Presentation of a Bachelor thesis: " A study of vanillin derivatives of condensed tannins in artificially aged leather related to physical deterioration "

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The study is analytical/theoretical, and the connections between the physical breakdown of leather and changes in the tannin structure is researched.

Vegetable tannins play a part in the deterioration of leather. A classification of degree of deterioration of the tannins is attempted, in order to choose a relevant conservation procedure.

The materials chosen are mimosa tanned and quebracho tanned new as well as historical leather. Half the materials are treated with aluminium alkoxide, by which the hydrothermal stability of leather increases. The materials are aged at 120°C in max. 4 days, by which different degrees of deterioration will occur.

Condensed tannins can be detected by vanillic acid, as the tannin will react and make a red complex. Any fluid has its own characteristic absorptionprofile, which is recorded on a disc by VIS-spectrophotometry. When the tannin deteriorates, the absorptionprofile lose its characteristics. VIS-spectrophotometry is therefore inapplicable for the identification of much deteriorated tannins.

Shrinkage temperature (Ts) is an expression for the hydrothermal stability of leather. A high shrinkage temperature indicates a stable leather, with lot of bindings between the collagen fibers. A low shrinkage temperature indicates a less stable leather with less bonds between the collagen fibers. Measurements of the shrinkage temperature show, that the shrinkage temperature decreases with increasing deterioration of the leather. The treatment with aluminium alkoxide shows its efficiency by virtue of an increase of the shrinkage temperature, but at the same time it is also indicated that it also has a ; destabilising effect.

If the two sets of data are compared, it is indicated that there is a connection between physical breakdown of leather and changes in the tannin structure.