

**SPECIFICATION —  
KLINKI PINE FOR AIRCRAFT USE**

**EFFECTIVE: Forthwith**

**SUBSECTIONS**

**1 — Quality**

**2 — Seasoning**

**3 — Moisture Content**

**4 — Density**

**5 — Mechanical Properties**

**6 — Marking**

**1 — QUALITY**

**1.1** — The timber shall be of uniform colour. It shall be free from obvious and incipient decay, blue stain, knots, shakes, splits, seasoning checks, internal checks, compression failures, compression wood, resin and bark pockets, pith streaks, callus tissue, insect attack, wane or want, blemishes due to handling and other injuries, but the following imperfections are permitted:

- (a) Pin-knots and/or needle traces not exceeding 0.75 mm diameter and not closer than 50 mm;
- (b) Sloping grain as determined by the splitting test: not exceeding 1 in 16;
- (c) Spring: not exceeding 1 in 600 or 5 mm in 3 m;
- (d) Bow: not exceeding 1 in 300 or 10 mm in 3 m;
- (e) Twist: not exceeding 7 mm in 1 m<sup>2</sup> of face area.

**2 — SEASONING**

**2.1** — The timber shall be either air-dried or kiln-dried to the moisture content specified, if kiln-dried, the operation shall be carried out in accordance with the appropriate schedule at Appendix 1.

**3 — MOISTURE CONTENT**

**3.1** — The moisture content of each plank shall be determined by means of an approved electrical moisture meter. Tests shall be made at points approximately 500 mm from each end at the mid-length. The three readings shall be between 15 per cent and 10 per cent and the individual readings shall not vary by more than 2 per cent in any plank.

**3.2** — In laminated assemblages the difference in average moisture content between any two laminations shall not exceed 3 per cent.

**4 — DENSITY**

**4.1** — The density of each plank shall not be less than  $385 \text{ kg m}^{-3}$  when the moisture content, calculated on the weight of the oven-dried wood, is 12 per cent. For each 1 per cent increase or decrease of moisture content from 12 per cent the density value shall be increased or decreased respectively at the rate of  $1.92 \text{ kg m}^{-3}$ .

*Note: Acceptable method for determining moisture content, and density are given in detail in Australian Standards Methods of Test (Emergency Series) for Timber for Aircraft Construction No. (E) CD, 800-1944.*

## **5 — MECHANICAL PROPERTIES**

The species average mechanical properties of Klinki Pine are given in Appendix II.

## **6 — MARKING**

Each plank accepted as complying with this specification shall be ink stamped with the following particulars:

- (a) the standard name of the timber (ie. Klinki);
- (b) the number of this specification (DCA 108.22).

## **AUTHORITY**

This Section of Air Navigation Orders is issued by the Secretary to the Department of Aviation in pursuance of the powers vested in him by the Air Navigation Regulations.

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APPENDIX I

KILN-DRYING SCHEDULES FOR KLINKI PINE

Moisture Contents Change - Points (Moisture Content of Wettest Sample Plant)	Dry Bulk Temperature °C	Wet Bulb Depression °C	Remarks
<b>1. Up to 25 mm — Mixed Sawn:</b>			
Green	60.0	5.5	-
40 per cent	65.5	8.5	-
30 per cent	71.0	11.0	-
12 per cent	71.0	6.5	Maintain this high Humidity Treatment for 48 hours
<b>2. Over 25 mm and up to 50 mm — Mixed Sawn:</b>			
Green	54.5	4.0	
40 percent	60.0	6.5	-
30 per cent	65.5	9.5	-
25 per cent	71.0	11.0	-
12 per cent	71.0	6.5	Maintain this high Humidity Treatment for 48 hours

*Note 1: Seven sample planks, which shall be representative of the stock in the kiln charge, and no two of which are prepared from the same length of timber, shall be included in each kiln charge and shall be well distributed throughout the charge.*

*Note 2: The moisture content change-points shall be determined by the moisture content of the wettest of the sample planks.*

*Note 3: For stock which has been partly air-dried, the initial kiln-drying conditions used shall be those shown as applicable to the appropriate moisture content change-point. Should the moisture content of the stock lie between the two change-points shown, the kiln-drying conditions used shall be those applicable to the wetter of the two change-points.*

## APPENDIX II

### MECHANICAL PROPERTIES OF KLINKI PINE

At 12 per cent moisture content, defect free specimens of Klinki pine have the following average properties:

- (a) Density .....452 kg m<sup>-3</sup>;
- (b) Modulus of Rupture (Centre pt. bending) .....76.5 MPa;
- (c) Modulus of Elasticity .....11,900 MPa;
- (d) Compression strength parallel to the grain .....43.9 M Pa; and
- (e) Shear strength.....9.65 MPa.

For modulus of elasticity in pure bending, ie, with no shear deformation, or in compression or tension parallel to the grain, the value 12,900 MPa may be used in place of the figure given above.

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