**Crack Pattern of Lightweight Concrete Under Compression and Tensile Test**

**H. Parung1, M. Tumpu1, M. W. Tjaronge2, A. A. Amiruddin2 M. A. Walenna1 and Mansyur3**

1Lecturer, Disaster Management, Graduate School, Universitas Hasanuddin

2Lecturer, Civil Engineering Department, Engineering Faculty, Universitas Hasanuddin

3Doctoral Course Student, Civil Engineering Department, Engineering Faculty, Universitas Hasanuddin

Email : [parungherman@yahoo.co.id](mailto:parungherman@yahoo.co.id)

**ABSTRACT**

Foam concrete is a type of lightweight concrete composed of cement paste or mortar with air spaces or structural pores formed by the addition of a foaming agent to the mixture. The purpose of this research is to examine the crack pattern of lightweight concrete under compressive and tensile loads. Portland composite cement, fine aggregate, and foam were used to create a foam concrete specimen. The foam created by a 3:10 ratio of foam agent to water. The foam volume variations used were 15.7 liters, 25.12 liters, and 37.68 liters, respectively. A cylinder measuring 10 cm x 20 cm was used as a specimen. The crack pattern of lightweight concrete was evaluated using compressive and indirect tensile strength tests at curing ages of 3, 7, and 28 days. The results showed that the crack pattern for the compressive and indirect tensile strength tests was nearly identical; the crack pattern was parallel to the load direction, so it was classified as a columnar crack pattern at 3, 7, and 28 days. The occurrence of crack patterns in lightweight concrete decreased with age. It can be concluded that the resistance of concrete increases with age.

Keywords : lightweight concrete, crack pattern, compressive load, tensile load