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Drying of energy wood by compression

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This study investigated the compression drying of energy wood in the form of sawdust. The test was carried out on freshlyfelled Scots pine (*Pinussylvestris*), Norway spruce (*Piceaabies*) and Downy birch (*Betulapubescens*). The compression pressure (6–38 MPa) and time (0–60 s) were adjusted in the experiments; it was found that pressure had more of a pronounced effect on dewatering than pressing time. When the compression holding time was zero, the highest drying rate reached for spruce was 25 percentage units and the second highest was 24 percentage units for pine using 38 MPa. The use of a holding time increased the drying effect by 1.0–2.3 percentage units. The lowest moisture content from all the tests, 30% (wet basis), was achieved for birch by continuous pressing using 38 MPa and with a pressing time of 30 s. The result was 7 percentage units above the fiber saturation point. Increasing the maximum compression pressure in the tests improved dewatering, but the improvement lessened with higher pressures. The energy consumption of compression drying is only a fraction of the energy required to vaporize water in thermal drying. The energy consumption for Scots pine and Norway spruce was almost the same, but the downy birch, due to its denser and stronger wood, required more energy than the softwoods.

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