

APPEARANCE GRADES

NOVEMBER 2012

This document contains information on the primary grades of appearance timber.

Appearance grades of timber, rough or surfaced two faces, shall unless otherwise specified, be determined from the better face and edge of the piece. In timber surfaced one face only, the surfaced face shall be regarded as the better face. Unless otherwise specified, the reverse face may be one grade below the better. The order of grades, from highest to lowest, for the purpose of this document is Clears 1, Clears 2, Dressing, Merchantable. A lower industrial grade does exist however is not considered an appearance grade for the purposes of this document.

MERCHANTABLE GRADE	01
DRESSING GRADE	03
CLEAR 2 GRADE	05
CLEAR 1 GRADE	07
DIMENSIONAL STABILITY	09
TERMINOLOGY	10

LUMBER GRADES

MERCHANTABLE GRADE

In terms of both appearance and performance, merchant grade is the lowest of the appearance grade scale. Merchant grade is generally cut from the centre of the log giving the wood a lower density and a higher risk of movement in service. In terms of appearance Merchant grade is knotty and may include the central pith. For specific Merchant grading see the following page.

Please refer to the following sample images which show a range of boards which fall within the Merchant grading specification.



01

LUMBER GRADES

Notes

- Cost effective.
- The lowest of the appearance grades with a number of permitted defects (industrial grade excluded).
- Does not handle kiln drying after treatment very well.
- Can be sourced from mills cutting structural logs which may allow for single length packs.

LUMBER GRADES

NZS 3631:1988 - Merchantable grade

Permitted defects - The following defects shall be permitted on the better face or edge:

Bark or resin pockets
(a) 20mm wide
(b) 50 mm long

Checks:
Knot checks not restricted
Surface checks 100mm long

Collapse not restricted

Holes, loose knots & decayed knots
(a) 20mm
(b) 40mm in pieces exceeding 150mm wide (max 4 per length)

Knots:
Intergrown knots - Other than spike knots (singly or in combination)
(a) 100mm (singly)
(b) Sum of sizes in any combination half of the width of the piece

Partially Intergrown knots - Other than spike knots (singly or in combination)
(a) 75mm (singly)
(b) Sum of sizes in any combination half of the width of the piece

Sound spike knots & Double spike knots
(a) 50mm wide
(b) projected length two-thirds of the width of the piece

Tight encased knots
(a) 20mm
(b) 75mm or one-third the length, whichever is less (max 4 per length)

Pith
(a) 12mm wide, max 10% of the length

Resin streaks
(a) One-fifth of the width, one-third of the length

Shakes other than through shakes
(a) one-fifth the length, slope across face 1 in 15

Sloping grain.....not restricted

Stain.....insufficient to obscure the grain

The reverse face or edge may contain any defects, except as follows:

Pith..... (a) 12mm wide
Wane..... (a) 20mm wide on the face
(b) 10 mm wide on the edge

LUMBER GRADES

DRESSING GRADE

Dressing grade is often referred to as a character knot grade. From a grading scale there can be a large variation of defects within the grade. At its lowest boards will contain a range of tight knot defects ranging all the way up to an almost clear board. For specific Dressing grade grading rules see the following page.

Please refer to the following sample images which show a range of boards which fall within the Dressing grade specification.



03

LUMBER GRADES

Notes

- Includes a range of character defects
- Less likely to move than Merchant grade as the wood is sourced further away from the log core.
- Can be kiln dried after treatment.
- Can be sourced primarily from mills cutting pruned logs which allows for random length packs in any given size.

LUMBER GRADES

NZS 3631:1988 - Dressing grade

Permitted defects - The following defects shall be permitted on the better face or edge:

Bark or resin pockets
(a) 6mm wide
(b) 50 mm long

Checks:
Knot checks 2mm wide
Surface checks (a) 1mm wide
(b) 100mm long

Collapse insufficient to affect dry-dressed dimensions

Knots:

Intergrown knots - Other than spike knots (singly or in combination)
(a) 75mm (singly)
(b) Sum of sizes in any combination half of the width of the piece

Intergrown sound Double spike Knots
(a) 25mm wide
(b) Projected length two-thirds of the piece

Intergrown sound spike knots
(a) 50mm wide
(b) projected length half of the width of the piece

Partially intergrown knots other than spike knots (singly or in combination)
(a) 75mm (singly)
(b) Sum of sizes in any combination one-third of the width of the piece

Tight encased knots

(a) Three
(b) 15 mm

Resin streaks

(a) Three
(b) One-fifth of the width
(c) One-third of the length

Sloping grain.....not restricted

Stain.....insufficient to impair a natural finish

The reverse face or edge may contain the defects permitted by Merchant grade, except as follows:

Pith..... (a) 6mm wide
(b) length not restricted

Wane..... (a) 10mm wide on the face
(b) 5 mm wide on the edge

LUMBER GRADES

CLEAR 2 GRADING

Clear 2 features a defect free face and 2 edges. This provides a high grade appearance option especially if only 1 Face will be seen. The rear face can feature any number of defects with the exception of pith. For specific Clear 2 grading rules see the following page.

Please refer to the following sample images which show a range of boards which fall within the Clear 2 grading specification.



05

LUMBER GRADES

Notes

- Features a clear face and 2 edges
- Sourced from the outside of the log where clear knot free wood grows. This outer wood has better stability than wood sourced closer to the core of the log i.e. Merchant grade.
- Can be kiln dried after treatment.
- Can be sourced primarily from mills cutting pruned logs which allows for random length packs in any given size.

LUMBER GRADES

NZS 3631:1988 - Clears 2 grade

Permitted defects - The following defects shall be permitted on the better face and 2 edges:

Resin streaks

- (a) One
- (b) 5mm wide
- (c) 100mm long

Sloping grain.....not restricted

Stain.....insufficient to impair a natural finish

Surface Checks

- (a) Three
- (b) 0.5mm wide
- (c) 50mm long

The reverse face or edge may contain any combination of defects, except as follows:

- Pith..... (a) 6mm wide
- (b) length not restricted

LUMBER GRADES

CLEAR 1 GRADING

Clear 1 is the highest grade and features a defect free appearance on both faces and edges of the board. For specific Clear 1 grading rules see the following page.

Please refer to the following sample images which show a range of boards which fall within the Clear 1 grading specification.



07

LUMBER GRADES

Notes

- Highest appearance grade available
- Features a 2 clear faces and 2 edges
- Sourced from the outside of the log where clear knot free wood grows. This outer wood has better stability than wood sourced closer to the core of the log i.e. Merchant grade.
- Can be kiln dried after treatment.
- Can be sourced primarily from mills cutting pruned logs which allows for random length packs in any given size.

LUMBER GRADES

NZS 3631:1988 - Clears 1 grade

Permitted defects - The following defects shall be permitted on the both faces and 2 edges:

Resin streaks

- (a) One
- (b) 5mm wide
- (c) 100mm long

Sloping grain.....not restricted

Stain.....insufficient to impair a natural finish

Surface Checks

- (a) Three
- (b) 0.5mm wide
- (c) 50mm long

LUMBER GRADES

DIMENSIONAL STABILITY

All timber must comply with the following tables at time of grading in accordance with NZS 3631

Permitted Bow (mm)

Length (m)	Thickness(mm)		
	25	40	50
1.8	15	10	10
2.1	25	15	10
2.4	30	20	15
2.7	40	25	20
3.0	45	30	25
3.3	55	35	30
3.6	65	40	35
3.9	80	50	40
4.2	90	55	45
4.5	105	65	55
4.8	120	75	60
5.1	135	85	70
5.4	150	95	75
6.0	185	115	95

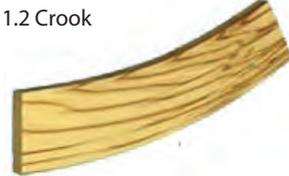
Fig 1.1 Bow



Permitted Crook (mm)

Length (m)	Thickness(mm)		
	25	40	50
1.8	15	10	10
2.1	25	15	10
2.4	30	20	15
2.7	40	25	20
3.0	45	30	25
3.3	55	35	30
3.6	65	40	35
3.9	80	50	40
4.2	90	55	45
4.5	105	65	55
4.8	120	75	60
5.1	135	85	70
5.4	150	95	75
6.0	185	115	95

Fig 1.2 Crook



Permitted Twist per 100mm of width (mm)

Length (m)	Thickness (mm)		
	25	40	50
1.8	10	5	5
2.1	10	10	5
3.0	15	10	10
3.6	20	10	10
4.2	20	15	10
4.8	25	15	10
5.4	25	15	15
6.0	30	20	15

Fig 1.3 Twist



Permitted Cup (mm)

Face Width (mm)	Permitted Cup (mm)
75	1
100	1
125	2
150	2
200	3
225	4
250	5
300	6

Fig 1.4 Cup



LUMBER GRADES

APPEARANCE GRADE TERMINOLOGY

The following terms apply to appearance timber grading:

Bark pocket

An opening between annual growth rings that contains bark. Bark pockets appear as dark streaks on radial surfaces and as rounded areas on tangential surfaces.

Bow

A lumber defect referring to deviation from a straight line drawn end to end along the wide face of a piece of lumber.

Check

A separation of the fibres along the grain forming a fissure, but not extending through the piece.

Crook

A curvature from the plane of the edge in the direction of the length.

Cup

A concave curvature across the grain, that is, across the width of the face.

Decay

decomposition of the wood by fungi.

Defect

Any irregularity in timber that affects its appearance, strength, durability or use.

Edge

The narrow surface at right angle to the face of a piece of timber.

Face

The wide surface of a piece of timber.

Grade

Any established quality or classification of timber.

Grain

The general direction of fibres or wood elements.

Raised grain

The roughen condition of a surface of a piece of dressed timber.

Sloping grain

The arrangement of fibres at an angle to the longitudinal axis of the piece of timber.

Heartwood

The inner layers of the log, which in the growing tree, have ceased to contain living cells. Heartwood is generally darker in colour than sapwood.

APPEARANCE GRADE TERMINOLOGY

Knot

A section of a branch which is embedded in the wood of the tree trunk

Decayed knot

A knot affected by or containing decay.

Intergrown knot

A knot that is wholly intergrown with fibres of surrounding wood.

Loose knot

A knot that is loose or likely to become loose in drying or machining, generally included any knot exceeding 15mm diameter that is fully enclosed in bark.

Occluded knot

A discontinuous knot usually formed as a result of pruning and subsequent clearwood growth.

Sound knot

A knot that is free from decay and insect attack.

Spike knot

A branch cut longitudinally by the plane of the face and extending to the edge of the piece. Also includes knots that would have been spike knots had they not been occluded.

Double spike knot

A pair of spike knots which start from the middle of the piece and extend to opposite edges.

Tight encased knot

A sound knot which has more than half its perimeter surrounded by bark, but fixed by growth in a way that means the knot will remain firmly in place.

Length

Unless otherwise stated means the length of the piece.

Pith

The central core of the log containing Parenchyma or soft tissue.

Resin pocket

A cavity that contains or has contained resin - applies only to softwoods.

Resin streak

Fibre that is saturated with resin - applies only to softwoods.

Sapwood

The living outer layers of the wood of a tree. Sapwood is generally lighter in colour than heartwood.

Shake

A separate of the grain between the growth rings usually originating in the standing tree.

LUMBER GRADES

APPEARANCE GRADE TERMINOLOGY

Softwood

The term softwood is a botanical term not related to the physical hardness of the wood. Softwoods are coniferous (have cones) and have needle-like leaves.

Split

A lengthwise separation of the wood fibres extending through a piece of timber from one surface to another.

Stain

A discolouration or variation to the natural colour of the piece. This can be from a chemical reaction, fungi, or other causes but not associated with decay.

Thickness

Unless otherwise stated the thickness is the call size (rough sawn) thickness of the edge of the piece.

Twist

A spiral distortion along the length of the piece.

Wane

The presence of the underbark surface of the log, on any face or edge, of the piece of timber.

Warp

Any variation from the flat surface. It may consist of bow, crook, cup twist, or any combination of these.

Width

Unless otherwise stated the thickness is the call size (rough sawn) width of the face of the piece.