Unit 108: Wood occupations

# Worksheet 6: Types of materials (tutor)

1. Using supplied offcuts of different types of board stock and using controlled tests, complete the table below. Please ensure that offcut strips are the same length, width and thickness (i.e. 600mm x 28mm x 18mm). Grade each type of board from 1 to 10: 1 being weak and 10 being strong. Torsional strength can be measured using a vice at one end and G clamp at the other and twisting. Compression can be tested using blocks in a vice. Bending can be tested by clamping over a variety of radiused jigs. You can decide the grading criteria.

(Answers depend on learner tests.)

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| --- | --- | --- | --- |
| **Type of board stock:** | **Strength against torsional (twisting) pressure** | **Strength against compression** | **Strength against bending** |
| Plywood |  |  |  |
| MDF (medium density fibre board) |  |  |  |
| OSB (oriented strand board) |  |  |  |
| LDF chipboard  (particle board) |  |  |  |
| Hardboard |  |  |  |

Offcuts of different types of board stock can also be soaked overnight in water to provide an extension to this test.

1. Name four types of board stock, listing their qualities and limitations (four from):

|  |  |  |
| --- | --- | --- |
| **Type of board stock:** | **Qualities:** | **Limitations:** |
| Plywood | Many grades. Rigid and durable, can be flexible. Odd veneers for stability; smooth finish, paintable | Can delaminate or have voids and knots, no end grain fixing, blunting.  Dust can be toxic (i.e eucalyptus) |
| MDF (medium density fibre board) | Stable and smooth. Can be treated, recycled, can be moulded and carved.  Good finish for painting as no grain rise. | Can fluff and crumble, tooling burn, no end grain fixing, harmful dust, disintegrates in damp conditions even when treated. |
| OSB (oriented strand board) | Cheap, recycled, relatively stable especially after fixing, water resistant, takes fixing better than chipboard. | Brittle, not weatherproof, rough finish, not stable, blunting, no end grain fixing. Requires flat storage. |
| LDF chipboard  (particle board) | Can be treated, recycled. Cheap flooring material, can be moulded with mechanical tongue and groove allowing tight joints. | Brittle, little flexibility, blunting, Poor screwing/nailing, edges can crumble, poor strength under direct compression. |

1. Name four types of hardwood, listing their qualities and limitations (four from):

|  |  |  |
| --- | --- | --- |
| **Type of hardwood:** | **Qualities:** | **Limitations:** |
| Oak | Hard, durable, strong, good figure, good finish, wide boards. | Iron disease; shakes, end splitting; slow growing, slow drying.Sensitiser. |
| Mahogany  (sapele,utile) | Soft and dense, straight grain, fine finish, stable, wide boards. | Overharvested, rare, expensive; slow growing. Sensitiser. |
| Teak  (Shorea,Iroko) | Water/ UV resistant, tight grained, easy to work. | Expensive; brittle; blunting tools; oily. Sensitiser. |
| Ash | Shock resistant, Light, good figure, strong, hard, good finish. | Ash dieback; can end split; toxic. Not weatherproof. Hard to treat or polish. Brittle. |
| Maple | Dense, hard, good figure, stable.  Elastic, usable sapwood. | Low durability. Tool burn.  Sensitiser. |
| Cherry | Good figure, straight grain, easy to work, flexible, durable. | Expensive, blemishes, water damage. |

1. Name four types of softwood, listing their qualities and limitations (four from):

|  |  |  |
| --- | --- | --- |
| **Type of softwood:** | **Qualities:** | **Limitations:** |
| Pine | Good figure, stainable and paintable. | Very weak due to fast growth, marks easily, sap pockets. |
| Larch | Weather resistant, readily available.  Hard, strong. | Splintering and splitting; too oily to paint.  Sensitiser. |
| Cedar | Weather resistant. | Expensive, too oily to paint. Sensitiser.  Splintering and splitting. |
| Spruce | Cheap, fast growing. | Sap pockets; loose grain |
| Douglas Fir | Medium strength and durability. | Brittle; can split and mark easily, too oily to paint. |
| Redwood | Good finish, medium strength and durability. Weather resistant. | Expensive.  Sensitiser. |