

Summary Checklist for Drying Quality Hardwood Lumber

Rate on a scale of 1-4 where 1 is low and 4 is high

Kiln _____

Date _____

Standard Operating Practices

1. Maintenance and Inspection **Low High**

- 1.a. Equipment above fan floor inspected regularly 1 2 3 4
- 1.b. Air velocity checks made regularly 1 2 3 4
- 1.c. Traps checked for proper operation and plumbed for ease of checking 1 2 3 4
- 1.d. Air supply to control instruments and operating valves checked at regular intervals 1 2 3 4
- 1.e. Regular maintenance program for steam valves 1 2 3 4
- 1.f. Regular calibration of temperature sensing devices and indicators 1 2 3 4
- 1.g. Wet-bulb wicks changed on a regular schedule 1 2 3 4
- 1.h. EMC wafers changed on a regular schedule 1 2 3 4
- 1.i. Regular maintenance program for dehumidification kilns 1 2 3 4

2. Moisture Content Monitoring and Recordkeeping **Low High**

- 2.a. Knowledge of history of lumber before going into kiln 1 2 3 4
- 2.b. Use of sample boards (kiln samples) to monitor moisture content 1 2 3 4
- 2.c. In-kiln moisture content monitoring equipment is used 1 2 3 4
- 2.d. Moisture content control practices for each charge 1 2 3 4
- 2.e. Dry storage of lumber 1 2 3 4
- 2.f. Control charts labeled and filed for reference 1 2 3 4
- 2.g. Records of moisture content checks are kept with control charts 1 2 3 4

3. Discussion and Feedback from Rough Mill or Glue Room Supervisors **Low High**

- 3.a. Regular communication with rough mill or glue room supervisor 1 2 3 4

4. Learning Opportunities **Low High**

- 4.a. Opportunities to visit other sites and meet other operators 1 2 3 4
- 4.b. Attend Dry Kiln Association meetings and drying workshops 1 2 3 4

Control Room

5. Valves Operate Properly **Low High**

- 5.a. Steam heat valves operate properly 1 2 3 4
- 5.b. Steam spray valve fully opens and closes 1 2 3 4
- 5.c. Gauges are working and readable 1 2 3 4

6. Controls Operate Properly **Low High**

- 6.a. Vents and spray are not on together 1 2 3 4
- 6.b. Recent control charts show fan reversals occur 1 2 3 4
- 6.c. Recent charts show setpoint changes are made according to the schedule 1 2 3 4
- 6.d. Correct instrument charts are used 1 2 3 4

Fan Deck and Kiln Roof

- 7. Fans** **Low High**
- 7.a. Fans and shrouds are well maintained 1 2 3 4
- 7.b. Fans turning for proper airflow 1 2 3 4
- 7.c. Fan deck (fan floor) in good repair 1 2 3 4
- 7.d. Easy access to fan deck and roof vents 1 2 3 4

- 8. Heat Distribution Systems** **Low High**
- 8.a. Heating coils clean and free of debris 1 2 3 4

- 9. Vents** **Low High**
- 9.a. Vent lids open and close fully 1 2 3 4
- 9.b. Vent actuators and linkages operate properly 1 2 3 4

Yard and Stacker Area

- 10. Sticker and Bolster Thickness** **Low High**
- 10.a. Sticker thickness uniformity 1 2 3 4
- 10.b. Bolster thickness uniformity 1 2 3 4
- 10.c. Uniformity of sticker straightness 1 2 3 4

Inside an Empty Kiln

- 11. Inside a Cold Kiln** **Low High**
- 11.a. Condensation or other water inside kiln 1 2 3 4
- 11.b. Drainage from kiln floor 1 2 3 4
- 11.c. Proper wet-bulb wick is used 1 2 3 4
- 11.d. Adequate water flowing to wet-bulb 1 2 3 4

- 12. Kiln Operational Checks** **Low High**
- 12.a. Heating coils and steam pipe free of steam or water leaks 1 2 3 4
- 12.b. Steam spray free of liquid water 1 2 3 4
- 12.c. Steam spray uniformly distributed 1 2 3 4

While Preparing Charges and Loading the Kiln

- 13. Lumber Quality and Package Loading** **Low High**
- 13.a. Lumber thickness variation 1 2 3 4
- 13.b. Plenum width adequate 1 2 3 4
- 13.c. Package arrangement to accommodate short packages 1 2 3 4
- 13.d. Package placement in package kilns 1 2 3 4
- 13.e. Package placement on kiln trucks in track kilns 1 2 3 4
- 13.f. Rails in track kilns 1 2 3 4

During Kiln Startup and Operation

- 14. During Kiln Startup** **Low High**
- 14.a. Adequate airflow across wet-bulb 1 2 3 4
- 14.b. Confirm that traps are functioning 1 2 3 4

- 15. While Kiln Is Operating** **Low High**
- 15.a. Doors, walls, and roof free of leaks 1 2 3 4
 - 15.b. Confirm fan reversal by feeling airflow direction 1 2 3 4

Moisture Content Control and Equalizing and Conditioning Treatments

- 15. Control of Moisture Content** **Low High**
- 15.a. Proper selection and use of kiln sample boards 1 2 3 4
 - 15.b. Moisture content variation using kiln sample boards 1 2 3 4
 - 15.a. Moisture content variation measured by in-kiln monitors 1 2 3 4
 - 15.b. Moisture content variation measured by electric moisture meter 1 2 3 4

- 16. Equalizing and Conditioning Treatments** **Low High**
- 16.a. Equalizing and conditioning treatments used correctly and used when needed 1 2 3 4
 - 16.b. Check for drying stresses using prong test 1 2 3 4

After Drying Is Completed

- 18. Before Unloading Kiln** **Low High**
- 18.a. Baffles used properly 1 2 3 4
 - 18.b. Package height uniform for good top baffle contact 1 2 3 4

Evaluate Stacking and Its Effect on Drying Quality

- 19. Sticker Placement** **Low High**
- 19.a. Sticker alignment 1 2 3 4
 - 19.b. Stickers missing 1 2 3 4
 - 19.c. Stickers on edge 1 2 3 4
 - 19.d. Sticker placement at ends of packages 1 2 3 4

- 20. Board Placement In Packages** **Low High**
- 20.a. Packages are square at both ends 1 2 3 4
 - 20.b. Overlapped boards in package 1 2 3 4
 - 20.c. Sides of package even 1 2 3 4

- 21. Package and Bolster Placement** **Low High**
- 21.a. Bolster (bunk) placement between packages 1 2 3 4
 - 21.b. Bolster (bunk) placement on floor 1 2 3 4
 - 21.c. Chimney allowance (track-loaded kilns) 1 2 3 4
 - 21.d. Packages placed at edge of kiln trucks 1 2 3 4

Drying Defects and Drying Problems Reported

- 22. Drying Degrade Seen in Rough Dry Lumber** **Low High**
- 22.a. End checking or end splits visible in stickered lumber 1 2 3 4
 - 22.b. Surface checking visible in stickered lumber 1 2 3 4
 - 22.c. Warp (including kinks) related to stickering and stacking 1 2 3 4

23. Drying Degrad Problems Reported	Low High
23.a. Rough mill and/or glue room complaints	1 2 3 4
23.b. Surface checking seen on surfaced lumber or cuttings	1 2 3 4
23.c. Internal checking or honeycomb seen on ends or surfaces	1 2 3 4
23.d. End checks and/or end splits seen on surfaced lumber or cuttings	1 2 3 4
23.e. Stain, including sticker stain, related to drying in species and grades in which it is a degrading condition	1 2 3 4

"Quality Drying of Softwood Lumber Guidebook/Checklist;" USDA Forest Service; Forest Products Laboratory; FPL-IMP-GTR-21 1992