

A NOTE ON THE ESTIMATION OF BASIC DENSITY OF FRESH WOOD CHIPS

D. J. COWN

Forest Research Institute, New Zealand Forest Service,
Private Bag, Rotorua, New Zealand

The basic density of wood chips is an important economic consideration in several industrial operations, e.g., pulp production, particleboard manufacture, and the transport of wood in chip form. Various methods have been proposed for measurement of chip density (Smith 1961; Harder 1976; Balodis *et al.* 1980) and international standards have been developed (*Tappi T18 m-53* and *Appita Pls-79*).

Most methods have been designed to cope with wood at various moisture contents from air-dry to green, and thus require that the material be soaked before wet volume determination. This procedure usually involves a vacuum treatment and a soaking period of several days, after which the samples are centrifuged or hand-dried to remove excess surface water. After volume measurement by water displacement the chips are oven-dried and re-weighed.

At the Forest Research Institute (FRI) wood billets for pulping studies are normally chipped when green and the wood is used almost immediately in experiments. Chip densities derived by the soaking and oven-drying process were found to be consistently 2-8% lower than solid wood densities from the same billets. An investigation of the influence of soaking on the green chip volume of radiata pine (*Pinus radiata*) and New Zealand silver beech (*Nothofagus menziesii*) revealed that both heartwood and sapwood samples increased in volume after treatment. The average increase was between 2 and 3% but individual chips showed values of up to 5%. Subsequent trials with soaked and unsoaked chip samples showed that the more accurate data were obtained using the untreated chips, leading to the conclusion that an extended soaking period is neither necessary nor beneficial when the samples are green. In fact, it may be a definite disadvantage with species which contain a significant portion of water-soluble extractives (Balodis *et al.* 1980).

At FRI, chip densities are now carried out routinely on fresh unsoaked samples with very satisfactory results (Fig. 1), using a method similar to that described in the Canadian Pulp and Paper Association Standard A.1H.

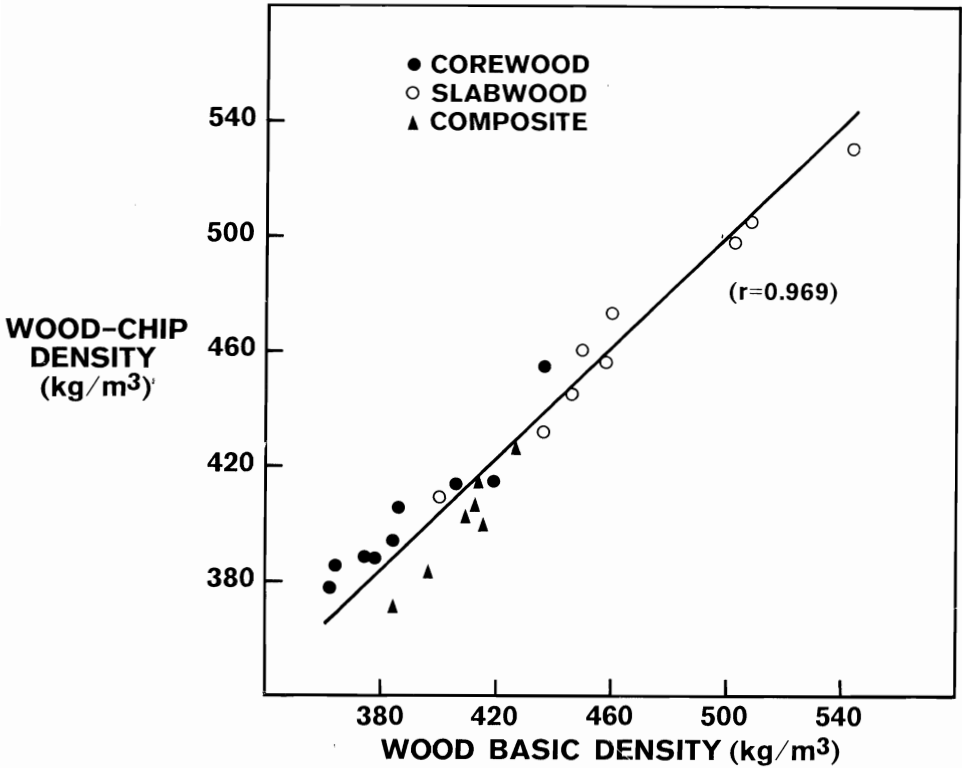


FIG. 1—Wood-chip densities for corewood, slabwood, and composite samples.

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