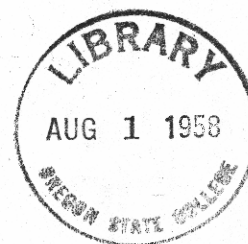


AIR-SEASONING AIRCRAFT STOCK

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SCHOOL OF FORESTRY
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**UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
FOREST PRODUCTS LABORATORY
Madison, Wisconsin**

In Cooperation with the University of Wisconsin

AIR SEASONING AIRCRAFT STOCK¹

It may be necessary to carry a surplus stock of lumber to insure against shortage at the time of manufacture. If the stock is green, advantage may be taken of this intermediate period to reduce the moisture content, thereby reducing the time required for kiln drying.

Lumber properly seasoned should be of uniform moisture content, straight, free from stain or decay, and without end or surface checks. Observance of the following rules will help to secure the desired results:

(a) Stain prevention:

If stain is likely to occur, freshly cut lumber containing sapwood should be dipped in or sprayed with an antiseptic solution to protect it against attack by fungi during the air-seasoning period.²

(b) Foundations for lumber piles:

(1) Foundations should be rigid and properly leveled.

(2) Foundations should be high enough from the ground to allow good circulation. The minimum distance that lumber should be from the ground at the rear of the pile is 18 inches.

(3) Foundations should slope from front to rear about 1 inch to the foot.

(4) Material for piers is listed in order of durability and should be so selected whenever available:

Concrete masonry.

Pressure-creosoted blocks of any species or the untreated heartwood of baldcypress, redwood, or any of the cedars.

(When untreated woods are used, all points of contact should be given two coats of hot creosote.)

¹This mimeograph is one of a series of reports issued by the Forest Products Laboratory to aid the Nation's war effort. Results here reported are preliminary and may be revised as additional data become available.

²Forest Products Laboratory Technical Note No. 225, "Cause and Prevention of Blue Stain in Wood." 1940. Scheffer, T. C., and Lindgren, R. M. "Stains of Sapwood and Sapwood Products and Their Control" U. S. Dept. Agr. Tech. Bull. 714, 123 pp.

(5) Beams and stringers should preferably be of steel, or pressure-creosoted timbers. Untreated durable woods with two coats of hot creosote at points of contact may be used when neither of the first two is available.

(6) If existing pile foundations are to be used, they should comply with the requirements given as to height levels and drainage conditions. All weeds, debris, and decayed wood and vegetation must be cleared away. Any part of the pile foundation containing decay should be removed or the decayed area cut out. All wood parts should be painted with two coats of hot creosote.

(c) Air flues:

The lateral spacing between the edges of boards or of groups of boards totaling 12 to 14 inches in width should be about 4 inches, so arranged as to form straight vertical flues in the pile. Where losses from stain are high, the flue width should be increased to about 6 inches. Where surface checking is the principal defect, the flue width should be reduced to 1 or 2 inches.

(d) Stickers:

(1) All stickers must be sound, thoroughly dry, free from stain, and of uniform thickness.

(2) Each tier of stickers must be aligned and rest on a beam.

(3) Stickers for 4/4-inch lumber shall be of nominal inch stock or thicker and not more than 4 inches wide. For thicker lumber of random length, stickers should be at least 1-1/2 inches thick, for greater stiffness and strength, and should not be more than 4 inches wide.

(4) Stickers should overlap the ends of the boards at least 1/2 inch to reduce end checking.

(5) Stickers should not be more than 2 feet apart for hardwoods up to 6/4 inches in thickness. For thicker hardwoods and all softwoods, the spacing should be equivalent to five rows of stickers for 16-foot stock.

(6) Aircraft stock should never be self-stickered.

(e) Placing of lumber:

(1) Piles should be erected of boards of equal length wherever practicable.

(2) Box piling should be used for mixed lengths. In this system, the longest stick is piled in the outer rows and short lengths within the pile, with one end of a board at one end of the pile, and one end of the adjacent board at the opposite end of the pile. In each succeeding layer, the outside ends of boards should be kept immediately over the ends of those below.

(3) Each layer should be composed of boards of the same thickness.

(4) The pile should have a forward pitch of 1 inch for each foot of height and a slope from front to rear of 1 inch for each foot of length.

(5) Narrow piles are desired for stock that will withstand rapid drying. Wide piles are desired for stock that may check and honeycomb. Common pile widths range from 6 to 16 feet.

(6) Lateral space between piles should be about 4 feet. The distance between the rear of one pile and the front of the next should be about 8 feet.

(f) End coatings:

Wood dries more rapidly from the end grain than from the side grain and is apt to check and split during seasoning unless end drying is retarded by means of end coatings. Either cold or hot coatings can be used.

One of the best cold coatings developed at the Forest Products Laboratory is an inexpensive hardened gloss oil thickened with barytes and magnesium silicate.

The manufacture of hardened gloss oil involves technical operations of such exactness that it should be made only by a commercial paint manufacturer. A hardened gloss oil suitable for end coating and made in accordance with the following formula should be specified:

6 to 8 parts, by weight, hydrated lime.
100 parts, by weight, rosin.
57.5 parts, by weight, mineral spirits.

To 100 parts by weight of this gloss oil, add 25 parts barytes and 25 parts magnesium silicate. If a black coating is desired, one or two parts of lampblack may be added. Because gloss oil so thickened tends to become pasty after standing, the user should mix small quantities as needed.

Paraffin is a satisfactory end coating for stock during air seasoning, but it melts at kiln temperatures.

The following hot coatings are particularly satisfactory for wood that is to be kiln dried after air seasoning:

- (1) Coal-tar pitches or asphalts with melting points between 195° and 213° F.
- (2) Mixtures of such coal-tar pitches and asphalts. (Example: 100 parts by weight of 213° and 40 parts of 155° F. coal-tar pitch plus 25 parts of 220° asphalt.)
- (3) Rosin and lampblack (100 parts by weight of rosin to 7 parts of lampblack).
- (4) Any mixture of high-melting-point pitches and rosin.

When end coatings chip or shear off, a fresh coating should be applied.

(g) Covering:

All material should be under cover either in an open shed or with roofs over individual piles. One satisfactory type of pile roof consists of two layers of low-grade boards. Those in the upper layer should be staggered with respect to those in the lower layer.

- (1) A minimum front height of 6 inches above the lumber, with a slope at least 1 inch to the foot, should be required.
- (2) The ends and the sides should project sufficiently to prevent snow and rain from beating into the lumber piles.
- (3) The roof should be securely fastened to the pile.

(h) Site:

The yard should be well drained and kept free of weeds and debris.