

Kajian eksperimental genteng hasil daur ulang kotak minuman dengan ukuran cacah campuran 75mm x 5mm dan 25mm x 5mm = experimental investigation of roof tile made from recycled shredded beverage carton using two combined size 75mm x 5mm and 25mm x 5mm

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Abstrak

Bahan aseptik merupakan material yang sulit untuk didaur ulang, dan proses daur ulangnya harus dengan cara hydra pulping (pemisahan lapisan) dimana dibutuhkan biaya yang cukup mahal sehingga jarang sekali dimanfaatkan untuk didaur ulang.

Skripsi ini membahas mengenai genteng yang terbuat dari proses daur ulang cacah kotak aseptik dengan ukuran cacah campuran 75mm x 5mm dan 25mm x 5mm dengan persentase perbandingan berat 50%:50%. Genteng ini dibuat dari bahan dasar aseptik kemasan minuman kotak yang terdiri dari kertas, plastik dan alumunium. Kotak aseptik dicacah dan dikempa dengan tekanan 30 kg/cm² dan suhu pemanasan $\pm 170^{\circ}\text{C}$, sehingga terbentuk genteng dengan ukuran cacah campuran 75mm x 5mm dan 25mm x 5mm (50%:50%) dan genteng ukuran cacah 50mm x 5mm (100%) sebagai pembanding utama. Dari penelitian ini, hal yang ditinjau adalah sifat fisis dan sifat mekanis genteng berupa kemampuan menyerap air, ketahanan terhadap rembesan air dari genteng daur ulang dan kemampuan genteng daur ulang dalam menerima beban lentur, sehingga dapat dijadikan produk genteng.

Berdasarkan hasil penelitian, didapatkan kesimpulan bahwa genteng dengan ukuran cacah campuran 75mm x 5mm dan 25mm x 5mm belum dapat memenuhi persyaratan peraturan genteng beton SNI-0096-2007 dan genteng keramik SNI-2095-1998. Namun genteng dengan ukuran cacah campuran 75mm x 5mm dan 25mm x 5mm (50%:50%) jika diberi lapisan kawat nyamuk alumunium (alumunium wiremesh/insect screen) serta lapis cat waterproofing, ternyata meningkatkan kemampuannya dalam menahan beban lentur dan dalam menahan daya serap air, sehingga dapat masuk kategori kualitas genteng mutu 3 SNI-2095-2998: Tentang Genteng Keramik

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Aseptic carton material is difficult material to be recycled where the only possible recycling process available is by conducting hydra pulping process (separation layer). Aseptic beverage box consist of paper, plastic and alumunium layer. However as it requires a significant financial cost, it is rarely used for recycling.

This final project discusses the investigation of roof tile which was made from the recycling of aseptic boxes. For the roof material shredded aseptic boxes of size 75 mm x 5 mm and 25 mm x 5 mm were mixed with a percentage ratio of weight 50% : 50% was used. Another mix using 100% of size 50 mm x 5 mm was utilized as a main comparison material. Shredded aseptic boxes were compressed with a pressure of 30 kg/cm² and heating temperature $\pm 170^{\circ}\text{C}$ in order to make solid roof tile. This research has

reviewed the . tile absorption to water, the resistance to water ingress and its flexural strength.

The result showed roof tile made from recycled shredded beverage carton using twocombined size 75 mm x 5 rnm and 25 mm x 5 mm doesn't fulfill the requirements of concrete tile regulation SNI-0096-2007 and ceramic tile regulation SNI-2095-1998. However bending strength of tile has been improved when a layer of aluminum insect screens (aluminum wiremesh) was placed inside the the tile and the resistance to water was also improved by coating the tile with waterproofing material. It's ability to withstand water and bending loads are better, thus the improved tile can be categorize as quality tile grade 3 SNI-2095-2998:Tile Ceramic Regulation.