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 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-

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 casehardened 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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