SUMMARY

The aim of this thesis was to investigate the effect of veneer properties on adhesive bond formation and performance, while analyzing the results in comparison of Estonian hardwoods. The studied species were birch, aspen and black alder. Aspen and black alder have been less utilized in veneer composites next to birch, and so far, less is known about their behavior.

Veneers with different log soaking temperatures and ages were characterized by surface roughness and contact angle measurements. Adhesive bonds were formed and tested using the Automated Bonding Evaluation System (ABES). The bonding process variables investigated were adhesive spread rate, assembly time and pressing time. Phenol-formaldehyde and lignin-phenol-formaldehyde adhesives were compared. It was found that the studied Estonian hardwoods result in different surface qualities in regard to veneer preparation, and show different bonding behavior. The work was useful for generally mapping the properties of the wood species; however, further research is needed to explain the relations between the properties and their effect on bonding more precisely. The study indicated that adhesives interact differently with veneers of various species and preparations. Therefore, it is important to know the history of the substrate material for reliable interpretation of adhesive testing results.

Keywords: veneer processing, surface properties, adhesive bond strength, ABES, master thesis.