Potential of thermally modified poplar wood for construction products

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Engineered Wood Products based on poplar/willow wood

Paradores, Leon, Spain, 8-10 September 2016

OUTLINE

- Why modifying poplar wood ?
  - changing unfavorable features
  - using more local wood with higher added value
- Intended products and main parameters
  - structural (load bearing)
  - structural – cladding
  - structural – window joinery
- Results and discussion
- Main conclusions






Material and history

Exterior joinery






Company support

SWP
Stockmans Wood Products

Plat

Leegwater Houtbereiding bv

COUSSÉE & GORIS architecten

studiebureaumouton

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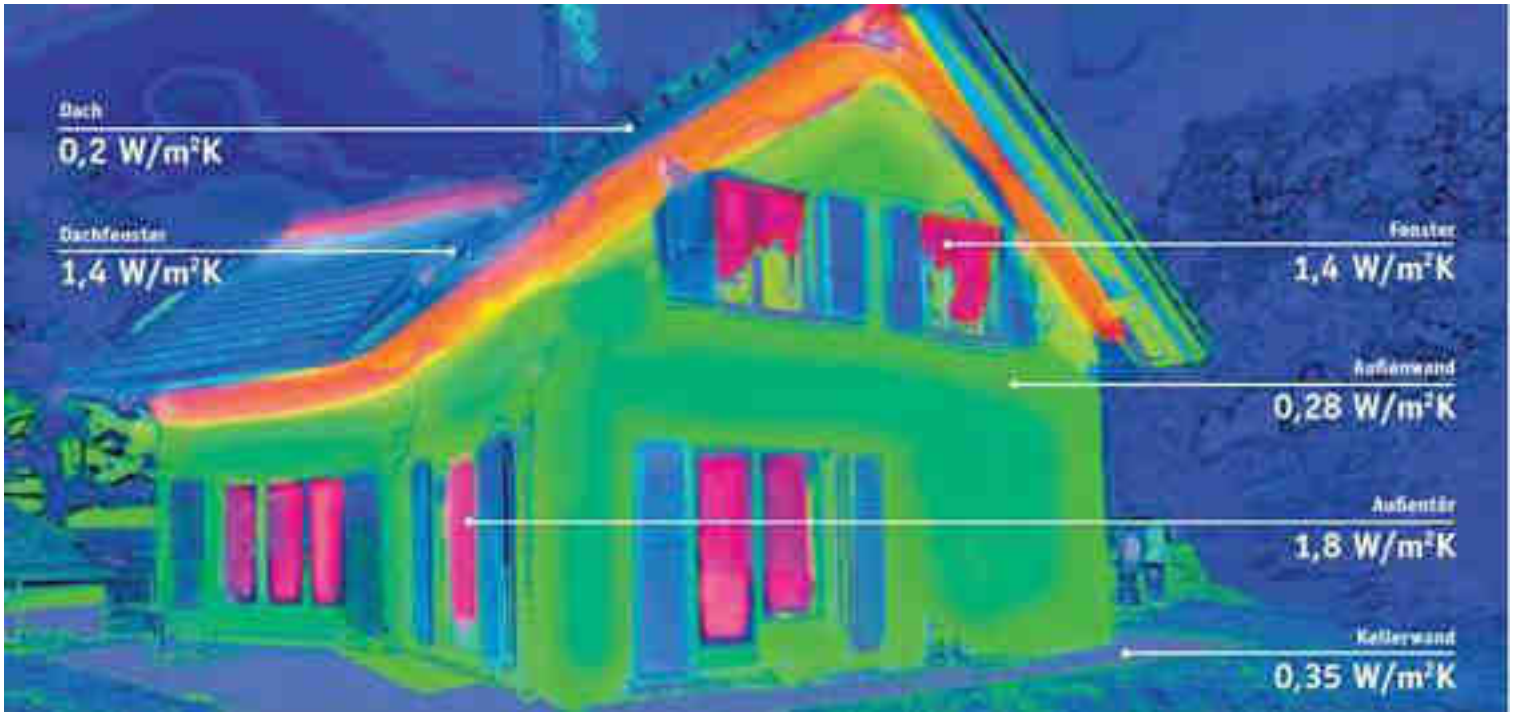
Window joinery








Window joinery

Thermisch gemodificeerd hout

ThermoDUR®

Hoge duurzaamheidsklasse : Klasse 2 (NEN EN 350-1 / KOMO BRL 3605)

Thermisch modificatieproces : Gebruik van standaard hang- en sluitwerk (goed Inox vorsist)

Geringe werking (Krimp- & Zwelgedrag) : Werking (Rad/Tang) bij 30-60% RV is 0,4 / 0,6% (bv. Afrormosia -> 0,7 / 1,0%)

Gunstige isolatiewaarde (EN 12667) : $\lambda_{...}$@ = 0,12 W/mK (naaldhout 0,13 W/mK & hardhout 0,18 W/mK)

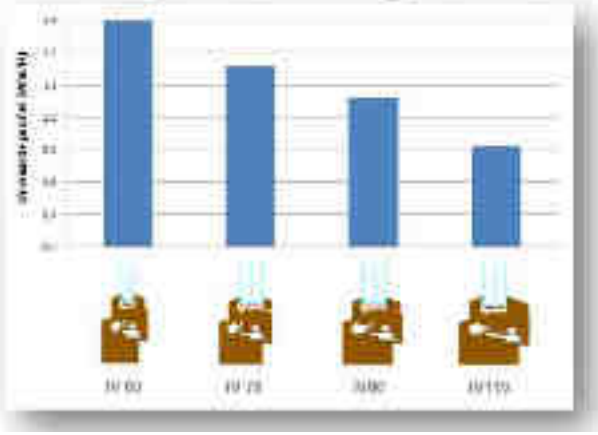
Optimale afdichtwaterdicht (watergedragen) : 10-jarige garantie met 2/3-lagen systeem (grondering + 1/2 dekkende lagen)

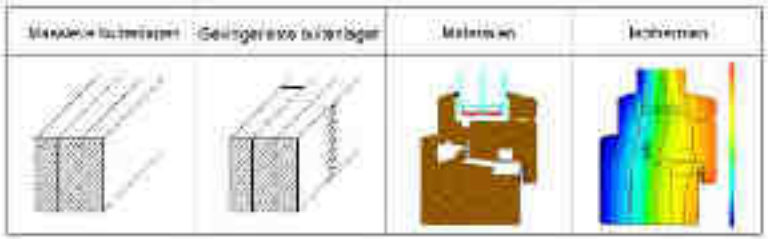
Brandvertragende behandeling : 10 jarige garantie (Brandklasse B - S2 - D0 conform EN 13501 of NBN A1)

Foutvrij : Geen krimpen, scheuren of barsten

Lage volumieke massa : 550 kg/m³ (in combinatie met driedubbele beglazing nog handelbaar bij plaatsing)

Kleine ecologische voetafdruk : Snel groeiende houtsoorten eventueel voorzien van FSC-label & t.e.v. eveneens eindproduct = duur kapcyclus houtsoort





SWP

Window joinery

Thermisch gemodificeerd hout

ThermoDUR®

Cladding

Cladding

Cladding






Cladding

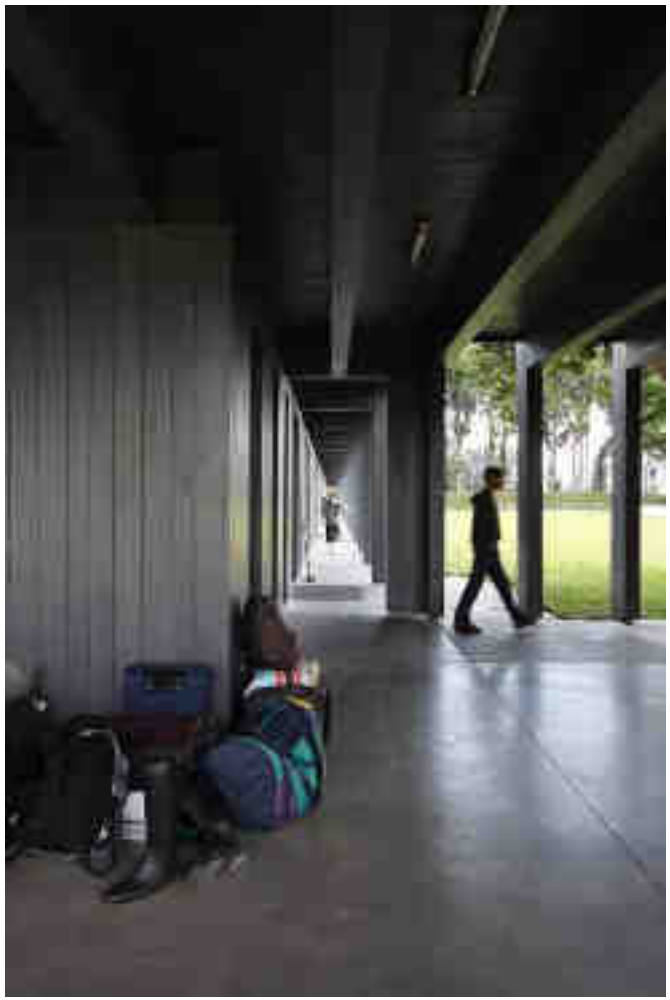
Other applications

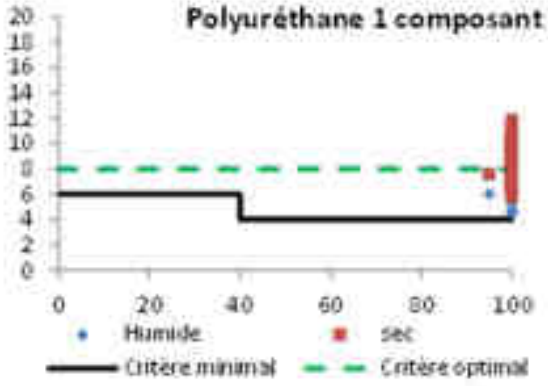


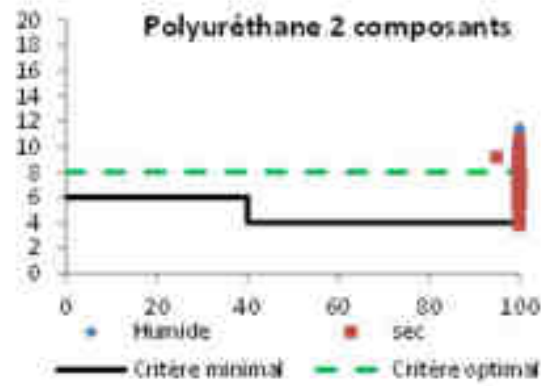


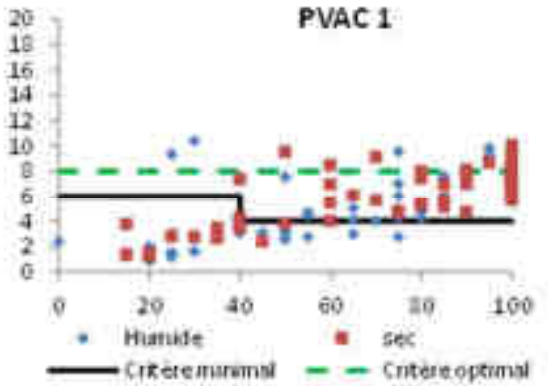

Other applications

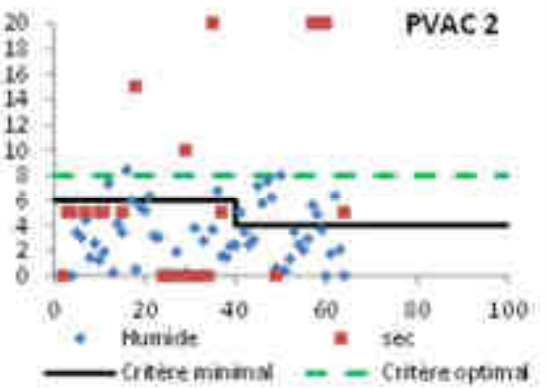
Other applications

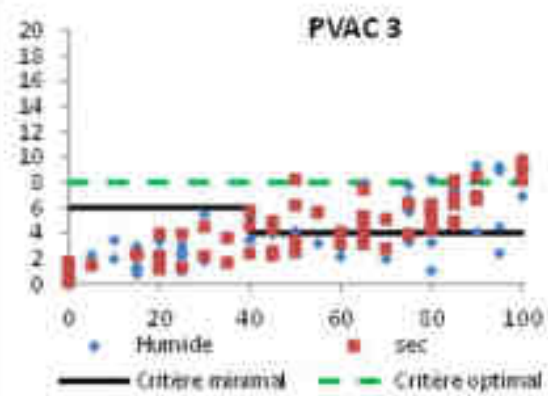


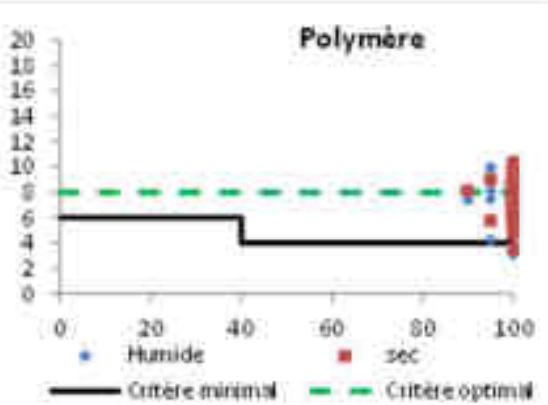












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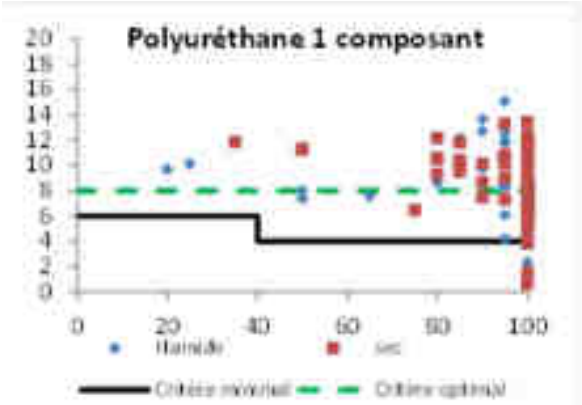

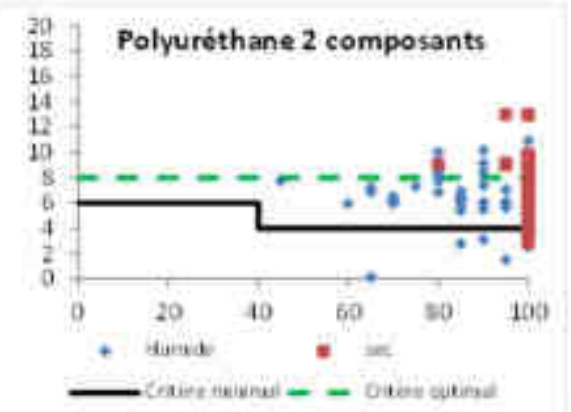

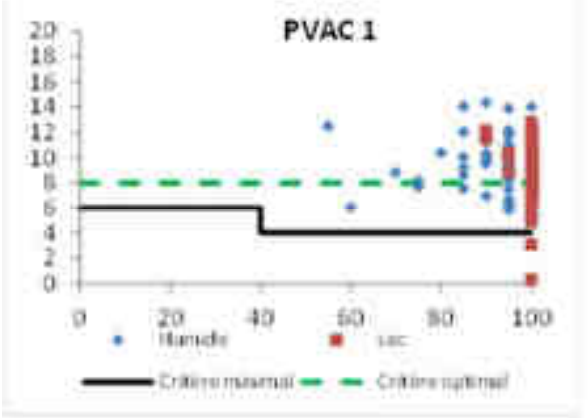

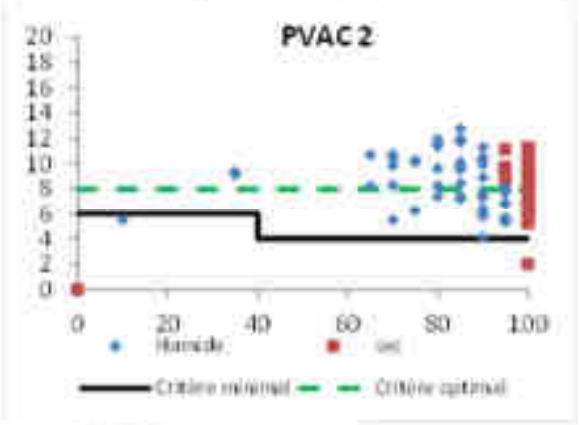

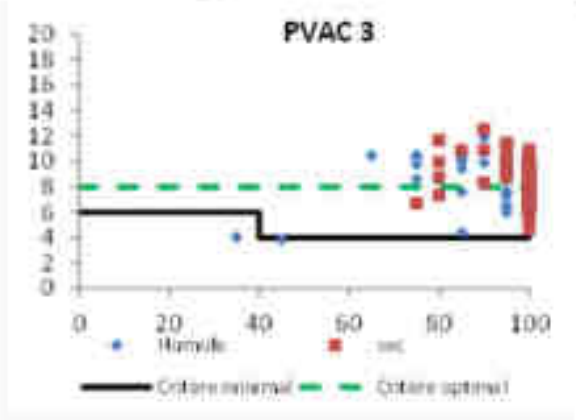

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OUTLINE

CONCLUSIONS

- Thermal modified poplar displays high potential.
- Strength grading points out that for a specific process (contact plate for heat transfer) the wood (as a whole) drops one strength grading class (Durability class III) or two strength classes (durability class II).
- As such load-bearing applications possible for small structures for outdoor use (e.g. carports)
- Window joinery possible
    - Limitations on dimensions (glazing)
    - Fixating joinery to wall elements with alternative systems
- Cladding is good application when a ‘grading’ process is put in place after the modification process
- First Belgian company doing final tests for bringing on the market a certified (CE and PEFC) poplar cladding.

THANK YOU

This work has been financed by the Institute of Nature and Forest Research (INBO – Geraardsbergen, Belgium) of the Ministry of the Flemish Community within the framework of the project "Tree and Wood Quality Research for the Flemish Forest-Wood Chain".

Also partly input from Flemish research projects as DO-IT Houtbouw.

In memoriam

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