

REDUCTION OF DISCOLOURATION DURING BEECHWOOD (*Fagus sylvatica* L.) CONVENTIONAL DRYING BY USE OF LEAVES TRANSPIRATIONAL PREDRYING

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Introduction and research objectives

Aims

The aim of the study is to take an advantage of leaves transpiration (LT) at harvested tree of European beech (*Fagus sylvatica* L.), as a non-invasive predrying procedure:

- to decrease the initial moisture content (MC) in logs and
- to reduce the risk of subsequent seasoning stains in sawn wood lumber.

Material and methods

Leaves transpiration predrying:

European beech tree (*Fagus sylvatica* L.), D = 32 cm
Period: 24.8. - 13.9.08



Sampling of harvested tree



Top: Disc D radial MC profile



Middle: Disc C - radial MC profile



LT predried log (B) (L = 1.2m)



Green log (A) (L = 1.2 m)

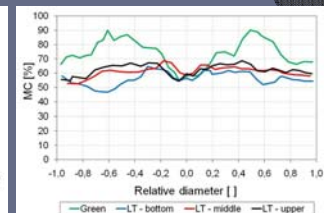
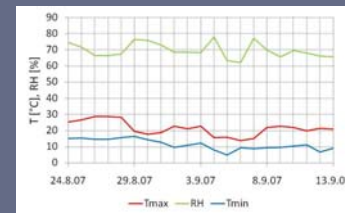
Kiln drying schedules

	RH	RH
	33%	75%
20 °C	Rate 2	Rate 1
40 °C	Rate 4	Rate 3

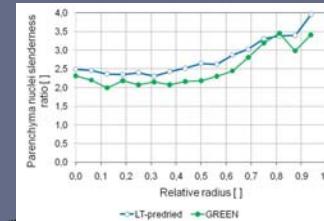


Kiln drying specimens (t = 25, 50 mm)

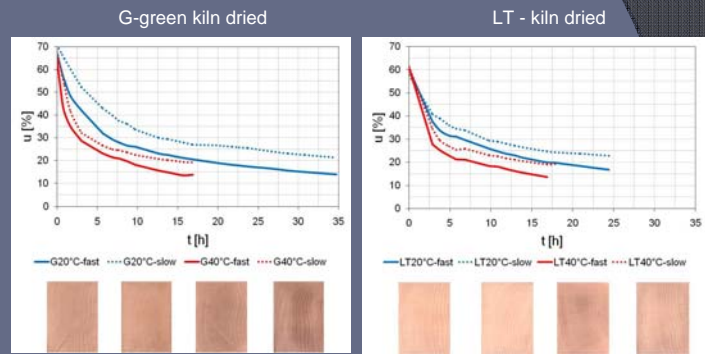
Results: Leaves transpiration, MC reduction, physiological state



- Significant reduction of initial MC in sapwood,
- Unchanged vitality of parenchyma cells after LT treatment.



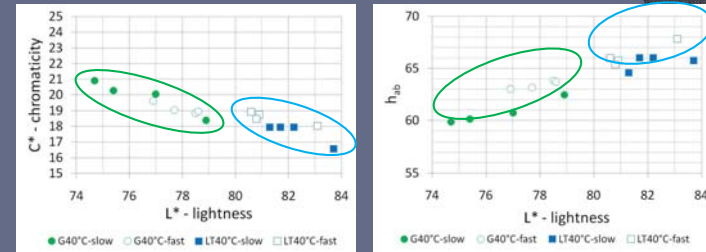
Results: Drying kinetics and discolouration



- > higher initial MC,
- > higher drying rate at high T and at low RH
- > Significant discolouration at high T

- > lower initial MC,
- > similar drying kinetics comparing to G drying
- > no discolouration and 20°C and slight at 40°C

Results: End wood colour comparison (middle of the specimens)



LT – predried kiln dried wood has comparing to G-kiln dried wood:

- > higher colour lightness (L*) and hue (h_{ab}) and
- > lower chromaticity (C*).

Conclusions

Leaves transpiration has promising potential for non-invasive reduction of green MC at deciduous, diffuse porous wood species.

Use of LT-procedure, as a predrying phase, followed by proper kiln drying, decreases seasoning stains at European beechwood.