Determination of the distribution of copper and chromium in partly remediated CCA-treated pine wood using SEM and EDX analyses

Soaking in different acids and electrodialytic remediation (EDR) were applied for removing copper and chromium from freshly Chromated Copper Arsenate (CCA) impregnated EN 113 pine wood samples. After remedial treatments, AAS analyses revealed that the concentration of copper (Cu) and chromium (Cr) could be reduced to a large extent. Scanning electron microscopy with simultaneous electron dispersive X-ray analysis (SEM/EDX) clearly demonstrated a distinct difference in the distribution of Cu and Cr due to experimental conditions. Before soaking, the Cu and Cr was mainly located in the cell wall. After soaking, a small amount of Cu and Cr was still present in the cell walls but larger particles were now found on wall surfaces. Most effective removal of Cu was obtained after soaking in phosphoric and oxalic acid followed by EDR; here numerous rice grain-shaped particles were observed containing large amounts of Cu and no Cr. Cr was most effectively removed after soaking in oxalic acid and subsequent EDR treatment or dual soaking in phosphoric acid and oxalic acid with and without subsequent EDR.

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