doubling of columns, exclusion of damaged elements, etc.).

→ *State*. Depending on the requirements of the intended application, the designer/specifier can specify his expectations on the following aspects:

- no stubborn, rotten or bad knots;
- absence of traces of frost, rolling, knots, large cracks and felling signs, flaws;
- no deformation, timber not twisted;
- items free of pitting and large worm holes, traces of rot and mould;

- reasonable presence of nail and bolt holes - which give old timbers some of their character;
- moisture content;
- identification of resistance classification;

→ *Quantity*: to increase the chances of meeting the offer available on the reclaimed market, the designer/specifier can choose to split the batch with different species and batches.



Design of a 110 m² residential extension from reclaimed materials,
© AASF Atelier Architecture Sarah Fruit, [Bati Recup](#) (FR)



Characteristics and fitness for use

Reclamation of elements for structural use generally requires knowing with sufficient precision the following specs ((related to the type of wood): moisture content, dimensional stability, natural durability of the timber, use class, mechanical resistance, reaction to fire and emission of dangerous substances. These characteristics, defined in the harmonized standard EN 14081-1, can be assessed by accredited professionals. Although detailed for new materials, they make it possible to consider the particular case of reclaimed rectangular section structural timber. Some of these characteristics are also relevant for non-structural uses.

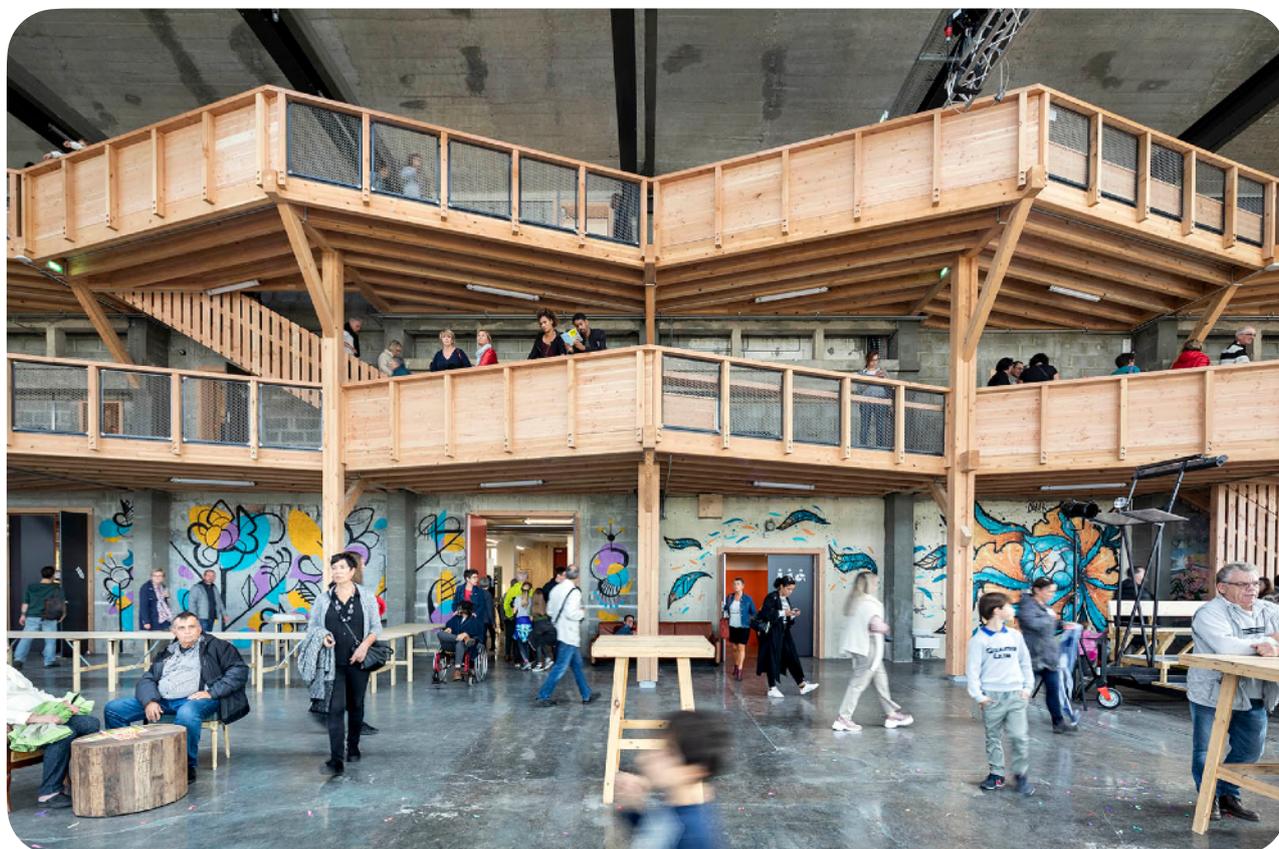
Relevant characteristics	Comments
Dimensional stability	Closely linked to the type of wood, the drying and storage conditions, the degree of sorting of the elements and the uniformity of the batch, the actual dimensions of timber elements are influenced by swelling and shrinkage due to variations in moisture content. A visual or detailed examination can be sufficient to estimate them.
Humidity level	Depending on its function and location in the construction, the timber element must be installed at a balanced humidity level (for example: 15% < H < 22% for structural members and H < 18% for framework members). Reference should be made to the installation standards. The moisture content of the wood depends mainly on the drying and storage conditions of the reclaimed timber. It is measured using a moisture meter.
Natural durability	This characteristic evaluates the natural resistance of the timber (sapwood vs heartwood) to fungal attacks. It is assessed according to the species and makes it possible to determine the use class of the elements. It is possible to increase the natural durability by means of preservation treatments adapted to the species and the intended use. In this case, we can talk of "conferred" durability. In the case of reclaimed timber, even if it is possible to visually detect the presence or absence of preservative treatments, it is generally more complicated to determine the exact nature of the substances present.
Use class	The use class of the timber determines the appropriate uses (<i>see table below</i>). The harmonized European standard EN 460 defines five classes of use of timber and the associated biological risks. It recommends the possible application of an appropriate protective treatment according to the use and the natural durability class of the timber used (see standards EN 350-2 and EN 335). For example, roofing timber which does not come into contact with the ground, which is not exposed to bad weather and which is temporarily moistened must belong to use class 2.
Mechanical resistance	The strength class is the result of the classification of timber based on its mechanical properties (resistance to bending, compression, traction, shear, modulus of elasticity). It is determined according to the wood species, its density and the moisture content. In general, woods with a high density have better mechanical strength. The mechanical classes of timber pieces can be established by a machine classification or a visual classification (<i>see box "Timber classification"</i>). Visual classification seems quite appropriate in the case of reclaimed materials since it is complementary to the reclamation process set up by the dealers. Approved certifiers can accompany you.

Use class	General use	Biological risks		Natural durability class of wood				
		Insects	Fungi	I	II	III	IV	V
1	Indoors, in the dry	Yes	No					
2	Indoors, or under shelter, not exposed to bad weather. Possibility of water condensation	Yes	Low					
3	Outside, above ground, exposed to bad weather	Yes	Yes					
4	Outside in contact with the ground and/or fresh water	Yes	Yes					
5	Immersed in salt water on a regular or permanent basis	Yes	Yes					

Treatment not required
Recommended treatment
Treatment needed



Relevant characteristics	Comments
Reaction to fire	<p>Specific requirements for the reaction to fire are determined by national regulations. These requirements depend, among other things, on the use of the premises (for example: private or community housing, emergency exits, terraces on flat roofs, etc.), on the height of the building (for the façade cladding) but also on the ability of users to evacuate the premises in the event of fire (senior citizens' residence, hospital, etc.). It is therefore important for the designer/specifier to meet regulatory requirements in terms of reaction to fire by determining the materials and their method of implementation, with regard to the intended use.</p> <p>According to a European resolution (Resolution 2003/43/EC), the reaction to fire class D-s2, d0 is assigned without additional testing to all solid timber with a minimum average density of 350 kg/m³ (measured according to a reference humidity, H=12%) and with a minimum overall thickness of 22 mm.</p> <p>The influence of a preservative treatment against biological attack or any other finishing treatment must also be taken into account. If necessary, the reaction-to-fire performance of the elements shall be tested and declared according to EN 13501-1.</p>
Fire resistance	<p>When calculating the fire resistance of timber structures (EN 1995 standard: Eurocode 5), the burning rate is evaluated using the geometric characteristics (dimensions of the elements, section, combination) and the properties of the material (species of wood, resistance, rigidity, characteristic density).</p>
Toxicity	<p>The timber elements may have been treated with toxic products or have been in contact with dangerous substances during their use. Most of the time, even though it is possible to visually detect the presence of preservative and finishing treatments, it is generally more complicated to determine the exact nature of the substances present. Laboratory tests may be required to assess the dangerousness of the contaminants present. The toxicity of some of these contaminants may have dropped drastically after several years in service. In the absence of information on this subject, it is best to stick to the "precautionary principle" or likely to interact with people, for interior applications.</p>



Reuse of structural timber in guardrail posts.
© Cyrus Cornut, Grande Halle de Colombelles, WIP. Architectes : [Encore Heureux](#) (FR)



Availability

Beams are often available in sections from 150mm × 150mm up to 450 × 450mm, and in a wide variety of lengths (common dimensions up to 8m). Longer beams are rarer. Most of the reclaimed timber beams are made of oak, but they are also found in pine, elm, teak, etc. Professional resellers generally have large stocks and are able to respond quickly to most medium and small orders. Larger orders usually require a lead time in order to build up sufficient stock.

Timber joists are available in most standard sizes (60 × 150mm up to 80 × 24mm) in pine, oak, jarrah, etc. Resellers usually have large inventories which they can replenish quickly.

Structural timber is generally available in 50 × 100 mm sections, with a length of between 2.4 and 3 m. These are softwoods, most often pine. For large volumes (tens of kms), the amounts are likely to come from different supplies and have differences in colour, section, etc.

Did you know?

According to several Belgian dealers, the demand for old beams decreased between 1990 and 2000. Many suppliers who had a large stock then equipped themselves to transform these beams into flooring, cladding, doors, stair treads or furniture. The beams are generally cut as follows: the faces are cut and kept intact to make a weathered floor. The core of the beam is itself cut into smaller sized elements which in some cases are artificially aged to complement the rustic flooring ranges.

Indicative prices (excl. tax)

Random sampling of the reclamation market in Western Europe (Belgium, France, Great Britain and the Netherlands) made it possible to extract some indicative prices. These vary depending on model, condition and quantities needed. Some observed prices :

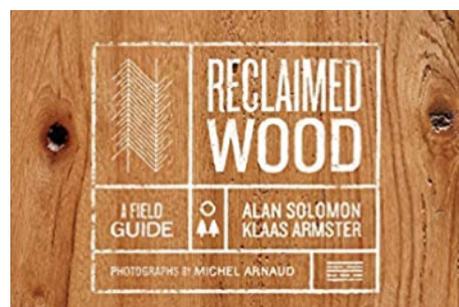
- Pine joists 6 × 16 cm: ~ 3.5 €/m
- Pine joists 8 × 24 cm: ~ 8.5 €/m
- Softwood joists (6 × 16 to 8 × 20 cm): 4 to 10 €/m depending on section

Generally, outlets prefer to supply lengths of 2.4-2.8m rather than 4m uprights because shorter lengths are easier to find. For lengths greater than 4 meters, a supplement may be added.

- Timber beams from old spruce trusses 90 × 400 mm: ~ 560 €/m³
- Old pine beams: variable price depending on the finish (planed or not) and the length: ~ 350 €/m³. The unit price is higher for long beams.
- Old oak beams: variable price depending on the finish (planed or not) and the length. For a 25 × 25 cm section: between 700 € and 2350 €/m³. The unit price is higher for long beams.
- Brushing/Cleaning: ~ € 20 per linear meter



Article on the importance of reclaiming timber elements despite the use of treatments that are currently prohibited: <https://www.salvoweb.com/salvonews/29459-salvo-strongly-supports-the-salvage-and-reuse-of-reclaimed-timbers>



A book on reclaimed timber in the United States (history, recovery, examples of reuse and practical advice). Reclaimed wood: a field guide (2019), Alan Solomon & Klaas Armster, 240 p., Abrams edition, ISBN-13: 978-1419738180

Find specialised businesses



salvoweb.com

opalis.eu



Feedback for the realization of a reclaimed wooden structure, YR Architecture Design: <http://www.yr-architecture.com/reclaimed-timber-preparing-reclaimed-wood-for-reuse/>



Assessing the impact of reclaimed timber construction products on global warming is complex and difficult to generalize. The general principle is that construction timber can confine biogenic carbon. Reclamation is therefore a way of preserving these carbon stocks and preventing it from being released into the atmosphere (which would be the case if the wood was incinerated, for example). The overall environmental assessment of a reclaimed timber element must, however, also take into account aspects such as the origin of the product and the distance travelled, the use of preservation treatment, etc. For more information, it is advisable to consult the specific paragraph devoted to this question in introductory sheet.



Hazardous substances and precautions

The solid timber structural elements may have been in contact during their use with dangerous substances or have been treated with toxic products, in particular to improve their resistance to biological agents, fire or humidity. Most of the time, even if it is possible to visually detect the presence or absence of preservative and finishing treatments, it is generally more complicated to determine the exact nature of the substances present. For certain molecules, simple revealing methods by colouring can sometimes be used (lead test, chromium azurol test, etc.).

In the example below, staining is applied to determine if the wood has undergone treatment. A red colouration indicates the absence of treatment while a bluish colouration demonstrates the presence of treatment.

Lead, copper, chromium, arsenic, PCP and certain biocidal molecules are among the dangerous substances likely to be found. Their concentration in timber, their effectiveness and their residual harmful power are difficult to estimate without implementing specific laboratory tests. In the absence of information on this subject, it is best to stick to the "precautionary principle" or likely to come into direct contact with people for interior applications. In addition, sawing, planing, sanding, etc. must be carried out by taking the appropriate safety measures (personal protective equipment, dust extraction systems, waste disposal, etc.).

Some types of timber treatment still offered today still involve toxic substances. Their use is highly regulated and reserved for certain applications. In any case, such processing could limit, or even completely compromise, the future reclamation of the elements thus treated.

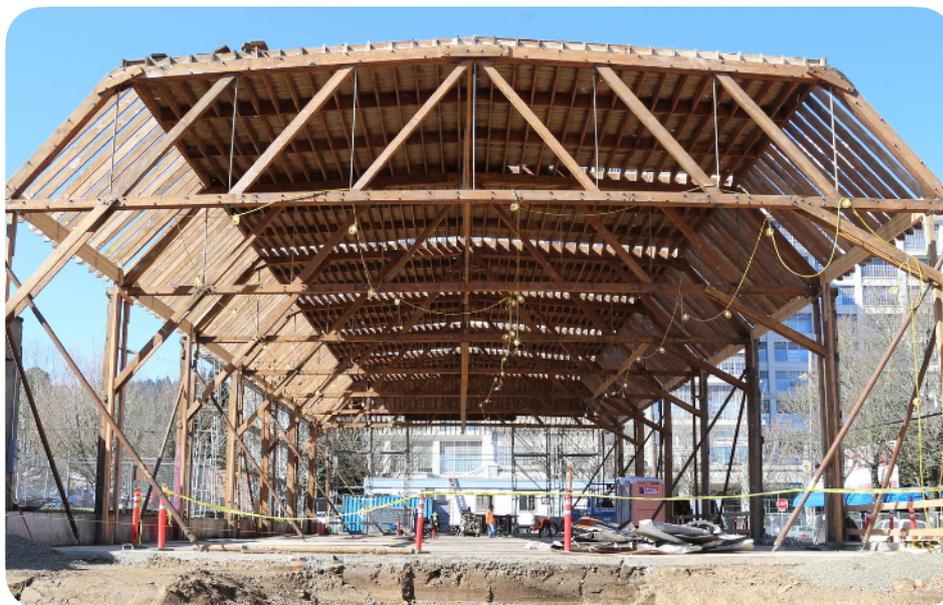
For more information on the subject, you can consult the following document written by INRS (in French) which covers the main timber treatment products (constituents, dangers, uses, preventive measures): <https://www.inrs.fr/media.html?refINRS=ED%20981>



Red colour revealing an absence of treatment. © expert-bois.fr



Bluish colour revealing the presence of a treatment (limited to sapwood). © expert-bois.fr



Reuse of 2000 linear meters of solid timber structural elements. Redfox Commons (2019) (USA) © LEVER Architecture



Reclaimed wood frame partitions: 350 m³ of reclaimed timber to create the plasterboard partition structure, *BedZED*. © Bill Dunster Architects (ZEDfactory, 2002) (UK)



Read more!

Some general principles relating to the re-use of wood are detailed in the document :

"Methodology for diagnosis and performance evaluation for the re-use of industrialised frames" - Fondation Bâtiment Énergie (FBE). December 2020 (in French).

<http://www.batiment-energie.org/doc/70/FBE-ECB-enjeu-A-charpente-V1.pdf>