

## GLOSSARY OF TERMINOLOGIES OF MALAYSIAN TIMBER SPECIES AND GROUPS

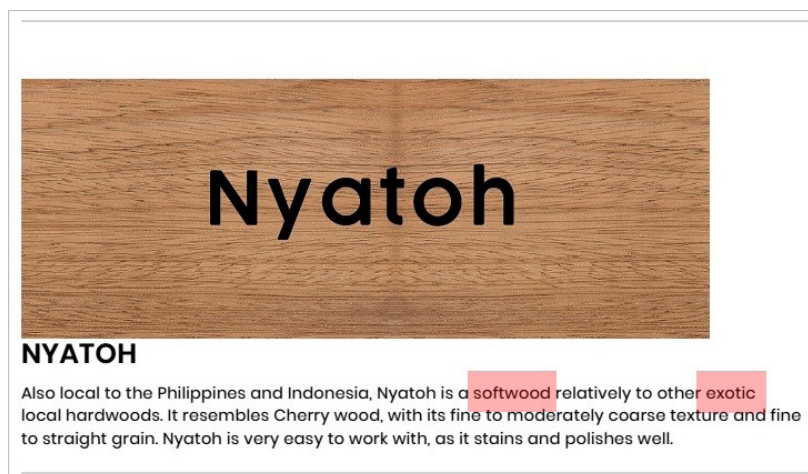
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### OVERVIEW

*“Lesser-known species are timber trees of secondary forests”.*

*“Supply of chap-char consists of low quality timbers”.*

The above proclamations seem true at a glance, as if they hold important facts about timber material. But are these statements really correct? Research and commercialisation terms such as lesser-known, pioneer species, secondary species, plantation species, chap-char, among many others, are often used in verbal and written communications to describe the types and sorts of timbers. Unfortunately, the industry has a rather confusing set of terminologies when referring to the classifications of timbers being considered or discussed. With the increase in the number of scientific literature and marketing bulletins, expressions are sometimes used spontaneously without the sound comprehension of the exact meaning, let alone denotations translated into languages other than English (Figure 1). Thus it is not impossible to find inaccurate statements such as the above even within the timber-based community. Although terminology can just be a word or phrase in writings, when instigated in the real world, the outcome can be detrimental. Perhaps terminological misperceptions such as – “lesser-known timbers are low-quality timbers” continuously make us rely only on the depleting popular species for the supplies of sawn timber, even until today.



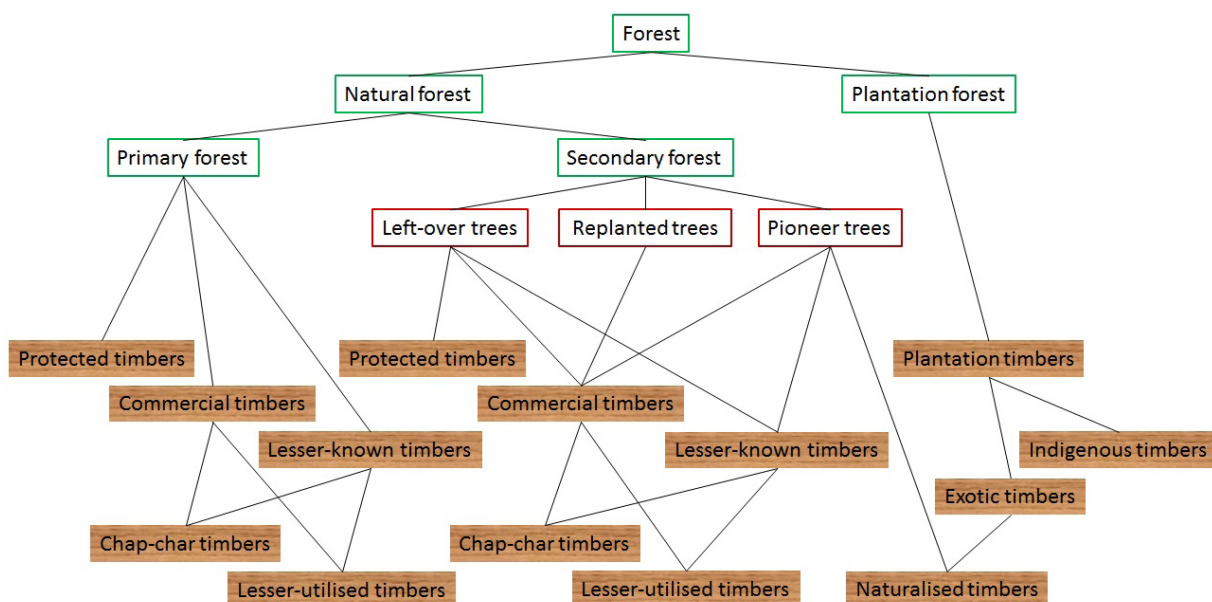
**Figure 1** Terms regarding timbers are often used incorrectly in promotional advertising

The use of the correct terms for a specific timber is important to avoid misinterpretation and allow for an accurate response. Generally, a term or expression is given to a group of timber in order to indicate the significance of the material in the industry. It is worth mentioning that a timber group or species is neither restricted nor permanent to any particular term. History has proved that the importance of timber in the market can change drastically. Before the 1950s, meranti timbers of *Shorea* spp. were often considered as inferior material, yet they are now the world's most important trade groups (Lemmens et al. 1995). Similarly, the rubberwood was once a valueless residue from rubber plantations. Today, the timber of *Hevea brasiliensis* is one of the most demanded and valuable materials in the industry. Clearly, continuous research and technological advancement have extended the potential uses of many timbers.

This article provides some basic information on common terminologies in classifying timbers that are specific to the Malaysian scenario. Readers should consider that the term for a particular species might differ between countries. For example, *Lagerstroemia* spp. produce a major commercial timber in Cambodia known as sralao, used in many applications such as beams, rafters, flooring, furniture and carving (Blackett 2008). In Malaysia, the trees are commonly found in lowland areas of primary forests, secondary forests, open spaces and along rivers. In other words, they are abundantly available. The species which produce timber with a local name of bungor, however, is a lesser-known and rarely utilised material (Lim & Gan 2006).

## COMMERCIAL CLASSIFICATIONS

A timber tree is defined as any tree that is valued as a source of timber material. In general, there are two main expanses of timber trees, namely natural forest and plantation forest (Figure 2). Natural forests consist of primary and secondary forests. Primary forests are forest areas that have remained relatively undisturbed by human activity. Secondary forests are forests areas that have re-grown through natural processes after significant human or/and natural disturbances such as logging, fire, or landslide. Hence under these tracts of forests, the Malaysian timbers are classified and referred by various terms. On the following pages, important terminologies of timber species and groups are highlighted with the bold or underlined font. The information is presented in index form for better readability.



**Figure 2** The chart of commercial classifications of Malaysian timbers

## TERMINOLOGY INDEX

- **Alien timber species.** See naturalised timber species.
- **Botanical names.** See scientific names.
- **Chap-char.** See mixed hardwoods.
- **Commercial timbers** are the most popular timbers and are highly preferred by the industry. They are sometimes referred as major commercial timbers, valuable commercial timbers, or prime timber species (Freezailah 1984, Lemmen et al. 1995). Both the domestic and international trading, pricing and utilisation of commercial timbers are group-oriented, formally denoted Standard Malaysian Names. However, in Sabah and Sarawak, some timbers are given different trade names. Commercial timbers are classified into four classes based on density and natural durability namely Heavy Hardwoods, Medium Hardwoods and Light Hardwoods of the angiosperm trees, plus Softwoods of the gymnosperm trees. For instance, giam is classified as Heavy Hardwoods while merawan is classified as Medium Hardwoods, although both are the timbers of *Hopea* spp. Most of the commercial timbers have been systematically classified under the Strength Groups as in MS 544 (2001).
- **Exotic timber species.** See non-indigenous timber species.
- **Foreign timber species.** See naturalised timber species.
- **Heavy Hardwoods** (commonly written as HHW) are timber groups with air-dry density between 800–1120 kg m<sup>-3</sup> at 15% moisture content and are naturally durable. The timbers are suitable for heavy construction, piling, heavy-duty flooring, parquet, flooring and power line post. Currently, a total of 15 groups of Malaysian timbers have been classified as Heavy Hardwoods (Anon. 2009).
- **Indigenous timber species** refer to sizable trees of timber-producing capacity known to have evolved and adapted to the Malaysian ecological conditions at the time of the establishment of the stand, despite being separated geographically. For example, although chengal (*Neobalanocarpus heimii*) is endemic to Peninsular Malaysia and non-native timber species to Sabah and Sarawak, it is considered an indigenous timber species to Malaysia. Indigenous timber species are also termed native timber species.
- **Introduced timber species.** See non-indigenous timber species.
- **Invasive timber species** are any species that are non-native to a particular ecosystem and whose introduction and spread causes, or are likely to cause socio-cultural, economic or environmental harm, or harm to human health (FAO 2020).
- **Lesser-known commercial timbers.** See mixed hardwoods.
- **Lesser-known timbers** are the unpopular timber groups in the market in terms of identity. They are being out of favour mainly due to the deficiency of technical data and lack of market promotion. Lesser-known timbers are also known as non-obligatory timbers, unpopular timber species, or weed timber species (Freezailah 1984). They are also referred as minor commercial timbers because of their minor economic importance (Lemmens et al. 1995). Lesser-known timbers are found throughout the forest areas, especially in secondary

forests (Samsudin et al. 2010). In Malaysia, lesser-known timbers such as gaham badak (*Blumeodendron* spp.), jenzulong (*Agrostistachys* spp.) and kasap (*Gironniera* spp.) are regularly exploited and marketed (Mohd Yunus et al. 2012). They are usually used for various applications in the form of mixed hardwoods (Lim et al. 2004). The trading history of timbers indicated that for many decades, the lesser-known timbers are being marketed and utilised in the industry (Ismariah & Vincent 1992).

- **Lesser-utilised timbers** are timber species or groups which are not commercially or rarely exploited. The timbers are not commercially utilised for various technical reasons such as having trees of poor form, the scarcity of supply, or processing difficulties. From the perspective of the Malaysian timber industry, lesser-utilised timbers and lesser-known timbers are not similar. Lesser-utilised timbers do not necessarily lack of technical data. Lesser-utilised timbers can be among the commercial timbers or lesser-known timbers. For example, pauh kijang (*Irvingia malayana*) and petaling (*Ochanostachys amentacea*) are commercial timbers with superior strength characteristics of Strength Group 3, and both are moderately durable under exposed conditions. But they are rarely utilised due to trees of poor form. *Garcinia* spp. produce a timber group locally known as kandis. The timbers are less utilised since they are reported to be difficult to work with due to the presence of silica. *Vitex* spp. is an internationally renowned genus for timber flooring and is reputed to be durable even in contact with the ground. In Malaysia however, the timbers of *Vitex* spp. (locally known as leban) are less utilised due to the short and crooked bole (Wong 2002). Penaga (*Mesua ferrea*) is a superior and valuable commercial timber, comparable to balau (*Shorea* spp.) and chengal (*Neobalanocarpus heimii*) in terms of strength and stiffness (MS 544 2001). However, it is a lesser-utilised timber, probably due to sawing difficulty, very slow seasoning, poor nailing property, high shrinkage and liable to termite attack.
- **Light Hardwoods** (commonly written as LHW) are timber groups with air-dry density between 400–720 kg m<sup>-3</sup> at 15% moisture content and are non-durable. The timbers are suitable for light construction, light-duty flooring, panelling, non-structural components and general utility timbers. Currently, a total of 48 groups of Malaysian timbers including acacia and rubberwood have been classified as Light Hardwoods (Anon. 2009).
- **Logged-over forests.** See secondary forests.
- **Major commercial timbers.** See commercial timbers.
- **Malayan wood.** See mixed hardwoods.
- **Medium Hardwoods** (commonly written as MHW) are timber groups with air-dry density between 720–880 kg m<sup>-3</sup> at 15% moisture content and are moderately durable. The timbers are suitable for moderately heavy to heavy construction, beams, columns, roof trusses, parquet, flooring, door and window frames. Currently, a total of 36 groups of Malaysian timbers have been classified as Medium Hardwoods (Anon. 2009).
- **Minor commercial timbers.** See lesser-known timbers.
- **Mixed hardwoods** is a common term for timbers traded in mixed groups (Lim et al. 2004). Mixed hardwoods are also known as mixed timber species, lesser-known commercial timbers, or chap-char (Lim et al. 2004, MTIB 2021). In the East Coast region of Peninsular Malaysia, they are dubbed as Malayan wood. The identity of the timbers is usually unknown, hence the strength properties and durability of mixed hardwoods can be widely varied. The trading and utilisation of mixed hardwoods are based on density classes. Planks of higher

density are traded at a higher price as mixed Heavy Hardwoods and used for light and medium construction. Planks of lower density are traded at a lower price as mixed Light Hardwoods and used as general utility timbers (MTIB 2021).

- **Mixed Heavy Hardwoods.** See mixed hardwoods.
- **Mixed Light Hardwoods.** See mixed hardwoods.
- **Mixed timber species.** See mixed hardwoods.
- **Mother timber trees** are trees that are protected from logging by forestry authorities in managing the reproductive and pollination mechanism of targeted species and locations. The selection of trees is conducted before the logging activities, in accordance with the sustainable forest management system (Sheikh Ibrahim 2006).
- **Native timber species.** See indigenous timber species.
- **Naturalised timber species** are non-indigenous timber species that have been introduced to the wild and successfully establish a population. They are sometimes referred as alien timber species or foreign timber species. Not all non-indigenous timber species are naturalised timber species. Some naturalised timber species can also be considered to be invasive timber species. *Acacia* spp. and *Leucaena leucocephala* are examples of naturalised timber species commonly developed at the forest edges and on open spaces.
- **Non-indigenous timber species** are timber tree species that are historically known not native to Malaysia but then introduced by humans, either intentionally or accidentally. Non-indigenous timber species were usually introduced into an ecosystem as plantation timber species, urban timber species, or for food and medicinal purposes. For example, the trees of asam jawa (*Tamarindus indica*) are widely found throughout the country. *T. indica* is planted for its pod-like fruits which are used in various cuisines. In foreign nations, the timber of *T. indica* is highly valued for furniture, panelling and planking. However, *T. indica* is believed to be an indigenous timber species to tropical Africa, hence it is classified as a non-indigenous timber species to Malaysia (Bolza & Keating 1972). Non-indigenous timber species are also known as non-native timber species, exotic timber species, or introduced timber species.
- **Non-native timber species.** See non-indigenous timber species.
- **Non-obligatory timbers.** See lesser-known timbers.
- **Pioneer timber species** refer to tree species that first colonise disturbed or damaged sites and are able to grow into a timber-producing size. They grow rapidly and establish new canopies faster than competing plants. Some common pioneer timber species are samak (*Adinandra* spp.), pulai (*Alstonia* spp.), kelempayan (*Neolamarckia cadamba*), terap (*Artocarpus* spp.), mendong (*Elaeocarpus* spp.), sesendok (*Endospermum diadenum*), ubah (*Glochidion* spp.), mahang (*Macaranga* spp.), balik angin (*Mallotus* spp.), batai (*Paraserianthes falcataria*), mempoyan (*Rhodamnia cinerea*), ludai (*Sapium* spp.), mengkirai (*Trema* spp.) and binuang (*Octomeles sumatrana*) (Nordahlia et al. 2018).
- **Plantation timber species** are timber species programmed for the establishment of plantation forests. Plantation timber species in Malaysia include indigenous timber species and non-indigenous timber species. At present, the National Forest Plantation Programme

focuses on eight plantation timber species namely *Acacia mangium*, *Azadirachta excelsa*, *Hevea brasiliensis*, *Khaya ivorensis*, *Neolamarckia cadamba*, *Octomeles sumatrana*, *Paraserianthes falcataria* and *Tectona grandis* (FDPM 2021). Introduced to Malaysia in the 1960s, sizable plantation sites of tropical pine (*Pinus* spp.) still exist though mostly were not managed and some have been lost to other forms of development. Other plantation timber species planted in Sabah are yemane (*Gmelina arborea*) and eucalyptus (*Eucalyptus deglupta*). Plantation timber species in Sarawak include engkabang jantung (*Shorea macrophylla*) (Krishnapillay 2002). Rubberwood (*Hevea brasiliensis*) is a non-indigenous timber species planted mainly for the latex, but today the timbers are traded as one of the valuable commercial timbers (MTIB 2021).

- **Pole-timbers** are small-diameter logs from trees having a diameter at breast height below the allowable harvesting size. In Malaysia, pole-timbers are commercially exploited for fuelwood, piling material and minor constructions (FDPM 2021). They are familiar with a local epithet of *kayu jaras* which literally means timber log of below 15 cm in diameter. Mangrove logs are a common example of commercially exploited small-diameter logs.
- **Primary stands** refer to timber tree species of untouched, pristine forests that exist in their original condition. The species composition of these forests is relatively unaffected by human activities. Primary stands are also termed virgin stands (Samsudin et al. 2010).
- **Prime timber species.** See commercial timbers.
- **Protected timbers** are species or groups of timber trees that are protected from logging activities. The protection can either be prohibition from exploitation or being trade-restricted timbers. The protection effort is due to various reasons such as being identified as mother timber trees, trees which are below the cutting size limit, threatened species, trees containing nests, den or breeding place, or trees having social forestry importance (Mohd Yunus et al. 2012). In Sarawak, tualang (*Koompassia excelsa*) is a protected tree due to the socio-economic importance of the honey-producing bee nests to the native people (Anon. 1998).
- **Scientific names** are the internationally applied system of naming species of living things. The scientific naming system of plants is also referred as botanical names. Based on the principle of “one plant, one name” and “one name for one plant”, scientific names are essential to represent the ultimate identity of a timber species and avoid confusion (Wong 2002). Scientific names are crucial to identify threatened timber species.
- **Secondary timber species** are timber trees commonly found in secondary forests. The opposite term for secondary timber species is primary stands. Some examples of secondary timber species are kelat (*Syzygium* spp.), perah (*Elateriospermum tapos*), mahang (*Macaranga* spp.), penarahan (*Knema* spp.), medan (Lauraceae), mempising (Annonaceae), sesendok (*Endospermum diadenum*), kedondong (*Santiria laevigata*), mempening (*Lithocarpus* spp.), nyalin (*Xanthophyllum* spp.), petaling (*Ochanostachys amentacea*) and melantai (*Shorea macroptera*) (Samsudin et al. 2010).
- **Secondary forests** are forests that have re-grown through natural processes after a significant disturbance such as logging, fire, or landslide, until the effects of the disturbance are no longer obvious. Secondary forests are also known as second rotation forests, second-growth forests, or logged-over forests).
- **Second-growth forests.** See secondary forests.

- **Second rotation forests.** See secondary forests.
- **Softwoods** are timbers from gymnosperm trees. There are only a few Softwoods in Malaysia with commercial importance namely damar minyak (*Agathis* spp.), podo (*Dacrycarpus imbricatus*, *Nageia* spp. and *Podocarpus* spp.), and sempilor (*Falcatifolium falciforme*, *Dacrydium* spp. and *Phyllocladus* spp.) (MTC 2021).
- **Standard Malaysian Names** are standardised timber names that are applicable throughout the country. In order to streamline the timber industry, trade names and vernacular timber names found within various parts of the country are equated and standardised. For example, the higher density timbers of *Hopea* spp. are given a Standard Malaysian Name of giam while the lighter species are named as merawan. Also, the timbers of *Cotylelobium* spp. and *Vatica* spp. are grouped together as resak (Wong 2002).
- **Strength Groups** (commonly written as S.G.) are the classification system of Malaysian timbers based on the mechanical properties from the highest values of S.G.1 to the lowest values of S.G.7. For instance, balau is classified under S.G.1, red balau is classified under S.G.3 and dark red meranti is classified under S.G.5, although all groups are the timbers of *Shorea* spp. (MS 544 2001).
- **Threatened timber species** are species that are protected from exploitation due to currently subject to extinction (Yong et al. 2021). Threatened timber species are either critically endangered (CR), endangered (EN), or vulnerable (VU). The protection of these timber trees is basically species-based. For example, balau (*Shorea* spp.) is one of the commercial timbers and is regularly logged and marketed. However, *Shorea lumutensis*, a species of balau that is endemic to Peninsular Malaysia with a vernacular timber name of balau putih, is protected from logging due to being critically endangered (Mohd Yunus et al. 2012).
- **Trade names.** Timber trade names are used mainly for trading purposes. In Malaysia, there are over 2500 species of timber tree, and most of them have been taxonomically identified by scientific names. Closely related species very often share similar properties and they can be safely grouped and marketed together under a single trade name (Wong 2002). Trade names are not necessarily confined to the multi-species groups. Trade names are also available for monospecific timbers such as kempas (*Koompassia malaccensis*) and chengal (*Neobalanocarpus heimii*). The states of Sabah and Sarawak have evolved their own sets of trade names for certain timbers. For instance, balau (*Shorea* spp.) is traded as selangan batu in Sabah and Sarawak.
- **Trade-restricted timbers** are timbers that have been classified under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). For example, the international trade of Ramin (*Gonystylus* spp.), which is listed under Appendix II, can only be authorised by the granting of the export permit or certificate (Mohd-Jamil 2018).
- **Unpopular timber species.** See lesser-known timbers.
- **Urban timber species** are timber trees planted in urban areas mainly for garden and landscaping projects. For example, hujan-hujan (*Samanea saman*) is a non-indigenous timber species commonly planted in lake gardens. Similarly, *Calophyllum inophyllum* is a species of commercial timbers of bintangor group, a widely planted street tree locally known as bintangor laut (Sreetheran et al. 2011).
- **Valuable commercial timbers.** See commercial timbers.

- **Vernacular timber names** are names given by natives to the timber trees. The main drawback in the usage of vernacular names is that they are often not confined to one particular species. For instance, there are timbers locally known as chengal pasir, chengal batu and chengal kampung which are totally unrelated to *Neobalanocarpus heimii*, a species that produces timbers with a Standard Malaysian Name of chengal. Likewise, various vernacular names are used for the same species of timber in different parts of the country. For example, the timber of *Koompassia malaccensis* which is recognised by the Trade Name kempas is known as impas in Sabah and menggris in Sarawak (Wong 2002).
- **Virgin stands.** See primary stands.
- **Weed timber species.** See lesser-known timbers.

## SUMMARY

The classification of timber species and groups using terms and expressions is a practical tool of encouraging research and promotional efforts. By segregating timbers into specific categories, the commercial status of a species or group could be continuously updated, refined, and given better attention, thus allowing for more effective marketing. For example, the trade value of pioneer timber species will significantly improve through further analysis of numerous other species. Also, lesser-utilised timbers and naturalised timber species are currently lack proper market attention and have relatively the least economic importance, thus making them the most potential species for research and commercialisation. Furthermore, there seems to be a great prospective for the exploitation of material from urban timber species. They are widely planted throughout the nation but hardly ever utilised commercially.



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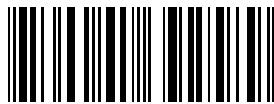
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