

Topic: Cleaner leather production and closed-loop processing

Title: SYNTHESIS OF STARCH-BASED LAYERED DOUBLE HYDROXIDE COMPOSITES AND ITS TANNING PROPERTIES

Abstract: Chrome tanning agent is a well-established commercially available material in leather manufacture, however, it's necessary for the development of chrome-free tanning agent because of the solid waste that chrome tanning agent brings. In this study, oxidized starch (OS) was prepared by hydrogen peroxide, the functional groups and molecular weight were analyzed by NMR、FT-IR and GPC. Magnesium aluminum zirconium hydrotalcite (MgAlZr-LDHs) was prepared by incorporating Zr^{4+} with tanning properties into the laminate via co-precipitation method. XRD result shows that MgAlZr-LDH was successfully synthesized. The synthesis of starch-based layered double hydroxides (OS-MgAlZr-LDHs) was prepared by the introduction of MgAlZr-LDHs into OS. The crust leather tanned by OS-MgAlZr-LDHs with shrinkage temperature of 66.7°C when using 8% tanning agent at initial pH 3.0 and final pH 8.0. Furthermore, compared to that of OS, the isoelectric point and mechanical properties are improved, indicating that the introduction of MgAlZr-LDH was beneficial for the enhancements of positive charge and comprehensive performance.

Keyword 1: starch

Keyword 2: LDH

Keyword 3: chrome-free tanning

