

# R List Timbers - Lesson 17

## I. General Information

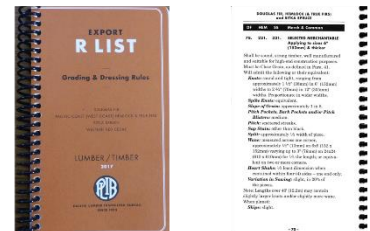
- Usage:** Timbers containing large knots.
- Grades:** Specify minimum requirements and maximum characteristics.
- R List Grading Rule:** Prohibits combinations that reduce strength.



## II. Species and Grading

- Species:** Douglas Fir, Sitka Spruce, Western Hemlock, Western Red Cedar.
- Separate Rules:** Western Red Cedar treated separately.
- Grading Paragraphs:**
  - Douglas Fir:** Paragraphs 78-81.
  - Western Hemlock:** Paragraphs 221-224.
  - Sitka Spruce:** Paragraphs 321-324.

### R List Timbers – 6 and Thicker



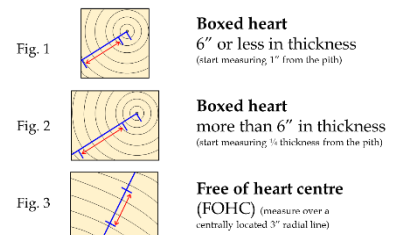
## III. Grades of R List Timbers

- Grades:** Select Merchantable, Number One Merchantable, Number Two Merchantable, Number Three Common.
- Purpose:** Strength, all four sides and both ends must be evaluated.
- Size Classification:** 6 inches and thicker.

R List Timbers - 6" & thicker (All species except WRC)			
Grade	Selection	Selection	Purpose Intended: Strength
Grade 1	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 2	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 3	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 4	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 5	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 6	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 7	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 8	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 9	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 10	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 11	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 12	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 13	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 14	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 15	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 16	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 17	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 18	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 19	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 20	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 21	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 22	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 23	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 24	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 25	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 26	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 27	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 28	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 29	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 30	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 31	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 32	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 33	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 34	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 35	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 36	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 37	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 38	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 39	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 40	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 41	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 42	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 43	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 44	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 45	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 46	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 47	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 48	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 49	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 50	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 51	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 52	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 53	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 54	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 55	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 56	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 57	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 58	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 59	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 60	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 61	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 62	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 63	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 64	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 65	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 66	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 67	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 68	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 69	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 70	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 71	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 72	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 73	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 74	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 75	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 76	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 77	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 78	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 79	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 80	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 81	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 82	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 83	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 84	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 85	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 86	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 87	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 88	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 89	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 90	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 91	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 92	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 93	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 94	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 95	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 96	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 97	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 98	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 99	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch
Grade 100	1.5 rings per inch	1.5 rings per inch	1.5 rings per inch

## IV. Characteristics and Allowances

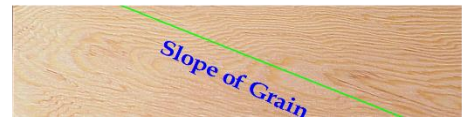
- Pockets:** Medium size allowed in Select Merch.
- Rate of Growth:**
  - Select Merch:** Close grain, 6 rings per inch.
  - Number One Merch:** Medium grain, 4 rings per inch.
  - Number Two Merch and Number Three Common:** No restriction.



c) **Slope of Grain:**

- i. **Select Merch and Number One Merch:** 1:8 ratio.
- ii. **Number Two Merch:** 1:6 ratio.
- iii. **Number Three Common:** 1:4 ratio.

Select Merch.	No. 1 Merch.	No. 2 Merch.	No. 3 Common
1 in 8	1 in 8	1 in 6	1 in 4

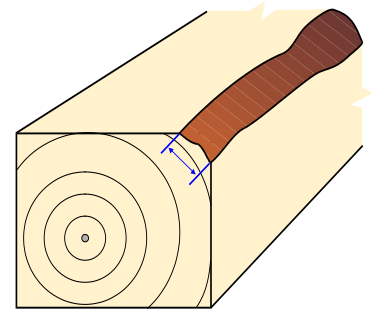


d) **Splits:**

- i. **Select Merch:** ½ width.
- ii. **Number One Merch:** Width of the piece.
- iii. **Number Two Merch:** Twice the width.
- iv. **Number Three Common:** ¼ length.

e) **Wane:** Measured across the corner, added together if on more than one corner.

- i. **Select Merch:** ½" across the corner in 6x6 for 1/6 length, add ¼" for each 2" increase.
- ii. **Number One Merch:** 1/6 face across the corner for all sizes, add dimensions and divide by 12 for ¼ length.
- iii. **Number Two Merch:** 2" across the corner in 6x6, full length, add ½" for each 2" increase.
- iv. **Number Three Common:** 3" across the corner in 6x6, full length, add ½" for each 2" increase.
- v. **Rectangular Timbers:** Convert to square by adding dimensions and dividing by 2.



f) **Shake:** Measured on ends, restricted to one end in Select Merch and Number One Merch.

- i. **Select Merch:** 1/3 thickness on one end.
- ii. **Number One Merch:** 1/2 thickness on one end.

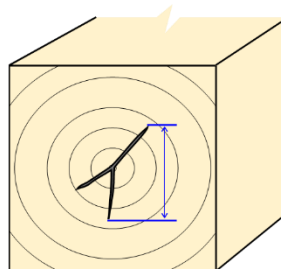


Fig. 1

Heart shake is measured across the longest 2 points to evaluate the worst effect.

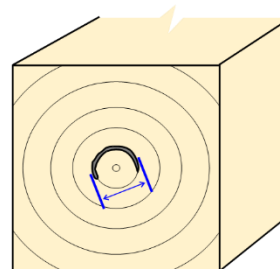


Fig. 2

Ring shake is measured across the largest diameter of the shake.

- iii. **Number Two Merch:** Shake on both ends or breaking onto a face, max depth 1/2 thickness by 1/2 length.
- iv. **Number Three Common:** Not through shake full length, through shake max 1/2 length.

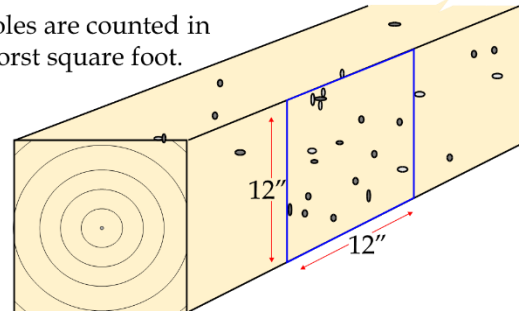
g) **Stained Heartwood:**

- i. **Select Merch:** Not allowed.
- ii. **Number One Merch:** 25% volume.
- iii. **Number Two Merch and Number Three Common:** 100% permitted.

h) **Pin Holes:**

- i. **Select Merch:** Not allowed.
- ii. **Number One Merch:** 10 per square foot.
- iii. **Number Two Merch:** 30 per square foot.
- iv. **Number Three Common:** 100% allowed.

Pin holes are counted in the worst square foot.



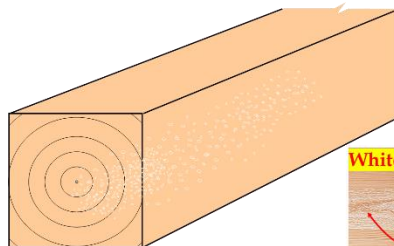
i) **Grub and Teredo Holes:**

- i. **Select Merch and Number One Merch:** Not allowed.
- ii. **Number Two Merch:** 1 per square foot.
- iii. **Number Three Common:** Any amount.



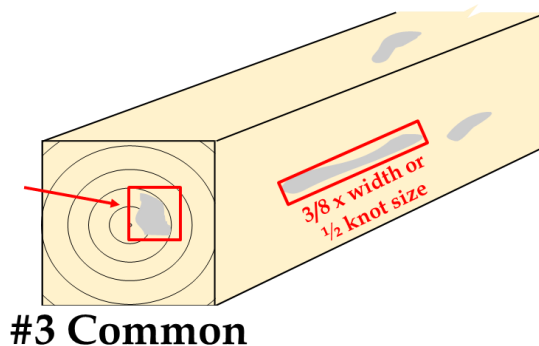
j) **White Specks and Honeycomb:**

- i. **Number Two Merch:** Through onto opposite faces, 25% volume.
- ii. **Number Three Common:** No restrictions, 100% firm honeycomb allowed.



k) **Unsound Wood:**

- i. **Number Three Common:** Restricted to  $\frac{1}{4}$  width by  $\frac{1}{4}$  thickness on ends,  $\frac{1}{2}$  allowable knot size on face.



- l) **Knot Measurement:** Knots are measured by average diameter and assessed on the face they appear.

Grades	Select Merch.	No. 1 Merch.	No. 2 Merch.	No. 3 Common
Knots	S&T	S&T	Any Quality	Any Quality
6"	1 1/2"	2"	3"	4 1/2"
8"	1 3/4"	2 1/2"	4"	6"
10"	2 1/4"	3"	5"	7 1/2"
12"	2 3/4"	3 1/4"	6"	9"
14"	3 1/4"	3 3/4"	7"	10 1/2"

- m) **Example:** In a 6x12 timber:

- Knots on the 6-inch face are compared against allowances for 6-inch faces.
- Knots on the 12-inch face are compared against allowances for 12-inch faces.

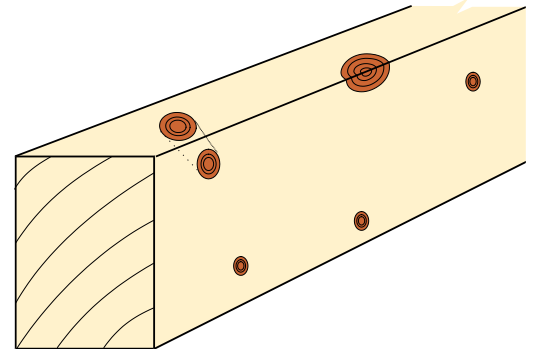
- n) **Number of Knots:** Not restricted.

- o) **Rectangular Timbers (FOHC):**

- Knots on the narrow face extending onto the wide face may be disregarded for size on the narrow face.
- If the knot on the narrow face does not appear on the wide face, its size must be considered.
- The quality of the knot on the narrow face must still be considered.

- p) **Corner Knots:**

- Measure average diameter on each face separately.
- Apply each size to the face on which it occurs.

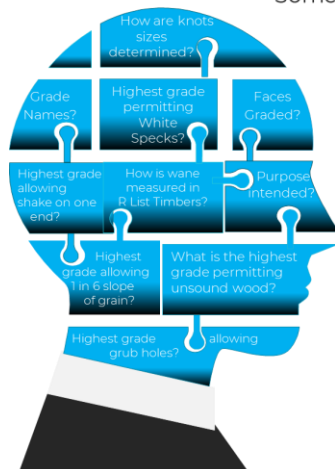


- q) **Knot Quality:**

- Select Merch and Number One Merch:** Knots must be sound and tight.
- Number Two Merch and Number Three Common:** Knots may be of any quality.

## R List Timbers – 6" & Thicker Review

Some Thought-Provoking Concepts



- How are knot sizes determined in R List Timbers  
Average diameter on worst face
- Grade Names?  
Select Merch, #1 Merch, #2 Merch, and #3 Common
- Faces Graded?  
All four faces and both ends
- How are knot sizes determined in R List Timbers  
Average diameter on worst face
- Purpose Intended?  
Strength
- How is wane measured in R List Timbers?  
Across corner
- Highest grade allowing shake on one end?  
Sel. Merch – 1/3 thickness
- What is the highest grade allowing 1 in 6 SOG?  
#2 Merch.
- What is the highest grade permitting unsound wood?  
#3 Common  
Ends = 1/4 width x 1/4 thickness  
Face – Spots 1/2 size of knots
- What is the highest grade allowing White Specks?  
#2 Merch. – 25% volume, through
- What is the highest grade allowing grub holes?  
#2 Merch. – 1 per square foot