Production of high-performance low density fibreboard from co-refined rubberwood-kenaf core fibres

ABSTRACT

A 50:50 kenaf core to rubberwood ratio were used to fabricate low-density fibreboards. Firstly, the fibres were co-refined at 180 °C for 10 min. Refined fibres were sieved on six levels of size distribution. Results on fibre size distribution concluded that the co-refined fibres were similar in size, in comparison to commercial rubberwood fibres. Low-density fibreboards were fabricated using the admixture of both rubberwood and kenaf core fibres. The results showed that board density played a greater role in producing high quality lightweight fibreboard rather than resin content. The study also revealed that low density fibreboards with acceptable properties could be successfully produced. Low-density fibreboards (550 kg m-3) had comparable physical and mechanical properties to those of commercial MDF (720 kg m-3). Nevertheless, a slightly higher resin content of 14% is needed, in comparison to the commercial MDF. Combining kenaf core and rubberwood fibres improved the internal bonding strength significantly. A total of 80% of the low-density fibreboards produced in this study passed the British Standard 622-5: 2009 even at a board density as low as 350 kg m-3.

Keyword: Light density fibreboard; Rubberwood; Kenaf core; Physical; Mechanical