

EPDM rubber is an elastomer which is characterized by wide range of applications. EPDM rubber is used in garden and appliance hose, tubing, electrical insulation, and speaker cone surrounds. It is also used as a medium for roofing membrane and geomembranes. EPDM exhibits unsatisfactory compatibility with most oils, gasoline, kerosene and concentrated acids. The main properties of EPDM are its outstanding heat, ozone and weather resistance. The resistance to polar substances and steam are also good. It has the ability to retain light colour. EPDM is used as a covering to waterproof roofs. It has the benefit that it does not pollute the runoff rainwater, which is of vital importance if the house owner wishes to use this water for personal sanitation or hygiene. Several houses equipped with rainwater harvesting thus make use of this type of roofing.

Granulated, colored EPDM granules are mixed with Polyurethane binders and trowled or sprayed onto concrete, asphalt, screenings, interlocking brick, wood etc. to create a non-slip, soft, porous safety surface for wet-deck areas such as pool decks or playgrounds.

EPDM ROOF



Green roofs cool and humidify the surrounding air creating a microclimate which has beneficial effects within the immediate area. They also conserve energy by moderating temperature on roof and surrounding areas.

Dramatically reduces storm runoff volume and peak flow rate. Restore the ecological and aesthetic value of urban open space.

Protects conventional roofing systems, typically doubling the service life of the underlying waterproofing membrane.

Green roofs create biodiversity, encouraging wildlife, such as birds, butterflies and insects, to remain within urban areas.

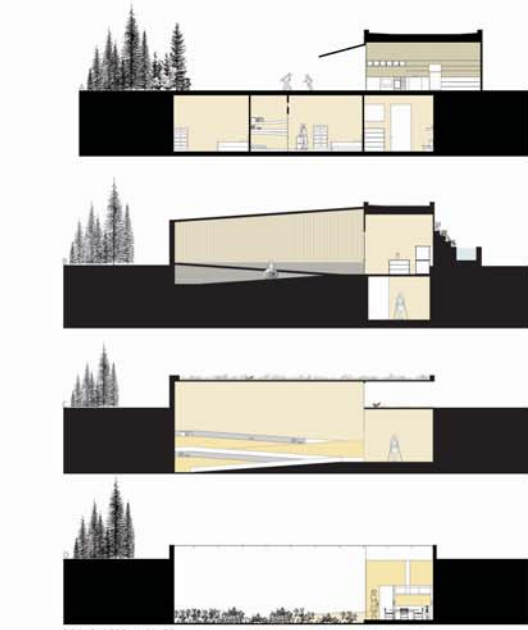
Green roof vegetation helps to filter out dust and smog particles. Nitrates and other aerosol contaminants are absorbed out of the air and rainfall and bound within the soil.

Depending on the design, a green roof can typically reduce storm water run-off by 50 to 90%. Additionally, the peak flow volume is greatly reduced and the peak flow period is delayed by as much as 4 hours, minimizing the impact on existing sewer systems.

Green roofs can improve the thermal resistance of the roof assembly throughout the year, especially in summer months by helping to reduce cooling costs.

A green roof, much like a PMR (Protected Membrane Roof) Assembly, protects the roof membrane from climatic extremes and physical abuse, thereby greatly increasing the life expectancy of the roof.

www.hydrotechusa.com



Heat-treated wood is an ecological alternative to tropical woods because of the beautiful and pleasant color it gives. Its fine and exotic appearance, heat-treated wood can also be used in place of wood obtained from tropical forests. Heat-treated wood 'lives' less than untreated wood, meaning that shrinking and swelling is considerably lower. This improves the usability.

The wood is generally used indoors on parquet and wooden floors, wall and ceiling panels, in saunas and fixed installations for example in the kitchen.

Heat-treated wood is rot-resistant enough for many outdoor uses, and this has been achieved without using chemicals that harm the environment or people's health. In temperatures in excess of 100°C, wood dries more quickly and also tolerates the drying better.

When wood is exposed to high temperatures (200°C or more), its properties change significantly. Sugars inside the wood break up into a form, which rot fungi cannot use. Natural protective compounds in the wood are effectively distributed to protect the wood. Heat treatment usually takes about 24 hours. Any type of wood can be heat-treated, but the commonest species are pine, spruce, birch and aspen.

www.stellac.nl



An extensive vector trellis works well for shading and preventing excessive solar gain. Plants growing on the trellis can provide some additional shading in the summer and allow more sun during the winter when it's desirable. A larger trellis can coat an entire wall and windows plus further reduce heat gain.

The Eden Project is a visitor attraction in the United Kingdom. Inside the artificial biomes are plants that are collected from all around the world. The project is located in a reclaimed kaolinite pit, located 3.25 miles from the town of St Blassay and 3 miles from the larger town of St Austell, Cornwall.

The complex comprises a number of domes that house plant species from around the world, each dome emulating a natural biome. The domes are made out of hundreds of hexagons plus a few pentagons that connect the whole construction, each of these is a transparent cushion made of ETFE plastic. The first dome emulates a tropical environment, the second a warm temperate, and third a Mediterranean environment.

The project was conceived by Tim Smit and designed by architect Nicholas Grimshaw and engineering firm Anthony Hunt and Associates. Alfred McAlpine did the construction and MERO designed and built the biomes. The ETFE technology was supplied and installed by the firm Vector Foiltec, which is also responsible for ongoing maintenance of the cladding. The computer-controlled environmental control system that regulates the temperature and humidity in each dome was designed and installed by HortMax Ltd. The project took 2½ years to construct and opened to the public on 17 March 2001.

Ethylene tetrafluoroethylene, ETFE, a kind of plastic, was designed to have high corrosion resistance and strength over a wide temperature range. ETFE has a very high melting temperature, excellent chemical, electrical and high energy radiation resistance properties.

Compared to glass, ETFE film is 1% the weight, transmits more light and costs 24% to 70% less to install. It's also resilient (able to bear 400 times its own weight), self-cleaning (due to its nonstick surface) and recyclable. In sheet form as commonly employed for architecture, it is able to stretch to three times its length without loss of elasticity. Employing heat welding, tears can be repaired with a patch or multiple sheets assembled into larger panels.

www2.dupont.com

- 1 The National Aquatics Center, "Water Cube", Beijing, China
- 2 Art Center College of Design, Pasadena, California
- 3 Beijing National Stadium, "Bird's Nest", Beijing, China
- 4 The Eden Project, Cornwall, United Kingdom

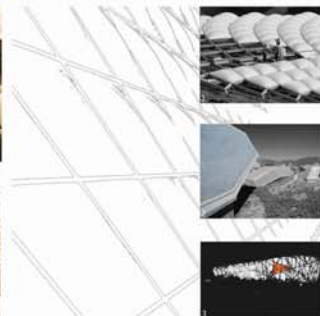


The Tropical Biome, which is the largest greenhouse in the world, covers 3.9 acres and measures 180 ft high, 328 ft wide and 656 ft long. It is used for tropical plants, such as fruiting banana trees, coffee, rubber and giant bamboo, and is kept at a tropical temperature and moisture level.

The Mediterranean Biome covers 1.6 acres and measures 115 ft high, 213 ft wide and 443 ft long. It houses familiar warm temperate and arid plants such as olives and grape vines and various sculptures. The Outdoor Biome is not covered and represents the Temperate regions of the world with plants such as tea, lavender, hops, hemp and sunflowers.

The biomes are constructed from a tubular steel space-frame with mostly hexagonal external cladding panels made from the thermoplastic ETFE. Glass was avoided due to its weight and potential dangers. The cladding panels themselves are created from several layers of thin UV-transparent ETFE film, which are sealed around their perimeter and inflated to create a large cushion. The resulting cushion acts as a thermal blanket to the structure. The ETFE material is resistant to most stains, which simply wash off in the rain. If required, cleaning can be performed by abseilers. Although the ETFE is susceptible to punctures, these can be easily fixed with ETFE tape. The structure is completely self-supporting, with no internal supports, and takes the form of a geodesic structure. The panels vary in size up to 29.5 ft across, with the largest at the top of the structure.

The domes provide diverse growing conditions, and many plants are on display. The Eden Project includes environmental education focusing on the interdependence of plants and people; plants are labelled with their medicinal uses. The massive amounts of water required to create the



BUILDING ART IS A SYNTHESIS OF LIFE IN A MATERIALISED FORM. WE TRY TO BRING IN UNDER THE SAME HAT NOT A SPLINTERED WAY OF THINKING, BUT ALL IN HARMONY TOGETHER.

ALVARO ALTO

DETAILS