

Introduction to Furniture Materials

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Furniture

Structure and Materials

- Quality of materials and technique in furniture construction has a major impact on both its durability and its proper use.
- Generally the details of construction of a piece of furniture are at least partially concealed in the finished piece. Because of this, the reputation of a particular manufacturer, published specifications, and price are all clues to the quality of construction.
- Well made furniture need not be expensive, but cheap duplicates of high quality products are almost always the result of some skimping on materials, or details of construction.
- Good furniture is not weak, fragile, or shaky when new, and will not develop weaknesses with normal use over long periods of time.

Furniture

General Guidelines

- Just how sturdy a piece of furniture needs to be depends on its intended use.
- Many fine antiques that have held up for centuries are quite delicate, but they have been used only under conditions that do not impose too much rough usage.
- Delicate materials and finishes can survive in private living spaces or in executive offices better than in hotel rooms, dormitories, or where young children will be regular users.
- Whatever its intended use, good furniture is characterized by good materials, techniques of construction, and finishes at an appropriate level of durability.

Materials used to make furniture

- A variety of materials are used to make furniture, but the primary structure of most furniture is based on a few families of materials, used alone, or in combination.
- The families of materials are:
 - Wood & other reconstituted wood products
 - Metal
 - Plastics
 - Glass
 - Paper & paper board

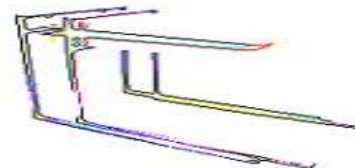
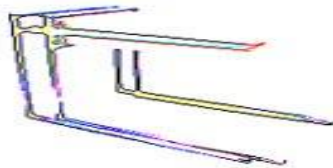
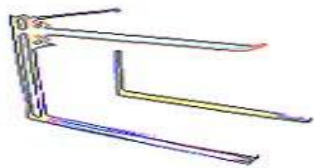
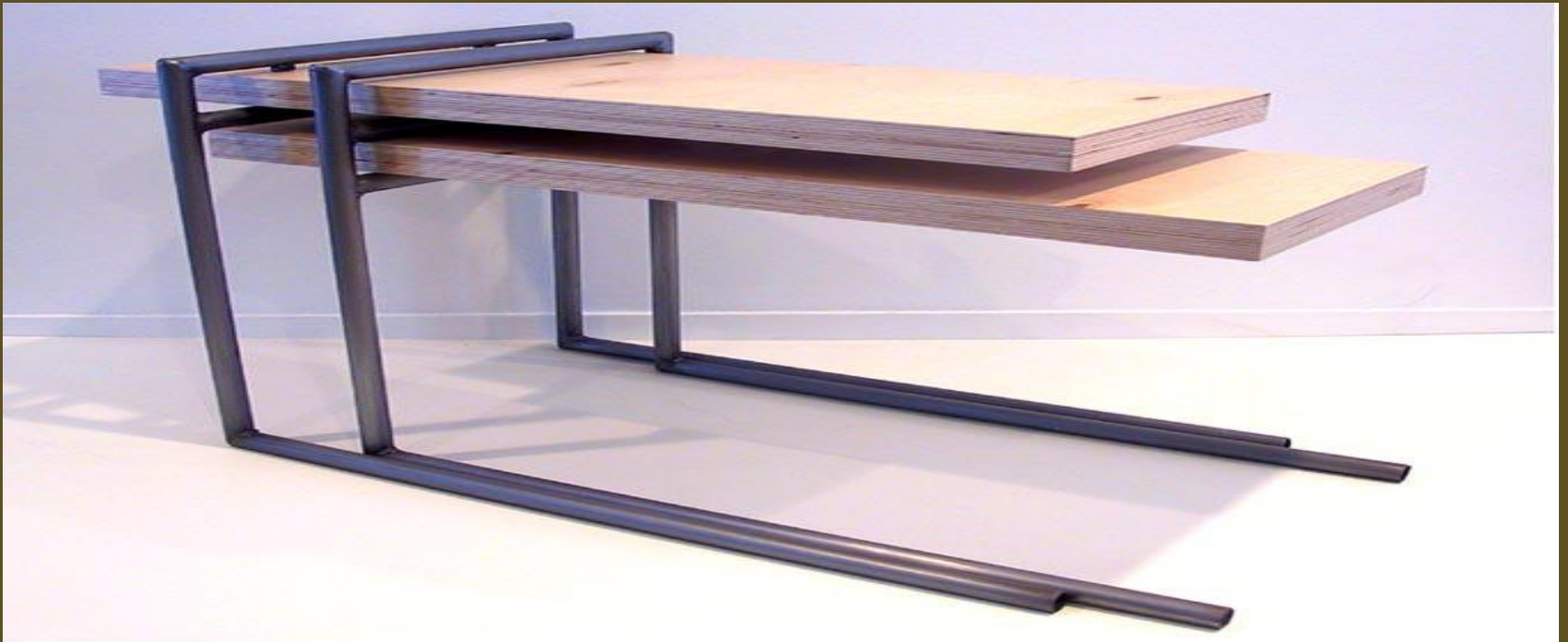
Wood furniture

- Wood is still the most used furniture material, and was almost the only material used in most historic (pre 20th century) furniture.
- In 2005, almost 85% of all furniture produced in Malaysia was made from wood or wood-related products.
- Wood used for furniture is either:
 - solid wood
 - plywood, particleboard, medium density fiberboard, oriented strand board

Malaysian Market

- Meranti and Nyatoh faced plywood is the most common among furniture manufacturers in Malaysia, accounting for almost 65% of the market share.
- Rubberwood is also being increasingly used in plywood manufacturing
- Although other species are available, the preference is for established species.

A table using Baltic birch plywood and steel tubes.



A glass top with molded Baltic birch plywood base elements.



Metal Furniture

- Metals are used to make parts, such as legs, frames, and table bases, and as a primary material for office furniture, kitchen cabinetry, utility shelving, and storage units.
- Steel in the form of rods, tubing, and sheets is the most used metal for furniture.
- Aluminum in the form of tubes, and formed sections, such as angles, channels, and T's is used for cast legs, frames, and small parts.

Metal Furniture

- Metal office furniture and utility files, cabinets, and shelves are made of sheet steel.
- The sheets are cut, and then bent to form box shapes, or with bent flanges (edges) used to make shelves or tops.
- The gauge (thickness) of the sheet metal is an important factor in determining the quality of a piece. Sheet metal that is too thin will not hold up well. Thicker sheet metal is stronger, will last longer, and will resist denting and deforming.

Plastics in furniture

- Plastic Laminates: are composed of layers of heavy paper impregnated with melamine resin.
- Acrylics: such as Plexiglas and Lucite, resemble glass in their transparency, but can be made translucent and colored, and opaque. Acrylics can be bent and molded into curved shapes.
- Molded Plastics: such as styrene, polyethylene, nylon, and vinyl, are often made into small parts, such as glides, rollers, edge trim, and drawer pulls.
- Fiberglass: a hybrid material in which glass fibers are embedded in a molded polyester resin. Used to make custom auto body parts and small boat hulls.



Wood-Plastic Frame



Other Combinations



Total Materials Usage (2010)

- Wood & Wood Products (75%)
- Rattan & Bamboo (13%)
- Metal (5%)
- Plastic (5%)
- Glass (1%)
- Paper & Paperboard (1%)

Selecting Material

- Production Friendly
- Price
- Availability
- Structure & Properties
- Aesthetics

Managing Materials

- Materials specification is a know-what
- Efficient processing of the material is a know-how
- Science + Art = Material Management

Thank you for your attention

Any Questions?