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PRODUCT GROUP PROFILES

Wood Panels

compiled by

HOLZ VON HIER

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HOLZ VON HIER: non-profit initiative with stakeholder board, advisory boards, expert panel and partnernetwork.
HOLZ VON HIER: Climate and Environment Label / HvH Environmental Footprint.

1 / Introduction

Wooden panel materials find a variety of applications in constructive construction, interior design and furniture construction. The basic raw material is always wood in different forms. However, the various board materials differ greatly in structure, application, manufacture and environmental impact. One distinguishes the following board materials:

- **Solid wood panels.** Solid wood panels are made of solid wood in the form of glued boards or bars. Here you can distinguish massive single-layer glued-wood panels and multi-layer panels. The former consist of the most different types of wood and are glued together from uniform or different broad boards or bars in parallel. They are used in interior fittings (kitchen tops, furniture fronts, stair blanks and other). Solid wood panels can also be multilayer panels. The panels consist of three to five layers of coniferous timber of the same or different thickness glued at right angles to each other. The panels are used very versatile, so both for interior design and furniture but partly also in the structural field, for example for slender load-bearing canopies, sight-constructions, roof cladding or even for facades. In the outdoor area, good constructive wood protection or coatings is necessary.

- **plywood boards**. This form of panel material is made from more or less thin layers of veneer. The veneers are glued in several layers crosswise (ie rotated by 90 °). This results in a particularly high rigidity. Plywood is used in furniture and interior design in different ways. Special forms of plywood boards consist of thin veneer layers and a stronger middle layer of rods, as well as multiplex boards of up to 15 cross-laminated veneer layers. The latter are mainly used in furniture construction and property development.

- **Chipboard panels.** Among them are the well-known chipboard and the so-called OSB board (oriented strand board).

  Chipboard consists of different sized glued chips, which are pressed into multilayer boards in mostly three to five layers. The main buyer of chipboard is the furniture industry, followed by the interior construction industry. OSB panels consist of coarser chips that are pressed in a standardized manner (‚oriented') in a glue bed. OSB panels are used as structural panels in structural work and in interior fittings as wall or roof paneling. In the floor area they serve as a laying plate (tongue and groove profile).

  In the production, the chips are used adhesives (wood glue and cement milk) for connecting the chips and various wetting and release agents for the pressing process.

- **Fibreboard.** Wood fiber boards are made from fine wood fibers from sawdust or residual wood, but also from other wood-fiber-containing plants such as flax or rapeseed. The structural cohesion is based essentially on the entanglement of the wood fibers and their natural binding forces, but adhesives can also be used as binders.

  Depending on the manufacturing process (dry or wet process) and compaction of the wood fibers, the following subgroups can be distinguished:

  For fibreboards produced by wet process:

  a) The wood fiber insulation board (HFD) is a low-density board material (230-350 kg / m³) which is used for heat and sound insulation in the construction industry (see also product group characteristics ‚insulation materials').

b) The Medium Hardboard (MB) is a board material with a density of 350 to 800 kg / m³.

c) The hardboard (HB or HFH) with a density of more than 800 kg / m³ is used for formwork, interior work, doors, furniture and packaging.

For fibreboards produced by dry process:

d) The medium-density fiberboard (MDF) is produced by a dry process. Due to its homogeneity, higher strength and better surface properties, it increasingly dissolves the chipboard.

e) The high-density fiberboard (HDF) consists of glue-impregnated wood fibers compressed under pressure and heat, which have been compressed to a particularly high degree. It is used as a carrier material for high loads with low material thickness (eg laminate flooring).

- **Other special board materials.** In addition to the above categories, there is a wealth of specialty board materials.). A variant are wood wool lightweight panels (HWL), which are provided in addition to the wood components with mineral binders. The best-known product of this category is the plate of the company Heraklith. For HWL boards and softwoods, especially spruce and pine, and cement or caustic burned magnesite (magnesium oxide, Sorelzement) are used as a binder. They are considered to be flame retardant (fire protection class B1). HW panels are mainly used as plaster supports for ceiling or roof soffits as well as acoustic panels for sound insulation. In masonry and concrete construction, they are used for insulation of good heat-conducting components, as a plaster base and acoustic panel, in timber as a plaster base or planking in the interior or exterior.

The production of wood panels worldwide.

Worldwide 268,8 million m³ of wood-based board materials are produced and 263,7 million m³ are processed. The 3 world regions with the largest production of wood panels are Asia, Europe and North America (FAO Current World Forest Report, 2011). Fifteen countries worldwide produce 80% of the wood-based board materials and also consume 75% of these wood boards. An „over" production with high exports but hardly or relatively little imports of wood panels takes place mainly in Asia and Latin America. At the country level, China ranks first with 7,6 million m³, Poland with 6,2 million m³ and Malaysia with 5,4 million m³. An additional need for high imports, but hardly any exports, especially in North America. Here it is above all the USA with 6,7 million m³ additional demand.

The production of wood panels in Europe.

The production of wood panels in Europe is about 78 million m³ and the consumption is about 77 million m³. The 15 European countries with the largest production of wood panels together produce about 86% of all wood panels in Europe and use 72% of them themselves. The largest producers of wood panels are Germany (No.1), Russia, Poland, France and Italy. The five largest consumers of wood panels in Europe are Germany (No.1), Russia, Italy, England and France.

For Comparison

Eternit plates are fiber cement boards. Fiber cement is a composite of cement and fibers, which is sold mainly under the brand name Eternit. The fibers improve the bending, tensile and breaking strength of the material. Cement-based facade tiles and tiles are available in many shapes and colors, even patterns. In many cases, they are now used in multistorey commercial buildings or office buildings. Like any facade material, the panels can be individually cut to size. Like all other facades, fiber cement facades are weather-resistant and easy to install regardless of weather conditions. In the past, up to 10% of asbestos fibers were used in fiber cement. Asbestos is classified in the EU today as extremely hazardous to health and therefore underlaid in European production limits and banned in Germany. Although bans are also valid for other countries outside the EU, but not for all. For health reasons, care should therefore be taken to ensure German or European production, since imports may still contain asbestos fibers. The asbestos fibers are today largely replaced by glass fibers, carbon fibers or plastic fibers

Gypsum panels are mainly used for interior design. Because of the comparatively low weight, the simple processing, the fire resistance, gypsum boards are mainly used for non-load-bearing interior walls, ceilings, roof pitches or screeds. The basis weight of gypsum fiber boards is approx. 10 kg / m2 (at 10 mm). The gross density of gypsum fiber boards, gypsum plaster boards, gypsum wall panels is approx. 600 - 850 kg / m3. The heat conductivity lambda is 0.25 W / mK, the specific heat capacity is 0.96 kJ / kgK (at 20 ° C) and the vapor diffusion resistance is 10 (dry) and 4 (humid). The question of whether natural gypsum or REA gypsum is more ecological is controversial even in construction. Natural gypsum mining is often described as landscape consuming and destroying nature. So far we have neither a scientific study nor statements by environmental associations on the subject. REA gypsum accumulates in power plants. For health reasons, natural gypsum is probably to be classified as compatible (see above). What possibilities exist to remove pollutants from REA gypsum before further use and whether this is used, is not yet known to us.

2 / Prechains

Basic raw materials in wooden building boards (material)

Solid wood panels are made of solid lumber as a precursor, which is glued to slabs. Basic raw material is roundwood. Here not only conifers but above all deciduous trees are processed. It can also tropical woods, some unknown origin are used. Therefore, it is particularly important here, for reasons of climate protection and the protection of biodiversity, to pay attention to native origin of the roundwood.

Multilayer panels consist of three to five layers of coniferous timber of the same or different thickness glued at right angles to each other as a precursor. Basic raw material here is Nadelrundholz. This can come from native sustainably managed forests, but it does not have to. In addition, the lumber can also be imported.

Veneered plywood panels are made of wood based on veneers (bottom layer, middle layer and top veneers) which are glued together, mostly with urea-formaldehyde binder (10.9%). Precursor and at the same time raw material is the roundwood. Here, coniferous and hardwoods can be used. It is the same as for solid wood panels.

OSB panels consist of coarse shavings of coniferous wood shaped with MUF glue (melamine-urea-formaldehyde resins), PMDI glue (PUR) (diphenylmethane, diisocyanate). Raw material in this case is directly the roundwood.

Particle board (raw and coated) consists of wood shavings (spruce) 84-86%, water 4-7%, UF glue (urea resin) 8-10%, paraffin wax emulsion <1%, as well as decor papers and melamion formaldehyde resin (for coated boards).

Primary products are mainly residual wood and sawdust or shavings from the sawmill industry. These materials may have been produced regioal or, like the basic raw material roundwood, sometimes have long ways to go.

Wood fiber boards such as MDF, HDF, DHF, DFF consist of: wood fibers 82 - 86%, water 5-7%, PMDI glue or UF glue (urea resin) 4 - 11%, paraffin emulsion <1%. In the case of coated plates, additives (for example melamine-formaldehyde resin) and optionally decorative papers are also added. Basic raw material here is roundwood of various types of wood such as pine, spruce and beech, but now also eucalyptus, birch, poplar, acacia and many more.

For Comparison

Basic raw materials in Eternit plates. Eternit plates are made of fiber concrete. Concrete consists essentially of cement and additives. Cement consists mainly of cement clinker (72 to 79%) and gypsum (17%). Gypsum in cement in German production (!) Is essentially natural gypsum (75%) and less FGD gypsum from industry (25%). Cement clinker consists mainly of limestone / chalk (83%), sand (8%), bauxite (1-2) and fly ash 6-7%. Ingredients for fiber cement facade panels are according to EPD: 35-40% Portland cement, 50-55% quartz sand, 5-10% pulp and 3-7% aluminum hydroxide.

Basic raw materials in gypsum boards: gypsum, LDPE granules, fibers and additives. As fibers plastic, glass, cellulose are mixed into the gypsum to make the plates more static and more suitable for wet rooms. Additives are e.g. Foaming agent.

Raw material extraction (A1)

Raw material extraction. Basic raw material for all wood-based panels is ultimately round wood from the forest. Crucial here is the production of roundwood or the extraction or harvest. Only if the cultivation takes place sustainably, ie does not remove more wood, and can regrow in natural species composition, the wood is to be considered as renewable and thus in principle unlimited available raw material. German forests have been sustainably managed for centuries and are additionally certified with sustainability labels for the forest (FSC and PEFC). That's not the case everywhere in the world. In Asia, Latin America and Africa, only 1-5% of forest land is certified. For imports without such a forest label the risk of depletion is high. According to a study by the European Union, only 30% of tropical timber imports into the EU are certified according to such labels. In Germany, the share is even ur 20%. Sustainability is also guaranteed for wood products with HOLZ VON HIER certificate, as the requirement for the entry of roundwood in the certification process is an FM certificate from FSC, PEFC or comparable.

Reach. Wood that comes from sustainable forestry is in principle permanently available, because it is not taken more wood than re-growing. Timber from tropical and boreal primary forests should not be used for climatic and environmental reasons. The „outreach" depends on the type of farming in countries with primary forests, in the tropics such as Asia, Latin America, Africa and boreal forest areas such as Siberia or Canada.

For Comparison

Extraction and range of the raw materials of Eternit and gypsum boards.

The main raw materials of the Eternit plate are gypsum, lime and bauxite. The main raw materials of the gypsum board are gypsum. Even with the raw materials mentioned an environmentally friendly degradation would be important, but is not subject to our environmental and health requirements in non-German or European production. Especially the mining of basic raw materials such as minerals, soils and ores represents a growing environmental burden.

(1) GYPSUM. Gypsum is extracted in 80 countries around the world, the three leading countries being China with 55.3%, the USA with 6.8% and Iran with 5.6% of the world production of gypsum. Germany has only 0.8% of the world's gypsum production but produces at least 1.9 million tonnes of gypsum per year, only comparatively small quantities (0.1 tonnes) are imported. The range is >> 100 years (USGS).

(2) LIME: China's main demolition site for limestone is 63.4%, followed by the US 5.4% and India 4.3%. Germany (1.9% of world production, 6.7 million tonnes) also imports around 1.9 million tonnes of lime per year from Austria, Belgium, Poland and France. The range is >> 100 years (USGS).

(3) BAUXITE. Bauxite is only available in 26 countries worldwide, the three main countries being Australia 30%, China 18% and Brazil 13%. Germany does not have its own bauxite deposit. The extraction of bauxite is a significant process that destroys the environment, as large-scale primary forest needs to be mined, with significant impacts on climate and biodiversity. The range of bauxite is given as 26 years (USGS 2016).

Transports „cradle to gate“ (A2) and Transports „gate to customer“ (A4)

Transports A2. As a rule, hardly any reliable information is available on the transports within the processing chain from the location of the raw material extraction. Life Cycle Assessments (EPC) usually rely on product-independent standard data sets of 50 to 350 km for the upstream chains. Studies also estimate kilometer data: 396 km for sawn timber (Thünen Institute), 50 to 136 km for OSB slabs (Thünen, IBU), 97 to 200 km for chipboard, 75 to 200 km (IBU) and 562 km (Thünen) for the upstream chains of wood fiber boards, 150 km for veneer plywood (Thünen). However, these values are likely to underestimate reality. On the one hand, there are only a few plate manufacturers in Germany and, on the other hand, primary products for plate production are imported on a large scale. Preventable, as overlapping, flows of goods for the primary products are 4.4 million tons of roundwood, 1.5 million tons of wood chips and 2 million tons of sawed wood. This results in avoidable CO_2 emissions of 160,000 t / a for roundwood, 64,000 t / a for woodchips and 69,000 t / a for sawdust. Wood panels without guarantees of origin such as „HOLZ VON HIER“ can therefore have covered many transport kilometers in the material flow even though the raw material itself would be very regional and the last processing step takes place in Germany.

Transports A4. If one also considers the imports of wood panels to Europe or in individual countries, it becomes clear that life cycle assessments strongly underestimate the transports with such modeled standard datasets in terms of their climate and environmental impact. The transport to the customer or the construction site (A4) in particular is not recorded in EPD, but can account for a large part of the life cycle assessment of a building material. Thus, various board materials are imported in large quantities to Germany. Here, the avoidable, overlapping flow of goods amounts to 2.5 million tons of chipboard, 1.3 million tons of fiberboard and 300,000 tons of plywood per year. This causes avoidable CO_2 emissions of 200,000 tonnes per year.

For Comparison

Standard data sets from life cycle assessments (EPD) also expect standard data sets of 50 to 350 km for the upstream chains for other plate types. This can hardly be realistic, simply because of the described basic raw materials in these products. This should be demonstrated by means of material flow indices.

Cement-based panels. Cement consists of cement clinker and gypsum and the cement clinker of limestone / chalk, sand, bauxite and fly ash. GYPSUM. Germany produces 2 million t / a of gypsum (0.8% of world gypsum production) and could meet its own needs. However, gypsum (0.12 million t / a) and gypsum (for example 0.14 million t / a gypsum plasterboard) are also imported. LIME. D produces 6.7 million t / a lime and imports about 2 million t / a, v.a. from Austria, Belgium, Poland and France (up to> 1,100 km). BAUXITE. D has no own deposits and imports the demand of 2 - 2.4 million t / a bauxite worldwide (for example from Australia, China, Brazil).

Gypsum panels. Plasterboards are produced in Germany but also 1.4 million tonnes of gypsum plasterboard are importetd to Germany (Destatis), e.g. from China where the world’s largest gypsum producers are, who want to significantly expand their capacities according to I-Net.

Production (A3)

Wood panels tend to consume slightly less energy in production (82 - 270 MJ / m2) than other panels such as fiber cement or gypsum boards (121 - 721 MJ / m2 (see chapter 5).

3 / Use-phase and After-use-phase

Use-Phase (B)

Inertness of the building material. Wood panels and other types of panels, are inert in the use phase and consume as a building material itself neither energy, water nor raw materials. Their climate and environmental parameters are set to zero (GWP, AP, EP, ODO, POCP, PERE, PENRE, water = 0). They also need no maintenance, so that there are no environmental effects for this purpose.

Afte-use-phase (D)

Untreated wood products can in principle be reused or recycled depending on their use. The less processed the wood panels are or the more sorted the material composition, the greater the reusability. Solid wood panels have the best advantages here, since they can possibly be used again in a different composition.

Chipboard or fibreboard materials, however, are hardly reusable. However, they can be partially recycled or thermally recycled, thus helping to conserve fossil resources. The usability depends on the ingredients. For example, Particleboard or many fibreboards can only be used thermally in special plants. This is especially true for wood fiber cement boards. Today's common reuse path for wood fiber cement boards is the disposal in the landfill or the incinerator.

Wood products are generally classified according to their use in waste wood categories AI (unencumbered) to AIV (burdened) and are used materially or energetically or the waste wood exported. AI and AII waste wood are already valuable substitute fuels for oil and gas throughout Europe and are widely used in regional biomass heating (power) plants. Old wood is also used worldwide, e.g. in wood panels. Technically common ways of recycling waste wood in recycling, which are extensively used in other countries, are excluded in Germany by the German waste wood regulation. However, the regulation does not prohibit wood boards with up to 100% waste wood from being imported into Germany and used here in construction.

For Compsrison

Eternit panels. The main route today is the disposal on construction waste landfills. Depending on the fastening system (adhesive, screws, nail systems), Eternit plasterboard could theoretically also be removed non-destructively. Undamaged and unmixed, the products could theoretically be recycled (in practice this is extremely rare).

Gypsum panels. All types of plasterboard are now disposed of in landfills (landfill class I and II). Although this is also the case in Germany, landfill capacity is falling. Therefore, gypsum waste and demolition with plasterboard are also exported. This disposal route causes correspondingly long transports and the destination landfills in other countries may have low environmental regulations than in Germany or Europe. Low recycling capacities are theoretically usable for unmixed, non-polluted material (according to EPD). A real recycling potential on a larger scale, however, is not recognizable and currently probably hardly practicable.

4 / Product features

Health aspects

Health aspects of wood panels. Health-critical emissions have always been an issue in panel materials. Here it depends heavily on the composition and materials used. Basically the most harmless here are of course solid wood panels, since they manage with very small amounts of usually harmless glues. The wood-based materials in the plates themselves contain no harmful substances. Potentially harmful substances could only come from the binders and additives used.

Chipboard or fiber-based wood-based panels can therefore cause relevant emissions. Risks to health of chipboard can arise from the adhesives used. This is the case in particular with chipboard containing urea resin formaldehyde. For the other adhesives, the risks to health are much lower.

For board materials produced in Germany, however, these are below the prescribed thresholds. In the case of OSB boards, for example, the measured formaldehyde values are 0 - 6.4 mg HCHO / 100 g and for coated chipboard 0.1 - 4.8 mg HCHO / 100 g (values from EPD). In any case, it is worthwhile, despite the limits, to pay attention to particularly low emission products, e.g. on the consideration of environmental criteria (see chapter 6).

REACH-RISK in wood fiber insulation materials. Ein risk of harmful substances in wood panels is not given or low in German production. For example, the MDI and PMDI glues used here are not listed in REACH. However, import plates from other parts of the world may contain other glues etc. For plates, it is therefore always useful to pay attention to the German or European origin, or to a proof of origin such as wood from here, because in Germany and Europe in comparison to other regions of the world very strict health requirements apply to production.

For comparison

Eternit panels. There are no values for formaldehyde in the analyzed EPD and carcinogens, stating „no REACH-relevant substances are used in production". Values for VOC are given in German production in TVOC-28 days: 24 µg / m3, VOC o. NIK-28 days: <5 µg / m3; TSVOC 28 days: <5 µg / m3. Some data on eluate analyzes were available in the examined EPD. Substances above the limit value of the Drinking Water Regulation were sometimes chromate <0.01 (GW = 0); COD value <15 mg / l (GW = 0), TOC 3.8 (GW = 0); AOX 0.026 mg / L (GW = 0). If landfilled, such eluates could be hazardous to the environment and should be excluded.

Gypsum panels. The investigated EPD on gypsum fibreboards only states that they comply with „levels below the limits" when measured to formaldehyde, without mentioning values. According to EPD, measurements of VOC showed values of TVOC-3 days <0.022 to <10 mg / m3, TVOC-28 days <1.0 mg / m3, SVOC-28 days <0.1 mg / m3 also all values below the permitted limits. For eluate analysis, no information was given in the analyzed EPD on plasterboard. Values for carcinogens were also below the limits permitted here for measurements of plates produced in Germany and Europe: carcinogenic 3-day <0.01 mg / m3, carcinogenic 28 days <0.001 mg / m3.

REACH-RISK in wood-based panels. A risk for harmful substances according to the European REACH regulation in wood panels is not given or low for German and European production. For example, the MDI and PMDI glues used here are not listed in REACH. However, it does not apply to any German or European origin, or to a proof of origin, as in Germany and Europe in strict compliance with requirements for production.

For comparison

REACH Risk (risk for health-threatening substances according to REACH) in other plate types

Products manufactured in Germany and Europe are bound by the European REACH regulation.

(Wood) fiber cement boards and Eternit boards. The risk of highly hazardous substances in the product is low for the wood content, but possibly for the cement content. For cement, there are potentially 5 substances on the REACH candidate list, plus substances from adhesives, adhesion promoters or paints.

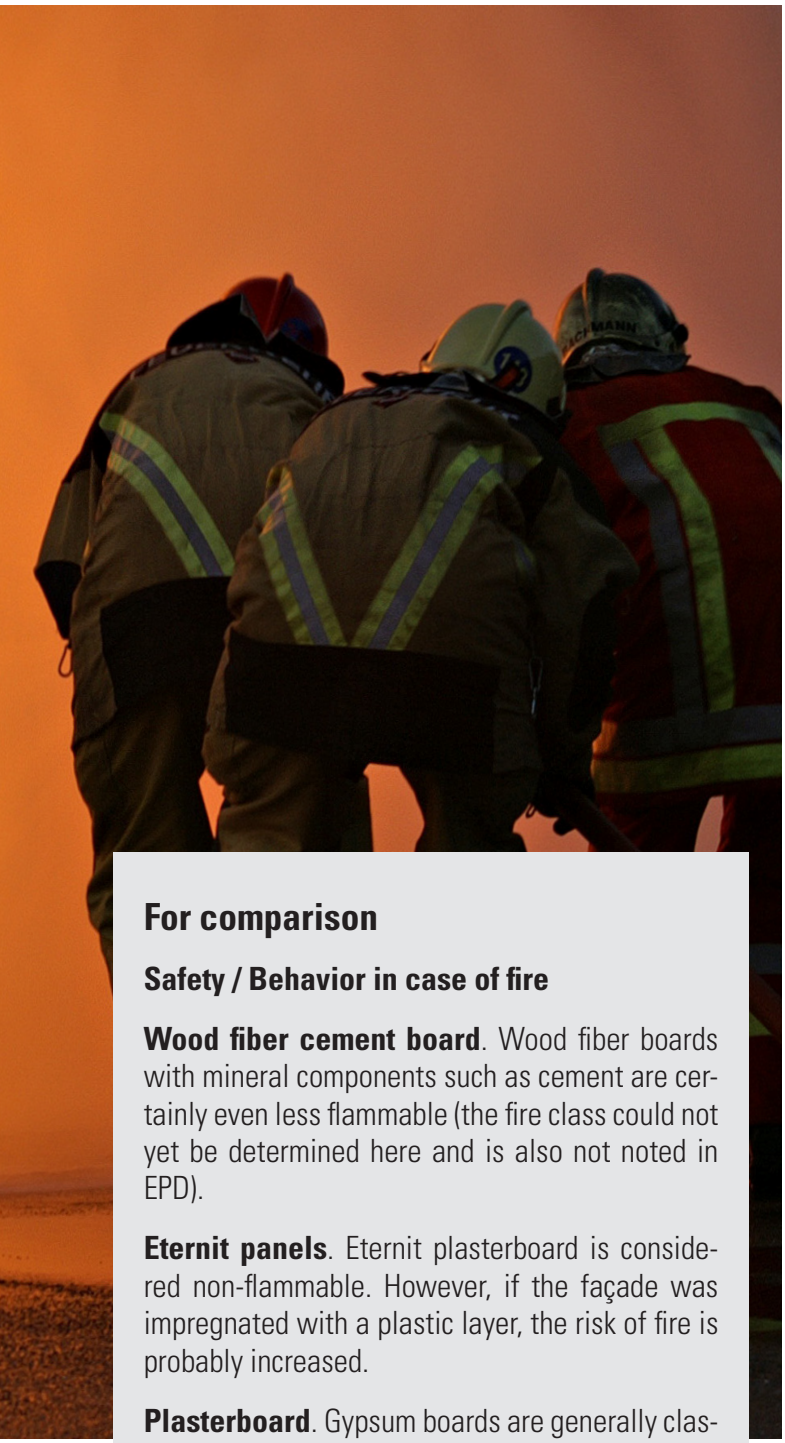
Plasterboard. For plasterboard you should always make sure that natural gypsum is used. This is the case with demonstrably European or German production. However, gypsum from flue gas desulphurisation plants (REA gypsum) is also becoming available in many low-cost producer countries (such as China). If REA gypsum is used or if plastics, glass or additives are mixed in, REACH-relevant substances can also be included. REA gypsum contains all the substances from the flue gases of the industrial plants that the flue gas filter REA gypsum has absorbed. These may later be released back to the room air in such panels (e.g., sulfur, mercury, dioxin, etc.). Some gypsum products from countries outside Europe may also contain radioactive phosphorus gypsum from fertilizer production. The extent of this can be seen in the Gisplatt scandal in the USA. The FAZ writes „Thousands of American homeowners are experiencing a nightmare: Built-in plasterboards from China release sulfur fumes. Owners complain of headaches and other complaints. The complaints are associated with hydrogen sulphide vapors escaping from the plates“ (faz).

Safty aspects

Safety and behavior in case of fire of wood panels. Wood panels are classified according to DIN usually in the fire class B1 (flame retardant). In this case, it is decisive for the safety in case of fire that building materials according to B1 are considered extinguishing, while for building materials B2 and below the fire itself is retained, even if the cause of the fire does not occur (for example dripping on burning of plastics).

A charring layer prevents wood chips from burning fast in the event of fire and thus inhibits the spread of the fire, so that the highest fire protection requirements up to F90 B / REI 90 can be achieved. Wood burns, yes, but with solid wood, the burning speed is greatly reduced by the charring around the fire. According to the project database wecobis of the Federal Ministry of Transport, Building and Urban Development and the Bavarian Chamber of Architects, natural materials such as wood and stone

are optimally compatible with health, both during use and in case of fire. In case of fire, however, the usual combustion gases are produced without highly toxic substances, such as e.g. in plastic fires.



For comparison

Safety / Behavior in case of fire

Wood fiber cement board. Wood fiber boards with mineral components such as cement are certainly even less flammable (the fire class could not yet be determined here and is also not noted in EPD).

Eternit panels. Eternit plasterboard is considered non-flammable. However, if the façade was impregnated with a plastic layer, the risk of fire is probably increased.

Plasterboard. Gypsum boards are generally classified according to fire classification A2 (= non-flammable). The gypsum core of a pure gypsum board contains about 20% of water of crystallization, which evaporates when exposed to fire. The temperature on the side facing away from the fire remains constant for a long time depending on the plate thickness at about 110 ° C (from EPD).

Lifetime

Lifetime. The durability of most wood products is classified according to BBSR (Federal Institute for Building, Urban and Regional Research) with the highest durability level> 50 years.

For comparison

Durability of other plate types

Wood fiber cement, Eternit, gypsum boards are covered by the BBSR, such as wood panels, with a shelf life of 50 years.

Durability, care, reparability

Durability, care, reparability of wood panels. The durability of wood panels is high, they are at defective sites comparatively simple and non-hazardous exchangeable. However, the modular interchangeability also depends on the type of attachment. Care in the sense is not necessary, the plates should be installed but moisture-proof.

For comparison

Durability, care, repair friendliness of other plate types

Eternit plasterboard. Eternit boards used in the façade area can be given tension-induced micro-fine stress cracks (winter-summer) which should be regularly maintained, e.g. about special cleaning coatings.

Gypsum boards. Gypsum boards are not shock resistant. As a care measure the correct installation and the user behavior are important for gypsum boards. In the case of gypsum boards, under certain climatic conditions (high humidity), the cardboard layer can form a breeding ground for mold and frequent condensation on the surface promotes the adhesion of microorganisms. Especially if plasterboard is installed in the interior, it is therefore necessary to provide adequate ventilation and in the winter room heating and so-called „thermal bridges" are to be avoided when removing. Defective gypsum boards are not repairable, but they can usually be replaced quickly and easily, e.g. because they are usually screwed onto the substructure.

5 / Environmental label

Environmental / quality label

HOLZ VON HIER (WOOD FROM HERE)

The HOLZ VON HIER label particularly distinguishes climate-friendly and environmentally friendly wood products with wood from the short routes of sustainable forest management, with proof of origin and life cycle assessment data. In addition, products manufactured in their entire material flow in Germany or Europe comply with the strict environmental and health regulations. Wood from Here is an environmental and environmental label and therefore has not developed its own criteria for sustainable forestry, but requires evidence such as FM certificates to FSC or PEFC or similar. Wood from Here is particularly important for hardwood floors

FSC

FSC-FM certification certifies sustainable forest management worldwide according to the criteria of FSC. The wood in products with an FSC-CoC certificate can exhibit long transport.

PEFC

PEFC-FM certification certifies sustainable forest management worldwide according to the criteria of PEFC. The wood in products with a PEFC-CoC certificate can exhibit long transport.

Nature Plus

Imported and European-made goods with the label NATURE Plus have significantly lower formaldehyde values and VOC values than allowed by the EU limit. Attention is paid to compliance with the REACH regulation and attention is paid to substances on the REACH candidate list.

Blauer Engel (Blue Angel)

The Blue Angel is characterized by formaldehyde-free, low-emission products that go far beyond European limit values with their specifications. Relevant for chipboard.

EU flower

Not yet awarded for wood products.

EPD

EPD are not environmental or quality labels and can not be used and evaluated as such. In addition to methodological problems such as comparability and system-immanent neglect of transports, an EPD without a comparative framework says nothing about the environmental friendliness of a product.