

# PEMANFAATAN LIMBAH STYROFOAM (EXPANDED POLYSTERENE) UNTUK PEMBUATAN DINDING STRUKTURAL BETON RINGAN RAMAH LINGKUNGAN

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## ABSTRACT

*This research study about usage of expanded polysterene for wall structure with strengthening of net wire. Styrofoam has very light weight unit which is about  $13 \text{ kg/m}^3$  up to  $15 \text{ kg/m}^3$ . Lightweight concrete from expanded polysterene is an effort of utilising it as an alternative in the structure of lightweight walls.*

*In this research, used 12 specimens of lightweight walls which were sandwich wall reference (DSK.H<sub>1</sub>-H<sub>6</sub>) has core dimension 80mm and sandwich wall polypropylene fiber (DS.l<sub>1</sub>-l<sub>6</sub>) with variation  $0.5\text{kg/m}^3$ ;  $1.0\text{kg/m}^3$ ,  $1.5\text{kg/m}^3$  respectively. It has core 70mm, 80mm, 90mm in dimension. The dimension of lightweight wall were  $\pm 530$ , 400 and 120mm. Every variant consists of 2 wall, the type of load applied were compression, tensile and flexure. The data then analyzed with quantitative descriptive method.*

*The test result showed that the average of compressive strength and tensile splitting test of self compacting mortar using fibres  $0\text{kg/m}^3$ ,  $0.5\text{kg/m}^3$ ,  $1.0\text{kg/m}^3$ ,  $1.5\text{kg/m}^3$  which were 12,45MPa, 10.38MPa, 12.24MPa, 9.49MPa and were 1.54MPa, 1.28MPa, 1.41MPa and 1.08MPa respectively. The addition of polypropylene fibers were not influence compared with reference cylinder with  $0\text{kg/m}^3$  fibers.*

*The composition of the addition of polypropylene fiber will optimum of  $1,0\text{kg/m}^3$  in volume. The core and plastering effective were the results 80mm and 20 mm, that the dimensions can increase the capacity of load 6.92%. The value of the maximum load capacity of walls on sandwich styrofoam is of 22.86kN on the addition of polypropylene fibers  $1.0\text{kg/m}^3$  in volume.*

**Keyword:** Sandwich Styrofoam, Lightweight concrete, polypropylene fibers