

ABSTRACT

Amount of housing needs of up to one million units per year and as one of the countries that are often affected by earthquake disaster become the main focus for the people and Indonesian government to build a simple, fast and safe houses. One way it to use panel walls. To increase the strength of the panel walls it will be test with the addition of plaster and wiremesh. This study aims to determine the effect of adding plaster and wiremesh to compressive strength, flexural strength and impact of expanded polystyrene (EPS) sandwich panel walls.

This study uses precast specimen expanded polystyrene panel wall with a length of 1800 mm, width 610 mm and thickness of 75 mm was made 27 specimens. The specimens consist of 3 variations, plain expanded polystyrene panel walls, panel walls with plaster addition of 1 cm and wiremesh with space of 1 cm, 2 cm. Each variation consists of 3 specimens for compressive load, Transverse Load and impact resistance based on SNI 03-3122-1992 concerning lightweight fibrous concrete panels.

The results of the average vertical compressive strength of expanded polystyrene panels and panels with the addition of plaster and wiremesh with space 1 cm, 2 cm obtained at 0.62 MPa, 0.77 MPa and 0.84 MPa, respectively. The compressive strength obtained does not meet the compressive strength required by SNI 03-3122-1992. The average horizontal flexural strength of expanded polystyrene panels and panel with the addition of plaster and wiremesh with space 1 cm, 2 cm obtained at 0.93 MPa, 1.50 MPa and 1.52 MPa, respectively. The flexural strength obtained has fulfilled the flexural strength required in SNI 03-3122-1992. The results of the study prove that the addition of plaster and wiremesh can increase the flexural strength of EPS sandwich panel walls. However, the addition and the difference space of wiremesh did not significantly influence the compressive strength of expanded polystyrene sandwich panel walls. Damage on expanded polystyrene panels with and without the addition of plaster and wiremesh on impact test was broken and has not fulfilled provisions of SNI 03-3122-1992, so it needs further examination.

Keywords: *expanded polystyrene panel walls, plaster and wiremesh, compressive strength, flexural strength, impact.*

ABSTRAK

Besarnya kebutuhan rumah tinggal mencapai satu juta unit pertahun dan sebagai salah satu negara yang sering terkena dampak bencana gempa bumi menjadi fokus utama bagi masyarakat dan pemerintah Indonesia mengusahakan pembuatan rumah sederhana yang cepat dan aman. Salah satu cara dengan menggunakan dinding panel. Untuk meningkatkan kekuatan dinding panel tersebut dilakukan penambahan plesteran dan kawat loket. Penelitian ini bertujuan untuk mengetahui pengaruh penambahan plesteran dan kawat loket terhadap kuat tekan, kuat lentur dan ketahanan pukul dinding *sandwich* panel *expanded polystyrene* (EPS).

Benda uji berbentuk dinding panel EPS pabrikasi (*precast*) dengan ukuran panjang 1800 mm, lebar 610 mm dan tebal 75 mm sebanyak 27 benda uji. Terdiri dari 3 variasi yaitu dinding panel EPS polos, dinding panel EPS dengan penambahan plesteran 1 cm dan kawat loket spasi 1 cm, 2 cm. Setiap variasi terdapat 3 benda uji untuk pengujian tekan vertikal, lentur horizontal dan ketahanan pukul (*impact*) sesuai ketentuan yang terdapat pada SNI 03-3122-1992 tentang panel beton ringan berserat.

Hasil kuat tekan vertikal rata-rata dinding panel EPS Polos dan panel penambahan plesteran dan kawat loket 1 cm, 2 cm berturut-turut diperoleh sebesar 0,62 MPa, 0,77 MPa dan 0,84 MPa. Kuat tekan yang diperoleh belum memenuhi nilai kuat tekan yang disyaratkan pada SNI 03-3122-1992. Kuat lentur horizontal rata-rata panel EPS polos dan panel penambahan plesteran dan kawat loket 1 cm, 2 cm berturut-turut diperoleh sebesar 0,93 MPa, 1,50 MPa dan 1,52 MPa. Nilai kuat lentur yang diperoleh sudah memenuhi nilai kuat lentur yang disyaratkan pada SNI 03-3122-1992. Hasil penelitian membuktikan penambahan plesteran dan kawat loket mampu meningkatkan kuat lentur dinding *sandwich* panel EPS. Namun, penambahan dan perbedaan spasi kawat loket tidak berpengaruh signifikan terhadap peningkatan kuat tekan dinding *sandwich* panel EPS. Kerusakan panel EPS dengan dan tanpa penambahan plesteran dan kawat loket pada pengujian ketahanan pukul (*impact*) berupa patah dan belum memenuhi ketentuan SNI 03-3122-1992, sehingga perlu dilakukan pemeriksaan lebih lanjut.

Kata kunci: dinding panel *expanded polystyrene* (EPS), plesteran dan kawat loket, kuat tekan, kuat lentur, ketahanan pukul.