

# FLAMMABILITY OF WOOD TREATED WITH NATURAL OILS AND (3-AMINOPROPYL)TRIMETHOXYSILANE

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## ABSTRACT

The aim of the study was stability determination of the chemical bonds between the wood and impregnates, and flammability investigation of the treated wood.

Fire tests were performed on Scots pine (*Pinus sylvestris* L.) sapwood samples treated with 5% APTMOS, 20% natural oils (O) (tung oil, linseed oil) and mixture of 5% APTMOS – (3-aminopropyl) trimethoxysilane with 20% tung or linseed oil (APTMO/S/O mixture). All formulations were dissolved in organic solvent. The samples were impregnated with two methods: soaking and vacuum. The fire tests were carried out on Mini Fire Tube (MFT) and Mass Loss Calorimeter (MLC). The flammability were tested on the samples before and after leaching acc. to EN 84. An Infrared Spectroscopy (FT-IR) and Atomic Absorption Spectrometry (AAS) were used for chemical analyzes of the Scots pine samples treated with APTMOS and APTMO/S/O mixtures.

Flammability tests of modified wood shows a reduction of mass loss, both before and after leaching, in comparison to untreated wood samples. The samples with mixture of APTMOS with natural oils showed greater resistance to leaching. The chemical analyzes revealed stable chemical bonds between wood and (3-aminopropyl)trimethoxysilane and increased hydrophobicity of wood treated with the natural oils.

The project is supported by Norway Grants and the National Centre for Research and Development of Poland (NCRD) as a part of Polish – Norwegian Research Program in the frame of the project “Superior bio – friendly systems for enhanced wood durability” (No. Pol – Nor/ 203119/32, DURAWOOD).

Key words: (3-aminopropyl) trimethoxysilane, tung oil, linseed oil, flammability

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