



### Timber Notes – Medium Hardwoods V (Perah, Petaling, Punah, Runggu, Rengas)

by

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- Trade Name:** Perah
- Species:** *Elateriospermum tapos* (family *Euphorbiaceae*).
- 1. Tree type and distribution:** Medium-sized tree to 27 m tall and 180 cm girth. Present throughout Peninsular Malaysia in hillsides, lowland forest to 600 m altitude and low undulating country in North Johore.
- 2. Wood characteristics:** Heartwood dark-brown and with dark-coloured streaks. Sapwood sharply differentiated and is light cream-brown. Texture moderately coarse and even. Grain straight or shallowly interlocked.
- 3. Timber classification:** MHW
- 4. Wood density:** Ranges from 735 to 1235 kg m<sup>-3</sup> air dry.
- 5. Drying and relative movement:** Air drying of 15 mm and 40 mm boards take 2 1/2 months and 4 months respectively. Recommended kiln drying schedule G (PRL, UK).
- 6. Machining properties:** Difficult to saw but planes well and produces a smooth finish.
- 7. Durability:** Non-durable. Susceptible to termite and powder-posts beetles attack. Except for the core wood, the timber is easily treated.
- 8. Strength grouping:** B
- 9. Strength properties:**
- | Property (MPa)            | Green  | Air dry |
|---------------------------|--------|---------|
| Modulus of rupture        | 112    | 149     |
| Modulus of elasticity     | 14 950 | 17 550  |
| Maximum crushing strength | 50     | 68      |
- 10. Uses:** Suitable for medium to heavy construction indoor, and when treated, it is suitable for all heavy construction.

n.a – not available

- Trade Name:** Petaling
- Species:** *Ochanostachys amentacea* Mask (family Olacaceae).
- 1. Tree type and distribution:** Small to medium tree reaching 30 m tall, 180 cm girth. Bole rather poor form, fluted or shortly fluted. Common throughout the country except Perlis & N. Kelantan. Low undulating country, hillsides and ridges to 900 m.
- 2. Wood characteristics:** The timber is hard to very hard and heavy to very heavy. Heartwood is dark yellow-brown or light red-brown and moderately defined from the sapwood which is dark yellow-brown or light red-brown. Texture fine and even. Grain interlocked.
- 3. Timber classification:** MHW
- 4. Wood density:** Ranges from 800 to 1105 kg m<sup>-3</sup> air dry.
- 5. Drying and relative movement:** Air drying of 15 mm and 40 mm boards take 6 and 9 months respectively. Susceptible to insect attack during seasoning.
- 6. Machining properties:** Easy to saw and work. Planed surface produced is smooth. Poor nailing property.
- 7. Durability:** Moderately durable under exposed conditions. The amenability to treatment is average.
- 8. Strength grouping:** B
- 9. Strength properties:** Based on tests carried out on *Ochanostachys amentacea*.

Property (MPa)	Green	Air dry
Modulus of rupture	-	-
Modulus of elasticity	-	-
Maximum crushing strength	45.3	56.1

- 10. Uses:** Suitable for piling, posts, heavy and medium construction under cover, furniture manufacture, strip flooring, pallets, boxes and crates.

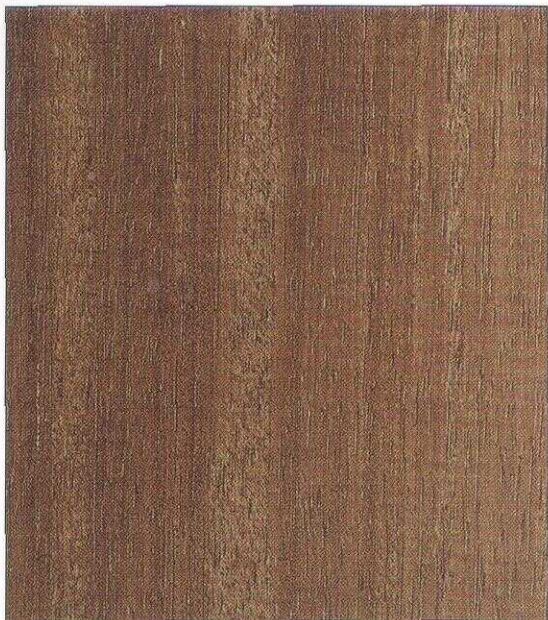
- Trade Name:** Punah
- Species:** *Tetramerista glabra*.
- 1. Tree type and distribution:** Big tree to 35 m tall, 3.3 m girth. Present in fresh water or peat swamp forests in Kedah, Perak, Terengganu, Pahang, Selangor, Malacca & Johore.
- 2. Wood characteristics:** Heartwood straw-coloured turning to orange-brown on exposure. Sapwood clearly defined in dried timber. Texture coarse but even. Grain straight or shallowly interlocked or wavy.
- 3. Timber classification:** MHW
- 4. Wood density:** Ranges from 625 to 800 kg m<sup>-3</sup> air dry.
- 5. Drying and relative movement:** Air drying of 15 mm and 40 mm boards take 2 1/2 months and 4 months respectively. For kiln drying, schedule C is recommended. Thick sections are prone to surface checking and incidences of 'collapse' have also been detected. End-coating is required. The timber has Type IV movement.
- 6. Machining properties:** Easy to saw and work. Planing is easy and planed surface is moderately smooth to rough. Nailing property is good.
- 7. Durability:** Moderately durable and is amenable to preservative treatment.
- 8. Strength grouping:** A
- 9. Strength properties:**
- | Property (MPa)            | Green  | Air dry |
|---------------------------|--------|---------|
| Modulus of rupture        | 66     | 87      |
| Modulus of elasticity     | 13 500 | 15 400  |
| Maximum crushing strength | 34.5   | 49.4    |
- 10. Uses:** Suitable for all forms of heavy construction under cover, posts, beams, rafters, heavy duty furniture, solid door and heavy duty flooring.

- Trade Name:** Runggu
- Species:** *Koordersiodendron pinnatum* (Blanco) Merr. (family Anacardiaceae).
- 1. Tree type and distribution:** Widely distributed throughout the Philippines, the northern part of Borneo (Sabah and Sarawak) and Indonesia. Occurs in lowland forest. The tree reaches 24 – 30 m height and 2.1 – 2.4 m girth.
- 2. Wood characteristics:** The wood is moderately hard to moderately heavy. Heartwood pink brown to red-brown and darkening on exposure and clearly defined from the sapwood which is white to pale pink. Texture fine and even. Grain straight to interlocked.
- 3. Timber classification:** MHW
- 4. Wood density:** Ranges from 690 to 915 kg m<sup>-3</sup> air dry.
- 5. Drying and relative movement:** Air drying of 15 mm and 40 mm boards takes 5 and 6 months respectively.
- 6. Machining properties:** Easy to saw and work well with all tools. Nailing property is variously reported as good to poor.
- 7. Durability:** Durable under exposed conditions.
- 8. Strength grouping:** B
- 9. Strength properties:**
- | Property (MPa)            | Green  | Air dry |
|---------------------------|--------|---------|
| Modulus of rupture        | -      | -       |
| Modulus of elasticity     | 15 288 | 17 019  |
| Maximum crushing strength | 47.120 | 58.0    |
- 10. Uses:** Suitable for flooring, interior construction, furniture and cabinet making, general joineries, door panels and turneries.

- Trade Name:** Rengas
- Species:** *Gluta* spp. (15 species) and *Melanochyla* spp. (10 species).
- 1. Tree type and distribution:** Small to big trees. *Gluta* is widely distributed from coasts and swamps to mountain forests *Melanochyla* is found mainly in the lowlands.
- 2. Wood characteristics:** Heartwood blood-red coloured and streaky and sharply defined from the sapwood which is light-brown with a pinkish tinge. Texture moderately fine or moderately coarse but even. Grain interlocked.
- 3. Timber classification:** MHW
- 4. Wood density:** Ranges from 640 to 960 kg m<sup>-3</sup> air dry.
- 5. Drying and relative movement:** Air drying of 15 mm and 40 mm boards take 2 months and 5 months respectively. *The recommended kiln drying schedule is E (PRL, UK). Type II movement.*
- 6. Machining properties:** Slightly difficult to resaw and cross-cut. Planed surface is moderately smooth. Nailing property is rated excellent.
- 7. Durability:** Moderately durable. Timber is difficult to treat.
- 8. Strength grouping:** B
- 9. Strength properties:** Data based on test carried out on *Melanorrhoea torquata*.

Property (MPa)	Green	Air dry
Modulus of rupture	81	111
Modulus of elasticity	14 000	14 900
Maximum crushing strength	41.4	59.4

- 10. Uses:** Suitable for panelling, parquet flooring, fancy articles, turnery and sliced veneers.



Perah



Petaling



Punah



Rangu



Rengas

## BACKGROUND INFORMATION

### 1. Tree type and distribution

The distribution and size of tree are given.

### 2. Wood characteristics

The colours of sapwood and heartwood, figure, appearance on planed surface and any other characteristic features of the timber.

### 3. Timber classification

Under the Malaysian Grading Rules (1984), timbers are classified as Heavy Hardwood (HHW) when their density exceeds  $800 \text{ kg m}^{-3}$  and the timbers are naturally durable. Medium Hardwoods (MHW) are timbers with density exceeding  $729 \text{ kg m}^{-3}$  but lack sufficient natural durability. Light Hardwoods (LHW) are timber with density below  $720 \text{ kg m}^{-3}$  and not naturally durable in exposed condition.

### 4. Wood density

Green density of freshly sawn board, defined as green mass divided by green volume. It varies with the freshness of the log in the log yard before processing and seasoning. Air dry density is the average mass divided by volume at 15 per cent moisture content.

### 5. Drying and relative movement

Air drying time for 13 mm and 40 mm boards and moisture content are from Grewal (1979), "Air-seasoning Properties of Some Malaysian Timbers", Timber Trade Leaflet No. 41. Suitable kiln drying schedule is mentioned [Schedules based on Grewal (1988), "Kiln Drying Characteristic of Some Malaysian Timbers", Timber Trade Leaflet No.42]. The relative movement (whenever is available) is defined as the change in dimension of a piece of timber when exposed to the service conditions of 60% RH/ 30 °C and 95% RH/ 30 °C respectively, and expressed as percentage of the value at 60% RH/ 30 °C. The movement ratings stated are based on values of the corresponding tangential movement [Choo *et al.* (1998), "Movement of Seasoned Timber in Service", FRIM Technical Information Handbook No. 18].

Movement rating	Tangential movement
Class I	< 1.5 %
Class II	1.5% to 2.0%
Class III	2.1% to 2.5%
Class IV	2.6% to 3.0%
Class V	> 3.1 %

### 6. Machining properties

Comments are made on the comparative ease or difficulty of sawing, planing, turning, boring, peeling, gluing and other wood working properties.

### 7. Durability

Durability ratings of Malaysian Timbers are based on performance of test-sticks in graveyard testing. Test-stakes of 50 x 50 x 600 mm are buried in test grounds and their performance monitored. The number of years that the timber can last under such conditions is used to classify the durability of the timber. Under the system, timbers are classified as follows;

Rating	Number of years
Very durable	more than 10 years
Durable	5-10 years
Moderately durable	2-5 years
Non-durable	0-2 years

Susceptibility to fungal and termite attacks may be mentioned.

### 8. Strength grouping

In the strength grouping of timber under each trade name, ranking is allocated from A (strongest) to D (weakest). Minimum values for strength groups based on common grade for dry timber (below 19% moisture content) (units are in MPa).

Strength group	A	B	C	D
Modulus of elasticity	9700	6600	5500	3100
Bending and tension parallel to grain	12.41	9.65	7.24	4.83
Compression parallel to grain	11.03	7.93	5.51	4.14
Compression perpendicular to grain	1.45	0.90	0.55	0.45
Shear parallel to grain	1.45	0.90	0.62	0.62

### 9. Strength properties

Values are from Lee *et al.* 1979, "The Strength Properties of Some Malaysian Timbers". Malaysian Forest Service Trade Leaflet No. 34.

### 10. Uses

Various past and potential uses are given, but the list is obviously not exhaustive.

## TIMBER TECHNOLOGY BULLETIN

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