



UNIVERSITÀ
DEGLI STUDI
FIRENZE



UNIVERSITÀ
DEGLI STUDI
DI TORINO



FP1407

ModWoodLife

Feasibility of highly durable plywood production with poplar wood as a substitute of tropical species

Giacomo Goli¹, Francesco Negro², Corrado Cremonini², Roberto Zanuttini², Marco Fioravanti¹

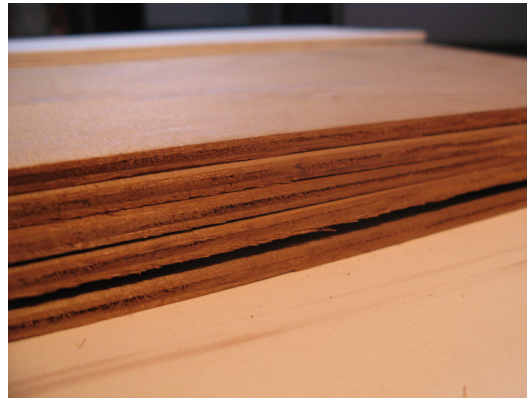
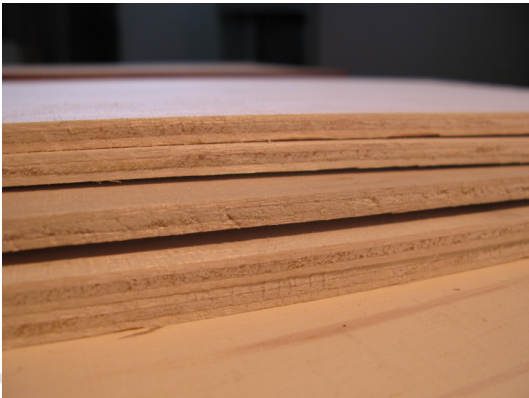
¹ GESAAF - University of Florence

² DISAFA – University of Turin

The material was heat treated at 180/190°C in a conventional air ventilated oven:

- Poplar I-214 euro-american clone veneers
- Ceiba veneers
- Poplar UF glued plywood panel
- Poplar MUF glued plywood panel

After heat treatment, Poplar and Ceiba veneers were glued with MUF resins in order to verify the effect of heat treatment on the glues.



Two heat treatments were performed:

T1 – up to $\sim 5\% ML_0$

T2 – up to $\sim 7\% ML_0$

Some physical:

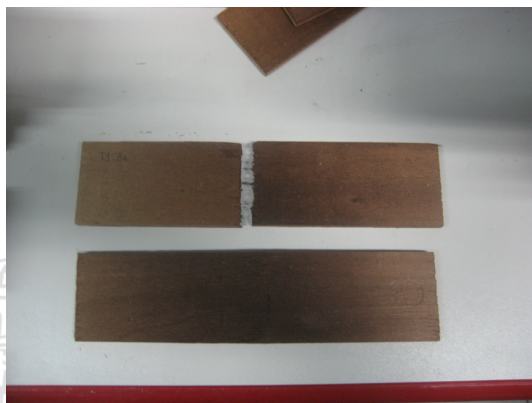
$MC - ML_0 - ML_{12} - \rho_{12} - \rho L_{12}$ (EN 322 – EN 323)

and mechanical properties were determined :

MOE – MOR (EN 310) (# samples going from 3 to 30)

Bonding quality was analysed as well:

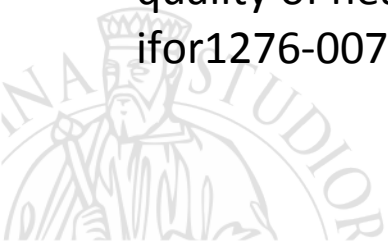
$f_v - ACWF$ (EN 314) (# samples going from 12 to 45)



- Dry mass losses from 5 to 8 % corresponds to density losses from 7 to 10 %
- The gluing of treated veneers can lead to permanent deformations during pressing operations
- MOE does not present statistically significant reductions after heat treatment
- MOR reduction vary from 25 to 50 % and few statistically significant differences can be observed between T1 and T2 and post panels presents better results than pre panels

- Glues shear strength reduction vary from 55 to 80%. *Post* panels seem to behave better than *pre* panels even if the difference is not very large
- MUF resins show an higher ACWF after heat treatment. This could depend on a larger effect of the treatment on the wood than on the glue

Goli G, Cremonini C, Negro F, et al (2014) Physical-mechanical properties and bonding quality of heat treated poplar (I-214 clone) and ceiba plywood. **iForest** doi: 10.3832/ifor1276-007





Thank you

