WOOD AND STRUCTURAL TIMBER

APPLICATIONS

- load-bearing structure - frame, slab, roof, stairs, pile
- bridge structure
- wall structure

PRODUCTION PROCESS

Structural timber: wooden elements having a rectangular cross-section, visual or strength graded
The manufacturing processes are debarking, sawing, drying (natural or technical), planing.

MAIN ENVIRONMENTAL IMPACTS

A biodegradable, recyclable material that can be produced in a sustainable way - which, in addition, sequesters atmospheric CO_2 and produces oxygen as a by-product.
Wood requires little processing to be converted into a building material, therefore its embodied energy is relatively low.
Transport energy, supplied by fuel oil, is the most important energy cost for timber.
Construction and demolition create millions of tonnes of wood waste annually.
The process of recycling is well established and its diffusion is in progress
Techniques for reducing consumption include using reclaimed timber, using smaller sections, which ensure that design and installation are conducive to durability and designing for minimal wastage.

MATERIALS

TECHNICAL DATA	
Thermal conductivity (W/mK)	0,12 – 0,18
Density (kg/ m^3)	450 - 700
Fire class	D

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OSB

APPLICATIONS

- lightweight buildings
- roof structures, partitions
- formwork both in load-bearing and non load-bearing constructions

PRODUCTION PROCESS

OSB is produced using wood from forest management work, instead of expensive, whole wood. Main inputs are industrial residue wood, paraffin and phenol formaldehyde resin.
OSB board is composed by more than 90% wood, mainly pine. The logs are already graded in raw material, then cleaned and barked, the wood is worked into rectangular splints, microfeners, the size of which is 100-120 mm long, 0.6 mm thick, the width of which varies, depending on which part of the trunk it comes from. Microfeners are graded and then passed through drying drums and then coated with an adhesive. The natural resin content of pine also plays a significant role in the strength of the OSB board, as well as the enormous pressure with which the board is pressed from microfeners. In the final product, the adhesive is approx. 5%. After drying and application of the adhesive, the microfurners are spread on a conveyor belt in a directed layer order. The thickness of the spread materials determines the thickness of the final product. The spread material is guided under a press plate where the final material structure is formed under high heat and pressure. Weather protection is provided by a special adhesive and emulsion paraffin coating.

MAIN ENVIRONMENTAL IMPACTS

OSB plants can emit large quantities of volatile organic compounds (VOCs) largely as a result of their dryers. Reusable around five times before the surface deterioration prevents further use.
The production of resins is dominant for the potential environmental impacts of the product. Main emissions are formaeldehyde and indirect emissions. Formaldehyde might evaporate also during use if the board is in contact with the inner space. At the end of useful life, boards can be reused or recycled. The energetic utilisation is also possible, but in waste incineration plants with flue gas cleaning.

MATERIALS

TECHNICAL DATA	
Thermal conductivity (W/mK)	0,13
Density (kg/ m^3)	650
Fire class	D

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CEMENT BONDED CHIPBOARD

APPLICATIONS

- indoor and outdoor coverings
- partitions
- sound insulation

PRODUCTION PROCESS

The raw material for cement-bonded chipboard production is mainly barked pine pulpwood and CEM I 42.5 Portland cement, as well as water glass and water. During the production process, the barked paperwood (1.0 - 1.1m) is put into knife-axis shredders. The resulting chips are transported pneumatically to a container. This ensures a continuous supply. During the mixing process, chips are first introduced into the mixer, then water glass and water are added, and finally cement. The mixture is spread on a metal plate. The enclosed pallet is placed in the mooring tunnel, which operates at 50 to 60 °C and 100% relative humidity to assist in setting the cement. Leaving the tunnel, a device separates the sheets to be put in a pile.

MAIN ENVIRONMENTAL IMPACTS

Board products have some advantages over sawn lumber, namely that the use of wood is more economic than sawn lumber. However composite boards have environmental impacts related to the production of cement, wood preparation and in the heat and pressure processes used to form the board.

MATERIALS

Source: https://www.proidea.hu/

TECHNICAL DATA

Thermal conductivity (W/mK)	0,23
Density (kg/ m^3)	1200
Fire class	B

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MINERALIZED WOOD CHIP BLOCKS

APPLICATIONS

facade walls, partitions, internal load-bearing walls

PRODUCTION PROCESS

Mineralized wood chip masonry elements enable the production of heat-bridge-free, infill concrete wall structures. Its raw material consists of recycled, mineralized wood chips and natural additives generated as industrial waste. The product features a broken fiber structure that can be achieved by a two-stage shredding operation in specially designed mixers.

MAIN ENVIRONMENTAL IMPACTS

The softwood chips used in the production are made from sawdust waste generated from the processing of logs. Debris and cutting waste generated during production can be recycled into the technological process. In terms of the environmental load, the balance of carbon dioxide taken up by the growing number of trees in forests and emitted during the production of building elements shows a favorable result.

MATERIALS

Source: https://www.leier.hu/

TECHNICAL DATA	
Thermal conductivity (W/mK)	0,12
Density (kg/ m^3)	600
Fire class	

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