Plywood

Plywood is a type of manufactured timber made from thin sheets of wood veneer. It is one of the most widely used wood products for furniture making and other relevant applications. It is flexible, inexpensive, workable, re-usable, and can usually be locally manufactured. Plywood is used instead of plain wood because of its resistance to cracking, shrinkage, and twisting/warping, and its general high degree of strength. Plywood layers (called veneers) are glued together with adjacent plies having their grain at right angles to each other for greater strength. There are usually an odd number of plies so that the sheet is balanced—this reduces warping. Because of the way plywood is bonded (with grains running against one another and with an odd number of composite parts) it is very hard to bend it perpendicular to the grain direction.

Plywood production requires good wood logs, called a peeler, which is generally straighter and larger in diameter than one required for processing into dimensioned lumber by a sawmill. The log is laid horizontally and rotated about its long axis while a long blade is pressed into it (rather like turning a Swiss Roll against the edge of a ruler), causing a thin layer of wood to peel off. In this way the log is peeled into sheets of veneer which are then cut to the desired dimensions, dried, patched, glued together and then baked in a press at 140 °C (280 °F) and 1.9 MPa (2800 psi) to form the plywood panel. The panel can then be patched, resized, sanded or otherwise refinished, depending on the market for which it is intended. Plywood for indoor use generally uses the less expensive urea-formaldehyde glue which has limited water resistance, while outdoor and marine-grade plywood are designed to withstand rot, and use a water resistant phenol-formaldehyde glue to prevent delamination and to retain strength in high humidity.

The adhesives used in plywood have become a point of concern. Both urea formaldehyde and phenol formaldehyde are carcinogenic in very high concentrations. As a result, many manufacturers are turning to low formaldehyde-emitting glue systems, denoted by an "E" rating ("E0" possessing the lowest formaldehyde emissions). Plywood produced to "E0" has effectively zero formaldehyde emissions.

Plywood type

Commercial plywood
Marine plywood