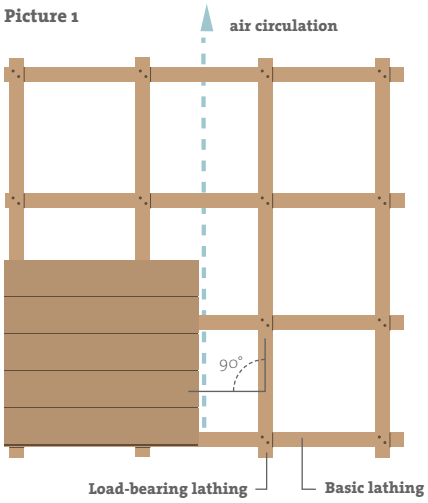
Principles for installation of wooden facade profiles

Picture 1



Protection against biological attack

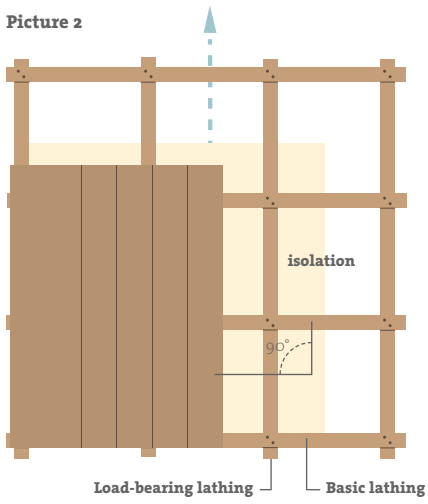
Protection against the biological attack and, thus, sufficient durability must be ensured:

1. structural protection
2. the natural durability of the wood chosen
3. chemical protection
4. surface treatment
5. regular inspection and maintenance

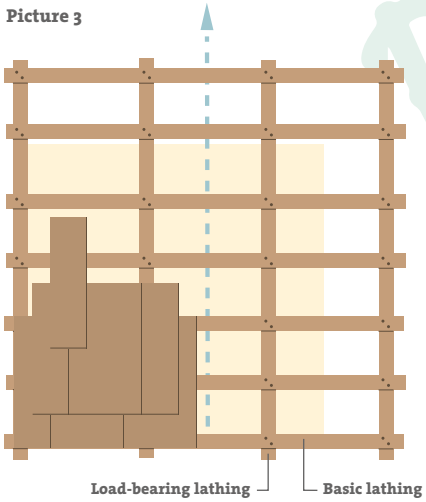
Structural protection

The primary hazard for wooden structures in outdoor environments is wood rot caused by the activity of wood-destroying fungi. To ensure the required service life of timber construction products or elements, the most important thing is to keep the moisture content of the wood below the critical threshold for the growth of wood-boring fungi, of which the equilibrium moisture content in covered exteriors is (15 ± 3) %. And in uncovered exteriors (18 ± 6) % shall be normally achieved after a prolonged period in the end-use environment. The moisture content of the wood of the façade may vary during use and usually varies over a wide range. When designing timber structures, including their details, the challenge is to achieve rapid, unrestricted drainage of all rainwater water that wets it. Where possible, it is better to choose a vertical direction of the grain of the tiling, as water flows better down the wood in the direction of the grain. Water is retained in pockets from which it cannot drain, on the upper and lower horizontal surfaces and in all joints and gaps narrower than 6 mm. Pockets and gaps narrower than 6 mm (preferably 10 mm) should be avoided. This also means that the profiles cannot be adjusted in length by frontal by the contact of two profiles, whether on a substrate or loose.

Picture 2



Picture 3



Possible length adjustment by a toothed joint is possible but must be agreed upon in advance. It is necessary to avoid contact of the profile faces with the masonry, longitudinal timber (e.g. in the case of the lining of window openings), etc.The faces must remain accessible for inspection and maintenance. The upper horizontal surfaces must be made with a slope. The lower horizontal surfaces must be sloping or provided with a drip groove to form a rib, from which the water can quickly drain. The lower edge of the tile must not be close to other horizontal surfaces (ground, terraces, roof roofing, etc.) to avoid splashing by reflected rainwater.
The connection of the tiles to the openings should also be designed according to the principles set out here fillings. The minimum thickness of the façade of solid timber is 18 mm.

Natural durability of wood

The natural durability of wood and wood-based materials is informed by the European standards 335 series, 350 series and EN 460. The corresponding durability class can be found for the selected wood species in tables 2 and 3 of EN 350-2. In Table 1 of EN 470, the relevant use class (in this standard, the term hazard class is used) shows under which conditions wood with a certain durability class can be used.

Chemical protection

Chemical protection aims to protect the wood from attack by wood-boring fungi and damage by wood-boring insects. Chemical protection must be used if the wood used needs to be naturally durable. In use classes 2 and 3, chemical protection is generally not necessary. However, in use class 3, chemical protection of the face profiles is recommended, especially for timber of durability class 3 and 4 (e.g. spruce, holly, pine, larch). Durability class 5 woods are not recommended for facade cladding in use class 3 (e.g. birch, beech, hornbeam, ash, maple, lime, alder, poplar).

Surface treatment

The surface treatment of the wooden facade protects the wood from moisture and UV radiation. UV radiation gradually erodes both the finish and the protected wood. The surface treatment aims to prevent water from entering the wood and increase its moisture content. Water enters the wood most easily where the grain is cut. This is on the milled surfaces, especially face (cross) cuts. The water intake on the crosscut is about 20 times greater than on the face. Crosscuts should always be coated. EN 927 'Coatings - Coating materials and coating systems for wood in outdoor environments' classifies façade cladding as a semi-stable wood element. The choice of surface treatment must correspond to this. The surface treatment applied by the coating materials may be diffusion open or diffusion tight. The first group includes oil, oil-wax or solvent paints that do not form a paint film, and the second group includes film-forming waterproof paints and systems. The first group allows moisture to penetrate the wood and escape more easily when drying. Wood under such a coating changes its moisture content and, thus, its dimensions and shape quite rapidly and to a greater extent. This causes both greater stress on the fastening means and surface cracks. However, experience has shown that changing moisture content does not increase the risk of wood rot. The second group includes opaque and semi-transparent pigmented coatings. If the paint film is intact, without cracks, it can effectively keep wood moisture at a low and acceptable level, below the critical level at which wood-boring agents are active fungi. As the paint film ages, cracks begin to form and grow, the risk of water ingress into the wood. Through the narrow cracks, water is absorbed faster than it evaporates. To prevent this, the cladding must be regularly inspected and the finish maintained.

Inspection and maintenance

Wood cladding should be inspected and maintained at regular intervals, preferably annually. Above all, the front surfaces must be checked, and they must, therefore, also be accessible for inspection and maintenance.

Supporting structure

The load-bearing structure must be designed to withstand a load of its weight, the weight of the cladding, and a load of external forces, especially wind. In addition, it must allow the cladding to be fixed so that it forms a plane with the deviations permitted by the general regulations. To ensure that the suspended façade is securely fixed to the substrate, the distance between the battens must be between 50 and 70 cm, depending on the thickness of the façade profile.

Fixing means

Fixing to the supporting structure has two extremes: Fixed fixing with more fixing prevents dimensional and shape changes, but from fixed points, the profiles can develop penetrating cracks with consequences for the appearance of the cladding and the possibility of water ingress into the resulting cracks. The heads of the screws must be flush with the profile face, and the screw hole and countersink must be pre-drilled. Cracks must not form around the screw heads. The fastening means must be permanently corrosion-resistant. The length of the fasteners shall be chosen to ensure sufficient strength of the joints but shall not overhang to damage any foil's tightness. The minimum distance for the screws at the ends of the boards is 3 cm minimum and 5 cm maximum from the end. This will prevent cracks from forming at the ends as the wood is worked.

Ventilation gap

The function of the ventilation gap is to draw moisture penetrating the wall from the interior and thus protect the cladding from getting wet. For the ventilation gap to perform its function, it must be open across its entire width at the bottom and top. This also applies to the horizontal connections of the tiling to the opening panels. The vents must be fitted with grilles to prevent the entry of insects, rodents, bats, etc. An effective ventilation gap is about 20 mm wide, and a larger width is recommended for extremely high tiles (over several floors).

Appearance

The appearance of the wooden facade cladding is determined by the type of wood and its texture. The colour of the wood changes over time. Most woods darken when exposed to light, and some light and some change colour. A completely different colour is obtained by a façade that shades or shelters part of the façade from the weather with structural elements. Such a façade will have a completely different appearance in some times coloured parts. The façade must not be allowed to leak rainwater from other surfaces (roofs, balconies, etc.). Otherwise, it will come very soon from this water. It will soon become dirty and unsightly. The facade will also be soiled by rainwater spraying off other horizontal surfaces.

AU-MEX Ltd, Podebradska 574/40, Prague 9 - Vysocany
tel.: 283 933 452, 283 933 472, 283 931 808, 283 930 309
Fax: 283 933 406, GSM: 608 052 450, 608 052 451, 608 877 630
e-mail: export@au-mex.com www.au-mex.com