



ALL SPECIES

120. NATIONAL GRADING RULE FOR DIMENSION LUMBER

120a. INTRODUCTION

- i)** Canadian Lumber Standards Accreditation Board (CLSAB) Regulations provide that grading rules of an agency may only be certified as conforming to Canadian Lumber Standards if the dimension rules therein conform to the National Grading Rule for Dimension Lumber. The National Grading Rule for Dimension Lumber (NGR) applies to all species or combinations of species which are covered by grading rules developed and approved under CSA Standard - CSA 0141.
- ii)** Product Standard 20 (PS 20) American Softwood Lumber Standard published by the U.S. Department of Commerce, stipulates that a National Grading Rule Committee composed of members competent in the field of lumber technology shall “establish, maintain and make fully and fairly available, nomenclature and descriptions of grades for dimension lumber.” It provides further that “grading rules of an agency shall not be certified as conforming to the American Softwood Lumber Standard if the ALSC Board of Review determines that the dimension lumber rules therein fail to conform to the provisions of the National Grading Rule for dimension lumber” established in conformance with Section 11 of PS 20. The NGR applies to all species of softwood lumber¹ which are covered by grading rules developed and approved under PS 20.

4

¹ *Hardwood lumber shall not be graded under provisions of this rule unless included in rules certified by the Board.*

120b. SCOPE

For purposes of the National Grading Rule for Dimension Lumber, “dimension” is limited to surfaced softwood lumber of nominal thicknesses from 2” through 4 inches and nominal widths 2 inches and wider; and which is designed for use as framing members such as joists, planks, rafters and studs. It does not apply to those grades that are segregated for special uses but which are sometimes manufactured to the “dimension” sizes provided that descriptions for such special grades are included in the applicable agency grading rules.

Lumber grades provide standard specifications for segregating the lumber cut from logs into appropriate use categories.




ALL SPECIES


Use categories may be developed based on appearance, structural capacity, suitability for secondary manufacturing, or a combination of these. The grade specifications in the NGR are based primarily on structural performance. Limitations for appearance characteristics are established principally to ensure good suitability and utility of the material in covered structural or industrial framing uses.

The following are examples of special products excluded from the National Grading Rule for Dimension Lumber:

Crossarms	Railroad Stock
Factory & Shop Lumber	Rough Lumber
Finish (Selects)	Scaffold Planks
Foundation Lumber	Ship Decking and Plank Stock
Industrial Clears	Stadium Plank
Ladder Stock	Worked Lumber
Laminating Stock	



When provisions are developed for segregating lumber based on rate of growth or specific gravity in accordance with the general provisions of ASTM D245 for a species, such provisions shall be included in grading rules applicable to that species. The provisions shall include the specific manner in which the specific gravity and/or rate of growth is to be determined.



120c. CLASSIFICATION

The National Grading Rule for Dimension Lumber classifies dimension into 3 width categories and 4 use categories. Dimension lumber up to 4 inches wide is classified as “**Structural Light Framing**” and “**Light Framing.**”

Dimension lumber 2 inches and wider is classified as “**Studs.**”
Dimension lumber 5 inches and wider is classified as “**Structural Joists & Planks.**”

The basic grade descriptions for dimension lumber provide good structural capacity, serviceability and general good appearance, however sometimes, structural grades with a higher appearance level are desired. An Appearance classification is also available that provides standard specifications for such uses. The Appearance category provides the same level of structural performance as the applicable NGR grade, but with the added restrictions on wane, skip and warp. Any NGR grade may be graded or ordered with “**Appearance**” limitations.



ALL SPECIES

"Appearance" shall be designated by either the term "**Appearance**" or the abbreviation "**App**" on the grade stamp or by specifically identifying "Appearance" in the purchase and shipping documents.

Except as otherwise provided herein, the following grades shall constitute the dimension grades included in rule books of certified rule writing agencies and are the only dimension grades which shall be grade stamped as Canadian Standard Lumber or American Standard Lumber. Modification of these descriptions shall be made only by the National Grading Rule Committee.

4

2" - 4" Thick, 2" & Wider

STUDS

Grade Name

Stud

2" - 4" Thick, 2" - 4" Wide

STRUCTURAL LIGHT FRAMING

&

2" - 4" Thick, 5" & Wider

STRUCTURAL JOISTS AND PLANKS

Grade Names (and Abbreviations)

Select Structural (Sel Str)

NO. 1

NO. 2

NO. 3

2" - 4" Thick, 2" - 4" Wide

LIGHT FRAMING

Grade Names (and Abbreviations)

Construction (Const)

Standard (Stand)

Utility (Util)

APPEARANCE

Grade Name (and Abbreviation)

NGR Grade name plus Appearance

(NGR grade name plus **APP**)

Applicable to all NGR Grades







ALL SPECIES

120d. GENERAL

The major characteristics encountered in grading of softwood lumber are listed for each grade herein. Not all the listed characteristics will occur in lumber of any particular grade. When characteristics unique to a single species are encountered which are not included in the grade description, the characteristics shall be assessed in comparison to the most similar characteristic listed and permitted to the same degree. All grade descriptions set forth the major limiting characteristics that occur in lumber in each grade. Hence, the rules describe the poorest pieces permitted in a grade. All or nearly all of the permissible characteristics of a grade are rarely present in maximum size or number in any one piece.

Any piece with a combination of characteristics which are judged to be more severe than the maximum characteristics permitted in the grade, even though each if taken individually is permitted, shall be excluded from the grade. The grading of lumber cannot be considered an exact science because it is based on a visual inspection of each piece and the judgement of the grader and/or on the results of a method of mechanically determining the strength characteristics of structural lumber. The NGR establishes a maximum of 5 percent below grade as the tolerance allowed between graders.



Knots, checks, shakes and slope of grain in visually graded lumber shall be measured in accordance with the provisions of ASTM D245 except that no increase in slope of grain or size of knots is permitted outside the middle one third of the length. Except as otherwise provided herein, knots appearing on narrow faces are limited to the same displacement as knots specified at edges of wide faces. The limitations on knot sizes and other characteristics governing strength shall not be exceeded. Compression wood shall be limited in effect to other appearance or strength reducing characteristics permitted in the grade.

120e. MACHINE GRADED LUMBER

A basic description for machine graded lumber is included for those certified rules writing agencies which possess the necessary technical information on their species to include detailed machine grading provisions in their grading rules. This method for mechanical testing and marking of machine graded lumber shall be included in certified agency rules if they provide for machine graded lumber.

Grade descriptions and grade marking privileges shall be provided by the certified rules writing agencies for machine graded lumber when lumber is evaluated by mechanical means.

ALL SPECIES

STUDS 2" to 4" Thick, 2" and Wider

121. There are two grades of Studs, "STUD" and "ECONOMY STUD." Only the "STUD" grade is stress rated, not the "ECONOMY STUD" grade. For measurement of knots, see Para. 320b.

121a. "STUD"

Characteristics permitted and limiting provisions shall be:

- Checks - seasoning checks not limited. Through checks at ends are limited as splits.
- Knots - not limited as to quality but are well spaced and are permitted in the following sizes or their equivalent displacement:

4

Nom. Width	At Edge Wide Face	Centreline Wide Face	Holes (Any Cause)
2"	3/4"	3/4"	3/4"
3"	1 1/4"	1 1/4"	1 1/4"
4"	1 3/4"	2 1/2"	1 1/2"
5"	2 1/4"	3"	1 3/4"
6"	2 3/4"	3 3/4"	2"
8"	3 1/2"	4 1/2"	2 1/2"
10"	4 1/2"	5 1/2"	3"
12"	5 1/2"	6 1/2"	3 1/2"
14"	6"	7"	4"

} One hole or equivalent smaller holes per 1 lin. ft.

Manufacture - Standard "F." See Para. 722 f.

Pitch & Pitch Streaks - not limited.

Pockets - pitch or bark - not limited.

Shake - if through at ends, limited as splits. Elsewhere through shakes 1/3 the length.

Skips - hit or miss on any face, with a maximum of 10% of the pieces containing heavy skips on wide faces only. See Paras. 720e and g.

Slope of Grain - 1 in 4.

Splits - equal in length to twice the width of the piece.

Stain - stained sapwood. Firm heart stain or firm red heart.

Unsound Wood - in spots or streaks limited to 1/3 the cross section at any point along the length. Must not destroy nailing edge. See Para. 710e.





ALL SPECIES

- Wane - 1/3 thickness and 1/2 the width full length, or equivalent on each face, provided that wane not exceed 1/2 the thickness and 3/4 the width for up to 1/4 the length. See Para. 750.
- Warp - 1/2 medium. See Para. 752.
- White Speck & Honeycomb - firm.

121d. "ECONOMY STUD"

Lumber of this grade is so designed that each piece can be used full length.

- Honeycomb - not limited.
- Shake - not limited.
- Splits - 1/4 length.
- Skips - maximum 1/4" scant of standard surfaced size.
- Unsound Wood - 75% of cross section away from ends.
- Wane - 3/4 of any face or as equivalent, 1/4 thickness across face full length, or up to 2' long 1/2 thickness.
- Warp - heavy.
- White Speck - not limited.
- Knots & Holes - 75% of cross section.
- 
- 

ALL SPECIES

LIGHT FRAMING 2" to 4" Thick, 2" to 4" Wide

122a. There are four grades of Light Framing: “**CONSTRUCTION**,” “**STANDARD**,” “**UTILITY**,” and “**ECONOMY**.” All of these grades are stress rated except “**ECONOMY**.” For measurement of knots, see Para. 320b.

122b. “CONSTRUCTION” LIGHT FRAMING

Characteristics permitted and limiting provisions shall be:

- Checks - surface seasoning checks not limited. Through checks at ends are limited as splits.
- Knots - sound, firm, encased, and pith, must be tight and are permitted in the following sizes or their equivalent displacement:

4

Nom. Width	Anywhere on Wide Face	Unsound or Loose Knots & Holes (Any Cause)
2"	$\frac{3}{4}$ "	$\left. \begin{array}{l} \frac{5}{8}" \\ \frac{3}{4}" \\ 1" \end{array} \right\} \begin{array}{l} \text{One hole or} \\ \text{equivalent} \\ \text{smaller holes} \\ \text{per 3 lin. ft.} \end{array}$
3"	$1\frac{1}{4}$ "	
4"	$1\frac{1}{2}$ "	

- Manufacture - Standard “E.” See Para. 722e.
- Pitch & Pitch Streaks - not limited.
- Pockets - pitch or bark - not limited.
- Shake - if through at ends, limited as splits. Surface shakes up to 2' long.
- Skips - hit and miss skips in a maximum of 10% of the pieces. See Para. 720f.
- Slope of Grain - 1 in 6.
- Splits - equal in length to the width of the piece.
- Stain - stained sapwood. Firm heart stain or firm red heart.
- Wane - 1/4 the thickness and 1/4 the width full length, or equivalent on each face, provided that wane not exceed 1/2 the thickness or 1/3 the width for up to 1/4 the length. See Para. 750.
- Warp - 1/2 of medium. See Para. 752.

ALL SPECIES

122c. "STANDARD" LIGHT FRAMING

Characteristics permitted and limiting provisions shall be:

- Checks - seasoning checks not limited. Through checks at ends are limited as splits.
- Knots - not restricted as to quality and are permitted in the following sizes or their equivalent displacement:

Nom.	Anywhere on	Holes	
Width	Wide Face	(Any Cause)	
2"	1"	$\frac{3}{4}$ "	} One hole or equivalent smaller holes per 2 lin. ft.
3"	1½"	1"	
4"	2"	1¼"	

- Manufacture - Standard "F." See Para. 722f.
- Pitch & Pitch Streaks - not limited.
- Pockets - pitch or bark - not limited.
- Shake - if through at ends, limited as splits. Away from ends through shakes up to 2' long, well separated. If not through, single shakes shall not exceed 3' long or 1/4 the length, whichever is greater.
- Skips - hit & miss, with a maximum of 5% of the pieces containing hit or miss or heavy skip 2' or less in length. See Paras. 720e, f, and g.
- Slope of Grain - 1 in 4.
- Splits - equal in length to 1½ times the width of the piece.
- Stain - stained sapwood. Firm heart stain or firm red heart. Not limited.
- Unsound Wood - small spots or streaks of firm honeycomb or peck are limited to 1/6 the width. In 2" lumber, any other Unsound Wood is limited to a spot 1/12 the width and 2" in length or equivalent smaller.
- Wane - 1/3 the thickness and 1/3 the width, full length or equivalent on each face, provided that wane not exceed 2/3 the thickness or 1/2 the width for up to 1/4 the length. See Para. 750.
- Warp - light. See Para. 752.
- White Speck - firm, 1/3 the face or equivalent.

ALL SPECIES

122d. "UTILITY" LIGHT FRAMING

Characteristics permitted and limiting provisions shall be:

- Checks - seasoning checks not limited. Through checks at ends are limited as splits.
- Knots - not restricted as to quality and are permitted in the following sizes or their equivalent displacement:

Nom. Width	Anywhere on Wide Face	Holes (Any Cause)
2"	1 ¹ / ₄ "	1"
3"	2"	1 ¹ / ₄ "
4"	2 ¹ / ₂ "	1 ¹ / ₂ "

} One hole or equivalent smaller holes per 1 lin. ft.

4

- Manufacture - Standard "F." See Para. 722f.
- Pitch & Pitch Streaks - not limited.
- Pockets - pitch or bark - not limited.
- Shake - surface shakes permitted. If through at edges or ends, limited as splits. Elsewhere through shakes 1/3 the length, scattered along the length.
- Skips - hit or miss, with a maximum of 10% of the pieces containing heavy skips. See Paras. 720e and g.
- Slope of Grain - 1 in 4.
- Splits - equal to 1/6 the length of the piece.
- Stain - stained wood, not limited.
- Unsound Wood - spots or streaks limited to 1/3 the cross-section at any point along the length. Must not destroy the nailing edge. See Para. 710e.
- Wane - 1/2 the thickness and 1/2 the width full length, or equivalent on each face, provided that wane not exceed 7/8 the thickness or 3/4 the width for up to 1/4 the length. See Para. 750.
- Warp - medium. See Para. 752.
- White Speck & Honeycomb - firm.



ALL SPECIES

122e. ECONOMY

2" to 4" Thick, 2" and Wider

Characteristics permitted and limiting provisions shall be:

Honeycomb &

White Specks - firm, not limited.

Knots - 75% of cross section.

Holes (Any cause) - Size of a hole not to exceed 75% of cross-section.
The through portion shall not exceed 2' in length.

Unsound Wood - 75% of cross-section. Not limited in length.



Wane - 3/4 width, full length of piece. If through the edge, equivalent to the area of the hole permitted. Through portion not to exceed 2' in length. If across the face, 1/2 the width must not exceed 1/4" scant in thickness for 1/3 length or, as equivalent longer.

Skips - 1/4" scant in thickness &/or width. Not limited in length.

Shake - not limited.

Splits - 1/3 length.

Waste - pieces 9' and longer in length may contain waste (areas where characteristics are larger than those permitted in the grade) which require removal by cross-cutting. The waste portions combined shall not exceed 25% of the length of the piece and must not be located within 2' of either end of the piece.





ALL SPECIES

STRUCTURAL LIGHT FRAMING 2" to 4" Thick, 2" to 4" Wide



STRUCTURAL JOISTS & PLANKS 2" to 4" Thick, 5" & Wider

124. There are four grades of Structural Light Framing and Structural Joists & Planks: "**SELECT STRUCTURAL**," "**NO. 1**," "**NO. 2**," and "**NO. 3**." All of these grades are stress rated. For measurement of knots, see Para. 320b.

4

124a. "SELECT STRUCTURAL"

Characteristics permitted and limiting provisions shall be:

- 
- 
- Checks - surface seasoning checks, not limited. Through checks at ends are limited as splits.
 - Manufacture - Standard "E." See Para. 722e.
 - Pitch & Pitch Streaks - not limited.
 - Pockets - pitch or bark - not limited.
 - Rate of Growth - limited to medium grain in Douglas Fir & Western Larch only. See Para. 350a.
 - Shake - if through at ends, limited as splits. Surface shakes up to 2' long.
 - Skips - hit and miss skips in a maximum of 10% of the pieces. See Para. 720f.
 - Slope of Grain - 1 in 12.
 - Splits - equal in length to the width of the piece.
 - Stain - stained sapwood. Firm heart stain or firm red heart limited to 10% of the piece.
 - Wane - 1/4 the thickness and 1/4 the width full length, or equivalent on each face, provided that wane not exceed 1/2 the thickness or 1/3 the width for up to 1/4 the length. See Para. 750.
 - Warp - 1/2 of medium. See Para. 752.

ALL SPECIES

Knots - sound, firm, encased and pith knots, if tight and well spaced, are permitted in sizes not to exceed the following, or equivalent displacement:

Nom. Width	At Edge		Centreline		Unsound or Loose Knots & Holes (Any cause)
	Wide Face	Wide Face	Wide Face	Wide Face	
2"	3/8"	3/8"	3/8"	3/8"	} One hole or equivalent smaller holes per 4 lin. ft.
3"	1/2"	1/2"	1/2"	1/2"	
4"	3/4"	7/8"	7/8"	3/4"	
5"	1"	1 1/2"	1 1/2"	7/8"	
6"	1 1/8"	1 7/8"	1 7/8"	1"	
8"	1 1/2"	2 1/4"	2 1/4"	1 1/4"	
10"	1 7/8"	2 5/8"	2 5/8"	1 1/4"	
12"	2 1/4"	3"	3"	1 1/4"	
14"	2 3/8"	3 1/4"	3 1/4"	1 1/4"	
16"	2 3/8"	3 3/8"	3 3/8"	1 1/4"	
18"	2 1/2"	3 1/2"	3 1/2"	1 1/4"	

ALL SPECIES

124b. "NO. 1" - STRUCTURAL

- Characteristics permitted and limiting provisions shall be:
- Checks - surface seasoning checks, not limited. Through checks at ends are limited as splits.
 - Manufacture - Standard "E." See Para. 722e.
 - Pitch & Pitch Streaks - not limited.
 - Pockets - pitch or bark - not limited.
 - Rate of Growth - limited to medium grain in Douglas Fir and Western Larch only. See Para. 350a.
 - Shake - if through at ends, limited as splits. Surface shakes up to 2' long.
 - Skips - hit & miss skips in a maximum of 10% of pieces. See Para. 720f.
 - Slope of Grain - 1 in 10.
 - Splits - equal in length to width of the piece.
 - Stain - stained sapwood. Firm heart stain or firm red heart.
 - Wane - 1/4 the thickness and 1/4 the width full length, or equivalent on each face, provided that wane not exceed 1/2 the thickness or 1/3 the width for up to 1/4 the length. See Para. 750.
 - Warp - 1/2 of medium. See Para. 752.
 - Knots - sound, firm, encased and pith knots, if tight and well spaced, are permitted in sizes not to exceed the following or equivalent displacement:

4

Nom. Width	At Edge Wide Face	Centreline Wide Face	Unsound or Loose	One hole or equivalent smaller holes per 3 lin. ft.
			Knots & Holes (Any cause)	
2"	1/2"	1/2"	1/2"	}
3"	3/4"	3/4"	3/4"	
4"	1"	1 1/2"	1"	
5"	1 1/4"	1 7/8"	1 1/8"	
6"	1 1/2"	2 1/4"	1 1/4"	
8"	2"	2 3/4"	1 1/2"	
10"	2 1/2"	3 1/4"	1 1/2"	
12"	3"	3 3/4"	1 1/2"	
14"	3 1/8"	4"	1 1/2"	
16"	3 1/4"	4 1/2"	1 1/2"	
18"	3 3/8"	4 5/8"	1 1/2"	

ALL SPECIES

124c. "NO. 2" - STRUCTURAL

Characteristics permitted and limiting provisions shall be:

- Checks - seasoning checks not limited. Through checks at ends are limited as splits.
- Manufacture - Standard "F." See Para. 722f.
- Pitch & Pitch Streaks - not limited.
- Pockets - pitch or bark - not limited.
- Rate of Growth - limited to medium grain in Douglas Fir and Western Larch only. See Para. 350a.
- Skips - hit & miss, with a maximum of 5% of the pieces containing hit or miss or heavy skip 2' or less in length. See Paras. 720e, f and g.
- Splits - equal in length to 1¹/₂ times the width of the piece.
- Shake - if through at ends, limited as splits. Away from ends through shakes up to 2' long, well separated. If not through, single shakes shall not exceed 3' long or 1/4 the length, whichever is greater.
- Slope of Grain - 1 in 8.
- Stain - stained sapwood. Firm heart stain or firm red heart not limited.
- Knots - well spaced knots of any quality are permitted in sizes not to exceed the following or equivalent displacement:

Nom. Width	At Edge Wide Face	Centreline Wide Face	Holes (Any cause)
2"	5/8"	5/8"	5/8"
3"	7/8"	7/8"	7/8"
4"	1 ¹ / ₄ "	2"	1 ¹ / ₄ "
5"	1 ⁵ / ₈ "	2 ³ / ₈ "	1 ³ / ₈ "
6"	1 ⁷ / ₈ "	2 ⁷ / ₈ "	1 ¹ / ₂ "
8"	2 ¹ / ₂ "	3 ¹ / ₂ "	2"
10"	3 ¹ / ₄ "	4 ¹ / ₄ "	2 ¹ / ₂ "
12"	3 ³ / ₄ "	4 ³ / ₄ "	3"
14"	4 ¹ / ₈ "	5 ¹ / ₄ "	3 ¹ / ₂ "
16"	4 ¹ / ₄ "	5 ³ / ₄ "	4"
18"	4 ³ / ₈ "	5 ⁷ / ₈ "	4 ¹ / ₂ "

} One hole or equivalent smaller holes per 2 lin. ft.



ALL SPECIES

Unsound Wood - (Excluding white specks) Not permitted in thicknesses over 2". In 2" lumber, small spots or streaks of firm honeycomb or peck are limited to 1/6 the width. Any other Unsound Wood is limited to a spot 1/12 the width and 2" in length or equivalent smaller.

Wane - 1/3 the thickness and 1/3 the width full length, or equivalent on each face, provided that wane not exceed 2/3 the thickness or 1/2 the width for up to 1/4 the length. See Para. 750.

Warp - light. See Para. 752.

White Speck - firm, 1/3 the face or equivalent.

4

ALL SPECIES

124d. "NO. 3" - STRUCTURAL

Characteristics permitted and limiting provisions shall be:

- Checks - seasoning checks not limited. Through checks at ends are limited as splits.
- Knots - wellspaced knots of any quality are permitted in the following sizes or their equivalent displacement:

Nom. Width	At Edge Wide Face	Centreline Wide Face	Holes (Any cause)
2"	3/4"	3/4"	3/4"
3"	1 1/4"	1 1/4"	1 1/4"
4"	1 3/4"	2 1/2"	1 3/4"
5"	2 1/4"	3"	1 7/8"
6"	2 3/4"	3 3/4"	2"
8"	3 1/2"	4 1/2"	2 1/2"
10"	4 1/2"	5 1/2"	3"
12"	5 1/2"	6 1/2"	3 1/2"
14"	6"	7"	4"
16"	6 3/8"	8"	4 1/2"
18"	6 1/2"	8 1/4"	5"

} One hole or equivalent smaller holes per 1 lin. ft.

- Manufacture - Standard "F." See Para. 722f.
- Pitch & Pitch Streaks - not limited.
- Pockets - pitch or bark - not limited.
- Shake - surface shakes permitted. If through at edges or ends, limited as splits. Elsewhere through shakes 1/3 the length, scattered along the length.
- Skips - hit or miss, with a maximum of 10% of the pieces containing heavy skips. See Paras. 720e and g.
- Slope of Grain - 1 in 4.
- Splits - equal to 1/6 the length of the piece.
- Stain - stained wood, not limited.
- Unsound Wood - spots or streaks limited to 1/3 the cross-section at any point along the length. Must not destroy the nailing edge. See Para. 710e.
- Wane - 1/2 the thickness and 1/2 the width full length, or equivalent on each face, provided that wane not exceed 7/8 the thickness or 3/4 the width for up to 1/4 the length. See Para. 750.
- Warp - medium. See Para. 752.
- White Speck & Honeycomb - firm.



ALL SPECIES

124e. ECONOMY

Graded under Para. 122e.



APPEARANCE

125. APPEARANCE (APP)

Conforms to all provisions of the applicable NGR grade.

In addition, the following limiting provisions shall apply.

4

- Manufacture - Standard "E". See Para. 722e.
- Skip - hit and miss skips in a maximum of 10% of pieces. See Para. 720(f)
- Wane - 1/4 the thickness and 1/6 the width by 1/4 the length. Omit Para. 750
- Warp - 1/2 of medium. See Para. 752
- 
- 



PURPOSELY LEFT BLANK

