



NEWS AND VIEWS OF THIS KILN DRYING BUSINESS

The Problem: Where should kiln samples be placed and how many should be used?

The Answer:

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The placement of kiln samples in the kiln charge is not always an easy proposition. They must be placed in a kiln truck in positions where they can be removed readily, yet should be located so that the drying conditions to which they are subjected are representative of the load.

In end-piled kilns this does not offer too much trouble as usually the operator has a walk down alongside the loads enabling him to get to the samples in the various loads making up the kiln charge. The samples should be placed in the load somewhat as shown in figure 1. If only one sample is placed in a kiln truck it probably is best to place it at about shoulder height for ease in taking it out. The kiln samples should be placed on the entering air side of the load in forced air circulation kilns.

If the kiln is an internal-fan kiln with reversing circulation, samples should be placed on both sides of the truck, or, if it is a double-track kiln, they should be placed in the trucks on both wall sides. If the kilns are external blower designs, the samples are most apt to be placed on the leaving air side of the load and the kiln operator must realize that the moisture loss shown by the kiln samples is that of the leaving air side and adjust the drying conditions accordingly.

The placement of samples in cross piled dry kilns, whether they are of natural draft or forced air circulation types, is usually quite a problem. Seldom is sufficient room available between the ends of the load and the walls of the kilns to allow the operator to get down to samples placed in the ends of other than the load nearest the kiln door. Some kiln samples can be placed in the load facing the kiln door in the manner illustrated in figure 1, but this may not be a very representative drying location. Very often, however, this is the best that can be done.

Additional kiln samples can some-

times be laid on projecting boards on either side of the second and third truckloads. Such a procedure certainly is better than not using kiln samples at all. The kiln operator will have to use judgment in interpreting the information that such kiln samples give and operate the kiln accordingly.

Getting a number of moisture content checks on the kiln-dried stock when the trucks are being taken down will give the operator a good idea of how the dryness of the samples at the locations he must use in the cross-piled kiln compares with the dryness of the stock in other parts of the kiln charge. In that way he can judge when the proper moisture conditions are reached for schedule changes, equalizing conditions, or pulling of the kiln charge.

The number of kiln samples to use in a kiln charge is a matter of debate. In any case a sufficient number of samples should be used to assure the kiln operator that he has a good knowledge of the rate at which the whole kiln charge is drying. I would say that as a minimum one kiln sample should be placed in each kiln truck in the kiln charge. This will sometimes result in quite a task for the kiln operator. Their preparation, placement, and periodic weighing may involve considerable work, particularly should each kiln contain quite a number of kiln trucks.

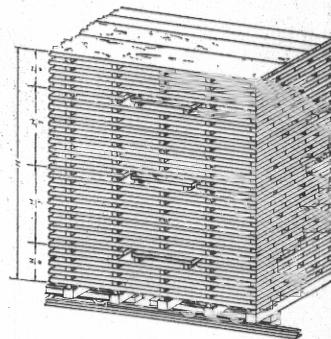
The experienced kiln operator, however, can reduce the workload by careful selection and placement of a relatively few kiln samples for each kiln charge, particularly if the installation has quite a number of dry kilns. Which kiln samples to use to determine when to change the drying conditions in the kiln is another problem that cannot easily be dealt with. Some samples dry faster than others and then it is up to the operator to judge whether he should run the kiln on the basis of the average moisture content of all of the kiln samples, the wettest or slowest drying one of the group, or use some other averaging technique.

I have found that good results will be obtained by using the average of the three wettest kiln samples as the basis of kiln schedule manipulation.

As the kiln charge approaches the final stages of drying the faster drying kiln samples may be getting too dry. At this stage the kiln is often put on "equalization", that is, the e.m.c. of the drying conditions is raised so that the drier stock will not be overdried yet the wetter materials can continue to dry. When all of the kiln samples have attained the desired moisture content condition and some of the samples have been cut for a recheck of their moisture content, the kiln charge is ready for conditioning for the relief of casehardening. If case-hardened stock is not a problem in fabrication of the kiln dried lumber then the conditioning treatment is not given and the kiln charge is pulled when the kiln samples show that they have attained the desired moisture content.

Kiln-drying green, partially air-dried, or well air-dried hardwoods rapidly and without seasoning degrade requires a good appraisal of the moisture content of the stock as it goes into the kiln and during the drying process. The kiln sample technique is the most practical method so far devised for this purpose. A dry-kiln operator with considerable experience can operate kilns drying hardwoods on a time schedule as is usually done with softwoods, but as a general rule it is a dangerous practice and for this reason we recommend the use of kiln samples for the kiln drying of most of our commercial hardwoods.

Placement of kiln samples in recessed areas built in the side of an end-piled load of lumber.



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