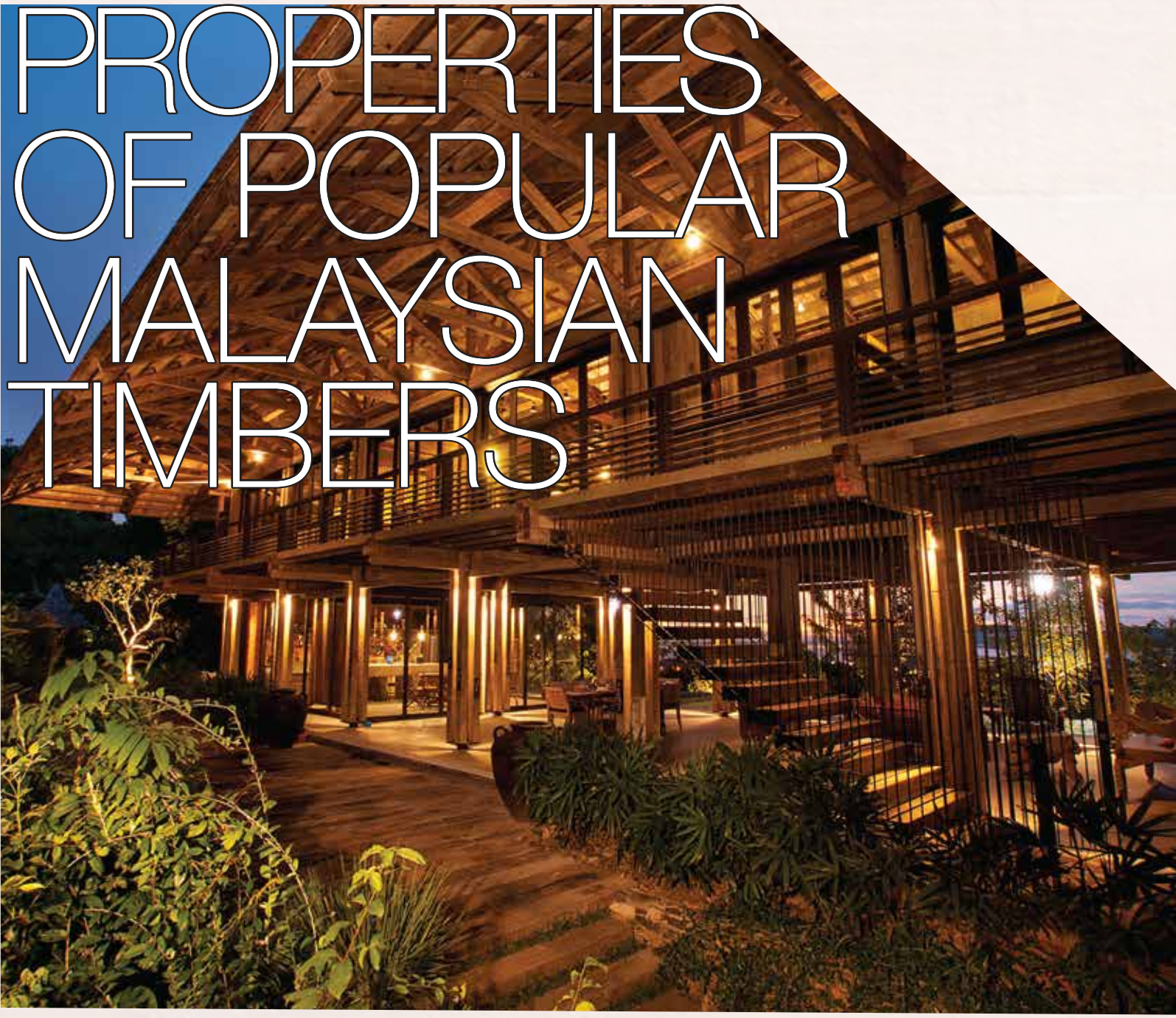
MTC
MALAYSIAN TIMBER COUNCIL

PROPERTIES OF POPULAR MALAYSIAN TIMBERS





Staircase
- Dark Red Meranti, Gerutu, Keledang, Machang, Rubberwood



Door and Window Frame
- Balau, Dark Red Meranti, Kembang Semangkok, Merbau, Merpauh, Mersawa, Nyatoh

no.	name	botanical name	air-dry density (kg/m^3)	shrinkage		recommended kiln schedule	strength group	static bending (MPa)		compression strength (MPa)		shear strength (MPa)
				radial %	tangential %			modulus of elasticity	modulus of rupture	perpendicular to grain	parallel to grain	
	heavy hardwood											
1.	Balau	*Shorea* spp.	850-1,155	1.7-2.1	3.5-3.9	B	1	20,100	142	9.8	76	15.0
2.	Bitis	*Madhuca utilis, Palaquium ridleyi & P.stellatum*	820-1,200	2.8	4.0	B	1	23,800	171	12.5	90	15.4
3.	Chengal	*Neobalanocarpus heimii*	915-980	1.1	2.6	B	1	19,600	149	12.0	75	13.9
4.	Giam	*Hopea* spp.	865-1,220	2.6-4.4	1.4-2.0	B	4	16,500	122	11.2	59	15.9
5.	Kekatong	*Cynometra* spp.	880-1,155	1.6	2.7	B	2	18,400	135	11.4	67	15.6
6.	Keranji	*Dialium* spp.	755-1,250	1.0-2.3	1.7-3.7	E	3	20,100	134	9.2-19.7	72	16.0
7.	Merbau	*Intsia* spp.	515-1,040	0.9	1.6	n.a.	4	15,400	116	9.2	58	12.5
8.	Red Balau	*Shorea* spp.	800-880	1.4-2.2	3.2-3.6	G	3	14,800-17,000	100-142	5.5	52-69	10.0-15.0
9.	Resak	*Cotylelobium* spp. & *Vatica* spp.	655-1,155	1.5	3.4	B	4	14,400-18,100	81-105	4.9-11.5	42-61	9.3-12.6
10.	Tembusu	*Fagraea* spp.	640-1,075	1.1	1.6	n.a.	5	14,000	100	8.0	52-61	10.0-14.0
	medium hardwood											
11.	Kapur	*Dryobalanops* spp.	575-815	1.5-2.1	3.8-5.1	E	4	13,000-18,700	114-126	5.5	62-70	9.9-12.5
12.	Kasai	*Pometia* spp.	735-915	2.8	3.5	D	4	17,000	106	5.3-9.5	49-54	13.4-14.3
13.	Kelat	*Syzygium* spp.	495-1,010	1.9	3.3	C	3	17,600	116	6.0	59	12.8
14.	Keledang	*Artocarpus* spp.	500-945	0.8-1.0	1.7-2.6	F	5	12,200-15,500	93-97	4.9	48-59	9.9-12.5
15.	Kempas	*Koompassia malaccensis*	770-1,120	2.0	3.0	E	2	18,600	122	7.5	66	12.4
16.	Keruing	*Dipterocarpus* spp.	690-945	1.6-3.1	3.3-7.4	D	5	17,000-22,300	91-133	4.3-9.2	50-68	9.2-12.3
17.	Kulim	*Scorodocarpus borneensis*	640-975	1.7	3.2	n.a.	3	14,900	107	5.1	57	10.3
18.	Mata Ulat	*Kokoona* spp.	895-1,055	1.6-2.6	2.0-3.0	C	2	16,300	102	6.8	53	10.7
19.	Mengkulang	*Heritiera* spp.	625-895	1.3-1.7	3.0-3.8	D	5	12,000-16,000	91-110	5.4	52-61	10.8-12.2
20.	Meransi	*Carallia* spp.	670-930	0.6	1.3-2.3	n.a.	4	13,200-13,400	104-105	10.3-10.4	55-56	10.8-11.0
21.	Merawan	*Hopea* spp.	495-980	0.9-1.3	2.2-3.3	H	4	15,000	90-92	5.1-5.6	46-51	9.0-9.3
22.	Merpauh	*Swintonia* spp.	640-880	0.8-1.4	1.5-2.0	C	4	14,000-18,000	94-108	6.4-7.2	44-57	12.6-13.7
23.	Punah	*Tetramerista* spp.	625-800	3.2	4.5	C	4	15,400	87	5.7	49	9.7
24.	Rengas	*Gluta* spp.	640-960	1.0	1.8	E	4	14,900	111	7.7	59	13.2
25.	Simpoh	*Dillenia* spp.	675-820	2.2	3.9	C	4	14,300	76	5.5	39	8.2
26.	Tualang	*Koompassia excelsa*	800-865	1.5	1.7	E	3	17,800	121	8.0	62	16.3
	light hardwood											
27.	Bintangor	*Calophyllum* spp.	465-865	1.4-2.1	2.0-3.7	C	5	14,300	74	3.2	37	10.8
28.	Dark Red Meranti	*Shorea* spp.	560-865	1.1-2.1	2.9-4.4	F	5	11,200-13,900	74-92	3.0-5.0	39-53	8.0-11.4
29.	Durian	*Durio* spp., *Neesia* spp., *Coelostegia* spp. & *Kostermansia* sp.	420-865	1.3-2.4	1.6-4.0	D	6	9,500-15,800	65-95	2.7-5.7	33-54	6.8-9.2
30.	Geronggang	*Cratoxylum* spp.	350-610	2.2	4.2	E	7	8,000	40	1.9	18	5.1
31.	Gerutu	*Parashorea* spp.	640-880	1.6-2.0	3.3-3.6	C	5	20,600	118	8.4	60	11.2
32.	Jelutong	*Dyera* spp.	420-500	0.8	2.0	H	6	8,100	50	2.7	27	5.8
33.	Kedondong	Burseraceae family	495-975	1.8-2.4	3.2-4.1	J	5	12,100-12,900	81	6.4	43-44	10.9-11.8
34.	Kembang Semangkok	*Scaphium* spp.	515-755	1.2	3.0	H	3	15,300-17,000	92-93	5.4	50-52	9.1-10.1
35.	Light Red Meranti	*Shorea* spp.	385-755	1.5-2.6	3.8-7.4	F	6	8,800-13,600	63-83	2.4-2.5	35-48	6.3-11.0
36.	Machang	*Mangifera* spp.	545-610	0.9-1.3	1.7-1.9	F	6	7,500-14,800	57-90	6.1	32-48	12.2-13.1
37.	Medang	Lauraceae family	350-880	0.9-2.0	2.2-3.9	n.a.	6	10,100-12,600	64-93	3.2	34-52	7.5-7.7
38.	Melantai	*Shorea* spp.	415-625	0.8-0.9	2.6-2.8	H	6	7,900	46	2.2	25	6.3
39.	Melunak	*Pentace* spp.	530-755	1.4	2.5	n.a.	5	12,000	85	4.3	44	10.8
40.	Mempisang	Annonaceae family	370-975	1.5-4.0	2.7-4.5	H	5	13,400-14,800	80-85	3.7-4.6	41-51	8.0-11.5
41.	Meranti Bakau	*Shorea uliginosa*	595-755	1.0	2.7	H	4	14,700	68	3.4	36	6.7
42.	Mersawa	*Anisoptera* spp.	515-735	1.4	3.2-3.8	E	6	9,200-12,600	49-54	5.5-5.7	26-29	7.1-7.4
43.	Nyatoh	Sapotaceae family	400-1,075	1.0-3.0	1.9-4.3	E	5	12,200-18,300	79-129	4.5-9.2	44-65	11.0-11.9
44.	Penarahan	Myristicaceae family	370-770	2.1-2.2	3.1-3.2	n.a.	5	9,380	51	5.7	44	9.6
45.	Perupok	*Lophopetalum* spp.	480-640	2.3-2.4	2.7-3.0	n.a.	4	12,200-12,600	76-79	5.2-5.5	43-44	7.4-9.0
46.	Pulai	*Alstonia* spp.	210-500	2.3	2.8	J	7	7,100	43	n.a.	25	6.3
47.	Ramin	*Gonystylus* spp.	530-785	1.6-1.9	3.4-4.0	B & C	5	12,000-16,400	88-134	n.a.	49-27	8.5-11.9
48.	Rubberwood	*Hevea brasiliensis*	560-640	0.8	1.2	D	5	9,200	66	4.7	32	11.0
49.	Sepetir	*Copaifera palustris* & *Sindora* spp.	530-785	1.5	2.9	G	5	13,600	92	5.9	46	13.6
50.	Sesendok	*Endospermum* spp.	305-655	1.2	1.3	J	7	8,500	39	1.8	21	5.4
51.	Terentang	*Campnosperma* spp.	320-560	1.6-2.1	3.2-5.5	F, H	7	7,000	42	2.2	22	7.5
52.	White Meranti	*Shorea* spp.	495-995	0.6-1.8	1.4-3.0	J	5	11,500-19,400	90-132	3.9-11.1	44-67	9.4-14.2
53.	Yellow Meranti	*Shorea* spp.	575-735	0.9-1.2	3.1-3.8	J	6	10,000-12,400	67-88	3.0	40-51	8.0-10.5
	softwood (conifers)											
54.	Damar Minyak	*Agathis* spp.	360-660	1.2	2.5	D	6	12,000	66	n.a.	34	6.9
55.	Podo	*Podocarpus* spp., *Dacrycarpus imbricatus* & *Nageia* spp.	380-920	n.a.	n.a.	n.a.	n.a.	10,500	n.a.	n.a.	49	7.8

no.	name	botanical name	ease of planing	quality of planing finish	ease of boring	quality of boring finish	ease of turning	quality of turning finish	quality of nailing	ease of treatability
	heavy hardwood									
1.	Balau	*Shorea* spp.	difficult	smooth	s. difficult	smooth	easy	smooth	very difficult	very difficult
2.	Bitis	*Madhuca utilis, Palaquium ridleyi & P.stellatum*	s. difficult	smooth	s. difficult	s. rough	difficult	rough	very difficult	very difficult
3.	Chengal	*Neobalanocarpus heimii*	easy	smooth	easy	smooth	easy	smooth	very difficult	m. difficult
4.	Giam	*Hopea* spp.	easy	smooth	easy	smooth	easy	rough	very difficult	very difficult
5.	Kekatong	*Cynometra* spp.	s. difficult	m. smooth	s. difficult	m. smooth	difficult	m. smooth	difficult	f. difficult
6.	Keranji	*Dialium* spp.	easy	smooth	easy	smooth	easy	smooth	good	difficult
7.	Merbau	*Intsia* spp.	s. difficult	smooth	easy	smooth	easy	smooth	very difficult	very difficult
8.	Red Balau	*Shorea* spp.	easy	smooth	s. difficult	smooth	easy	smooth	difficult	very difficult
9.	Resak	*Cotylelobium* spp. & *Vatica* spp.	easy	smooth	easy	smooth	difficult	smooth	n.a.	very difficult
10.	Tembusu	*Fagraea* spp.	easy	smooth	easy	smooth	easy	smooth	good	difficult
	medium hardwood									
11.	Kapur	*Dryobalanops* spp.	easy	smooth	easy	smooth	easy	m. smooth	difficult	difficult
12.	Kasai	*Pometia* spp.	easy	rough	s. difficult	s. rough	s. difficult	rough	good	very difficult
13.	Kelat	*Syzygium* spp.	easy	smooth	s. difficult	s. rough	difficult	smooth	difficult	difficult
14.	Keledang	*Artocarpus* spp.	easy	smooth	difficult	rough	easy	rough	good	difficult
15.	Kempas	*Koompassia malaccensis*	easy	smooth	s. difficult	rough	s. difficult	rough	difficult	very easy
16.	Keruing	*Dipterocarpus* spp.	s. difficult	smooth	s. difficult	smooth	s. difficult	rough	very difficult	very easy
17.	Kulim	*Scorodocarpus borneensis*	s. difficult	smooth	s. difficult	smooth	m. easy	s. rough	very difficult	average
18.	Mata Ulat	*Kokoona* spp.	easy	smooth	easy	smooth	difficult	rough	n.a.	very difficult
19.	Mengkulang	*Heritiera* spp.	s. difficult	smooth	difficult	m. smooth	easy	s. rough	good	easy
20.	Meransi	*Carallia* spp.	easy	smooth	easy	m. smooth	n.a.	n.a.	n.a.	average
21.	Merawan	*Hopea* spp.	easy	smooth	s. difficult	m. smooth	easy	smooth	very difficult	difficult
22.	Merpauh	*Swintonia* spp.	easy	smooth	difficult	smooth	difficult	rough	good	very easy
23.	Punah	*Tetramerista* spp.	easy	m. smooth	easy	smooth	easy	rough	good	average
24.	Rengas	*Gluta* spp.	difficult	m. smooth	s. difficult	s. rough	s. difficult	rough	excellent	very difficult
25.	Simpoh	*Dillenia* spp.	f. easy	smooth	easy	s. rough	easy	smooth	difficult	average
26.	Tualang	*Koompassia excelsa*	easy	m. smooth	s. difficult	rough	easy	m. smooth	good	easy
	light hardwood									
27.	Bintangor	*Calophyllum* spp.	easy	smooth	easy	smooth	easy	s. rough	difficult	m. difficult
28.	Dark Red Meranti	*Shorea* spp.	easy	smooth	easy	s. rough	easy	smooth	good	difficult
29.	Durian	*Durio* spp., *Neesia* spp. ,*Coelostegia* spp. & *Kostermansia* sp.	easy	smooth	easy	f. rough	easy	rough	good	easy
30.	Geronggang	*Cratoxylum* spp.	easy	smooth	easy	rough	easy	rough	excellent	easy
31.	Gerutu	*Parashorea* spp.	easy	smooth	easy	smooth	easy	smooth	excellent	f. difficult
32.	Jelutong	*Dyera* spp.	easy	smooth	easy	smooth	easy	smooth	excellent	easy
33.	Kedondong	Burseraceae family	s. difficult	m. smooth	difficult	s. rough	s. difficult	m. smooth	good	very difficult
34.	Kembang Semangkok	*Scaphium* spp.	easy	smooth	easy	s. rough	easy	s. rough	good	very easy
35.	Light Red Meranti	*Shorea* spp.	easy	smooth	easy	smooth	easy	m. smooth	good	difficult
36.	Machang	*Mangifera* spp.	easy	m. smooth	easy	s. rough	easy	rough	excellent	very easy
37.	Medang	Lauraceae family	easy	smooth	easy	m. smooth	easy	smooth	excellent	very difficult
38.	Melantai	*Shorea* spp.	easy	smooth	easy	m. smooth	easy	rough	good	difficult
39.	Melunak	*Pentace* spp.	s. difficult	smooth	easy	smooth	easy	m. smooth	good	very difficult
40.	Mempisang	Annonaceae family	easy	smooth	easy	rough	easy	smooth	difficult	extremely easy
41.	Meranti Bakau	*Shorea uliginosa*	easy	smooth	easy	smooth	easy	rough	good	rather difficult
42.	Mersawa	*Anisoptera* spp.	difficult	smooth	easy	rough	easy	smooth	good	difficult
43.	Nyatoh	Sapotaceae family	easy	smooth	easy	smooth	easy	smooth	good	difficult
44.	Penarahan	Myristicaceae family	easy	smooth	easy	smooth	easy	smooth	good	very easy
45.	Perupok	*Lophopetalum* spp.	easy	smooth	easy	smooth	easy	smooth	difficult	difficult
46.	Pulai	*Alstonia* spp.	easy	smooth	easy	smooth	easy	smooth	excellent	extremely easy
47.	Ramin	*Gonystylus* spp.	easy	smooth	easy	rough	easy	smooth	difficult	extremely easy
48.	Rubberwood	*Hevea brasiliensis*	easy	smooth	easy	rough	easy	rough	good	easy
49.	Sepetir	*Copaifera palustris & Sindora* spp.	easy	smooth	s. difficult	smooth	m. easy	s. rough	good	very difficult
50.	Sesendok	*Endospermum* spp.	easy	smooth	easy	smooth	easy	m. smooth	excellent	extremely easy
51.	Terentang	*Campnosperma* spp.	easy	rough	easy	rough	easy	rough	excellent	easy
52.	White Meranti	*Shorea* spp.	m.easy	rough	easy	rough	m. easy	rough	good	easy
53.	Yellow Meranti	*Shorea* spp.	easy	smooth	easy	rough	easy	s. rough	good	m. difficult
	softwood (conifers)									
54.	Damar Minyak	*Agathis* spp.	easy	smooth	difficult	rough	easy	smooth	excellent	extremely easy
55.	Podo	*Podocarpus* spp., *Dacrycarpus imbricatus & Nageia* spp.	easy	smooth	easy	smooth	easy	smooth	excellent	n.a.

Remarks : f. = fairly m. = moderately s. = slightly



Wall Panels

- Balau, Bintangor, Dark Red Meranti, Kempas, Merbau, Rubberwood



Flooring

- Keledang, Kembang Semangkok, Mengkulang, Merbau, Sepetir, Yellow Meranti



Decking

- Balau, Bintangor, Kelat, Kempas, Keruing, Merbau

THE CHARACTERISTICS OF POPULAR MALAYSIAN TIMBERS

HEAVY HARDWOOD



Sapwood is lighter in colour and well defined from the heartwood, which is yellow or grey-brown and darkens to deep brown on exposure. The grain is deeply interlocked and the texture is fine and even.



Sapwood is light yellow and sharply defined from the heartwood, which is light yellow-brown with a distinct green tinge, darkening on exposure to dark purple-brown or rust-red. Texture is fine and even, with shallowly to deeply interlocked grain.



Sapwood is pale yellow in colour. Heartwood is yellowish to orange-brown when fresh, darkening to brown or dark red-brown on exposure. The texture is coarse but even, with interlocked grain.



Sapwood is pink, purple-brown or grey-brown and is fairly distinct from the well-defined from the heartwood which is light to deep red-brown. The grain is interlocked, often deeply interlocked. Texture is rather coarse and even.

MEDIUM HARDWOOD



Sapwood is lighter in colour than and not sharply defined from the heartwood, which is pink, red or red-brown. Texture is moderately coarse but even, with straight or shallowly interlocked grains.



Sapwood is not well-defined from the heartwood which is light brown, pink-brown, red brown or purple brown with a grey tinge. The grain is interlocked, irregular or wavy. Texture is moderately fine and even.



Sapwood is light yellow to yellow-brown, sharply defined from the heartwood, which is brown or orange-brown and turns to dark brown on exposure. Texture is moderately coarse to coarse and even, with interlocked to deeply interlocked grain.



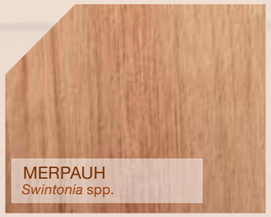
Sapwood is white or pale yellow in colour. Heartwood is pinkish when fresh and darkens to bright orange-red or deep brown. The grain is interlocked, often very interlocked. The texture is coarse but even, except in areas where included phloem occurs.



Sapwood is lighter in colour than the heartwood and is invariably with a tinge of grey. The heartwood is red-brown to purple-red and darkens on exposure. Grain is straight to deeply interlocked. Texture is moderately coarse to coarse but even.



Sapwood is usually lighter in colour than and not always well-defined from the heartwood, which is red, red-brown to dark red-brown to dark re-brown. The grain is straight to shallowly interlocked and texture is slightly to moderately coarse but even.



Sapwood is light brown with a grey or pink-tinge and is not well-defined from the heartwood, which is light grey-brown with a pink-tinge. The grain is interlocked and texture is moderately coarse but even.

To learn more about Malaysian timber species, check out MTC WOOD WIZARD

LIGHT HARDWOOD



Sapwood and the heartwood are clearly demarcated. The former is yellow-brown with a pink tinge and the latter is deep red, red-brown, pink-brown or orange-brown. The timber has interlocked, spiral or wavy grains and often comes with a striped figure. The texture is moderately coarse to coarse and uneven.



Sapwood is not clearly defined form the heartwood which is medium red to deep red to deep red-brown. The grain is interlocked. The texture is moderately coarse but even.



Sapwood is light yellow-brown and frequently darker than the heartwood which is light golden brown and darkens to a deep brown on exposure. Its texture is moderately coarse and even, with interlocked grain.



Sapwood is lighter in shade, merging gradually into the heartwood, which is yellow-brown, light buff or light brown. Texture is slight coarse and uneven, due to the broad rays and wide layers of parenchyma. Grain is straight or shallowly interlocked.



Sapwood is not sharply defined from the heartwood, which is light to dark yellow and darkens on exposure. Texture is moderately coarse but even, with shallow to deeply interlocked grain, occasionally with slight spiral grain.



Sapwood is lighter in colour and is only moderately sharply differentiated from the heartwood, which is deep pink-red or red-brown. Texture is moderately fine to slightly coarse, with straight to shallowly interlocked and sometimes wavy grain.



Sapwood is light grey-brown or beige with a pink tinge. Heartwood is brown with a pink tinge and darkens on exposure. Texture is moderately fine and even, with straight or shallowly interlocked grain.



Sapwood is well-defined. The heartwood is light yellow-brown with a green tinge, darkening to deeper shades of yellow-brown or brown. The grain is interlocked and sometimes wavy. The texture is moderately coarse but even.



Sapwood is not differentiated from the heartwood, which is pale cream in colour, often with a pink tinge. Texture is moderately coarse but even with straight to shallowly interlocked grain.

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MTC
MALAYSIAN TIMBER COUNCIL

MTC HEADQUARTERS
T +60 3 9281 1999
E council@mtc.com.my

MTC LONDON
T +44 207 222 8188
E mtclondon@mtc.com.my

MTC GUANGZHOU
T +86 20 3877 3019
E mtcchina@mtc.com.my

MTC DUBAI
T +971 4 4279 823
E mtcdubai@mtc.com.my

MTC BANGALORE
T +91 80 4853 8888
E mtcindia@mtc.com.my

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malaysiantimber
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mtc_my