

ZENA FOREST PRODUCTS SCALING AND GRADING RULES



OVERVIEW

Logs should be bucked to the following lengths. Preferred lengths in **bold**.

6'6"	15'	21' 4"
8'4"	17'	23' 6"
13'	19' 6"	25' 6"

For logs longer than this, buck at the crotch, break or crook.

- Each 6' or 8' log section must be almost perfectly straight. We have very little allowance for crook or sweep.
- Crotches should be bucked back until no bark seam shows
- I need at least 1 clear face on each log section. The more clear faces, the better.

Minimum scale end diameter inside bark of 10"

Maximum butt end diameter inside bark of 34"

ZENA LOG PURCHASE INSTRUCTIONS

Scaling is the measure of sound material in the log and relates to quantity rather than quality of material. Logs will be scaled to determine the sound volume and not in relation to any particular log grades. It should be understood that making a scaling deduction up to the limits provided in the grading rules does not upgrade the log. Grading on the other hand is the classification of a log to a particular quality.

1. Sawlogs shall have a minimum of 6” of trim for 6’ logs and 4” of trim for 8’ logs
2. All logs must have a minimum scale end diameter of 12”
3. The Scribner Decimal C Log Rule shall be used as the standard log rule for determining the board foot content of logs.
4. All logs shall be scaled on the average diameter of the small end inside the bark. Fractions of 1/2" or less will be dropped and fractions over 1/2" shall be raised to the next inch.
5. Logs with more than 50% deduction will be culled.
6. Each log grade defines the poorest log which will be permitted in that grade.
7. We primarily purchase Oregon White Oak.
8. We occasionally purchase Western Bigleaf Maple and Oregon Ash.
9. **We scale and pay for the short logs that we can manufacture.**

NOTES ON SAWLOG SOURCING, MANUFACTURE AND DELIVERY

Log Sources:

There is less than 5% of the hardwood resource left in the Willamette Valley, and the resource continues to shrink. In an effort to ensure a long term supply of hardwood logs and a viable hardwood industry, Zena Forest Products is committed to helping manage and grow our hardwood resource. To this end, we pay a 30% premium for wood coming from projects where hardwood is being retained and restored. Examples of this would be thinning projects where a viable stand of hardwood trees is left to keep growing, or where hardwood trees are planted post harvest. Basically any project that actively works to increase the hardwood resource over time. This includes any property that is part of the [Willamette Valley Oak Accord](#).

Protecting the Bark:

The bark is very fragile on hardwood logs and will easily fall off during logging operations, especially if a harvester head is used. This bark, however, is critical in protecting the trunk from sun and heat damage. Logs with missing bark will begin to develop surface checks

within days during the summer months. If these surface checks grow to over 1” in depth, they will turn into a scaling defect. This can have a profound impact on net scale volume, and in small logs, can sometimes reduce the diameter to the point of culling. In order to minimize this damage, the following are best practices to follow:

1. Minimize bark loss as much as possible during processing and skidding.
2. Deliver logs to the mill as soon as possible
3. If the weather is exceptionally hot or the logs cannot be delivered immediately, store logs in the shade, or cover with shade cloth or a tarp.

Short Logs vs. Long Logs:

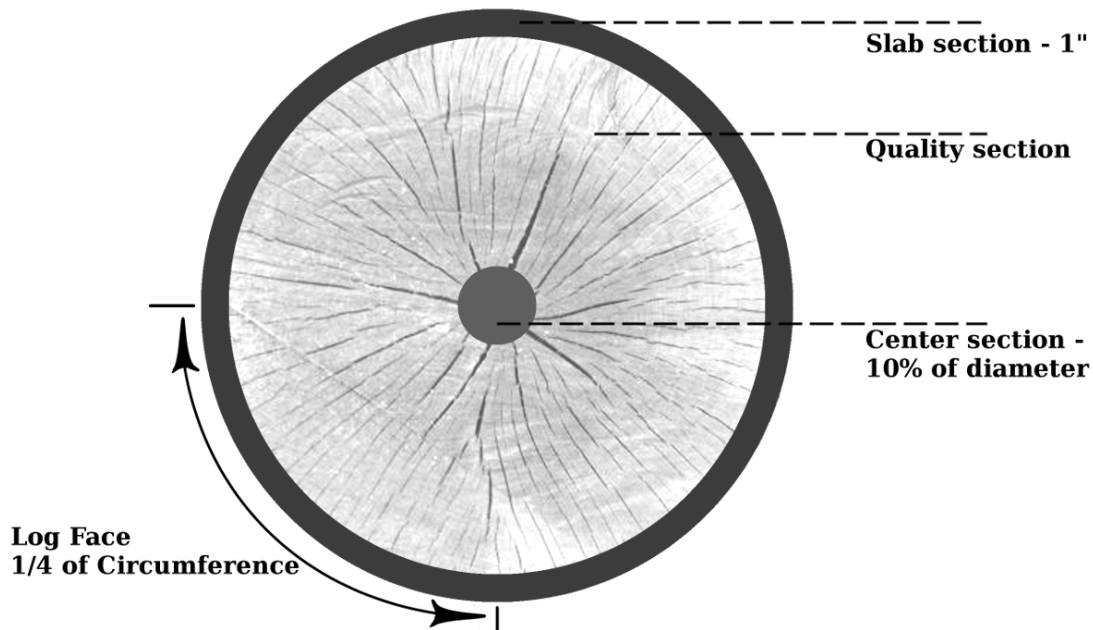
We prefer logs to be bucked to our specified lengths prior to delivery. Transport of short logs is not always feasible or cost effective however. If long logs are shipped, in order to get the most yield, logs should be bucked to exactly the lengths listed at the top of this document. If it is necessary to leave a short section of cull material on the end of a log in order to bunk on a truck, that is acceptable. We pencil scale, so we will not deduct for the unusable section.

The log bucking instructions contained within this document are intended to give the operator the information necessary to buck logs as best as possible. In addition, please ask any questions that might arise during the logging process. In order for logs to be bucked accurately, it is necessary for the operator to be familiar with our instructions. We are always available via phone, or an in person visit if any questions arise. 503-871-5854 or ben@zenaforest.com

HARDWOOD SCALING AND GRADING DEFECTS

Defects fall into two groups: (1) those that reduce the volume of sound wood in the log are called scalable defects and (2) those that reduce quality or otherwise limit utility are called grading defects.

A log is divided into three sections and four faces for the purpose of scaling and grading.



The importance of a given type of defect - scalable or grading - depends on the section of the log or log face in which it occurs. Defects confined to the slab section (outer 1") do not degrade the log. Defects confined to the center section (Center 10%) are not grading defects but may result in a loss of volume. All sound and unsound defects in the quality section must be considered in grading the log.

SCALING DEDUCTIONS

1. Interior Deductions by Squared Defect Method:

Deductions for defects showing in one or both ends is determined as follows:

$$\text{Deduction} = \frac{(\text{width}"+1") \times (\text{height}"+1") \times \text{Length}'}{15}$$

in Board feet

Round up deduction to nearest ten for Scribner Decimal C rule.

2. Length Deduction: Easiest to just scale the usable length of log. In certain circumstances the following formula can be used:

The rule for determining the percent of total volume to be deducted is:

$$\text{Percent Deduction} = \frac{\text{Length of Cull Section}}{\text{Total Log Length}}$$

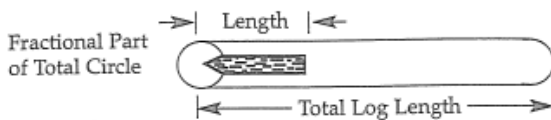


3. Pie-cut Deduction:

This method is used where the defect is deep and V shaped and can be enclosed in a sector of the circle.

The rule for determining the percent of volume to be deducted is:

$$\frac{\text{Defect Length} \times \text{Fractional Part}}{\text{Total Length}} \text{ of Total circle}$$

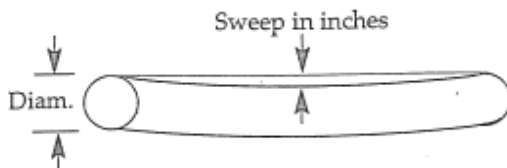


4. Sweep Deduction:

No more than 2" of Sweep allowed on any log. The rule for determining the percent of volume to be deducted is:

$$\frac{\text{Sweep in Inches } (\frac{1}{2}'' \text{ increments})}{\text{Log Diameter}}$$

(Do not count flare in butt logs)

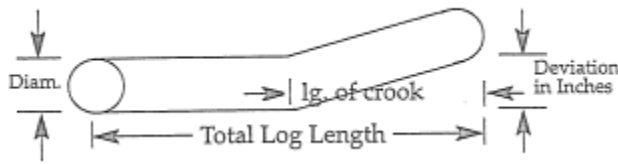


5. Crook Deduction:

A crook in a log is a sudden curve or bend from a straight line. When possible, buck log back to next longest length to remove crook. The rule for determining the percent of volume to be deducted:

$$\text{Percent} = \frac{\text{Deviation } (") \times \text{Length of Crook } (')}{\text{Total Log Length}}$$

Deduction Log Diam. (") Total Log Length (')



No more than 2" of deviation is allowed

6. Crotch Deduction:

Reduce log length until no bark seam is visible. Or take an interior deduction per #1

7. Diameter Deduction:

Used for deductions in sap rot and surface checks. Reduce log size by scaling the sound diameter inside the defective outer area at the small end.

HARDWOOD LOG SCALING AND GRADING DEFECTS

Bulge, Bump, Bark Distortion or Knot Sign- A general enlargement of a section of the log and evidence of internal rot. Sometimes an indication of overgrown knots or other defects. Many log surface abnormalities appear to be only breaks in the normal bark pattern. Overgrown knots, mechanical wounds, holes of all types, ingrown bark and bird peck are typical defects under bark distortions which can be definitely established from bark appearance alone. They are all grading defects. A slight bark distortion consisting of a simple horizontal break across the normal bark pattern is not a grading defect. Surface swells (less than 1" rise in 12" of length) can be disregarded.

Butt Scar - The result of damage at the base of the tree. Butt scars of recent origin are usually associated with a limited amount of rotten or stained wood. Severe rot is usually associated with older butt scars. If the scar extends into the log beyond the slab section, the area involved is a grading defect.

Epicormic branches and Dormant Bud Clusters - Epicormic branches are found at points on the stem. Dormant bud clusters may develop on the stem any time during the life of a tree. Both are a grading defect.

Holes on Log Face - All holes are grading defects when extending into the quality section.

Bird Peck - The work of sap-sucker woodpeckers. The defect consists of ingrown bark usually not over 1/8 inch in diameter. Often noticeable on the end surfaces of logs and evidence of their presence in the logs is to be seen on the bark surface many years after the injury occurred. A grading defect for Prime, #1 & #2 sawlogs when the area contains more than four bird pecks per square foot of surface area, and the depth of the bird peck exceeds 10% of the log

diameter.

Knots - Cut or broken-off limbs, green or dead, protruding, flush or depressed but with exposed sound or rotten wood. Any knot, regardless of size, is a grading defect.

Splits/Checking - Splits extending into the log beyond the slab section are grading defects.

Metal/Foreign Objects - Depending on the location and severity, it will either be a grading defect or a cull.

Seams - Seams are cracks or splits running with the grain for part of or full length of the log. They are generally caused by wind, lightning or frost and may extend from the bark to the center of the log. They may be open or completely healed over. They are very damaging and especially so when they run spirally around the log. Seams extending beyond the slab section are grading defects.

HARDWOOD LOG END SCALING AND GRADING DEFECTS

Unsound end defects such as decay and heavy shake when extending into the quality section are grading defects

Specific end defects such as bird peck, worm holes, spot worm holes, stain, mineral spots or streaks and unsound defects as grub holes and bark pockets are considered when in the quality section.

Ring Shake - A separation of wood fibers along parts of the annual ring. A scaling defect when outside the heart center. Shake must be bucked back until it occupies no more than 25% of the Quality Section

Ray Shake - A separation of wood fibers that emanate radially from the center. A scaling defect when outside the heart center. Shake must be bucked back until it occupies no more than 25% of the Quality Section

Grub Channels/Worm Holes - Round holes or irregular channels of varying length, made by wood consuming grubs, worms or beetles. A grading defect in the quality section, unless few and scattered or confined to heart center, in which case they are not a grading defect. In extreme cases and when found in conjunction with other degraders, grub channels may cause the log to be culled.

Rot - Wood which has decayed to the point where the fiber is weakened. A scaling defect in the quality section.

ESTABLISHING FACES AND GRADES

After taking into account the size and soundness of the log, the first step in grading is to visually square the log full length into four faces so oriented to give the largest possible number of good faces. The influence of a given defect should be confined to one grading face wherever possible instead of permitting it to extend over two faces unnecessarily.

The next step is to establish the grade of the best three faces. Only when two of these faces grade higher than the third is it necessary to examine the fourth face in order to be sure that the best faces have been selected. The grade of the log is that of the lowest of the faces chosen as the three grading faces.

Pricing

8'4" Logs	Diameter Range	Clear Faces	Sweep & Crook	Price/MBF	FSC 20%	R&R 40%
Grade #1	18"-26"	3	0%	\$710	\$850	\$995
Grade #2	14"-28"	2	5%	\$525	\$630	\$735
Grade #3	10"-32"	1	10%	\$390	\$470	\$545
Cull	>50% Deduct			\$0	\$0	\$0
6'6" Logs	Diameter Range	Clear Faces	Sweep & Crook	Price/MBF	FSC 20%	R&R 40%
Grade #1	18"-26"	3	0%	\$640	\$770	\$895
Grade #2	14"-28"	2	5%	\$475	\$570	\$665
Grade #3	10"-32"	1	10%	\$351	\$420	\$490
Cull	>50% Deduct			\$0	\$0	\$0

Premiums

20%	FSC	Logs carrying FSC Certification
40%	R&R	Logs coming from a stand where hardwood is being <i>Retained and Restored</i> or an Oak Accord property