

Polystyrene adalah jenis plastik yang biasa dikenal sebagai gabus putih dan pada umumnya digunakan sebagai pembungkus barang-barang elektronik. Masalah yang di hadapi dalam penggunaan *polystyrene* adalah pada limbah *polystyrene*-nya yang memiliki sifat sangat sulit untuk didaur ulang (*recycle*). Pemanfaatan limbah *polystyrene* merupakan upaya menekan pembuangan *polystyrene* seminimal mungkin. Salah satu bentuk pemanfaatan limbah *polystyrene* dengan pemakaian kembali (*reuse*) *polystyrene* sebagai agregat ringan di dalam campuran beton. Beton yang dihasilkan digolongkan beton ringan yang dapat digunakan sebagai partisi ruangan. Penelitian ini adalah untuk mengetahui kuat tekan, berat isi, daya serap beton *polystyrene*, modulus elastisitas beton ringan *polystyrene* dengan campuran serat ijuk, juga untuk mengetahui kuat lentur, kuat tekan, dan klasifikasi panel dinding beton *polystyrene* dengan variasi ukuran panjang serat ijuk berdasarkan berat jenis dan kuat tekan yang dihasilkan.

Penelitian ini merupakan penelitian eksperimental. Penelitian dilakukan di Laboratorium Pusat Studi Ilmu Teknik, Universitas Gadjah Mada. Penelitian ini menggunakan 10 benda uji panel *polystyrene* dengan dimensi panjang x lebar x tinggi adalah 80 cm x 30 cm x 0,5 cm. Berbagai variasi serat ijuk digunakan dengan jumlah 2% terhadap berat kebutuhan semen setiap benda uji. Pembuatan panel dinding dilakukan melalui proses pengempaan 2 MPa dengan *polystyrene* 100%, semen per m³ sebanyak 200 kg, dan fas 0,3. pengujian benda uji panel dinding *polystyrene* mengacu pada SNI 03-3122-1992.

Analisis dalam penelitian ini menggunakan uji tekan, uji lentur, uji serapan air, uji kadar air. Hasil penelitian ini menunjukkan bahwa campuran beton ringan *Polystyrene* dengan serat ijuk untuk ketebalan 5 mm tidak memenuhi sebagai panel dinding rangka. Pengempaan beton *polystyrene* memberikan pengaruh terhadap kuat tekan beton *polystyrene*. Semakin tinggi pengempaan maka berat isi beton *polystyrene* semakin tinggi. Semakin tinggi pengempaan beton akan mengurangi kadar air beton *polystyrene* karena benda uji semakin padat. Pada tingkat pengempaan yang sama semakin tinggi serat ijuk, kadar air beton *polystyrene* semakin tinggi. Serat ijuk dapat menaikkan kuat tekan beton sekitar 0,127%, semakin banyak kandungan serat ijuk, berat isi beton semakin tinggi

Kata kunci: *polystyrene*, serat ijuk, panel dinding



Polystyrene, also known as white foam, is generally used as electronic's wrap to prevent damage of the electronics. However, polystyrene still become a problem since it's waste can not be breakdowned and hardly to be recycled. Polystyrene utilization is an effort to suppress the formation of polystyrene waste as minimum as possible. An example of polystyrene utilization is by reusing the polystyrene as a light mixture in the concrete. The mixture is further classified as light concrete and can be used as the room partition. This research aim to determine the compression strength, weight, water absorption ability of polystyrene concrete, elasticity modulation of polystyrene concrete with palm fibers. This research is also aimed to determine the flexural strength, compression strength, and to classify the polystyrene-concrete panels based on the variation of palm fiber's length, and based on specific gravity and compression strength.

This is an experimental research. The research was held in Pusat Studi Ilmu Teknik Laboratory, Gadjah Mada University. The research used 10 polystyrene panel testing objects with the measurement in length x width x thickness is 80 cm x 30 cm x 0,5 cm. Several variation of the palm fibers was used in the concentration 2 % of the concrete in each testing object. Polystyrene 100%, concrete in amount of 200 kg per m³, fas 0,3, with the 2 MPa compression force were used to form the wall panels, and used a compression method to make it. The testing of the polystyrene panels is based on the SNI 03-3122-1992.

This research used compression testing, flexural testing, water absorption testing, and water concentration testing as the analysis method. The result of this research shows that the mixture of polystyrene concrete and palm fibers on 5 mm thickness cannot be used as wall panel construction. Compression on the polystyrene concrete gives influence on polystyrene concrete's compression strength. The stronger the compression, the bigger the polystyrene concrete weight will be. The stronger the concrete's compression, the fewer water concentration of the polystyrene concrete will be because of the testing objects get solid. On the same compression force, the higher concentration of the palm fiber, the higher the water concentration will be. Palm fiber increase the concrete's compression strength. The more the concentration of the palm fibers in the concrete, the more of the concrete weight will be.

Keyword: polystyrene, palm fiber, wall panel