

17/10/2023

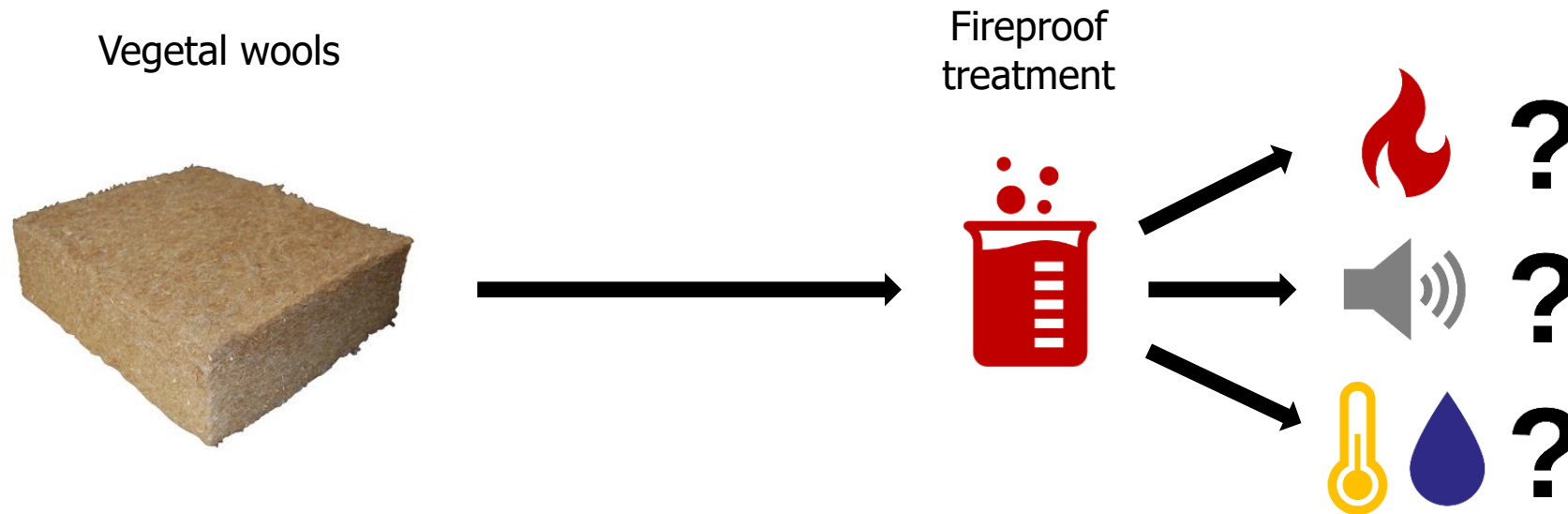
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Optimized vegetal wools for indoor comfort: coupling fire treatment with acoustic and hygrothermal performances

 **Université
Gustave Eiffel**

CONTEXT AND OBJECTIVES



- ❖ Sustainable wall insulator 
- ❖ Multifunctional properties
 - ❖ Acoustic absorption 
 - ❖ Thermal insulation 
 - ❖ Hygroscopic nature 
- ❖ **Low fire resistance** 

- ❖ The treatment needs to be viable at large scale
- ❖ Will the fireproof treatment affect the microstructure of the fibers?
- ❖ Will it impact the acoustical and hygrothermal performance of the vegetal wools?

THE TREATMENT

Impregnation Method

Solution preparation with 10% phytic acid and 30% urea



Immersion in solution



Oven for 2h at 80°C (Mild) and 120°C (Intermediate)



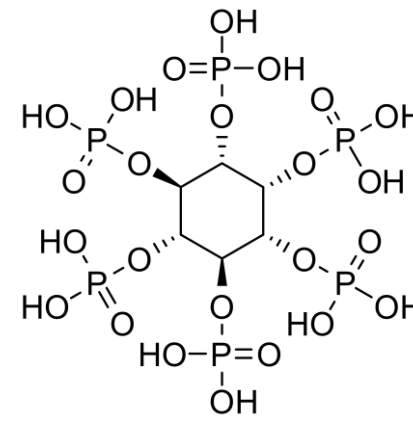
Wash and dry

Pulverization Method

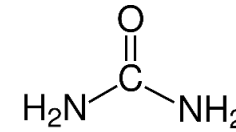
Spraying of the solution



Dry

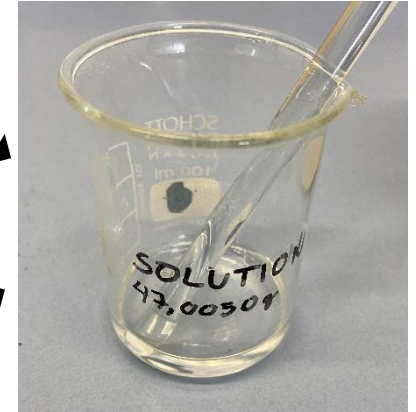


Phytic acid (PA)



Urea

Solution



Impregnation

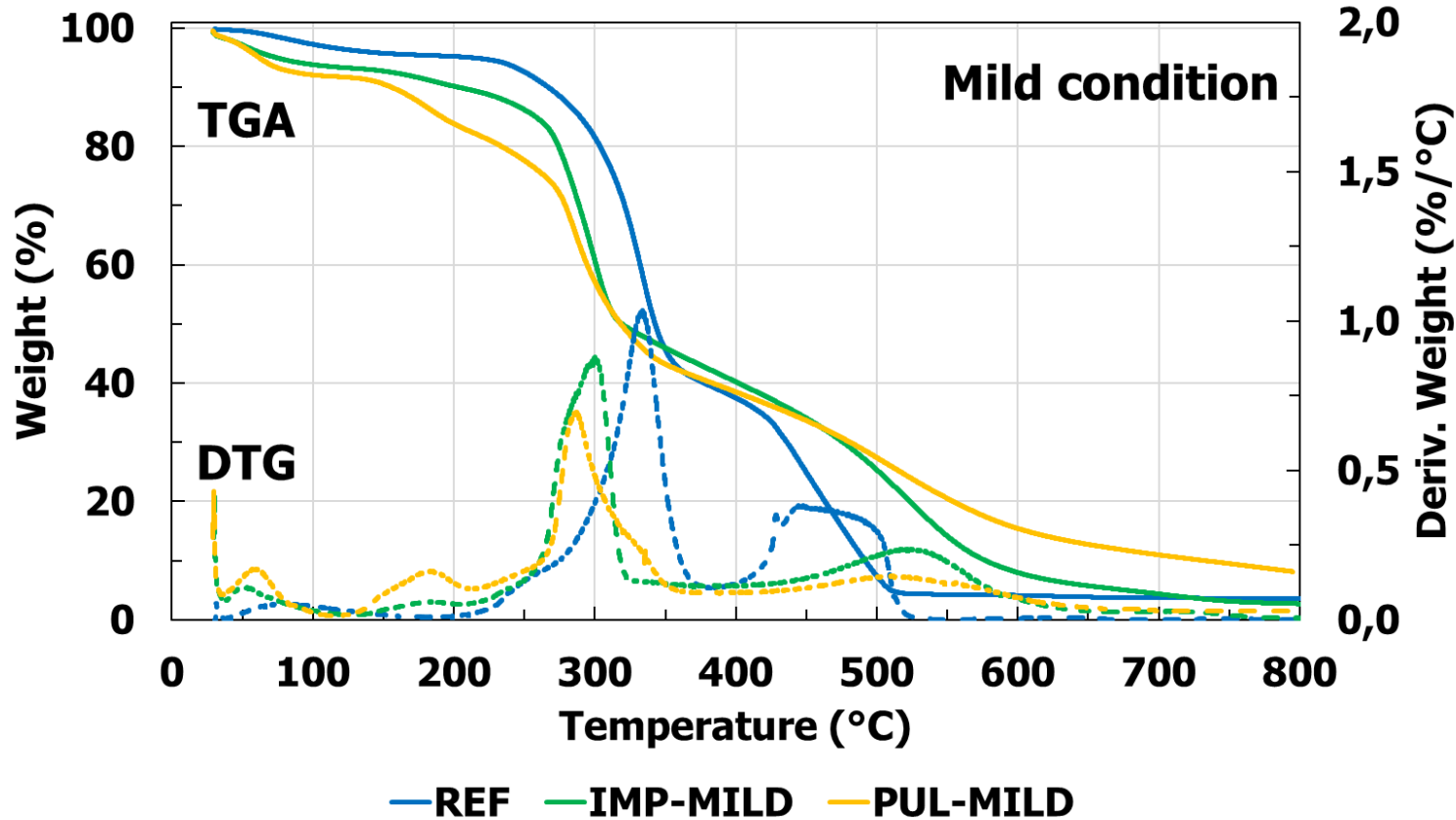


Pulverization

RESULTS



TGA and DTG of hemp fibers in air atmosphere



On the poster:

- ⌘ Consequences of the treatment on the fibers
- ⌘ TGA at intermediate condition
- ⌘ SEM images
- ⌘ Conclusion and perspectives



**Funded by
the European Union**

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie COFUND grant agreement No 101034248.

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