

Title: Study of thermochemical treatments of cork in the 150-400 degrees C range using colour analysis and FTIR spectroscopy

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Abstract: A study of chemical transformations of cork during heat treatments was made using colour variation and FTIR analysis. The cork enriched fractions from *Quercus cerris* bark were subjected to isothermal heating in the temperature range 150-400 degrees C and treatment time from 5 to 90 min. Mass loss ranged from 3% (90 min at 150 degrees C) to 71% (60 min at 350 degrees C). FTIR showed that hemicelluloses were thermally degraded first while suberin remained as the most heat resistant component.

The change of CIE-Lab parameters was rapid for low intensity treatments where no significant mass loss occurred (at 150 degrees C L* decreased from the initial 51.5 to 37.3 after 20 min). The decrease in all colour parameters continued with temperature until they remained substantially constant with over 40% mass loss. Modelling of the thermally induced mass loss could be made using colour analysis. This is applicable to monitoring the production of heat expanded insulation agglomerates. (C) 2012 Elsevier B.V. All rights reserved.

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