DISCOVERING MALAYSIAN TIMBER AND TIMBER PRODUCTS
1. Misconception about Wood
2. Nature of Wood
3. Properties of Wood
4. Malaysian Wood Products
5. Useful References
Misconception About Wood
Felling tree is bad
Selective Management System (SMS)

Forest harvesting is based on Sustainable Forest Management practices.

Pre-felling inventory. The number and size of trees are recorded.

Selective harvesting using directional felling to reduce impact takes place according to national allowances.*

Regenerated forest after 25 – 30 years.

Post-felling inventory, if necessary silvicultural treatment is applied.

* National allowances: 32 residual trees of above 30cm diameter at breast height (dbh) to form the next crop.
* Minimum cutting limit: dipterocarps - 55cm dbh, non-dipterocarps - 45cm dbh.
* For further information, please go to www.forestry.gov.my.
Renewable, Carbon lock & Environmentally friendly
Replanting - Mangrove forest
IUCN Red List of Threatened Species
Todaiji Temple, Japan
Wood can be treated to enhance durability
Wood is not versatile as a building material.
Energy Efficient

Energy Consumption

- Aluminium (126)
- Steel (24)
- Glass (14)
- Cement (5)
- Wood (1)
One tonne of wood can carry a heavier load than one tonne of steel.
Excellent Insulator

- Better insulation compared to other materials.

  Wood → 1,700 times better than Aluminium
  390 times better than Steel
  5 times better than Concrete
  8 times better than Glass
  6 times better than Brick
Good acoustic properties
For outdoor applications
For structural and interior applications
For structural and interior applications
Wood is a fire hazard
Wood is still standing after fire
Steel will buckle and concrete will crumble under high temperatures.
2,500 – 3,000 species in the forest

800 species are commonly traded
Nature of Wood

Wood is a cellular material of biological origin.
HARDWOOD VS. SOFTWOOD

HARDWOOD

- Meranti, Chengal, Balau

SOFTWOOD

- Pine, Spruce, Cypress
HEARTWOOD VS. SAPWOOD

HEARTWOOD
- Dark colored
- Center part of wood
- Naturally durable

SAPWOOD
- Light colored
- Outer part of wood
Hygroscopic of wood

- Absorbs water vapor or liquid
- Desorbs water vapor

Swelling and shrinkage arrows indicate changes in size due to water absorption and release.
Properties - Classifications

Heavy Hardwood
heavy to very heavy constructional timbers
density: 800 - 1120 kg m$^3$

Balau

Chengal
Properties - Classifications

Medium Hardwood
moderately heavy to very heavy
constructional timbers
density: 720 - 880 kg m³

Kempas

Keruing
Properties - Classifications

**Light Hardwood**
light weight and soft timbers
density: 400 - 720 kg m$^3$

Nyatoh

Sepetir
Properties

Colours

- Kembang Semangkok
- Balau
- Jelutong
- Kulim
- Dark Red Meranti
- Mengkulang
Strength characteristics indicate ability to withstand load and potential as engineering material.

Malaysian timbers are categorized into 7 groups: SG 1 to SG 7.
<table>
<thead>
<tr>
<th>SG1</th>
<th>SG2</th>
<th>SG3</th>
<th>SG4</th>
<th>SG5</th>
<th>SG6</th>
<th>SG7</th>
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</thead>
<tbody>
<tr>
<td>a) Naturally Durable</td>
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<td>Balau</td>
<td>Belian</td>
<td>Bekak</td>
<td>Giam</td>
<td>Teak</td>
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<tr>
<td>Bitis</td>
<td>Mata ulat</td>
<td>Delek</td>
<td>Malabera</td>
<td>Tembusu</td>
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<td>Chengal</td>
<td>Kekatong</td>
<td>Keranji</td>
<td>Merbau</td>
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<td>Penaga</td>
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<td>Resak</td>
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<td>b) Requiring Treatment</td>
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<tr>
<td>Dedaru</td>
<td>Red balau</td>
<td>Kapur</td>
<td>Keledang</td>
<td>Damar</td>
<td>Minyak</td>
<td>Ara</td>
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<td>Kempas</td>
<td>Kelat</td>
<td>Kasai</td>
<td>Keruing</td>
<td>Durian</td>
<td>Batai</td>
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<td>Merbatu</td>
<td>Kembang</td>
<td>Mempening</td>
<td>Ketapang</td>
<td>Jelutong</td>
<td>Geronggang</td>
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<td>semangkok</td>
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<td>Mertas</td>
<td>Kulim</td>
<td>Meransi</td>
<td>Melunak</td>
<td>Medang</td>
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<td>Pauh Kijang</td>
<td>Meranti bakau</td>
<td>Mempisang</td>
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<td>Melantai</td>
<td>Sesendok</td>
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<tr>
<td>Perah</td>
<td>Merawan</td>
<td>Mengkulang</td>
<td>Meranti, light red</td>
<td>Terentang</td>
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<tr>
<td>Petaling</td>
<td>Merpauh</td>
<td>Meranti, dark red</td>
<td>Meranti, yellow</td>
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<tr>
<td>Ranggu</td>
<td>Nyalin</td>
<td>Meranti, white</td>
<td>Mersawa</td>
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<tr>
<td>Tualang</td>
<td>Perupok</td>
<td>Nyatoh</td>
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<td>Punah</td>
<td>Penarahan</td>
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<td>Rengas</td>
<td>Ramin</td>
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<td>Simpoh</td>
<td>Rubberwood</td>
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Structural Components and Roofing

SG 1 TO SG 5
Flooring, Staircase & Balustrades

SG 1 TO SG 6
Ceiling & door frames

SG 1 TO SG 6
Furniture

SG 1 TO SG 6
Panelling

SG 7
<table>
<thead>
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<th>APPLICATIONS</th>
<th>STRENGTH GROUP</th>
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</thead>
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<tr>
<td><strong>Structural Components</strong></td>
<td></td>
</tr>
<tr>
<td>• Columns, beams, bearer, studs, joists, ties and struts</td>
<td>- SG 1, SG 2, SG 3, SG 4</td>
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<tr>
<td>• Form work</td>
<td>- SG 1, SG 2, SG 3, SG 4, SG 5</td>
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<tr>
<td><strong>Roofing</strong></td>
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<tr>
<td>• Rafters, ties, struts, purlins and bracing</td>
<td>- SG 1, SG 2, SG 3, SG 4</td>
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<tr>
<td>• Battens</td>
<td>- SG 1, SG 2, SG 3, SG 4, SG 5</td>
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<tr>
<td><strong>Staircase</strong></td>
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<tr>
<td>• Stringers, treads, trimmer beam and handrail</td>
<td>- SG 1, SG 2, SG 3 AND SG 4</td>
</tr>
<tr>
<td>• Balustrades</td>
<td>- SG 1, SG 2, SG 3, SG 4, SG 5, SG 6</td>
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<tr>
<td><strong>Flooring</strong></td>
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<tr>
<td>• Floor boarding and parquetry</td>
<td>- SG 1, SG 2, SG 3, SG 4, SG 5</td>
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<tr>
<td>• Skirtings</td>
<td>- SG 1, SG 2, SG 3, SG 4, SG 5, SG 6</td>
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<tr>
<td><strong>Walling</strong></td>
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<tr>
<td>• Wall, partition framing and external wall boardings</td>
<td>- SG 1, SG 2, SG 3, SG 4, SG 5, SG 6</td>
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<tr>
<td>• Internal wall boardings, slates screens</td>
<td>- SG 1, SG 2, SG 3, SG 4, SG 5, SG 6, SG 7</td>
</tr>
<tr>
<td>• Fascia boards</td>
<td>- SG 1, SG 2, SG 3, SG 4</td>
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<tr>
<td><strong>Ceiling Frames</strong></td>
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<tr>
<td>• Cover battens to joints of ceiling sheets</td>
<td>- SG 1, SG 2, SG 3, SG 4</td>
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<tr>
<td>• Ceiling strips and soffit battens</td>
<td>- SG 1, SG 2, SG 3, SG 4, SG 5, SG 6</td>
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<tr>
<td><strong>Door &amp; Window Frames</strong></td>
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<tr>
<td>• Door, window and vent frames including their stops and grounds</td>
<td>- SG 1, SG 2, SG 3, SG 4</td>
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<tr>
<td>• Door leaves, window and vent sashes</td>
<td>- SG 1, SG 2, SG 3, SG 4, SG 5, SG 6</td>
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<tr>
<td><strong>Furniture</strong></td>
<td></td>
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<tr>
<td>• Built-in fittings, furniture generally and workshop furniture</td>
<td>- SG 1, SG 2, SG 3, SG 4, SG 5, SG 6</td>
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<tr>
<td>• Science laboratory tops</td>
<td>- SG 1, SG 2, SG 3, SG 4</td>
</tr>
<tr>
<td><strong>Beading, fillets and edgings generally</strong></td>
<td>- SG 1, SG 2, SG 3, SG 4, SG 5, SG 6</td>
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</table>
MALAYSIAN WOOD PRODUCTS
Flooring
Laminated Veneer Lumber (LVL)

Engineered wood product that uses multiple layers of thin wood assembled with adhesives.
Strength
Finger-jointed pieces of strength-graded solid timber (lamellae) are glued together to form large structural members such as beams and columns.
School, South Korea
Cross Laminated Timber

Consists of three, five, or seven layers of dimension lumber oriented at right angles to one another and then glued to form structural panels with exceptional strength, dimensional stability, and rigidity.
Stadthaus is a nine-storey residential building in Hackney, London.
Choosing Malaysian Timbers

Analysis of the job in hand

Information required
- Expected load
- Durability

Armed with specification

Look for timber with this properties
Timber Species & MTC Wood Wizard

20 Popular MALAYSIAN TIMBERS

With over 61 per cent of its land area under natural forest, Malaysia is home to over 2,600 tree species. Continued R&D in forestry has enabled Malaysia’s Permanent Reserved Forests to be managed well, and certified as sustainable, to ensure its perpetuity.

Showcased here are the more common Malaysian hardwoods.

This innovative software will allow you to have an extensive contact with Malaysian timbers. All the properties of the more common Malaysian timbers are available at your fingertips. Embark on a journey of discovery in the world of unsurpassed beauty and versatility that is offered by Malaysian timbers.
Reference

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Q&A
THANK YOU