
Timber — Round and sawn timber — Vocabulary

Bois — Bois ronds et bois sciés — Vocabulaire

STANDARDSISO.COM : Click to view the full PDF of ISO 24294:2021



STANDARDSISO.COM : Click to view the full PDF of ISO 24294:2021



COPYRIGHT PROTECTED DOCUMENT

© ISO 2021

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

	Page
Foreword.....	iv
Introduction.....	v
1 Scope.....	1
2 Normative references.....	1
3 Terms and definitions.....	1
4 Terms related to round timber.....	3
5 Terms related to sawn timber.....	6
6 Terms related to moisture content.....	13
7 Terms related to dimensions of round timber.....	16
8 Terms related to dimensions of sawn timber.....	18
9 Terms related to the anatomical structure of timber.....	20
10 Terms related to common features of round and sawn timber.....	22
11 Terms related to features of round timber.....	24
12 Terms related to features of sawn timber.....	27
13 Terms related to stain and fungal attack.....	31
14 Terms related to degradation by insects or other wood borers.....	35
Bibliography.....	38
Index.....	39

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 218, *Timber*.

This second edition of ISO 24294 cancels and replaces ISO 24294:2013 and ISO 1032:1974, which have been technically revised. The main changes compared to the previous editions are as follows:

- updated, corrected and clarified definitions;
- re-ordered term categories and terms within categories to match the subject matter.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Wood is a naturally occurring resource and is the only major construction material that is renewable. Because it is renewable, the use of wood and the many different timber products made from wood, contributes to overall sustainable development. Many of these timber products are intended specifically for use both as structural and non-structural elements in the construction of timber-framed or platform-frame buildings. Properties of wood are affected by species, natural growth characteristics and moisture content and with its unique cell structure; wood has different strength properties in different grain directions.

This document defines terms related to the physical and mechanical characteristics of the many different hardwood and softwood round, sawn and processed timbers in a manner that is consistent and recognized globally. This document has been prepared by the various groups involved in the timber industry, such as manufacturers, builders, wholesalers and importers, as well as research organizations, academia, national regulatory bodies, standards developers and professional design organizations.

Understanding the nature of the various physical characteristics and features of round and sawn timber enables effective communication related to sawn and processed timber, in a manner that is consistently understood by and equitable to all active and potential traders/users. Its use alongside other standards also aids harmonization and provide a basis for specialist terminology.

STANDARDSISO.COM : Click to view the full PDF of ISO 24294:2021

Timber — Round and sawn timber — Vocabulary

1 Scope

This document defines terms related to round and sawn timber. It applies to identification of a tree and its components, stages of processing in round and sawn forms, and timber grading, dimensions, anatomical structure, features, moisture content and conditions relating to stain, fungal and insect attack. It does not apply to terms related to strength properties of wood, engineered timber products or timber structures.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1

wood

lignocellulosic substance between the *pith* (9.14) and *bark* (9.5) of a tree or a shrub

Note 1 to entry: Lignified materials from bamboo, cork, rattan, palm trees and other monocotyledons are not wood.

Note 2 to entry: Internationally, the terms “wood” and *timber* (3.2) are often used interchangeably to represent the basic material of wood products.

3.2

timber

wood (3.1) in the form of standing or felled trees, or a solid wood product of these after *processing* (3.10)

Note 1 to entry: In the case of processed solid wood products, refers to *round timber* (4.1) and *sawn timber* (5.1). Does not apply to other wood products, such as wood-based panels, veneer, wood pulp, *chips* (3.11) or *sawdust* (3.12).

Note 2 to entry: Internationally, the terms “timber” and “wood” are often used interchangeably to represent the basic material of wood products.

Note 3 to entry: In Canada and the U.S., there is a homograph for the term “timber”. See 5.6.

3.3

species

botanical category classifying a group of distinct trees with a significant level of genetic similarity

EXAMPLE Douglas-fir (*Pseudotsuga menziesii*) and Norway spruce (*Picea abies*).

Note 1 to entry: Usually referred to by a common name and identified by a botanical name that is based on a Linnaean binomial of its genus and species.

3.3.1

species group

species combination, en CA, U.S.

population of two or more tree *species* (3.3) or multiple populations of the same tree species combined into a single marketing group on the basis of similar properties using criteria appropriate for the intended end use

EXAMPLE Spruce-pine-fir (S-P-F).

Note 1 to entry: Evaluated to develop combined species properties so that the wood products from species within the group can be used interchangeably.

Note 2 to entry: Trees of the same species group may originate from one or more growth or production regions.

3.4

hardwood

wood (3.1) of trees of the botanical class *Angiospermae*, subclass *Dicotyledonae*

Note 1 to entry: The term has no reference to the actual hardness of the wood.

Note 2 to entry: Generally deciduous trees with broad leaves and enclosed seeds.

3.5

softwood

wood (3.1) of trees of the botanical class *Gymnospermae*, subclass *Coniferophytae*

Note 1 to entry: The term has no reference to the actual hardness of the wood.

Note 2 to entry: Generally evergreen trees with needle or scale-like leaves and unenclosed seeds, also known as conifers.

3.6

feature

physical, morphological or growth characteristic of *timber* (3.2) that could affect its use

3.7

defect

feature (3.6) that results in lower quality of *timber* (3.2) which causes restrictions in use

3.8

grading

separation or sorting of *timber* (3.2) by end-use, tree *species* (3.3), appearance, mechanical or working properties, sizes or some combination thereof

3.9

batch

lot

specified quantity of a product

3.10

processing

function or a combination of functions other than *felling* (4.26) that change the form of the material without changing its solid *wood* (3.1) structure

Note 1 to entry: May include *debarking* (4.14), sawing, re-sawing, planing (surfacing), cross-cutting and trimming at the sawmill, but does not include gluing.

Note 2 to entry: May be supplemented by *drying* (6.10) at various stages of production.

3.11**chips**

small flakes of *wood* (3.1) produced during a fragmentation process

Note 1 to entry: Generally utilized for pulp, wood-based products or fuel.

3.12**sawdust**

fine particles of *wood* (3.1) produced during the process of sawing

3.13**cross-section**

virtual section at a right angle to the longitudinal axis

3.14**length**

shortest distance between the ends of a piece of *timber* (3.2)

4 Terms related to round timber**4.1****round timber**

felled tree after delimbing and removal of top, that may or may not have been cross-cut

4.1.1**long pole**

round timber (4.1) that has not been cross-cut

4.1.2**log**

cross-cut portion of *round timber* (4.1)

4.1.3**butt log**

log (4.1.2) produced from the larger end of a *long pole* (4.1.1)

4.1.4**middle log**

log (4.1.2) produced from the portion of a *long pole* (4.1.1) between the *butt log* (4.1.3) and the *top end log* (4.1.5)

Note 1 to entry: More than one middle log may be obtained from one long pole.

4.1.5**top end log**

log (4.1.2) produced from the smaller end of a *long pole* (4.1.1)

4.1.6**cylindrical log****perfect round log**

log (4.1.2) that has a *cross-section* (3.13) on both ends that represents a true circle

Note 1 to entry: The roundness of a log is determined by measuring the largest *diameter* (7.1) and the diameter at right angles to it, at the least round end and calculating the ratio of the lesser and greater diameters, expressed as a percentage. The roundness of 100 % is rarely achieved naturally.

4.2**crown**

upper portion of a tree with branches

4.3

spring of the crown

zone of the *stem* (4.4) from where the lowest branches of the *crown* (4.2) grow out

4.4

stem

portion of a tree above ground, excluding branches

Note 1 to entry: Sometimes refers to trees in general, i.e. stems per unit area.

4.5

trunk

portion of a *stem* (4.4) used for valuing a standing tree

Note 1 to entry: Usually specified by stating the minimum *top diameter* (7.1.3).

4.6

butt swelling

flared base part of the *stem* (4.4)

4.7

buttress

projecting rib at the lower end of the *stem* (4.4)

4.8

stump

portion of the tree that remains above and below ground level after *felling* (4.26)

Note 1 to entry: Does not apply to *uprooted trees* (4.26.1).

4.9

branch whorl

zone of the *stem* (4.4) where several branches or *knots* (10.1) occur at approximately the same *cross-section* (3.13)

4.10

de-sapped round timber

round timber (4.1) that has had all *sapwood* (9.1) thoroughly removed

Note 1 to entry: The sapwood is removed generally to prevent *biodeterioration* (13.1).

4.11

pruned timber

timber (3.2) from a tree that had its lower branches removed by *pruning* (4.11.1)

4.11.1

pruning

removal of live or dead branches or of multiple leaders of shoots from standing trees

[SOURCE: ISO 6814:2009, 2.19]

4.12

stop

portion of a *stem* (4.4) where there is a marked reduction in *diameter* (7.1)

Note 1 to entry: Can occur at a thick branch or at a *branch whorl* (4.9) in some tree *species* (3.3).

4.13

cross-cut point

location on *round timber* (4.1) where it will be cross-cut

4.13.1**theoretical cross-cut point**

point at which a *trunk* (4.5) or *round timber* (4.1) is visually assessed for cross-cutting for *grading* (3.8) purposes

4.14**debarking**

removing *bark* (9.5) from trees or *round timber* (4.1)

4.14.1**rough debarking**

partial removing of *bark* (9.5)

4.14.2**bundle debarking**

simultaneous *debarking* (4.14) of a group of *round timbers* (4.1)

4.14.3**piece-by-piece debarking**

debarking (4.14) of individual *round timbers* (4.1)

4.14.4**patch debarking**

rough debarking (4.14.1) resulting in spots or patches of remaining *bark* (9.5) on the surface of *round timber* (4.1)

4.14.5**clean debarking**

complete removal of *bark* (9.5) and any remnants of branches and branch wood

4.15**ring barking**

girdling, en CA, U.S.

removing a narrow strip of *bark* (9.5) around the *stem* (4.4) of a living tree to weaken it or cause death

Note 1 to entry: Not to be confused with *debarking* (4.14) for the purpose of *processing* (3.10) *round timber* (4.1).

4.16**sawlog**

log (4.1.2) for *processing* (3.10) into *sawn timber* (5.1)

4.17**veneer log**

log (4.1.2) for conversion into veneer

4.18**pulpwood**

log (4.1.2) or logs used for mechanical or chemical conversion into pulp for paper or wood panel products

4.19**pit prop**

round timber (4.1) intended for supporting mine works

4.20**special assortment log**

log (4.1.2) specified by *length* (3.14) or *diameter* (7.1), or both, for a specific end-use

4.21**regularized round timber**

round timber (4.1) processed to obtain a cylindrical or conical shape

4.22

pole

long *round timber* (4.1) for use in a free-standing application

4.23

stake

round timber (4.1) of small *diameter* (7.1) usually pointed at one end

Note 1 to entry: May also be split or sawn.

4.24

bundle

group of evenly placed *logs* (4.1.2), bundled by strapping or other packaging means

4.25

pile

stack, en CA, U.S.

deck, en CA, U.S.

group of *logs* (4.1.2) stacked in a row or several parallel rows

Note 1 to entry: Can be located at a forest landing, road-side landing or mill yard.

4.26

felling

separating the *stem* (4.4) of a tree from its root system

Note 1 to entry: Done by cutting a standing tree near ground level to leave a *stump* (4.8) or by cutting off a root ball of an *uprooted tree* (4.26.1).

4.26.1

uprooted tree

tree that is blown over as a result of wind or mechanically pushed over with the root ball still attached

5 Terms related to sawn timber

5.1

sawn timber

lumber, en CA, U.S.

sawn lumber, en CA, U.S.

solid *wood* (3.1) product obtained by the longitudinal sawing of *logs* (4.1.2), having at least two parallel planes

Note 1 to entry: Often supplemented by additional *processing* (3.10) and/or *drying* (6.10).

Note 2 to entry: Does not include any products obtained by end, *face* (5.17) or *edge* (5.18) gluing of sawn timber components.

5.1.1

rough sawn timber

sawn timber (5.1) without any additional *processing* (3.10)

5.1.2

regularized green timber

regularized green lumber, en CA, U.S.

sawn timber (5.1), in a green state, processed to specified *permitted deviations* (8.8)

5.1.3

prepared timber

blank

sawn timber (5.1) that, at the *end-use moisture content* (6.7), has been processed to *permitted deviations* (8.8) under special agreement between buyer and seller

5.2

regularized dried timber**regularized dried lumber**, en CA, U.S.

regularized dry timber

sawn timber (5.1) that, after *drying* (6.10) to the *end-use moisture content* (6.7), has been processed to specified *permitted deviations* (8.8)

5.3

planed timber**planed lumber**, en CA, U.S.**dressed lumber**, en CA, U.S.**surfaced lumber**, en CA, U.S.

sawn timber (5.1) that, at the *end-use moisture content* (6.7), has been processed for its *full length* (3.14) and *width* (8.2) on at least one *face* (5.17) to obtain a smooth surface

Note 1 to entry: The end-use moisture content forming part of a specification for planed lumber is typically specified as either an average *moisture content* (6.1) with a limit on the variation, or as a moisture content limit, which a large portion of the production shall not exceed.

5.4

profiled timber**profiled lumber**, en CA, U.S.

sawn timber (5.1) that, at the *end-use moisture content* (6.7), has been processed to obtain a specified, non-rectangular *cross-section* (3.13)

5.5

boule

set of pieces of *unedged timber* (5.14), resulting from cutting a *log* (4.1.2) longitudinally by successive parallel cuts, and reassembled into the original log form without the *slabs* (5.15)

5.6

baulk**timber**, en CA, U.S.**large scantling**, en MY

large *sawn timber* (5.1) of square or rectangular *cross-section* (3.13)

Note 1 to entry: In Canada and the U.S., the minimum dimensions of the cross-section of a timber are 114 mm × 114 mm (nominal 5 in × 5 in).

Note 2 to entry: In Malaysia, the minimum dimensions of the cross-section of a large scantling are nominal 10 in × 6 in.

Note 3 to entry: In Belarus, Russia and Ukraine, the minimum dimensions of the cross-section of a baulk are 100 mm × 100 mm.

Note 4 to entry: In the EU, the minimum *thickness* (8.1) of a baulk is 80 mm and the sum of the thickness and *width* (8.2) shall be greater than or equal to 200 mm.

Note 5 to entry: In Canada and the U.S., there is a homograph for the term “timber”. See 3.2.

5.7

board

piece of *sawn timber* (5.1) of smaller dimensions

Note 1 to entry: In Malaysia, at least 141 mm (nominal 6 in) in *width* (8.2).

Note 2 to entry: In Belarus, Russia and Ukraine, less than 100 mm thick with the width at least twice the *thickness* (8.1).

Note 3 to entry: In Great Britain/UK, at least 100 mm (nominal 4 in) in width.

Note 4 to entry: In Japan, less than 75 mm thick with the width at least four times the thickness.

Note 5 to entry: In Canada and the U.S., less than 38 mm (nominal 2 in.) thick and 38 mm (nominal 2 in.) or more in width.

5.8

lath

slat, en CA, U.S.

strip, en MY

thin, narrow strip of *sawn timber* (5.1)

Note 1 to entry: Typically, 9 mm (3/8 in) to 12,5 mm (1/2 in) in *thickness* (8.1) and 38 mm (1-1/2 in) in *width* (8.2).

Note 2 to entry: In Malaysia, the width can be up to 141 mm (nominal 6 in).

Note 3 to entry: Typically used as backing for wall plaster and sometimes for fences.

5.9

scantling

piece of *sawn timber* (5.1) of rectangular *cross-section* (3.13) whose *thickness* (8.1) usually equals or exceeds half its *width* (8.2)

EXAMPLE 1 Small scantlings have sizes such as 3 in × 2 in, 4 in × 2 in, 4 in × 3 in, 6 in × 4 in, etc.

EXAMPLE 2 Large scantlings have sizes such as 10 in × 6 in, 12 in × 8 in, 12 in × 12 in, etc.

Note 1 to entry: In Malaysia, the minimum dimensions of the cross-section of a *large scantling* (5.6) are nominal 10 in × 6 in.

Note 2 to entry: In Belarus, Russia and Ukraine, the thickness of a small scantling is less than 100 mm.

5.10

cant

flitch, en CA, U.S.

log (4.1.2) sawn on at least one side

Note 1 to entry: Usually intended for further *processing* (3.10).

Note 2 to entry: In some countries, may be specified as having at least two flat sides.

5.11

square-edged timber

square-cornered timber, en CA, U.S.

sawn timber (5.1) of rectangular *cross-section* (3.13)

Note 1 to entry: *Wane* (5.13), in specified amounts, is permitted in some cases.

Note 2 to entry: In Canada and the U.S., the term “square-edged” refers to sawn timber free of wane and without *eased edges/eased arrises* (5.19.3).

Note 3 to entry: In Canada and the U.S., the term “square cornered” refers to sawn timber with an allowance for wane in some cases but without eased edges/eased arrises.

5.12

taper-edged timber

sawn timber (5.1) processed so that the *edges* (5.18) are not parallel

5.13

wane

absence of *wood* (3.1) in the *cross-section* (3.13) of *sawn timber* (5.1) due to the original rounded surface of a *log* (4.1.2), with or without *bark* (9.5), on any *face* (5.17) or *edge* (5.18) and extending along the longitudinal axis of the piece

5.14**unedged timber**

sawn timber (5.1) with parallel *faces* (5.17) and with one or both *edges* (5.18) left unsawn

5.15**slab**

thin longitudinal exterior slice of a *log* (4.1.2) obtained by the first sawcut

Note 1 to entry: May be further processed.

5.16**squared end**

end of *sawn timber* (5.1) that has a plane surface at a right angle to the longitudinal axis of the piece

5.17**face**

either of the two wider longitudinal opposite surfaces of *sawn timber* (5.1) or any of the longitudinal surfaces if the piece has a square *cross-section* (3.13)

5.17.1**outside face**

face (5.17) furthest away from the *pith* (9.14)

5.17.2**inside face**

face (5.17) nearer to the *pith* (9.14)

5.17.3**better face**

face (5.17) that, using a specific rule for *grading* (3.8), is judged to be of a higher grade than the other face

5.17.4**worse face**

face (5.17) that, using a specific rule for *grading* (3.8), is judged to be of a lower grade than the other face

5.18**edge**

either one of the narrow longitudinal surfaces of *square-edged timber* (5.11)

Note 1 to entry: In Canada and the U.S., also applies to the part of the *face* (5.17) nearest to the *arris* (5.19) defined for the purpose of *grading* (3.8).

Note 2 to entry: In Canada and the U.S., there is a homograph for the term “edge”. See 5.19.

5.19**arris**

edge, en CA, U.S.

line of intersection of two *faces* (5.17) or a face and an *edge* (5.18)

Note 1 to entry: In Canada and the U.S., there is a homograph for the term “edge”. See 5.18.

5.19.1**waney arris**

waney edge, en CA, U.S.

arris (5.19) that contains *wane* (5.13) in one or more places

5.19.2**sharp arris**

sharp edge, en CA, U.S.

arris (5.19) free of *wane* (5.13)

5.19.3

eased arris

eased edge, en CA, U.S.

arris (5.19) that has a slightly rounded surface

5.20

plain sawn timber

<visible rays> *sawn timber* (5.1) that has a *face* (5.17) normal or approximately normal to the *rays* (9.20)

Note 1 to entry: Limits on the angle between rays depend on the *species* (3.3) and on other factors; e.g. for oak, the angle between the rays and the face are between 60° and 90°. Other limits can be specified in rules for *grading* (3.8).

5.21

plain sawn timber

<rays not visible> *sawn timber* (5.1) that has a *face* (5.17) tangential or approximately tangential to the *growth rings* (9.8)

Note 1 to entry: Limits for *species* (3.3) where the rays are not visible are 0° and 30° for the angle between the growth rings and the face. Other limits can be specified in rules for *grading* (3.8).

5.22

quarter sawn timber

<rays visible> *sawn timber* (5.1) that has a *face* (5.17) tangential or approximately tangential to the *rays* (9.20)

Note 1 to entry: Limits on the angle between rays depend on the *species* (3.3) and on other factors; e.g. for oak, the angle between the rays and the face are between 0° and 30°. Other limits can be specified in rules for *grading* (3.8).

5.23

quarter sawn timber

<rays not visible> *sawn timber* (5.1) that has a *face* (5.17) normal or approximately normal to the *growth rings* (9.8)

Note 1 to entry: Limits for *species* (3.3) where the rays are not visible are 90° and 60° for the angle between the growth rings and the face. Other limits can be specified in rules for *grading* (3.8).

Note 2 to entry: In Canada and the U.S., the term “quarter sawn” refers to *timber* (3.2) sawn so that the growth rings form angles of 45° to 90° with the face of the piece.

5.24

fully quarter sawn timber

<rays visible> *sawn timber* (5.1) where the angle between the *rays* (9.20) and a *face* (5.17) is 10° or less

5.25

fully quarter sawn timber

<rays not visible> *sawn timber* (5.1) where the angle between the *growth rings* (9.8) and a *face* (5.17) is 80° or more

5.26

grain

fibres (9.18) in *wood* (3.1) and their direction, size, arrangement, appearance or quality

Note 1 to entry: In English, there is a homograph for the term “grain”. See 9.19.

5.26.1

diagonal grain

deviation of *grain* (5.26) from a line parallel to the *edges* (5.18), through the *thickness* (8.1) of the piece.

Note 1 to entry: See also *slope of grain* (12.7).

5.26.2**flat grain**

FG, en CA, U.S.

slash grain

SG, en CA, U.S.

timber (3.2) sawn approximately parallel to the *growth rings* (9.8) so that all or some of the growth rings form an angle of less than 45° with either *face* (5.17) of the piece

Note 1 to entry: A piece of *sawn timber* (5.1) containing both *vertical grain* (5.26.4) and flat grain is classified as flat grain.

5.26.3**mixed grain**

MG, en CA, U.S.

sawn timber (5.1) with any mixture of *vertical grain* (5.26.4) and *flat grain* (5.26.2)

5.26.4**vertical grain**

VG, en CA, U.S.

edge grain

EG, en CA, U.S.

rift grain

timber (3.2) sawn at approximate right angles to the *growth rings* (9.8) so that they form an angle of 45° or more with either *face* (5.17) of the piece

5.27**exposed pith**

pith (9.14) that is visible on a part or the full *length* (3.14) of a *face* (5.17) or an *edge* (5.18)

5.28**boxed heart**

pith (9.14) that is present and not visible on any *face* (5.17) or *edge* (5.18)

5.29**free of heart centre**

FOHC, en CA, U.S.

side cut

piece of *sawn timber* (5.1) that does not contain the *pith* (9.14)

5.30**heart plank**

piece of *sawn timber* (5.1) that contains the *pith* (9.14)

5.31**side board**

first piece of *sawn timber* (5.1) cut from the outer portion of a *log* (4.1.2)

5.32**sawing defect**

surface irregularity on a piece of *sawn timber* (5.1) caused by sawing

5.32.1**tooth marks**

scoring on the surface of *sawn timber* (5.1) caused by a saw tooth

5.32.2**chipped grain**

breaking away of the *fibres* (9.18) below the surface of *sawn timber* (5.1) caused by the action of a tool

Note 1 to entry: Frequently occurs on the *edge* (5.18) and by the breaking away of dried *knots* (10.1).

5.32.3

snaking

waviness on the surface of *sawn timber* (5.1) caused by irregular sawing

5.32.4

torn grain

condition of the surface of *sawn timber* (5.1) on which the *fibres* (9.18) have been dragged up or pulled out

5.33

warp

distortion of a piece of *sawn timber* (5.1) caused by *processing* (3.10), *drying* (6.10), or storage, or some combination thereof

5.33.1

bow

warp (5.33) consisting of lengthwise curvature of a piece of *sawn timber* (5.1) normal to the *face* (5.17)

5.33.1.1

simple bow

warp (5.33) consisting of a single *bow* (5.33.1)

5.33.1.2

complex bow

warp (5.33) consisting of two or more *bows* (5.33.1) in alternate directions

5.33.2

spring

crook, en CA, U.S.

side bend, en CA U.S.

warp (5.33) consisting of lengthwise curvature of a piece of *sawn timber* (5.1) normal to the *edge* (5.18)

5.33.2.1

simple spring

simple crook, en CA, U.S.

warp (5.33) consisting of a single *spring* (5.33.2)

5.33.2.2

compound spring

warp (5.33) consisting of two or more *springs* (5.33.2) in alternate directions

5.33.3

cup

warp (5.33) consisting of curvature of a piece of *sawn timber* (5.1) across the width of the piece

5.33.4

twist

warp (5.33) consisting of lengthwise spiral distortion of a piece of *sawn timber* (5.1)

5.34

raised grain

condition of the surface of *sawn timber* (5.1) where a distortion of the *grain* (5.26) (9.19) causes ends of *fibres* (9.18) to loosen

5.35

top rupture

deviation in the *grain* (5.26) (9.19) caused by damage to the top of a live tree

6 Terms related to moisture content

6.1

moisture content

MC

amount of water contained in *wood* (3.1), expressed as a percentage of the mass of the wood in the *oven-dry state* (6.16.1)

Note 1 to entry: Determined as mass of evaporable water divided by mass of wood in oven-dry state.

Note 2 to entry: When moisture content is specified for production, it is expressed as either an average moisture content with a limit on the variation, or as a moisture content limit, which a large portion of the production should not exceed.

6.2

free water

free moisture

water that is contained in the cell cavities and intercellular spaces of *wood* (3.1)

6.3

bound water

bound moisture

water in the cell walls of *wood* (3.1)

6.4

fibre saturation point

FSP

moisture content (6.1) of *wood* (3.1) saturated with *bound water* (6.3) but with no *free water* (6.2)

Note 1 to entry: Considered to be approximately 30 % in wood of temperate *species* (3.3).

Note 2 to entry: The exact value is difficult to determine because there is generally some free water when the cell walls are fully saturated.

6.4.1

wood hygroscopicity limit

moisture content (6.1) of *wood* (3.1) at a stated ambient temperature, when the cell walls have absorbed the maximum of *bound water* (6.3) from the surrounding air and no *free water* (6.2) exists in the cell cavities

Note 1 to entry: At room temperature it is the same as the *fibre saturation point* (6.4).

6.5

final moisture content

moisture content (6.1) at the end of *drying* (6.10) process

6.6

equilibrium moisture content

stabilised *moisture content* (6.1) of *wood* (3.1) in a given environment

6.7

end-use moisture content

moisture content (6.1) appropriate to the environment of final use

6.8

surface moisture content

moisture content (6.1) on the surface of a piece of *timber* (3.2)

6.9

core moisture content

moisture content (6.1) at the centre of the *cross-section* (3.13) of a piece of *timber* (3.2)

6.10

drying seasoning

reduction of the *moisture content* (6.1) of *timber* (3.2)

6.11

green timber

timber (3.2) that has not been subject to *drying* (6.10) below the *fibre saturation point* (6.4)

Note 1 to entry: Generally refers to freshly cut timber that might have had some exposure to air drying.

Note 2 to entry: In Canada and the U.S., *sawn timber* (5.1) where a large portion of the pieces are expected to have *moisture content* (6.1) above 19 % at the time of *grading* (3.8) is considered green.

6.12

shipping dry timber

shipping dry lumber, en CA, U.S.

sawn timber (5.1) that has a *moisture content* (6.1) sufficiently low to limit *stain* (13.9), *mould* (13.17) and *fungal attack* (13.2) of timber while in transport

6.13

dry graded timber

dry lumber, en CA, U.S.

sawn timber (5.1) that has a specified *moisture content* (6.1) at the time of *grading* (3.8)

Note 1 to entry: In Europe, refers to sawn timber that has a mean moisture content of 20 % or less, without any measurement exceeding 24 % at the time of grading.

Note 2 to entry: In Canada and the U.S., the term “dry lumber” is used to refer to sawn timber that has a moisture content of 19 % or less at the time of grading.

Note 3 to entry: In Japan, there are several classes of moisture content depending on use of *timber* (3.2). The number after “D” is the mean moisture content of sawn timber at the time of grading:

- D15, D20 and D25 for structural use *softwood* (3.5) timber;
- D13 and D15 for non-structural use softwood timber; and
- D10 and D13 for structural or non-structural use *hardwood* (3.4) timber.

6.14

air-dried timber

air-dried lumber, en CA, U.S.

air-dry timber

sawn timber (5.1) that has been subject to *drying* (6.10) by exposure to air without any artificial heating and has a *moisture content* (6.1) in approximate equilibrium with the surrounding natural atmospheric conditions

Note 1 to entry: In Japan, mean moisture content of 30 % or less at the time of *grading* (3.8) is targeted.

6.15

kiln-dried timber

kiln-dried lumber or KD lumber, en CA, U.S.

kiln-dry timber

sawn timber (5.1) that has been subject to *drying* (6.10) in a closed chamber in which the required *moisture content* (6.1) is obtained by artificial heat and humidity control

Note 1 to entry: The moisture content is targeted to the same limitations as *dry graded timber* (6.13).

6.16**oven-dry timber****oven-dry wood**, en CA, U.S.*timber* (3.2) that contains neither *free water* (6.2) nor *bound water* (6.3)Note 1 to entry: Obtained by *drying* (6.10) in a ventilated oven at $103\text{ °C} \pm 2\text{ °C}$ until constant mass is achieved.**6.16.1****oven-dry state**state of a piece of *wood* (3.1) that contains neither *free water* (6.2) nor *bound water* (6.3)**6.17****shrinkage**decrease in dimensions of a piece of *timber* (3.2) due to reduction of the *moisture content* (6.1) below the *fibre saturation point* (6.4)**6.17.1****total shrinkage***shrinkage* (6.17) in a stated anatomical direction (radial or tangential or longitudinal) between the *fibre saturation point* (6.4) state and the *oven-dry state* (6.16.1), expressed as a percentage of the dimension at the fibre saturation point state**6.17.2****shrinkage value****shrinkage coefficient***shrinkage* (6.17) in a stated anatomical direction for a one percentage point reduction in *moisture content* (6.1)Note 1 to entry: Derived by dividing *total shrinkage* (6.17.1) by the *fibre saturation point* (6.4).**6.17.3****radial shrinkage***shrinkage* (6.17) in a direction normal to the *growth rings* (9.8) or in a direction parallel to the *rays* (9.20)**6.17.4****tangential shrinkage***shrinkage* (6.17) in a direction tangential to the *growth rings* (9.8) or in a direction normal to the *rays* (9.20)**6.17.5****longitudinal shrinkage***shrinkage* (6.17) in a direction parallel to *grain* (9.19)**6.18****swelling**increase in dimensions of a piece of *timber* (3.2) due to increase in *bound water* (6.3)**6.18.1****total swelling***swelling* (6.18) in a stated anatomical direction between the *oven-dry state* (6.16.1) and the *fibre saturation point* (6.4) state expressed as a percentage of the dimension at the oven-dry state**6.18.2****swelling value****swelling coefficient***swelling* (6.18) in a stated anatomical direction for a one percentage point increase in *moisture content* (6.1)Note 1 to entry: Derived by dividing *total swelling* (6.18.1) by the *fibre saturation point* (6.4).

6.18.3

radial swelling

swelling (6.18) in a direction normal to the *growth rings* (9.8) or in a direction parallel to the *rays* (9.20)

6.18.4

tangential swelling

swelling (6.18) in a direction tangential to the *growth rings* (9.8) or in a direction normal to the *rays* (9.20)

6.18.5

longitudinal swelling

swelling (6.18) in a direction parallel to *grain* (9.19)

6.19

moisture pocket

small portion or section of *timber* (3.2) that retains excessive *moisture content* (6.1) after *drying* (6.10)

6.20

case-hardened timber

timber (3.2) where the outer layers have undergone some *drying* (6.10) and become set without corresponding *shrinkage* (6.17), causing stress between the inner and outer layers

6.21

honeycombing

separation of the *fibres* (9.18) in the interior of a piece of *timber* (3.2) induced by *drying* (6.10) stresses

Note 1 to entry: The separation usually occurs along and in the plane of the *rays* (9.20).

Note 2 to entry: See also *fissure* (10.11) and *honeycomb* (13.34).

6.22

collapse

flattening or buckling of cell walls during excessive *drying* (6.10)

Note 1 to entry: The collapse manifests itself as a wavy surface.

7 Terms related to dimensions of round timber

7.1

diameter

distance between two parallel lines tangential to the *stem* (4.4) or to *round timber* (4.1)

7.1.1

butt diameter

large diameter

diameter (7.1) at the larger end

7.1.2

mid diameter

mid girth, en MY

diameter (7.1) at mid-length (3.14)

7.1.3

top diameter

diameter (7.1) at the smaller end

7.2

full dimension

dimension with any fraction of the unit of measurement ignored

7.3**nominal length**

specified *length* (3.14) of *round timber* (4.1), disregarding any *cross-cut allowance* (7.4)

7.4**cross-cut allowance**

additional clearance to compensate the loss of *length* (3.14) due to a cross-cut

7.5**solid volume**

measure of the quantity of *wood* (3.1) in *round timber* (4.1) based on its dimensions

Note 1 to entry: Usually expressed in cubic metres.

Note 2 to entry: Can be based on dimensions determined *over bark* (7.7) or *under bark* (7.8).

Note 3 to entry: See also *bark allowance* (7.9).

7.6**piled volume****stacked volume**

volume occupied by a *pile* (4.25) of *round timber* (4.1) determined by external dimensions, including air spaces

7.7**over bark****outside bark**

including the *bark* (9.5) in a measurement

7.8**under bark****inside bark**

excluding the *bark* (9.5) from a measurement

7.9**bark allowance**

factor to convert the volume of *round timber* (4.1), measured *over bark* (7.7), to the corresponding volume measured *under bark* (7.8)

7.10**weight measure**

measure of the quantity of *round timber* (4.1) based on its mass

7.11 Terms related to measurement of solid volume**7.11.1****piece-by-piece measurement of volume**

determination of *solid volume* (7.5) based on measurement of the *diameter* (7.1), with or without *bark* (9.5), and the *length* (3.14) of each individual piece of *round timber* (4.1)

7.11.2**geometric measurement of piled volume**

measurement of the aggregate volume of a *pile* (4.25) of *round timber* (4.1) with a fixed form with conversion of *piled volume* (7.6) into *solid volume* (7.5)

7.11.3**mass measurement of volume**

weighing of *round timber* (4.1) with subsequent conversion of the mass into *solid volume* (7.5)

7.11.4

hydrostatic measurement of volume

determination of the *solid volume* (7.5) of *round timber* (4.1) by change in water displacement upon complete immersion in water

7.11.5

photographic determination of volume

determination of *solid volume* (7.5) of *round timber* (4.1) by measurement of the size and density of the *pile* (4.25) using its photo image and taking into account the *lengths* (3.14)

7.11.6

electro-optical determination of volume

determination of *solid volume* (7.5) of *round timber* (4.1) by electro-optical (scanning) devices

8 Terms related to dimensions of sawn timber

8.1

thickness

distance between the *faces* (5.17) of a piece of *sawn timber* (5.1) at the specified place of measurement

8.2

width

distance between the *edges* (5.18) of a piece of *sawn timber* (5.1) at the specified place of measurement

8.2.1

narrowest width

width (8.2) of *unedged timber* (5.14) measured at the narrowest point of the narrower *face* (5.17)

8.3

setting size

size to which a machine is set to give *sawn timber* (5.1) a required dimension

Note 1 to entry: The setting size usually includes an oversize allowance for sawing inaccuracies and *shrinkage* (6.17).

8.4

nominal dimension

basic size

size by which *sawn timber* (5.1) is designated or marketed, approximately equal to its *actual size* (8.6)

Note 1 to entry: No inference should be drawn that nominal designations are actual sizes.

8.5

dimension stock

batch (3.9) of *sawn timber* (5.1) sawn to *target sizes* (8.7) for a specified purpose

8.6

actual size

size of a piece of *sawn timber* (5.1) at the time of measurement

8.7

target size

standard size, en CA, U.S.

size of a piece of *sawn timber* (5.1) at a specified *moisture content* (6.1) that is desired after *processing* (3.10)

Note 1 to entry: Any permitted deviation (8.8) is expressed relative to the target size.

8.8**permitted deviation**

combination of the permitted algebraic differences between the limits of the *actual size* (8.6) and the corresponding *target size* (8.7)

Note 1 to entry: Generally expressed as a combination of the *upper* and *lower permitted deviations* (8.9) (8.10).

If the upper permitted deviation has a different magnitude than the lower permitted deviation, the target size and the permitted deviation are typically indicated as follows:

$$(50^{+3}_{-2}) \text{ mm.}$$

If the upper and lower permitted deviations have the same magnitude, the target size and the permitted deviation are typically indicated as follows:

$$(75 \pm 2) \text{ mm.}$$

8.9**upper permitted deviation**

algebraic difference between the upper limit of size and the corresponding *target size* (8.7)

8.10**lower permitted deviation**

algebraic difference between the lower limit of size and the corresponding *target size* (8.7)

8.11**tolerance**

algebraic difference between the *upper permitted deviation* (8.9) and the *lower permitted deviation* (8.10)

Note 1 to entry: Tolerance is an absolute value without sign.

8.12**average length**

sum of the *lengths* (3.14) of all pieces in a *batch* (3.9) of *sawn timber* (5.1) divided by the number of pieces

8.13**average width**

sum of the *widths* (8.2) of all pieces in a *batch* (3.9) of *sawn timber* (5.1) divided by the number of pieces

8.14**full sawn**

oversize, en MY

oversized timber

sawn timber (5.1) that has been sawn to a size allowing for *shrinkage* (6.17) and, if desired, further *processing* (3.10)

Note 1 to entry: The size is generally greater than the *target size* (8.7) until the *end-use moisture content* (6.7) is achieved.

Note 2 to entry: The grade assigned to sawn timber is generally not altered following shrinkage. Further processing may alter the grade.

8.15**bare sawn**

undersize, en MY

undersized timber

sawn timber (5.1) that, at the time of inspection, has lower dimensions than specified

9 Terms related to the anatomical structure of timber

9.1

sapwood

outer zone of *wood* (3.1) that, in a live tree, contains living cells and conducts sap

Note 1 to entry: Frequently lighter in colour than the *heartwood* (9.2), from which it is not always clearly differentiated.

9.2

heartwood

inner zone of *wood* (3.1) that, in a live tree, has ceased to contain living cells or to conduct sap

Note 1 to entry: Frequently darker than *sapwood* (9.1), from which it is not always clearly differentiated.

9.3

false heartwood

inner zone of *wood* (3.1) that has an abnormal colour, often in a tree *species* (3.3) in which there is no marked colour contrast between *heartwood* (9.2) and *sapwood* (9.1)

Note 1 to entry: May result from natural causes such as frost or abnormal growing conditions.

Note 2 to entry: See also *red heart* (13.15).

9.4

double pith

presence on one end of *round timber* (4.1) or *sawn timber* (5.1) of two *piths* (9.14) with independent systems of *growth rings* (9.8), surrounded by one peripheral system caused by a forked tree *stem* (4.4)

9.5

bark

outer covering of the *stem* (4.4) and branches of a tree

9.6

bast

inner layer of *bark* (9.5), adjoining the *cambium* (9.7)

9.7

cambium

layer of cells that is located between the woody part of the tree and the *bast* (9.6) and which, in a living tree, continuously divides to form bast cells towards the exterior and *wood* (3.1) cells towards the interior

9.8

growth ring

layer of *wood* (3.1) produced in one growing season

Note 1 to entry: The width of growth rings depends on the tree *species* (3.3) and on growing conditions. In temperate growth zones, growth rings generally correspond to *annual rings* (9.9).

9.9

annual ring

growth ring (9.8) corresponding to an annual period of growth

Note 1 to entry: usually, includes one ring of *early wood* (9.11) and one ring of *late wood* (9.12).

9.10

rate of growth

average number of *growth rings* (9.8) per unit of a specified distance

9.11**early wood****springwood**, en CA, U.S.portion of the *growth ring* (9.8) that is formed during the earlier stage of a growth periodNote 1 to entry: Often less dense and paler than *late wood* (9.12).**9.12****late wood****summerwood**, en CA, U.S.portion of the *growth ring* (9.8) that is formed during the later stage of a growth periodNote 1 to entry: Often denser and darker than *early wood* (9.11).**9.13****texture**visual and tactile character of *wood* (3.1), determined by its anatomical structure and the width and form of the *growth rings* (9.8)**9.14****pith****heart centre**, en CA, U.S.zone within the first *growth ring* (9.8) that consists chiefly of soft tissue**9.15****brittleheart***wood* (3.1) characterized by abnormal brittleness, mostly located in the *heartwood* (9.2)Note 1 to entry: Occurs in some tropical *hardwoods* (3.4).

Note 2 to entry: In English, there is a homograph for the term “brittleheart”. See 11.30.

9.16**dry side**outer portion of *round timber* (4.1) or *stem* (4.4) consisting of dead tissue**9.17****T-disease**longitudinal *scar* (11.22), originating in the standing tree, that appears as a “T” shaped mark on the *cross-section* (3.13) of *round timber* (4.1) or *sawn timber* (5.1)**9.18****fibre**long narrow cell (or bundle of cells) of which *wood* (3.1) is largely composed**9.19****grain**general direction or physical arrangement of *fibres* (9.18) in *wood* (3.1)

Note 1 to entry: In English, there is a homograph for the term “grain”. See 5.26.

9.20**ray****medullary ray****wood ray**, en CA, U.S.ribbon-like aggregate of cells extending radially relative to the *growth rings* (9.8)**9.21****pore***cross-section* (3.13) of a moisture conducting cell, as seen on the end surface of a piece of *wood* (3.1)

9.22

fiddle back grain

wavy grain (10.6) showing on a sawn surface as closely spaced regular transverse bands

9.23

reaction wood

wood (3.1) with distinctive anatomical characteristics, which are formed typically in parts of leaning or crooked *stems* (4.4) when the tree attempts to restore its vertical position after disturbance

9.23.1

compression wood

reaction wood (9.23) formed typically on the under-side of leaning or crooked *stems* (4.4) of *softwood* (3.5) trees

9.23.2

tension wood

reaction wood (9.23) formed typically on the upper side of leaning or crooked *stems* (4.4) of *hardwood* (3.4) trees

9.24

compression failure

fracture of *fibres* (9.18) across the *grain* (9.19) resulting from excessive compression parallel to the grain either by direct end compression or in bending

10 Terms related to common features of round and sawn timber

10.1

knot

portion of a branch embedded in the *wood* (3.1)

Note 1 to entry: The size of knot, often referred to as its “diameter”, is measured by its exposed section on the surface of *round timber* (4.1) or *sawn timber* (5.1).

10.1.1

sound knot

knot (10.1) showing no indication of *rot* (13.19.1)

Note 1 to entry: In Malaysia, refers to a knot having the following characteristics:

- solid across its exposed surface;
- except for its own *pith* (9.14), as hard as or harder than the surrounding *wood* (3.1) to which it is firmly joined;
- shows no indication of decay; and
- usually darker in colour than the surrounding wood.

10.1.2

unsound knot

knot (10.1) affected by *rot* (13.19.1)

Note 1 to entry: In Malaysia, where the *rot* (13.19.1) is advanced, there can be a hole in the centre of the knot and the sides of the hole contain decay.

10.2

included sapwood

presence in the *heartwood* (9.2) of a complete or incomplete *growth ring* (9.8) having the colour and the properties of *sapwood* (9.1)

10.3**pocket**

well-defined opening between the *growth rings* (9.8) that develops during the growth of the tree

Note 1 to entry: Usually contains pitch or *bark* (9.5).

Note 2 to entry: In Canadian and U.S. *grading* (3.8) rules for *sawn timber* (5.1), further classified based on dimensions.

10.3.1**bark pocket**

bark (9.5) that is partly or wholly enclosed in a *pocket* (10.3) in *wood* (3.1)

Note 1 to entry: In Canada and the U.S., refers to an opening between or through the *growth rings* (9.8) that contains or that has contained bark.

Note 2 to entry: In *grading* (3.8) rules for *sawn timber* (5.1), usually classified under pockets for permissible size measurement.

10.3.2**resin pocket**

pitch pocket, en CA, U.S.

lens-shaped cavity in *wood* (3.1) containing, or that has contained, a resinous substance

10.4**spiral grain**

grain (9.19) that follows a spiral course around the *pith* (9.14)

10.5**curly grain**

grain (9.19) that follows tight irregular curves

10.6**wavy grain**

grain (9.19) in fairly uniform waves or ripples

10.7**interlocked grain**

grain (9.19) in which cells in succeeding growth periods incline alternately in opposite directions that are different from that of the axis of the tree

10.8**coarse texture**

texture (9.13) with relatively large cells or wide irregular *growth rings* (9.8), or a combination of both

Note 1 to entry: For limits of these *features* (3.6) see the relevant rule(s) for *grading* (3.8) or commercial agreements.

10.9**moderately fine texture**

texture (9.13) with medium sized cells or moderately wide regular *growth rings* (9.8) or a combination of both

Note 1 to entry: For limits of these *features* (3.6) see the relevant rule(s) for *grading* (3.8) or commercial agreements.

10.10**fine texture**

texture (9.13) with relatively small cells or relatively narrow regular *growth rings* (9.8), or a combination of both

Note 1 to entry: For limits of these *features* (3.6) see the relevant rule(s) for *grading* (3.8) or commercial agreements.

10.11

fissure

shake, en CA, U.S.

longitudinal separation of *fibres* (9.18)

Note 1 to entry: See *honeycombing* (6.21).

10.11.1

end shake

fissure (10.11) showing on the end surface

Note 1 to entry: Can extend as a *crack* (11.11).

10.11.2

heart shake

radial *fissure* (10.11) originating at the *pith* (9.14) and extending through the *growth rings* (9.8) towards the surface

10.11.3

ring shake

fissure (10.11) following a *growth ring* (9.8)

10.11.4

frost crack

radial *fissure* (10.11) caused by frost action on the standing tree that extends from the *sapwood* (9.1) towards the *pith* (9.14) and for a distance longitudinally

Note 1 to entry: Accompanied by darkening of the adjacent *wood* (3.1) and deviation of the *annual rings* (9.9).

10.11.5

check

short, narrow, and shallow *fissure* (10.11)

Note 1 to entry: Commonly caused by *drying* (6.10).

Note 2 to entry: In Canada and the U.S., refers to a fissure that usually occurs across or through the *growth rings* (9.8) as a result of drying.

Note 3 to entry: In Canadian and U.S. *grading* (3.8) rules for *sawn timber* (5.1), further classified based on dimensions.

11 Terms related to features of round timber

11.1

uncovered knot

knot (10.1) visible on the curved surface of *round timber* (4.1)

11.2

covered knot

knot (10.1) that is not visible on the curved surface of *round timber* (4.1)

11.3

knot surround

bare patch on the curved surface of *round timber* (4.1), surrounding a *knot* (10.1) where a branch, the associated local swelling and *bark* (9.5) have been trimmed flush

Note 1 to entry: Generally paler in colour than the knot.

11.4

epicormic shoot

secondary twig or trace of a twig visible on the curved surface of the *stem* (4.4)

11.5**burl**

protrusion on *round timber* (4.1) around a group of dormant buds and possibly twigs

Note 1 to entry: In English, there is a homograph for the term “burl”. See 12.2.

11.6**buckle**

local swelling on the curved surface of *round timber* (4.1)

Note 1 to entry: Possibly indicates a *covered knot* (11.2), foreign body, etc.

11.7**rose**

concentric folds of the *bark* (9.5) on *round timber* (4.1) indicating an internal *feature* (3.6), usually a *knot* (10.1)

11.8**moustache**

mark on the curved surface of *hardwood* (3.4) *round timber* (4.1) that has a thin arc, shaped as part of an oval curve, that indicates an internal *feature* (3.6), usually a *knot* (10.1)

11.9**burr**

large woody excrescence in *round timber* (4.1) with *curly grain* (10.5), giving rise to a characteristic *figure* (12.16) when sawn

11.10**star shake**

two or more *heart shakes* (10.11.2)

11.11**crack**

fissure (10.11) showing on the curved surface of *round timber* (4.1)

Note 1 to entry: May extend as an *end shake* (10.11.1).

11.11.1**traversing crack**

fissure (10.11) that appears on the end surface and twice on the curved surface of *round timber* (4.1)

11.11.2**lightning shake**

crack (11.11) caused by a lightning strike on a standing tree

11.11.3**felling shake**

fissure (10.11) caused by *felling* (4.26), appearing at the butt end of *round timber* (4.1)

11.12**sweep****curvature****bend, en MY**

deviation of the longitudinal axis of *round timber* (4.1) from a straight line

Note 1 to entry: Refers to both the *feature* (3.6) and the method of measurement.

11.12.1**simple sweep**

sweep (11.12) characterized by only one bend

11.12.2

multiple sweep

sweep (11.12) characterized by two or more bends in one or several planes

11.12.3

local sweep

sweep (11.12) caused by damage to the top of the tree

11.13

ovality

characteristic of the *cross-section* (3.13) of *round timber* (4.1) where there is a significant difference between the larger and smaller *diameters* (7.1)

11.14

taper

gradual reduction in *diameter* (7.1) of a *stem* (4.4) along its height or of a *round timber* (4.1) along its *length* (3.14)

11.14.1

taper coefficient

rate of reduction of the *diameter* (7.1) of a *stem* (4.4) along its height or of a *round timber* (4.1) along its *length* (3.14)

Note 1 to entry: Usually expressed in centimetres per metre or inches per foot.

11.15

eccentric pith

pith (9.14) that is at a significant distance from the geometric centre of the *cross-section* (3.13) of *round timber* (4.1)

11.16

fluting

longitudinal depressions, ridges, or some combination thereof, on the surface of *round timber* (4.1)

11.17

tapping cut

cut into the *stem* (4.4) of a living tree to extract resin

11.18

undercut

scarf, en MY

wedge shaped cut, visible at the butt end of *round timber* (4.1), made at the base of the *stem* (4.4) to set the direction of *felling* (4.26)

11.19

butt trimming

oblique cut at the large end of *round timber* (4.1) to facilitate extraction from the forest

11.20

shear

torn hole on an end surface of *round timber* (4.1) caused during *felling* (4.26) or cross-cutting

11.21

carbonized wood

wood (3.1) partly burnt as a result of lightning or fire

11.22

scar

surface wound on *round timber* (4.1) that has been wholly or partly enclosed by the growth of a tree

11.23**animal damage**

damage to the *stem* (4.4) caused by animals

11.24**bird peck**

patch of distorted *grain* (5.26) (9.19) resulting from birds pecking into the living cells of a tree

Note 1 to entry: See *peck* (13.35).

Note 2 to entry: Sometimes contains holes, ingrown *bark* (9.5), or both, and is usually associated with discolouration.

11.25**bark stripping damage**

removal of *bark* (9.5) of standing trees caused by harvesting or animals

11.25.1**peeling damage**

loss of *bark* (9.5) caused by animals

11.26**hump**

series of ring-shaped swellings perpendicular to the axis of *round timber* (4.1) due to the presence of *wavy grain* (10.6)

11.27**caterpillar grain**

series of small longitudinal lens-shaped cavities appearing in rows of various sizes on the curved surface of *round timber* (4.1)

11.28**blister grain**

small longitudinal cavity in the shape of barley grain on the curved surface of *round timber* (4.1), generally concealed by *bark* (9.5)

11.29**thick streak**

abnormal darker zone of the *heartwood* (9.2) of some tropical tree *species* (3.3) associated with higher density and different anatomical properties

11.30**brittleheart**

defective core of *round timber* (4.1) characterized by abnormal brittleness, which occurs in certain tree *species* (3.3) of tropical *hardwoods* (3.4)

Note 1 to entry: Usually not clearly defined and the affected *wood* (3.1) shows no visible sign of *rot* (13.19.1).

Note 2 to entry: In English, there is a homograph for the term "brittleheart". See 9.15.

12 Terms related to features of sawn timber**12.1 Terms related to knots****12.1.1****face knot**

knot (10.1) that is exposed on one or two *faces* (5.17)

Note 1 to entry: Can also be partially exposed on an *edge* (5.18).

12.1.2

edge knot

knot (10.1) exposed on one or two *edges* (5.18)

12.1.3

arris knot

knot (10.1) exposed on an *arris* (5.19)

12.1.4

round knot

knot (10.1) exposed so that the ratio of the maximum to the minimum dimension is not more than 1,5

12.1.5

oval knot

knot (10.1) exposed so that the ratio of the maximum to the minimum dimension is more than 1,5 but not more than 4

12.1.6

spike knot

knot (10.1) exposed so that the ratio of the maximum to the minimum dimension exceeds 4

Note 1 to entry: Found when the embedded branch is cut either lengthwise or diagonally.

12.1.7

splay knot

arris knot (12.1.3) exposed so that the ratio of the maximum to the minimum dimension exceeds 4 on the *face* (5.17)

Note 1 to entry: In Sweden, found on an *inside face* (5.17.2) and extends to the *arris* (5.19) of the piece and partly shows on the *edge* (5.18).

Note 2 to entry: In Sweden, refers to a *knot* (10.1) resulting from a *top rupture* (5.35) in a living tree that can be vertical or cone-shaped.

12.1.8

branched knot

two *splay knots* (12.1.7) or *spike knots* (12.1.6) appearing on the same *face* (5.17) and originating approximately from the same point

12.1.9

traversing knot

knot (10.1) exposed on two opposite surfaces of a piece of *sawn timber* (5.1)

12.1.10

single knot

knot (10.1) located so that there is a full recovery of the lines of continuous *grain* (5.26) between adjacent knots

12.1.11

knot cluster

two or more *knots* (10.1) located so that the lines of continuous *grain* (5.26) are deflected around the entire cluster

12.1.11.1

group knots

two or more *knots* (10.1) located so that some recovery of the lines of continuous *grain* (5.26) is evident between adjacent knots

Note 1 to entry: In Canada and the U.S., *grading* (3.8) rules contain further sub-classifications such as well-scattered knots and well-spaced knots.

12.1.12**pin knot**

round knot (12.1.4), *oval knot* (12.1.5), *sound knot* (10.1.1), *intergrown knot* (12.1.15) or *partially intergrown knot* (12.1.16) with a maximum size of 5 mm

Note 1 to entry: In Canada and the U.S., the maximum size of a pin knot is 13 mm.

12.1.13**black knot**

knot (10.1) that is partly or fully black resulting from a dead branch that the *wood* (3.1) growth of the tree has surrounded

12.1.13.1**black pin knot**

black knot (12.1.13) with a maximum size of 5 mm

Note 1 to entry: In Canada and the U.S., the maximum size of a black pin knot is 13 mm.

12.1.14**cat's paw**

knot cluster (12.1.11) of tightly packed *pin knots* (12.1.12)

Note 1 to entry: Often found in *species* (3.3) of oak.

12.1.15**intergrown knot**

knot (10.1) that, on the surface considered, is intergrown with the surrounding *wood* (3.1) for most or all of the perimeter of its *cross-section* (3.13)

Note 1 to entry: See *partially intergrown knot* (12.1.16), *dead knot* (12.1.17) and *encased knot* (12.1.18).

Note 2 to entry: Generally, intergrown for at least 3/4 of its cross-sectional perimeter.

12.1.16**partially intergrown knot**

knot (10.1) that is intergrown with only a portion of the surrounding *wood* (3.1)

Note 1 to entry: Generally, intergrown for more than 1/4 but less than 3/4 of its cross-sectional perimeter.

12.1.17**dead knot**

knot (10.1) that is intergrown with only a small portion of the surrounding *wood* (3.1)

Note 1 to entry: Generally, intergrown for less than 1/4 of its cross-sectional perimeter.

12.1.18**encased knot**

knot (10.1) that is not intergrown with the surrounding *wood* (3.1)

Note 1 to entry: Generally surrounded by *bark* (9.5) for more than 3/4 of its cross-sectional perimeter.

12.1.19**loose knot**

dead knot (12.1.17) that is not held firmly in the surrounding *wood* (3.1)

12.1.20**hollow knot**

sound knot (10.1.1) containing a hole greater than 6,4 mm (¼ in) in diameter

12.1.21**pith knot**

sound knot (10.1.1) containing a hole not greater than 6,4 mm (¼ in) in diameter

12.2

burl

distortion of *grain* (5.26) (9.19), usually caused by abnormal growth due to injury to the tree

Note 1 to entry: Usually assessed in relation to *knots* (10.1) for *grading* (3.8) of *sawn timber* (5.1),

Note 2 to entry: For tropical *hardwoods* (3.4), refers to a *figure* (12.16) resulting from cutting through a contorted or gnarled growth that, unless it contains an unsound centre, is not considered a *defect* (3.7).

Note 3 to entry: In English, there is a homograph for the term “burl”. See 11.5.

12.3

resin wood

wood (3.1) that has abnormally high content of resin

12.3.1

resin streak

pitch streak, en CA, U.S.

well-defined accumulation of resin in the cells of the *wood* (3.1) showing on the surface in the form of a streak

Note 1 to entry: See *gum mark* (12.4).

12.4

gum mark

mark, similar to *resin streak* (12.3.1), frequently found in *hardwoods* (3.4) with high gum content

12.5

closed pocket

pocket (10.3) that has an opening on one surface only

12.6

through pocket

open pocket

pocket (10.3) that has an opening on opposite surfaces

Note 1 to entry: See *through check* (12.14).

12.7

slope of grain

divergence of the direction of the *fibres* (9.18) from the longitudinal axis of the piece

12.8

face shake

fissure (10.11) showing on a *face* (5.17) and possibly at the end of the piece

12.9

edge shake

through shake, en CA, U.S.

fissure (10.11) showing on an *edge* (5.18) and possibly at the end of the piece

12.10

split

fissure (10.11) that extends from one surface to another on the end surface of the piece

12.11

straight shake

fissure (10.11) approximately parallel with the *arris* (5.19)

12.12

oblique shake

fissure (10.11) at an angle to the *arris* (5.19), showing on a *face* (5.17) or an *edge* (5.18), or both

12.13**surface check**

check (10.11.5) that occurs on a single *face* (5.17) or *edge* (5.18) of a piece

Note 1 to entry: Typically, less than 2 mm deep and can be eliminated by normal surface planing of *rough sawn timber* (5.1.1).

12.14**through check**

check (10.11.5) that extends from one surface of a piece to the opposite or adjoining surface

Note 1 to entry: See *through pocket* (12.6).

12.15**silver figure**

longitudinal irregular stripes or flecks, result of cutting along the *rays* (9.20), appearing on a *face* (5.17) of *quarter sawn timber* (5.22, 5.23)

Note 1 to entry: Occurs mostly in *species* (3.3) of oak and beech.

12.16**figure**

ornamental markings, seen on the surface of the piece, formed by structural *features* (3.6) of the *wood* (3.1)

13 Terms related to stain and fungal attack**13.1****biodeterioration**

spoilage of appearance, or loss of strength properties, or both, of *wood* (3.1) caused by biological agents

13.2**fungal attack**

biodeterioration (13.1) caused by *fungi* (13.3)

13.3**fungus**

organism that obtains its nourishment from organic matter, without chlorophyll

Note 1 to entry: It can cause *biodeterioration* (13.1) of *timber* (3.2).

13.4**natural durability**

inherent resistance of *wood* (3.1) to attack by wood-destroying organisms

13.5**wood preservation**

process of protecting *wood* (3.1) from *biodeterioration* (13.1) by the application of wood preservatives

13.6**treatability**

ease with which *wood* (3.1) is penetrated by preservatives

13.7**preservative treatment**

treatment to improve the resistance of *wood* (3.1) to *biodeterioration* (13.1)

13.8**remedial treatment**

treatment to rectify and prevent further *biodeterioration* (13.1)

13.9

stain, noun

variation from the natural colour of *wood* (3.1) that is not associated with a significant loss of strength

Note 1 to entry: Can be the result of *fungi* (13.3), weathering, contact with metals, etc.

13.10

blue stain

stain (13.9) caused by *fungi* (13.3), in which the discolouration ranges from light blue to black

Note 1 to entry: Usually affects the *sapwood* (9.1) of certain tree *species* (3.3).

13.10.1

deep blue

blue stain (13.10) that cannot be removed by surface planing

Note 1 to entry: Typically, more than 2 mm deep.

13.10.2

surface blue

blue stain (13.10) that can be removed by surface planing

Note 1 to entry: Typically, less than 2 mm deep.

13.11

stick mark

stain (13.9) on the surface of *sawn timber* (5.1) caused by sticks inserted between the layers during storage or *drying* (6.10)

13.12

brown stain

attack, originating in the standing tree, appearing as a black mark on the smooth parts of the *bark* (9.5)

Note 1 to entry: Typically seen on *species* (3.3) of poplar and white pine.

Note 2 to entry: Can also be seen in *sawn timber* (5.1).

13.13

sunburnt

change in the colour on the surface of the piece due to exposure to sunlight

Note 1 to entry: The change in colour is entirely superficial and is different from *stain* (13.9).

13.14

brown streak

stain (13.9) in the form of brownish flame-like patches that occurs only after *felling* (4.26)

13.15

red heart

red *stain* (13.9) or *brown stain* (13.12) affecting the central portion of *timber* (3.2) from beech *species* (3.3) and that is sharply defined

Note 1 to entry: See *false heartwood* (9.3) and *firm red heart* (13.19.4).

13.16

black streak

dark zone along a *growth ring* (9.8) in some *species* (3.3) of *hardwood* (3.4)

Note 1 to entry: Appears as a dark streak in *sawn timber* (5.1).

13.17**mould****mold**, en U.S.woolly or powdery fungal growth that can form on the surface of *wood* (3.1) in damp conditions**13.18****canker**cavity or protrusion on the surface of *round timber* (4.1), caused by a *fungus* (13.3) in the living tree**13.19****rot**, verb**decay**, verb, en CA, MY, U.S.decomposition or disintegration of *wood* (3.1) due to action of wood-destroying *fungi* (13.3)Note 1 to entry: Can result in softening, loss of strength and mass and often a change of *texture* (9.13) and colour.**13.19.1****rot**, noun**decay**, noun, en CA, MY, U.S.**unsound wood**, en CA, U.S.**dote**, en CA, U.S.*wood* (3.1) that has disintegrated or decomposed due to action of wood-destroying *fungi* (13.3)Note 1 to entry: The wood can often soften, lose strength and mass, and sometimes change *texture* (9.13) and colour.

Note 2 to entry: In Canada and the U.S., there is a homograph for the term “dote”. See 13.20.

13.19.2**advanced rot****advanced decay**, en CA, U.S.late stage of *rot* (13.19.1) in which the decomposition is readily recognizable in the *wood* (3.1)

Note 1 to entry: Advanced rot is typically evidenced by the condition of the wood becoming soft, spongy, stringy, shaky, pitted or crumbly. Significant discolouration or bleaching of the damaged portion is often apparent.

13.19.3**incipient rot****incipient decay**, en CA, U.S.early stage of *rot* (13.19.1) in which the decomposition has not proceeded far enough to be readily recognizable in the *wood* (3.1)

Note 1 to entry: The softening or other change in the hardness of the wood is typically not perceptible and usually there is some slight discolouration or bleaching of the wood. The strength properties of wood are not affected at this stage.

13.19.4**firm red heart****stained heartwood***rot* (13.19.1) in the *wood* (3.1) at a stage of *incipient rot* (13.19.3) characterized by a reddish colour in the *heartwood* (9.2)

Note 1 to entry: Usually does not render the wood unfit for the majority of yard purposes.

13.20**dote**stage of *incipient rot* (13.19.3) characterized by coloured streaks or patches in the *wood* (3.1), the general *texture* (9.13) and strength properties remaining more or less unchanged

Note 1 to entry: In Canada and the U.S., there is a homograph for the term “dote”. See 13.19.1.

Note 2 to entry: Can occur prior to *felling* (4.26) or during storage.

13.21

**brown rot
cubical rot**

rot (13.19.1) caused by *fungi* (13.3) that attacks cellulose and hemicellulose, leaving a brown friable residue of un-attacked lignin and reducing the strength properties of the *wood* (3.1)

Note 1 to entry: Tends to crack along and across the *grain* (5.26) (9.19).

13.22

white rot

rot (13.19.1) caused by *fungi* (13.3) that attack cellulose, hemicellulose and lignin and generally lightening the colour and reducing the strength properties of the *wood* (3.1)

13.23

soft rot

rot (13.19.1) caused by *fungi* (13.3) that tunnel within or erode the wood cell walls and considerably reduce the strength properties of the *wood* (3.1)

Note 1 to entry: Most commonly associated with *Ascomycetes* fungi on timber in wet soil or water.

13.24

pocket rot

rot (13.19.1) where the attack is limited to small, usually lens-shaped areas or *pockets* (10.3)

13.25

heartwood rot

heart rot, en CA, U.S.

rot (13.19.1) characteristically confined to *heartwood* (9.2)

13.26

sapwood rot

rot (13.19.1) characteristically confined to *sapwood* (9.1)

13.27

hollow heart

cavity at the heart of *round timber* (4.1), caused by biological agents

13.28

brown oak

biodeterioration (13.1) confined to the *heartwood* (9.2) of standing oak *species* (3.3), characterized at an early stage by a brown flame-shaped discolouration

13.29

black heart

abnormal black or dark brown discolouration of the *heartwood* (9.2) of some tree *species* (3.3)

Note 1 to entry: It occurs mostly in species of ash.

Note 2 to entry: Not necessarily associated with *rot* (13.19.1).

13.30

butt rot

rot (13.19.1) confined to the base of the tree that usually originates while still standing

13.31

mistletoe traces

marks left in the *wood* (3.1) by the roots of mistletoe

13.32**parasitic plant**

plant deriving its nourishment from the standing tree on which it grows

Note 1 to entry: Its roots can leave marks in the *wood* (3.1).

13.33**white specks**

small white or brown pits or spots in *wood* (3.1) caused by the *fungus* (13.3), *Phellinus pini*, that develops in the living tree

Note 1 to entry: Does not develop further in wood when in service.

Note 2 to entry: Pieces containing white specks are typically no more subject to *rot* (13.19.1) than pieces that do not contain white specks.

Note 3 to entry: "Firm" in relation to white specks implies that it will not crumble readily under thumb pressure and cannot be easily picked out.

Note 4 to entry: *Phellinus pini* was formerly commonly known as *Fomes pini*

13.34**honeycomb**

marking of the *wood* (3.1) that is similar to *white specks* (13.33) except that the *pockets* (10.3) are larger

Note 1 to entry: See *honeycombing* (6.21).

Note 2 to entry: Pieces containing honeycomb are typically no more subject to *rot* (13.19.1) than pieces that do not contain honeycomb.

Note 3 to entry: "Firm" in relation to honeycomb implies that it will not crumble readily under thumb pressure and cannot be easily picked out.

13.35**peck**

channeled or pitted areas or *pockets* (10.3) found in the *wood* (3.1) of cedar or cypress *species* (3.3)

Note 1 to entry: See *bird peck* (11.24).

Note 2 to entry: Wood between areas containing peck usually remains unaffected in appearance and strength.

Note 3 to entry: All further growth of the *fungi* (13.3) causing peck ceases after the tree is felled.

14 Terms related to degradation by insects or other wood borers**14.1****insect attack**

biodeterioration (13.1) caused by insects

14.2**imago****adult insect**

insect that has reached its final stage of development

Note 1 to entry: The four stages are egg, *larva* (14.3), *pupa* (14.4) and imago.

14.3**larva**

insect in the second of four stages of development, from egg to adult

14.4

pupa

insect in the third of four stages of development, from egg to adult

14.5

insect life cycle

period of time from any stage in one generation to the same stage in the next, measured as the time between egg-laying by successive generations

14.6

bore hole

borer hole, en MY

hole or tunnel in *timber* (3.2) caused by an invertebrate, boring insect, or their *larvae* (14.3)

Note 1 to entry: Can occur either in the living tree (e.g. some ambrosia beetles) or after *felling* (4.26) or sawing (e.g. powder-post beetles), or by marine borers.

Note 2 to entry: In Malaysia, there are three sizes of borer holes recognized; *needle hole* or *pin hole* (14.7), shot hole, and *large borer hole* or *grub hole* (14.8).

Note 3 to entry: In Malaysia, a shot hole is a small bore hole over 2 mm (1/16 in) in diameter but not more than 3 mm (1/8 in) in diameter and, where the perimeter of the hole is not stained, it is referred to as an unstained shot hole.

14.7

pin hole

pin hole, en MY

needle hole, en MY

bore hole (14.6) usually not more than 2 mm in diameter

Note 1 to entry: In Malaysia, is not over 2 mm (1/16 in) in diameter, usually 1 mm (1/32 in) or less in diameter, and only sometimes stained around the perimeter.

14.8

grub hole

large borer hole, en MY

grub hole, en MY

hole or tunnel in *timber* (3.2) with a diameter of 10 mm to 50 mm, caused by *larvae* (14.3)

Note 1 to entry: Grub holes are quite common in tropical timber.

Note 2 to entry: In Malaysia, large borer holes or grub holes are over 3 mm (1/8 in) in diameter, caused by longhorn beetles, and usually average about 6 mm (1/4 in) in diameter.

14.9

black hole

bore hole (14.6) where the wall of the tunnel is darkly stained

Note 1 to entry: Dark *stain* (13.9) indicates that the *insect attack* (14.1) is finished.

14.10

white hole

bore hole (14.6) where the wall of the tunnel has the colour of the surrounding *wood* (3.1)

14.11

active timber infestation

infestation where live animal or insect organisms are present and continue to attack

14.12

inactive timber infestation

infestation where no live insect is present

14.13**teredo**

wood-boring terebrate mollusc living in salt or brackish water of tropical and some temperate regions

14.14**teredo hole**

hole in *timber* (3.2) caused by marine borers, normal to the *grain* (5.26) (9.19) and not more than 20 mm in diameter

Note 1 to entry: The tunnel can be covered with lime.

14.15**beetle**

member of either the *Bostrychidae* or *Lyctidae* families whose *larvae* (14.3) bores in the *sapwood* (9.1) of *timber* (3.2) that has not been fully seasoned, mainly *hardwoods* (3.4), leaving a fine flour-like dust

Note 1 to entry: The emergence holes are typically 2 mm to 3 mm (1/16 to 1/8 in) in diameter but sometimes larger in tropical timbers.