
LASER TREATMENT OF WOOD IN SKI INDUSTRY – A PARAMETER STUDY

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The laser treatment of wood has become more important in recent years. This project is about the laser treatment of wood for ski production.

The laser beam affects the colour of wood and every wood species reacts differently to the laser treatment. So, the main objective of this study focused on the visual appearance of the wood surface and therefore the colour changes through laser treatment.

First we had to analyse the behaviour of several wood species, because wooden ski cores often consist of different wood species. For the tests we chose four different types of wood species: (Beech, Lime, Ash and Spruce), as each wood species has different physical properties. Secondly, we analysed various laser parameters according to their influence on the colour achieved by the laser treatment. A CO₂ laser was used with a maximum power of 120 watts. Then we had to test whether additional wood surface treatments after laser treatment would change the colour of the wood. (1. Samples without final treatment, 2. Samples with an oil finish, 3. Samples with a lacquer finish). Finally the colour was measured using a Mercury 2000 spectrophotometer (Datacolor).

The results can be seen on the next pages.

Results

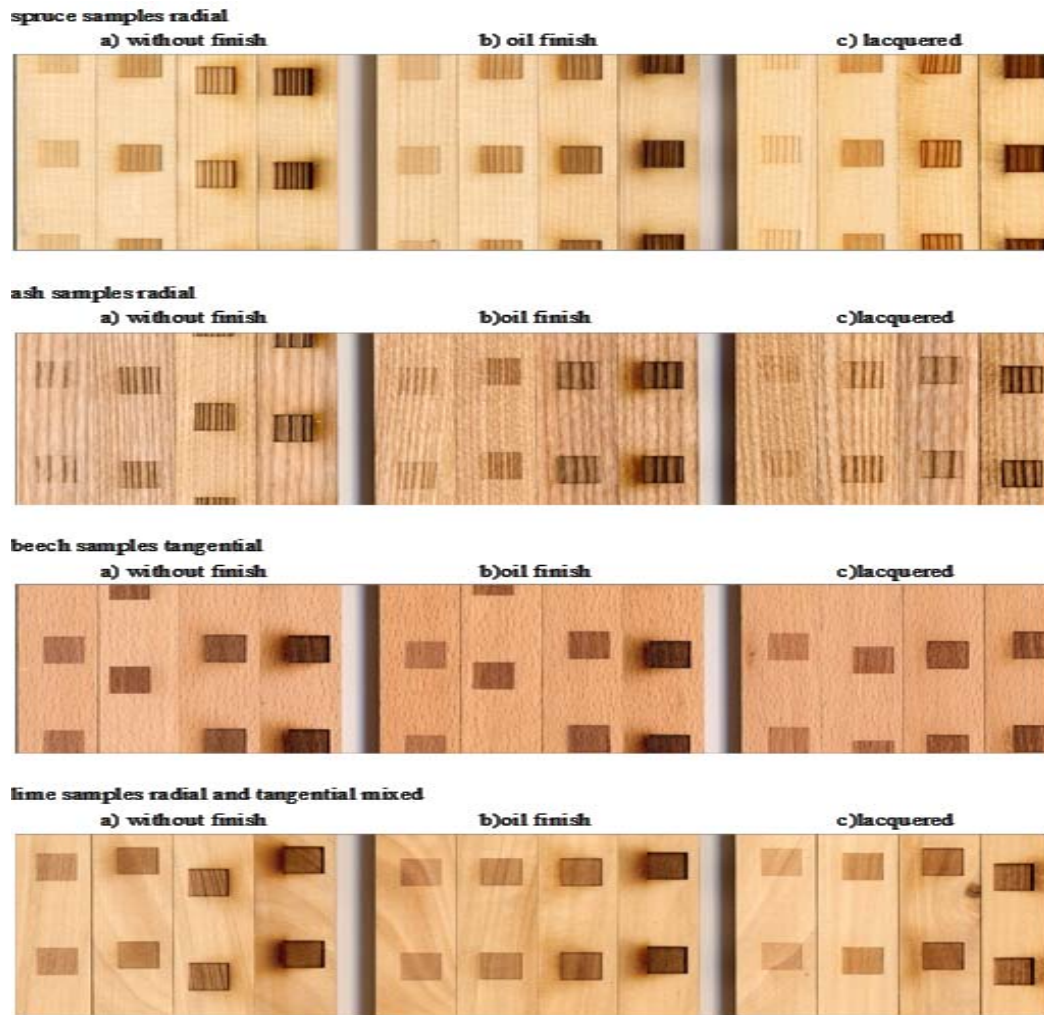


Figure 1: Images of laser treatments on the wood species with different laser intensities and wood surface treatments.

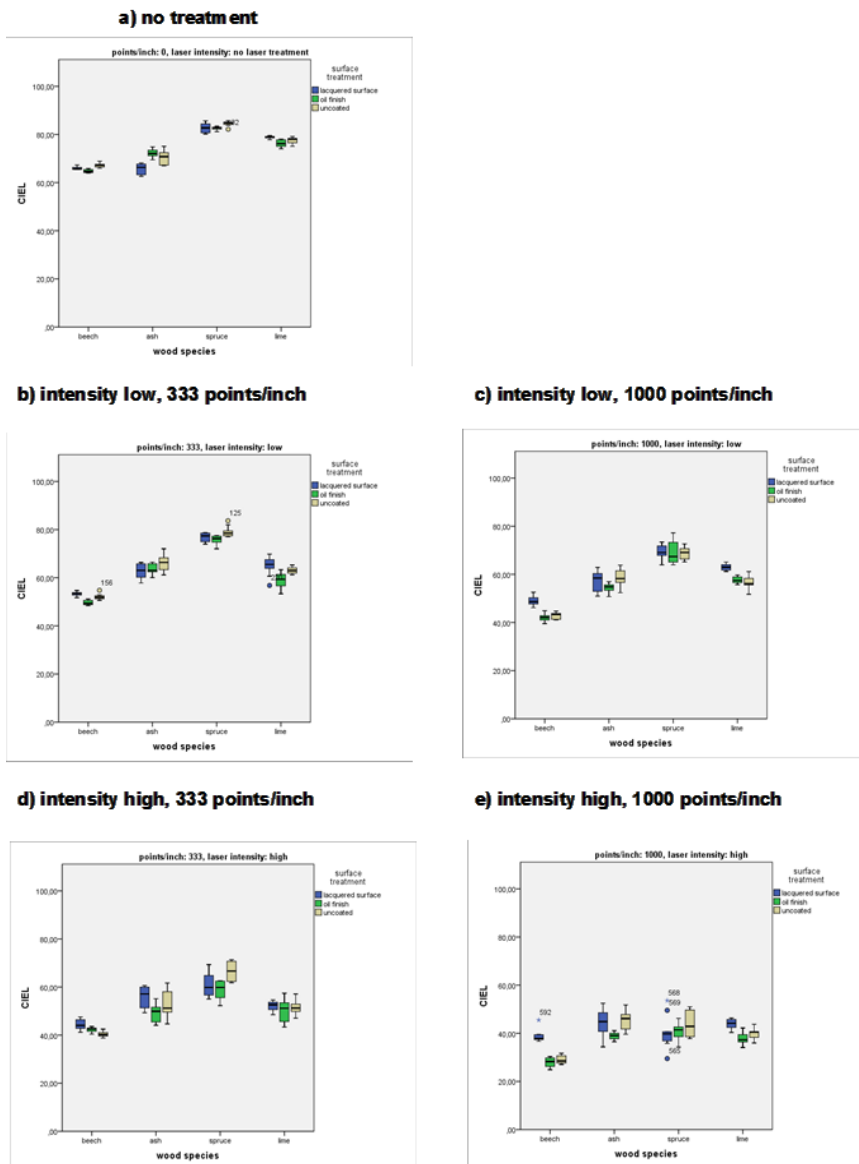


Figure 2: Results of the CIEL value measurement for the tested wood species (separately for the different laser parameter settings)