Analysis of board moisture in wood based panels production

Board Moisture in 6 sec

Laboratory and Process Instruments and Support
Producers of wood based panels need to control and optimize the manufacturing process. There are also industry and official standard requirements to measure several process parameters like for instance board moisture. The EN 312 standard requires board moisture to be measured with the EN 322 method after each 8 hours of production. Each formaldehyde test with EN 120 also requires determination of board moisture according to EN 322 to correct the perforator value to 6.5% moisture. The EN 322 standard method takes 24 hours to complete.

The Near Infrared Reflectance (NIR) technique is particularly suited for measurement of moisture in board samples. Recent advances in instrumentation and calibration technology that have enabled stable and precise measurements.

In only 6 seconds...

DA 7250 NIR Analyzer

The DA 7250 is a new full-spectrum, NIR instrument designed for use in process environments. Using novel diode array technology it performs a multi-component analysis in only 6 seconds with no or little sample preparation required.

During these 6 seconds, a baseline is collected, noise monitored, wavelength accuracy is standardized, and a large number of full spectra are collected.

Advantages

• Short analysis time
• Automatic documentation of results, no risk for typing errors
• Save personnel resources
• No limitation in oven capacity
• The EN 120 uncorrected value can be moisture corrected directly after it is measured using the DA 7250 moisture measurement
DA 7250 for board moisture factory production control

The EN 322 method can be replaced with the DA 7250 board moisture measurement using the procedure described in EN 326-2.

Experimental

Several hundred samples from wood-based panel mills were collected. The samples were analyzed on multiple DA 7200 and DA 7250 analyzers following the procedure described in the “DA 7250 Quick Guide v1.0 appendix EN moisture testing”. With this procedure the board samples are cut in pieces and measured from the edge. Reference analyses were performed by the mills according to EN 322.

A calibration was developed by Perten Instruments, with the following statistics:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Number of samples</th>
<th>Range</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>Board moisture</td>
<td>~ 500</td>
<td>3,8-9,4 % dry</td>
<td>0,96</td>
</tr>
</tbody>
</table>

The DA 7250 results are very accurate when compared to the results from the reference method.

Figure 1. Validation results from one particle board mill. 33 validation samples showed an SEP of 0,34 % moisture, $R^2=0,92$, Slope=0,97

Figure 2. Cross validation results for the board moisture calibration.
Global expertise, local support

We supply solutions to our customers – support after the sale is as important as the instrument itself. Our teams of technicians and applications specialists, and the services they provide, ensure our customers continue to get the most benefit during the entire life of the instrument. We provide service, training classes, calibration development, method development and other customized programs and services.

We are active in nearly every part of the world. We serve you through our direct offices and our extensive network of highly qualified, experienced and trained distributors. Our distributors are an important part of Perten Instruments team and many have been with us for more than 25 years.

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