

Typha—a sustainable building material

Innovative construction with cattail as raw material



Typhaboard serves both load-bearing and insulating purposes with a single layer of construction material.

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Building material functions efficiently combined

Common systems used to build today's houses are based on a multi-layer wall structure. As a result, a separate material layer is generally required for each specific function: for example, pillars for load-bearing, an insulation layer for thermal insulation, a fire protection panel for fire safety and a foil for moisture control.

Especially this last layer is often damaged over time (e.g. when installing sockets)—and can lead to major moisture damage. In addition, the multi-layer wall structure is extremely time-consuming and costly to make—and is also much more difficult to disassemble and recycle.

Typhaboard

The magnesite-bonded, sustainable building material made from cattail is a promising alternative to materials used in conventional house construction. It often enables much slimmer walls to be constructed because it fulfills load-bearing as well as thermal insulation, moisture control and fire protection functions.

Innovative load-bearing and insulating building material made from cattail (Latin: typha)

Product features

Thanks to cattail's remarkable structural properties, building materials can be produced which offer a combination of insulation and load-bearing functions that is unique on the market.

The particular suitability of the leaf mass of the cattail results from the structure of the plant: the leaves are made of a fiber-reinforced, stable supporting layer filled with a soft, open-cell spongy mass. This results in both outstanding structural strength and excellent insulating properties.

The result is a range of positive product properties:

1. Excellent fire protection (does not smolder)
2. Superior sound and heat insulation (especially in summer)
3. Mold resistance (relatively vapor-permeable and capillary active)
4. Easy to process with common tools
5. Potential for a wide range of products (e.g. OSB substitute, sandwich panels)
6. High suitability as interior insulation in existing buildings
7. Relatively insensitive to production fluctuations



The particular suitability of the cattail's leaf mass results from the structure of the plant. © Bayerisches Landesamt für Denkmalpflege, Chr. Grube

Product development and manufacture

In collaboration with the engineer Werner Theuerkorn, a particularly interesting mineral-bonded, isotropic board material was developed—and has already been used and tested in a wide variety of applications. To make the boards, first of all uniform, relatively large particles are produced without removing any fibers so that the leaf structure remains intact.

The particles are then bonded together with mineral adhesive (e.g. magnesite) under low pressure to form boards (this manufacturing process involves comparatively little energy).

The use of magnesite as an adhesive ensures excellent fire protection. In addition, the material can be easily returned to the material cycle because further additives such as biocides and fire retardants are no longer required.

When manufacturing the boards, the leaf structure is preserved. © Bayerisches Landesamt für Denkmalpflege, Chr. Grube



Cultivation and environmental protection

Cattail is predestined as a raw material for industrial use due to its worldwide availability, its enormous yield per unit area and its economic efficiency. Typha crops are robust, sustainable natural monocultures that produce about 15 to 20 tons of dry matter per hectare annually.

The cultivation of cattail as a raw material and the associated rewetting of peatlands, river floodplains, etc. can bring about a variety of positive ecological effects:

- Purification of waters affected by over-fertilization or pollutants
- Reduction of carbon dioxide emissions due to peat extraction
- Protection against soil erosion
- Creation of water retention areas and floodplains
- Generation of valuable biotopes for fauna typical to fens

Cattail grows quickly and is easy to cultivate worldwide.
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Further benefits

Typha also offers diverse environmental, economic and social advantages:

- Preservation or creation of jobs in structurally weak regions through employment opportunities for small and medium-sized enterprises as well as agriculture
- Second mainstay to conventional agriculture or third mainstay with small-scale cultivation for a regional product (as relatively unaffected by production fluctuations)
- Lucrative, subsidy-free agriculture achievable in the medium term
- Product supply from the region
- Easy to recycle and return to the material cycle (cradle to cradle)

Cattail is harvested during the winter months.
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The cultivation potential and environmental benefits of cattail have already been demonstrated in a pilot project funded by the German Federal Environmental Foundation DBU."

If you have any questions, need advice or would like to receive a non-binding offer, please do not hesitate to contact us at any time. For more information, please visit:

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