nailed. Panels are 30mm thick. The material is guaranteed for 40 years, will not rot or splinter and is maintenance free.

www.lankhorst-recycling.nl

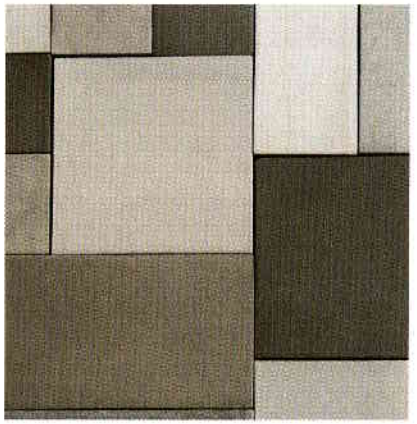
on location. Several types of effects are possible. Even precisely engraved figures and custom designs are possible.

www.legrand-sgm.fr

← Miscanthus

A biodegradable flower pot made from a biopolymer derived from colza oil and the Miscanthus plan.

www.miscanthus.ch



Alumillenium →

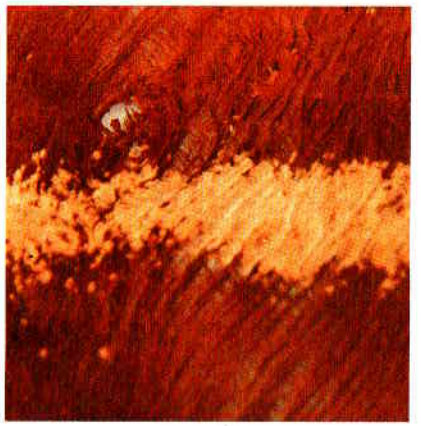
Alumillenium uses recycled metals – aluminium, bronze, brass – as the principle component for panels and tiles of various sizes and textures.

www.alumilleniumtile.com

BarkTex →

BarkTex is the improved version of Bark Cloth/Rindentuch, made from the regenerating bark of the Mutuba tree (Ficus natalensis). The bark undergoes a metamorphosis during various state-of-the-art industrial, semi-industrial and manual processes that improve its properties and increase its applications.

www.barkcloth.de



What is required of a material varies according to the situation – to be strong, good-looking, unique, slender, durable, translucent, shiny, colourful, breathable, temperature-regulating – and, ideally, it should also respect nature and be ecologically sound.

Ecowood, eco coffee, eco milk, eco-tourism, ecoTV and even ecoplastic! Eco-friendliness is very much 'in'. But what exactly is 'eco', apart from an EU-protected label that cannot be attached at will to a product name? More importantly, can 'eco' be used as a criterion for choosing materials? 'Ecologically sound' is just such a vague term as 'environmentally friendly'. An 'ecologically sound' material is one that during production, use and degradation leaves as few harmful traces as possible on the earth and in the earth's atmosphere. Based on this description it is fairly easy to enumerate principles that contribute to responsible use of materials and to their development, often taking nature as a model.

Biomimicry

Biomimicry is a relatively new branch of science devoted to the application of methods and systems found in nature. One example is mother-of-pearl, a mineral composed of overlapping layers of calcium carbonate (in a special crystal form known as aragonite) and Lustrin A proteins. The combination of hard and elastic layers makes mother-of-pearl remarkably strong and rigid and ensures that the material remains intact under considerable pressure. During the time he worked at Oklahoma State University (1996-2003), researcher Nicholas Kotov and his colleagues developed a nano-scale material that mimics the structure and properties of mother-of-pearl, thereby opening up the prospect of a strong, lightweight material for aeroplanes, artificial bones and other applications. The synthetic material consists of overlapping layers of clay and a polymer (polyelectrolyte).

Another biomimetic research programme focuses on the glue that makes it so difficult to separate a mussel from its substrate. The epoxy exuded by the mussel's foot has an adhesiveness to rival that of any super glue in the construction market. Molecular biologists at the Idaho National Engineering and Environmental Laboratory have cloned five mussel proteins for use in a natural, waterproof glue. The epoxy is not just environmentally friendly but remains intact in seawater and can be produced at relatively low temperatures.

Renewables – vegetable and animal

Examples of renewable materials are wood, reed, bamboo, wool and animal hides. Using renewable sources like these reduces the impact on the living environment. What's more, many renewable raw materials use CO_2 to grow, which has a positive effect on the atmosphere. (There is a danger, however, of whole regions converting to a single source or plant, which has a disastrous effect on ecological diversity. A good example of this is the Amazon region that is currently being overrun by soybean plantations.)

The most important renewable material is wood. Wood's disadvantages, such as combustibility, moisture-sensitivity and variable quality, can be reduced by means of various chemical engineering techniques. For example, wood can be modified by applying steam and pressure to alter the cell structure or it can be combined with recyclable synthetics to produce composites like Tech-wood and MDF. These modern techniques are giving the centuries-old building material a whole new dimension and future, allowing it to be extruded as profiles, pressed into three-dimensional bowl shapes, bent, processed into laminates and rendered non-combustible and durable by means of chemical manipulation.

There are now new, clean technologies capable of modifying the properties of renewable raw materials so favourably as to make them an increasingly popular choice. The process that Finnforest uses to make Thermowood from Scandinavian pine is simple and non-toxic: the wood is placed in a brick kiln and steam-heated to its core, thereby driving out all the moisture and resin. This results in a considerable improvement in physical properties: 50% more stable, less shrinkage and swelling due to weather conditions and reduced susceptibility to rot and fungal growth.

Another development concerns the revival of old techniques such as the weaving, knitting and pressing of paper yarns. A fine example of an innovative material based on renewable raw materials is the TT Sheet produced by the Italian company Albeflex. It consists of a wafer-thin sheet of wood (veneer) which, when combined with different backings, can be used in products where wood has never been used before. With a leather backing, for example, the TT Sheet is as flexible as a textile, meaning that clothing, shoes and accessories can be made using different kinds of wood.

Windochine is an American company that specializes →