

# WOOD SCHOOL – a glossary of terms used in the woodworking industry.

## TIMBER – WEIGH, SHAPE AND FORM

**Botanical Name** – This is the only definitive way to identify a timber. Vernacular and trade names are notoriously inaccurate in this regard. It is also possible to assume some familial similarities between timbers in the same genus.

**Density** – In our catalogue we give the densities of the timbers in kilograms per cubic meter. Water has a density of 1000kg/m<sup>3</sup> so any timber with a higher density than that will sink in water.

The density of the timber can be used as an indication of the hardness, strength, and comparative workability of the wood.

### Two square edged



Two square edged maple boards

Most imported timbers come to us sawn with two square edges. This saves on shipping space and excludes infestations of bark dwelling insects. In higher grade it can normally be assumed that most objectionable defects such as sapwood, heart shake, ring shake and most knots will have been removed. Packs of 2SE lumber often a mix of the product of several different logs therefore colour and grain matching will be necessary.

### One square edged



One square edged oak board

Some larger logs are sawn this way for the convenience of the sawmill and to make the boards easier to handle. The log is first sawn down the middle and then each half log is milled to boards square to the original sawn face leaving one edge square and one edge waney. It can be assumed that some objectionable defects and sapwood will still be present. Packs of one square edged timber are likely to comprise the product of a single tree therefore colour and grain matching may be less of an issue.

## Through and through



Oak through and through sawn boards

A simple milling method typically used in the cutting of smaller diameter logs and almost universally used by UK sawmills for native hardwoods. Planks are sawn in sequence from the 'crown' of the log and have two waney edges. All objectionable defects will still be present. Packs of through and through boards may comprise the product of more than one log so colour and grain matching might be necessary.

## Boules



Through and through Oak log presented as a boule

Through and through sawn boards stacked in sequence as they were cut and the product of the same log. The boards will have similar grain and colour and 'sister boards can be used to create book matches.

## Squared logs



Bocote squared logs

A method sometimes used to present small exotic timber logs. Four faces are cut around the log to remove the less desirable sapwood and to expose the beauty of the wood within. This method also makes logs stackable and stops them from rolling about during shipment.

## Cylinders



Lignum vitae palo santo cylinders

Lathe turned logs with most of the sapwood removed. A method normally associated with Lignum Vitae.

## Flitch



Satinwood flitches

A trimmed portion of a log, usually of heavy section, produced with the intention of further conversion into veneer or more finely wrought pieces of solid material. Sometimes also referred to as **billets** or **cants**.

## Dimension Stock



Bubinga dimension stock

2 Square edged boards or squares sawn to fixed sizes suitable for specific purposes. We usually price this sort of stock per piece.

**Part Seasoned** – The wood is in the course of being air dried and would require further drying to be reliable for any use. Moisture content will be above 16%.

**Kiln Dried** – The wood has been subjected to one of several different types of drying procedures that leave it with a moisture content suitable for interior work. Moisture content will be between 6 and 11% depending on origin.

**Air Dried** – The wood has reached the end of the natural seasoning process and will have moisture content perfect for exterior work but for interior work will need extra drying in a kiln or an acclimatisation period inside a heated room to make it reliable in service. Moisture content is normally between 12 and 16%.

**M3** – Cubic meter – a volumetric measure of timber useful in large transactions and standard in the UK hardwood trade but a big unfriendly unit of measure for small transactions.

The simplest way to calculate the volume of a board in M3 is to treat length, width and thickness as meters or part meters, for example a board 3.3meters long by 250 mm x 26mm would be  $3.3 \times 0.25 \times 0.026 = 0.02145\text{m}^3$

**Ft3** – Cubic foot – a traditional imperial volumetric measure of timber that remains in use because it is more user friendly for small transactions and because some of us do not know how to move on. There are 35.315 Ft3 to the M3.

The simplest way to calculate the volume of a board in Ft3 is to multiply length, width and thickness in inches and divide by 1728. There are probably other simple ways but that is what I use.

**150mm wide and wider, 1900mm long and longer** – an indication of board size that is self-explanatory. It can be assumed that a smaller minimum specification will also indicate a smaller maximum board size.

**M2** – Square meter – a metric measure representing the equivalent of 1000mm x 1000mm widely used for veneer and thin stock.

**Ft2** – Square foot– an imperial measure representing the equivalent of 12 x 12” widely used for veneer and thin stock. There are 10.78 Ft2 to the M2.

**Kg** – Kilogram – some timbers are sold by weight because an accurate measure of volume is not practical. For the mathematically minded it is possible to calculate the equivalent price per Ft 3 by multiplying the density in kg per M3 by 28 then multiplying by the price per kg and dividing by 1000. Metric calculation is simpler, multiply the density in kg per M3 by the price per kg and you have the price per M3.

**MBFT** – Thousand board feet – a volume measure used in the USA when dealing with larger quantities of wood. This measure is equivalent to 2.36M3 and 83.333Ft3

**BDFT** – Board foot - A unit of volumetric measure for hardwoods very widely used in the USA. It is the equivalent of a piece of wood 12 x 12 x 1”. There are 12 board feet in one cubic foot and about 424 board feet in one cubic meter.

**Hoppus measure** – a form of measurement specific to round logs, it creates an allowance of about 27% for waste in conversion. The calculation is length in feet to the nearest ½ foot x quarter girth x quarter girth divided by 144. Sounds archaic but is still used in the home grown hardwoods industry.

**String measure** –a form of measure specific to round logs making no allowance for waste in conversion effectively treating the log as a cylinder. Widely used in Europe.

## FIGURE IN WOOD

Terms used to describe ornamental markings or designs in wood.

### Ripple



Ripple Sycamore

A beautiful wood figure caused by the buckling of wood fibres in the growing tree. The fibres buckle in an even wave like pattern and become more intense as the tree matures.

**Fiddleback** – Another term for ripple figure deriving from the frequent use of book matched panels of rippled Maple or Sycamore for violin backs.

**Flame** – A term used by some to describe ripple figure e.g. flamed Maple, but also used by others to describe curl figure e.g. flame mahogany. The use of this term should be discouraged because it is confusing.

**Curly** – The term preferred in the USA to describe ripple figure e.g. curly maple. It should not be confused with term curl e.g. curl mahogany that is in proper use in the UK to describe a different type of figure.

**Tiger** – A term sometimes used in the USA to describe ripple figure e.g. tiger Maple. It should not be confused with ‘Tigerwood’, another American term sometimes used as an alternative name for Goncalo alves (*Astronium fraxinifolium*)

### Quilt



Quilted maple

Quilt or quilted figure has the appearance of folds, waves or blisters and shows best on crown or slab cut faces. The likely cause might be the same as for ripple figure but the outcome different. It is quite a rare figure and is associated with North American maples, where currently the main use is for guitars, and with old growth European Ash (Hungarian Ash) that went through a vogue in the late 19<sup>th</sup> century for furniture.

**Blister** – Another term used to describe quilted figure.

**Popcorn quilt** – a term used to describe quilted maple where the scale of the figure is smaller than usual.

**Waterfall** – a term used to describe quilt figure where the scale is especially small. This term usually connected with bubinga.

## Pommelle



Pommelle sapele

Another term to describe quilted figure but associated only with Sapele and Honduras Mahogany

## Block Mottle



Block mottle makore

The fibres are buckled in a way that results in the wood apparently being patterned with almost geometrically shaped blocks due to intermittent changes in the direction of the grain when viewed on radial surfaces. Causes are similar to ripple figure. This type of figure is frequently associated with Makore, but also seen in many others e.g. Bubinga, Ovangkol, and Pearwood.

## Beeswing



Beeswing satinwood

A miniature version of block mottle usually combined with a tight interlocked grain and very often seen and admired in Sri Lanka Satinwood.

## Curl



Curl mahogany

A beautiful feathery figure in the wood formed for a short distance at the junction point where the main stem of the tree divides evenly to two branches. Usually presented as veneer and associated with Mahogany and Walnut.

**Crotch** – The point where the main stem of the tree divides evenly to two branches. Crotch figure is another term for curl figure.

**Feather** – a term occasionally used to describe curl figure.

**Flame** – a term occasionally used to describe curl figure. This term is also sometimes used to describe ripple figure. The use of this term should be discouraged because it is confusing.

## Swirl



Swirl mahogany

The figure in veneers taken from the zone just beyond where the best curl figure veneers are taken. The resulting figure is like crown figure but much more spectacular.

## Crown



Crown cut teak

The figure in wood produced by the growth rings on tangentially cut surfaces. The centre of the board shows the annual rings as elongated ovals and parabolas with the edges of the board usually showing the annual rings as straighter lines.

**Flat** – Flat sawn – Figure is the same as crown

**Slab** – Slab sawn – Figure is the same as crown.

**Plain** – Plain sawn – figure is the same as crown.

**Bastard** – Bastard sawn – figure is the same as crown

**Tangential** – Tangential sawn – figure is the same as crown.

### Rotary cut



Kevasingo – rotary cut bubinga

Only associated with veneer cutting and plywood. The logs are peeled in one continuous piece around the circumference of the tree following the annual rings. The figure looks like the contour lines on a map and are consistent across the entire width. Birds eye maple veneers are prepared this way.

**Kevasingo** - Bubinga veneer that has been rotary peeled for the elaborate patterns that result.

### Quarter



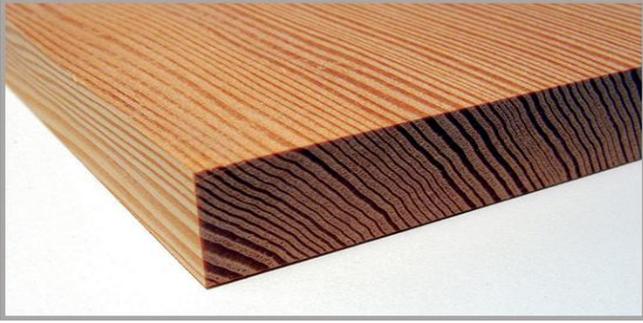
Quarter cut Osage orange wood

The figure in wood produced by the growth rings on radially cut boards. The growth rings run as more or less straight parallel lines. The figure is sometimes enhanced by colour variations in the wood and when accurately quarter cut an additional pattern can be produced by the medullary rays variously known as silver grain, flower, silky or lace.

**Medullary ray** – ribbons of tissue formed radially across the growth rings of trees. Their function is the radial transmission of sap. In wood they are what causes the line of cleavage that makes wood easier to split at right angles to the annular rings.

Medullary rays create a pattern of markings across the grain that in some types of wood are very pronounced because of their size or contrasting colour. Medullary rays can considerably add to the lustre or chatoyance of the wood surface.

## Rift



Rift cut pitch pine

Another term for quarter sawn. Normally used to describe wood less exactly cut on the quarter and therefore lacking the showiness of the medullary ray figure.

**Radial** – another term for quarter sawn.

## Silver grain



Silver grain in quarter cut English oak

The figure in wood produced by the medullary rays when the wood has been accurately quarter sawn. Most often associated with oak.

**Flower** – Another term for silver grain.

## Lace



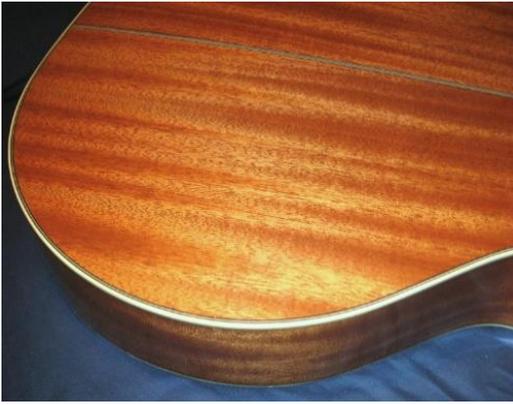
Lace figure in London plane

The figure in wood produced by the medullary rays when the wood has been accurately quarter sawn, but specifically used where the medullary rays are conspicuous and very numerous. This term is noted for the quarter cut wood of the London Plane tree.

**Silky** – another term for lace figure. This term is most commonly used with Australian timbers such as Silky Oak.

**Silk** – A term sometimes used by guitar makers to describe medullary ray figure in perfectly sawn spruce soundboards.

## Ribbon



Ribbon figure showing in a Mahogany guitar back

The figure that results from spiral growth in the tree that changes direction every few years or so. The spiral growth will be clockwise for a time, then anti clockwise, and so on. Ribbon figure is common in tropical hardwoods but scarce in temperate hardwoods. It is often seen in quarter cut pieces of Sapele and Mahogany.

**Interlock** – Interlocked grain and interlock describe the same feature as ribbon figure.

## Waney edge



Waney edge Yewtree boards

The waney edge is the part of a board that was originally the outside part of the tree with the bark on it. T & T sawn boards have 2 waney edges, 1SE boards have 1 waney edge. Waney edged boards are mostly associated with homegrown or locally sourced wood where considerations such as shipping and the spreading of diseases do not come in to play. Waney edge is not strictly speaking a type of wood figure but it is sometimes used as an interesting visual effect for shelves, table tops and rustic work.

**Live edge** – another term for waney edged timber.

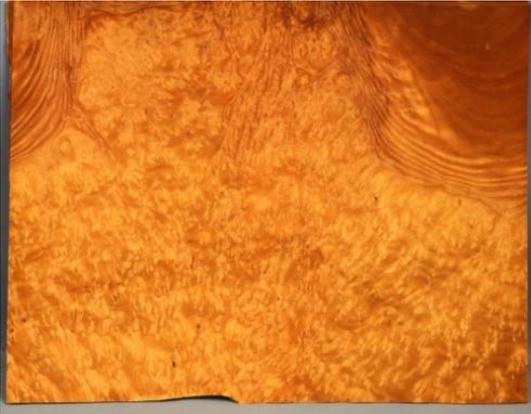
## Natural edge



Natural edge bowl in English yew

This term describes much the same thing as waney edge but it is mostly associated with turned wooden bowls where the outside layer of the tree has been used as the rim of the bowl. Good effects are achieved using natural edge using burrs and using small diameter logs.

## Burr



Madrone burr

Abnormal growth resulting from an area of the trunk of the tree sending out a multitude of dormant buds in increasing amounts year by year. Burrs usually appear as a bark covered blister or bulge on the outside of a tree. Sometimes burrs are concentrated at the base of a tree, sometimes the entire bole of a tree can be burr. Some valuable burrs grow underground as a root ball, examples being Thuya burr and Briar.

Burr figure shows as hundreds of densely packed small knots surrounded by contorted and gnarly wood grain. The best presentation of burr figure is on tangential faces where the small knots are seen head on.

**Burl** – What an American calls burr figure.

## Cluster



Cluster figure in Elm

Boards or veneers where small patches of burr are separated by non-burry wood that is contorted or rippled.

## Cat's paw



Cat's paw figure in European poplar.

Small patches of burr are spread all over a board with normal wood in between. Oak often shows this figure.

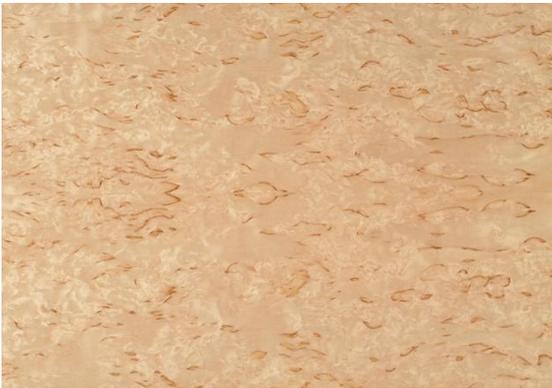
## Pippy



Pippy Yew

Many small individual knots are scattered over a board to decorative effect. Usually associated with Oak and Yew.

## Masur



Masur Birch

The German language term for burr – or –

In the case of Masur Birch it is a figure found in a genetic variant of European birch – *Betula pendula* var. *Carelica*. The figure shows as twists and contortions combined with darker zones that are either pith flecks or ingrown bark pockets. Quite unique looking and technically not a burr at all.

## Bird's eye



Birds eye maple

A type of figure usually associated with American rock maple (*Acer saccharum*) but also occasionally found in other species. It is formed when the cambium (the growing layer of the tree between the sapwood and the bark) is damaged in multiple small areas causing pits to develop where the wood has not formed. The cambium then repairs itself and the subsequent layers of growth follow the contours created by these small pits and continue to do this for many years.

Not to be confused with any burr or burr derived figures.

### Gum vein



- Gum vein figure in Salmon gum

The equivalent of a resin pocket but specific to hardwoods rather than softwoods. Often associated with Zebrano where the gum shows as a black crystallised substance in a pocket in the wood and frequently found in a range of Australian trees such as Salmon gum and Jarrah. Defect or figure depending on your point of view.

### Pith fleck



Pith fleck in Cherry

Not in any way connected to the pith of a tree which is the small point of soft tissue at the very centre of a log. Pith flecks show as irregular discoloured streaks of tissue in wood and are caused by damage to the cambium (growing layer) of the tree by insects. Common in Birch and American cherry.

### Heart and sap



Heart and sap figure in PNG Ebony

Sapwood is the outer part of the living tree and comprises the living cells in the growing tree (Alburnum). Heart wood is the inner part of the tree (Duramen) and is not normally made up of living cells. Many trees such as Sycamore, Beech and Ash do not show a visible difference in colour between the sapwood and heartwood. Timbers with dark coloured heartwood will have a contrasting sapwood in yellowish or greyish white. The width of the sapwood in a tree can vary from a few millimetres to several centimetres.

The properties of sapwood and heartwood can be quite different as is dramatically revealed in the English longbow. The heartwood works brilliantly in compression, the sapwood is brilliant in tension. The rule of thumb however is that the sapwood is less virtuous than the heartwood and can give trouble over time. As an example, European Walnut sapwood is a worm magnet, the heartwood much less so, and for that reason it would be better excluded from the work.

Sapwood is often used for dramatic effect, for example for table tops, or in matched sequences of 2 or more when veneering panels.

## Spring growth



Spring and summer growth lines in Pitch Pine

The wood that grows in the early part of the year. This wood is faster grown and sometimes a little lighter in weight and softer than summer grown wood. In softwoods it is the lighter coloured part of the growth ring.

**Summer growth** – Wood that grows in the later part of the year. This wood is usually denser, harder and darker than spring growth. In softwoods this is the darker part of the growth ring.

**Early wood** – The same as spring growth.

**Late wood** – The same as summer growth.

## Ring porous



Swamp Ash showing ring porous structure

Wood that has a band of large pores in the spring part of the growth ring and smaller pores in the summer part of the growth ring giving a distinct figure especially with slab cut wood. Examples are Ash and Oak.

## Diffuse porous



Steamed Pear showing diffuse porous structure

Wood where the pores are scattered evenly across the annual rings so that there is little visible difference between the spring and summer growth. Examples are Lime and Pear.

## Wormy



Wormy figure showing in American Chestnut

Where wood boring insect larvae have the wood of the tree while living or dead. This sometimes is used to describe the wood in a positive way, e.g. Wormy American Chestnut, or a negative way. Very often the worm holes will affect the colour and figure of the wood around them as happens to good effect with timbers such as 'ambrosia Maple'.

## Ambrosia



Ambrosia figure showing in American Maple

Another term for wood with figure that arises from worm attack while the tree was alive e.g. Ambrosia Maple.

## Stripe



Stripe figure in Macassar Ebony

A term used to describe the figure in wood with alternating bands of colour. Ribbon stripe is also a less used term to describe the 'ribbon' figure found in wood with an interlocked grain.

## Fumed



Fumed Oak

Wood that has been subjected to the fumes from a strong solution of ammonia in an air-tight chamber before polishing. It is traditionally a method for darkening oak.

## Brown



Brown Oak

A term normally associated with oak to describe the dark brown heartwood that results from the living tree being infected by the 'beefsteak' fungus.

## Bog



Fenland bog Oak

The term used to describe oak and sometimes yew that was preserved when prehistoric forests were submerged under water and silt in anaerobic conditions thousands of years ago. The tannin in the wood reacts with the iron salts dissolved in the water making the wood very dark brown to pure black in colour.

## Plum pudding



Plum pudding Mahogany

A type of figure mostly associated with mahogany. Almost impossible to describe, has similarities to pommelle figure.

## Watermark



Watermark figure in Ziricote

A type of figure associated with Brazilian rosewood and Ziricote. Straight dark lines in the figure combine with curved dark lines that flare off and back on to them.

**Spider web** – Another name for watermark figure.

## Partridge



Partridge figure in Wenge

Or partridge wing figure -associated with slab sawn pieces of partridge wood and wenge, the thin pale line of parenchyma tissue in the growth ring creates a feathery pattern against the dark brown background colour of the wood.

## Olive



Olive Ash

Or olive heart - a term used where a tree that normally has wood with an even light colour has instead a dark brown heart due to the age or health of the tree. A typical example is Olive Ash.

## Porcupine



Porcupine figure in black Palmira

The figure encountered in the wood of some palm tree species. Dark needle like elements are massed in to a lighter coloured and softer matrix. The dark part of the wood is deemed to look like porcupine quills.

## End grain



End grain figure in black Palmira

A special figure can sometimes be achieved by cutting and laying end grain veneers. An example would be porcupine wood or black Palmira where the dark elements show as black dots on a paler background.

## Oyster



Oyster veneer work on a rather expensive chest of drawers.

An old veneering technique using thin cross-cut pieces from small round logs of olivewood, laburnum, lignum vitae or walnut and using the end grain figure of those woods to good effect.

## Spalt



Spalted American maple

Figure created in some perishable species of wood through partial fungal decay. Wood that is normally light brown becomes patchily coloured and thin fine dark lines are randomly distributed.

**Lustre** – How light reflects on the surface of the wood. Low lustre woods have a dull appearance and special figure in the wood does not stand out very well. High lustre woods come alive when polished and the slightest figure is emphasized.

**Chatoyance** – A word silly people use to describe lustre.

**Figure** – The term used to cover all the variations in the appearance of wood.

**Texture** – terms to describe how the wood feels to the touch. In wood it can be coarse, fine, even, hard, harsh, medium, mild, silky, smooth, soft, uneven, uniform etc.

## DEFECT IN WOOD

**Heart shake** – Cracks that develop in the living tree radiating out from the centre of the log following the line of the medullary rays and usually running the full length of the log. Looking at the end grain they vary in pattern and severity. There may be many of them radiating out like the spokes of a bicycle wheel. There may be just one that effectively divides the log in half. Heart shake can cause great loss in the yield of good timber from a log. This can be even greater if the log also exhibits spiral growth because the heart shake will tend to follow the direction of the spiral growth and even more of the log will therefore be affected.

The main cause of heart shake is down to soil conditions. Trees that have grown on moisture retentive soil such as clay will not normally show much heart shake. Trees from well drained soils such as sandy or chalk soils will very frequently show heart shake. In times of drought the living tree still requires water as part of the photosynthesis process and trees that cannot find water via the root system will take it from the water contained within the wood of the tree. The removal of this water causes the heartwood to shrink and cracks develop because of this shrinkage.

**Star shake** – Heart shake that radiates out from the centre of a log in the shape of a star or like the spokes of a bicycle wheel.

**Ring shake** – a crack that follows the circumference of part, or all of an annual ring in a log, and that tends to run a part or all of the length of a log. It usually develops in the living tree and is caused by a lack of cohesion between the annual rings. Certain types of tree are particularly prone to this defect. Chestnut is quite well known for it.

**End shake/end check** – The cracks that develop in the ends of logs or boards as part of the drying process. Water can escape the wood very quickly through the exposed end grain but the wood further in remains much wetter. The wood at the ends of the log or boards shrinks, the wood further in does not, therefore cracks develop.

**Surface check** – Cracks in the surface of a board caused by rapid drying. The surface of the board loses water quickly but the wood in the centre of the board remains wet. The wood on the surface shrinks and the wood in the core does not, therefore cracks develop.

**Hairline cracks** – Another name used to describe surface checks but specifically used when the cracks are very narrow.

**Heat Checks** – End checks or surface checks that have been caused through excessive heat being created in the working of the wood. Overzealous sanding by wood turners is a common cause.

**Honeycomb** – Internal cracks in a board that are usually not seen on the surface. These cracks tend to get wider towards the centre of the board. They are due to case hardening of the wood which in turn is due to bad kiln drying techniques.

**Case hardening** – A defect in boards that have been kiln dried too quickly and at too high a temperature particularly at the beginning of the drying process. The outer part of the board dries and shrinks putting the core of the board in compression. When the moisture content of the wood of the outside of the boards reaches full dryness the wood 'sets' and is dimensionally fixed. The wet wood in the core continues to dry and shrink but the outer surfaces resist the shrinkage because they are fixed in dimension. This results in compression stresses on the board surfaces and tension stresses in the core.

These internal stresses show themselves instantly the board is deep cut or rip sawn, with both sides of the cut cupping and bowing towards each other over the width and the length of the board.

Let's start up **C.A.K.E.**, Campaign Against Kilning Excess.

**Ingrown bark** – Bark that has been covered by later growth of wood.

**Worm** – Bore holes in timber that result from the actions of various species of worm or larvae. Worm can attack the living tree, fallen logs, unseasoned wood or seasoned wood and different species can be responsible in each case. The teredo worm is famous for attacking wood in a marine environment. The common furniture beetle attacks wood in furniture and timber that is stored in a slightly damp environment.

Worm holes vary from about 0.5mm to 15mm in diameter. Live worm attack can usually be spotted by the little piles of frass that build up beneath the worm holes.

**Frass** – Worm poo.

**Dote – or Dotey** – Wood or logs that have begun to decay due to poor or extended storage of the logs or because the tree is over mature and close to the end of its natural life.

**Iron stain** – The dark bluish black stain in wood that has been in contact with iron while wet. The chemical reaction is the same as happens with bog oak.

**Blue stain** – a bluish discolouration mostly associated with soft wood caused by partial fungal decay due to poor storage conditions or slow drying of the wood.

**Sap Stain** – similar to blue stain but more associated with timbers with a different coloured sapwood such as oak.

**Grey stain** – similar to blue stain but associated with perishable light coloured hardwoods like Sycamore.

**Decay** – the transformation of wood due to fungal and bacterial activity due to damp conditions or poor storage of the logs or lumber.

**Fungal stain** – colour changes to all or part of the wood due to fungal activity, e.g. grey stain in sycamore.

**Spalt** – Partly decayed wood where the discolouration results in beautiful streaks and markings. The best examples of timbers that spalt in a spectacular way are European beech and North American hard rock maple. Soft zones in spalted wood are common.

**Warp** – distortion of a sawn board of wood after drying or re-sawing for a number of different reasons.

**Wind** – Warping in sawn timber normally showing as a twist in the face of a board.

**Twist** – Another name for wind. Wind and twist are often caused by spiral growth in the tree.

**Cup** – a concave surface across the grain of a sawn board due to one face of a board being subject to a higher shrinkage rate than the other. Cupping can occur in the seasoning process and when a dry board is subject to heat or other drying effects on one side of a board more than the other. Cupping is much more associated with slab sawn wood than quarter sawn wood and a slab sawn board will always cup towards the outer layers of the tree.

**Bow** – a curve to the length of a board. Bowing may also sometimes be associated with cupping. Bowing can be caused by case hardening due to bad drying, or by the presence of tension or compression wood in the tree. Bow common in fast grown or plantation grown timbers.

**Crook** – An old-fashioned term sometimes heard to describe edge bend in wood.

**Edge bend** – distortion along the edge of a board that may otherwise have been originally sawn in a straight line. Bowing can be caused by case hardening due to bad drying, or by the presence of tension or compression wood in the tree. Bow common in fast grown or plantation grown timbers.

**Spring** – Another old-fashioned term for edge bend.

**Knots** – an area in a board where a branch of the tree has passed through.

**Sound knots** – a knot that is firmly joined to the wood around it.

**Live knots** – The same as sound knots.

**Tight knots** – The same as sound knots.

**Spike knots** – Where the knot runs across the face of a board rather than through it. Spike knots are a feature of quarter cut boards and weaken the board considerably.

**Pin knots** – very small diameter knots showing occasionally in a board, possibly the beginnings of epicormic growth.

**Dead knots** – A knot that shows evidence of decay and is detached from the wood around it.

**Loose knots** – The same as dead knots.

**Gum vein** – A localised build-up of gum between the annual rings in hardwoods. Common in Zebrano and some Australian timbers.

**Resin pocket** – A localised build-up of resin between the annual rings in softwoods.

**Pitch pocket** – The same as resin pockets.

**Pith flecks** – Localised areas of damage caused to the growing layer of the tree (the cambium) by insects. The tree develops a kind of scar tissue (wound parenchyma) on the damaged areas and that shows as irregular coloured streaks in the wood. It has no connection with the pith of the tree.

**Rind gall** – where damage to the outside of the tree has been covered by later growth.

**Silica** – a mineral secretion in some types of wood that shows as a white deposit in open parts of the grain of the wood and sometimes in heart shakes. It wears out the edges of sharp tools very quickly but on the plus side makes the wood more resistant to insect damage.

**Cross grain** – where the grain does not run straight along the length of the board as seen in interlocked grain and others.

**Spiral growth** – The fibres of the tree are not perfectly vertical. They spiral around the tree as a helix. Quarter sawn boards will have short grain because of this defect.

**Short Grain** – where the grain of the wood does not run in a straight line along the length of a board due to spiral growth in the tree or milling a log when drunk.

**Run out** – How short grain is described in America.

**Wandering heart** – A tacky country and western song about infidelity or a defect in a board where the early growth of the log was wayward but ultimately became straight when mature.

**Tension wood** – Wood from a tree that has grown with a lean or with branches that were heavier on one side than the other putting the wood of that part of the log in tension. The cells become longer than normal wood and thin walled. The balance between the lignin and cellulose is also out of balance and this can be seen on sawn boards as a rough and fluffy surface.

**Compression wood** – wood from a tree with a lean or with branches heavier one side than the other putting the wood of that part of the log in compression. The cells are shorter than normal and thick walled. In softwoods the annual rings will appear darker.

**Price** – A defect in wood that can never be overcome.