Medium Density Fibreboard (MDF)

Manufacturing

In Australia the main species of tree used for MDF is plantation-grown Radiata pine.

The trees are debarked after being cut. The bark can be sold for use in landscaping, or burned in on-site furnaces. The debarked logs are sent to the MDF plant where they go through the chipping process. A typical disk chipper contains 4-16 blades. Any resulting chips that are too large may be re-chipped; undersized chips may be used as fuel. The chips are then washed and checked for defects.

The chips are then compacted using a screw feeder, and will be heated for 30-120 seconds to soften the wood; they are then fed into a defibrator which maintains high pressure and temperature. The pulp that exits from the defibrator is fine, fluffy, and light in weight and in colour.

From the defibrator the pulp enters a blow line where it is joined with wax (to improve moisture resistance) and resin (to stop the pulp from forming bundles). The material expands in size and is then heated by heating coils. When it comes out it may be stored in bins for an indefinite length of time.

After this drying period the board goes through a "Pendistor" process which creates 230-610 mm thick boards.

Then it is cut and continues to the press. Here it is pressed for a few minutes, to make a stronger and denser board.

After pressing, MDF is cooled in a star dryer, trimmed and sanded.

The Environmental Impact of MDF has greatly improved over the years. Today many MDF boards are made from a variety of materials. These include other woods, scrap, recycled paper, bamboo, carbon fibers and polymers, steel, glass, forest thinning and sawmill off-cuts.
The manufacture of medium density fibrboard
Advantages: -

• It is dense, flat, and stiff, has no knots and is easily machined.

• Because it is made up of fine particles its surface is very smooth and can be painted to produce a smooth quality surface.

• Because MDF has no grain it can be cut, drilled, machined and filed without damaging the surface.

• MDF may be dowelled and biscuited together and traditional woodwork joints may even be cut. MDF may be glued together with PVA wood glue. Oil, water-based paints and varnishes may be used on MDF.

• MDF is an excellent substrate for veneers.

Disadvantages: -

• Due to the fact that MDF contains a great deal of glue the cutting edges of your tools will blunt very quickly.

• MDF will split if nailing or screwing into the edge. Screws should not be any closer than 40mm from the end. When using screws always use pilot holes.

• Heavier than plywood or chipboard (the resins are heavy)

• Swells and breaks when waterlogged

• Urea formaldehyde is always being slowly released from the surface of MDF. When painting it is good idea to coat the whole of the product in order to seal in the urea formaldehyde.

MDF can be dangerous to use if the correct safety precautions are not taken. MDF contains a substance called urea formaldehyde, which may be released from the material through cutting and sanding. Urea formaldehyde may cause irritation to the eyes and lungs. Proper ventilation is required when using it and facemasks are needed when sanding or cutting MDF with machinery.
**Uses:**
Medium density fibreboard may be used to make display cabinets, table tops, wall-panels and storage units.

**Projects made from MDF**

- Toy Box
- Study Desk
- Electric Guitar
- Mantle Piece
- Oak veneered MDF top with solid timber base