

### **7.2.1: Laminates and Coatings - Cold Temperature, High Pressure, and Modifications for Product Improvement**

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#### **Abstract:**

To stay competitive, the wood industry has to innovate and develop new surface protective systems for wood and wood based products. Many applications of wood products are determined by this special surface properties, which are influenced by the nature of surface material, processing parameters and usage conditions.

High-pressure decorative laminates (HPL) are a practical solution for horizontal or vertical surfaces that require high physical, mechanical and chemical performances, with a high versatility and excellent decoration ability. However, durability and reliability of the polymeric layer is still problematic because these materials are susceptible to induced damage when exposed to critical conditions or long-term use, and may develop microcracks with negative visual impact. A possible solution for this problem may be development of HPL with self-healing properties that it has the ability to regenerate microcracks independently of their location. The aim of this work was study the self-healing performance of a commercial polyurethane dispersion (PUD). The commercial PUD was applied as a coating on a finished HPL (like a regular varnish), as a coating on melamine impregnated paper and then pressed (1st bath of paper: melamine resin, 2nd bath: PUD) and as an overlay paper impregnated with PUD and then pressed. HPL were scratched by a steel wool and a knife. Buchholz hardness was studied too. The best self-healing performance occurred for “varnish” approached and for steel wool damage. Buchholz hardness of these HPLs was always lower than in case of a standard melamine HPL.