Application Note EDXRF1248

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EDXRF1248 - IPBC Wood Treatment

Scope

This application note demonstrates the measurement of IPBC (3-Iodo-2-propynyl butyl carbomate) in wood treatment solutions using NEX QC.

Background

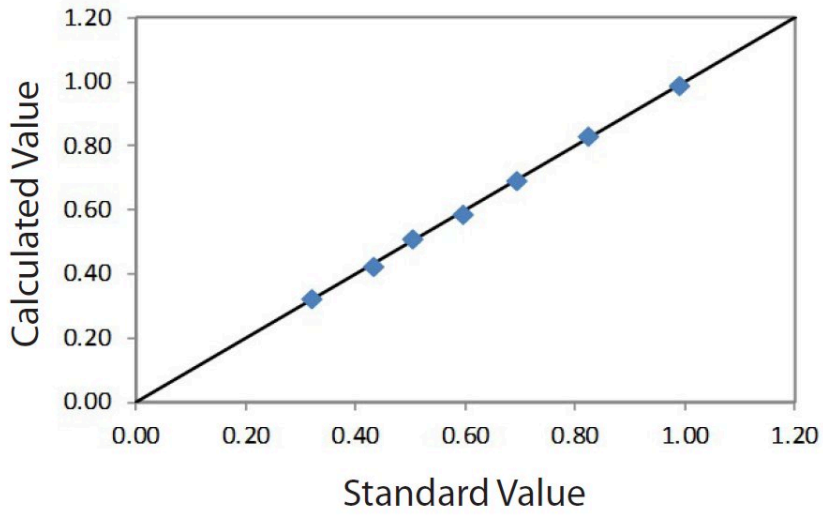
Wood treatments are used to protect lumber from fungi, insects, UV damage, and general wear. Lumber treated with IPBC is often used to treat window frames, as the iodine treatment does not discolor wood and does not hinder the coloring of the finished wood. When treating wood, the proper balance of treatment solution must be monitored to ensure the highest quality while minimizing waste and excess cost due to treatment usage or product rejection. Iodine levels (as IPBC) are monitored in solution prior to treatment, and then in the wood to ensure proper retention. A quick, simple, reliable means of analysis is required throughout the quality control process. XRF is an ideal tool for such analysis.

Calibration – IPBC in solution

An empirical calibration was built using a set of assayed solution standards.

Element: IPBC **Units: %**		
Sample I.D.	**Assay value**	**Calculated value**
S-1	0.3184	0.3218
S-2	0.4321	0.4248

S-3	0.5039	0.5112
S-4	0.5938	0.5881
S-5	0.6920	0.6893
S-6	0.8228	0.8316
S-7	0.9900	0.9862



Correlation plot IPC in solution

Repeatability – IPBC in solution

To demonstrate repeatability (precision), the low and high samples were chosen from the set of calibration standards. Each sample was measured in static position.

Element: IPBC **Units: %**				
Sample I.D.	**Standard value**	**Average value**	**Std. dev**	**% Relative**
S-1	0.3184	0.3217	0.0006	0.2
S-7	0.9900	0.9977	0.0019	0.2

Conclusion

The typical results detailed here show exceptional performance for the fast and simple measurement of IPBC in solution. Iodine is best measured on NEX QC using 50 kV tube voltage to measure the I K-line. The Rigaku NEX QC is an excellent tool along the QC process of producing treated lumber, giving the production process an affordable means of optimizing quality, while minimizing costs and helping to minimize product rejection and waste.

Related products

NEX QC II Series

Compact, intuitive benchtop EDXRF for everyday elemental testing