

The pleasing and natural appearance of hardwood makes it an ideal material for bridges and boardwalk in the countryside and parklands where it blends harmoniously with its surroundings.

- Hardwoods :
- ✓ Require minimal maintenance
 - ✓ Provide an extended life without the need for preservative treatment
 - ✓ Have excellent vandal and fire resistant characteristics

Shorea spp.

Family

Dipterocarpaceae

DISTRIBUTION

The hard, heavy timber species of Shorea occurring in South East Asia are grouped under common trade names peculiar to the area. Thus Selangan Batu (hard Selangan) is the name used in Sabah, Brunei and Sarawak, while Balau is used to describe the heavy Malaysian species.

BALAU

Balau is generally separated into two types in Malaysia, i.e. Balau and Red Balau.

Balau is produced mainly from Shorea Atrinervosa, Shorea Elliptica, Shorea Foxworthyi, Shorea Glauca, Shorea Laevis, Shorea Maxwelliana and Shorea Submontana.

Red Balau is produced mainly from Shorea Guiso, Shorea Kunstleri, Shorea Collina and Shorea Ochrophloia

THE TIMBER

Selangan Batu is a yellowish-brown timber with interlocked grain, and coarse, but even texture. According to species, durable to very durable.

Balau is a yellow-brown, brown or reddish-brown timber with interlocked grain and a moderately fine and even texture. It is classified in Malaysia as being very durable.

Red Balau is a purplish-red or dark red-brown timber with an interlocked grin and a coarse but even texture. It is classified in Malaysia as being less durable than Balau, i.e. moderately durable.

Red Selangan Batu (Sabah), and Alan, or Meraka Alan (Sarawak and Brunei) are approximately equal in colour and characteristics to Red Balau.

AVERAGE WEIGHTS (air dry)

Balau and Selangan Batu No.1	881 to 980 kg/m ³
Red Balau	800 to 880 kg/m ³
Selangan Batu No. 2	850 kg/m ³
Alan	850 to 880 kg/m ³
Red Selangan Batu	850 kg/m ³

AVERAGE STRENGTH PROPERTIES

All species mentioned have hard, heavy and strong timber with strength properties similar to those of Greenheart.

USES

All species are suitable for heavy structural work, bridge and wharf construction, sleepers, flooring and boat framing, but the higher durability of Balau and Selangan Batu renders them more suitable for adverse conditions of use.

Information extracted from TRADA'S Timbers of the World – Book 4



The behaviour of timber structures exposed to fire is an issue of major importance. How structures behave in the first and second phases of fire development is termed its reaction to fire. The reaction to fire of a structure is a measure of how easy it is to ignite that structure and also how easy that structure contributes to the fire development and spread. This may be important for the intended use of the structure or the influence of the fire on the structure's surroundings.

Once we reach the fully developed fire phase it is assumed that all combustible materials present are burning. We are therefore interested in the fire resistance of the structure, a measurement of the ability of a system to withstand fire.

Fire resistance is defined in BS4422:2005 as "the ability of an item to fulfil, for a stated period of time, the required fire stability and/or integrity and/or thermal insulation and/or expected duty specified in a standard fire resistant test". Fire resistance is therefore a property of the elements of an item and not its materials.

Structural elements are required to maintain their load bearing capability for the appropriate period and separating elements must resist the passage of fire or excessive heat. The principle is one of maintenance of structural stability and containment of the fire until fire fighting is successful.

Set against the complex interactions of an assembly and a mixture of materials is the predictable speed at which timber burns known as the 'charring rate'.

Different timbers char at varying rates, largely as a function of their density, with the higher density timbers charring more slowly. For structural timbers listed in BS 5268: Part 2 this rate of depletion is taken at 20 mm in 30 minutes, from exposed face. Certain of the denser hardwoods, such as Oak and Sapele (densities in excess of 640 kg/m³), which are used for structural purposes, have char rates of only 15 mm in 30 minutes, whereas lower density timbers such as Western Red Cedar (density 390 kg/m³) have rates of 25 mm in 30 minutes.

CHARRING RATE

Type of Timber	Charring per minute
Softwood	0.80 mm
Softwood Glue Laminated	0.70 mm
Hardwood	0.55 mm



Bridges and structures supplied by Sarum Hardwood Structures are typically manufactured in Ekki, which has a density of 1070 kg/m³, giving it superior fire reaction, fire resistance and inhibiting the development of fire.

All timbers supplied by SHS are obtained from responsibly managed sources. If required, timber can be sourced from independently certified forests managed in accordance with the principles and criteria established by the Forest Stewardship Council (FSC).

Responsible Forest Management

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