

*An Experimental Study on the Fracture Energy of Foamed Concrete Using V-Notched Beams*

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In recent years, foamed concrete has experienced a lot of revolutions as an alternative replacement of normal concrete in structural engineering. A low range of densities of foamed concrete can be obtained for various applications. The main advantages of foamed concrete as structural component are its characteristics as high strength with low density, good serviceability and lightweight. Therefore, many interests and studies were conducted to investigate the strength and mechanical properties of foamed concrete. These studies, however, not consider the investigation on fracture energy of foamed concrete which is the main parameter that govern the damage and crack mechanisms. The objective of this study is to experimentally investigate the fracture energy of foamed concrete using beam specimens with V-notch under the three-point bending test.

Beam specimens of foamed concrete with densities  $1400\text{kg/m}^3$  and  $1600\text{kg/m}^3$  were casting and prepared. The V-notch was designed with length 30mm and located at the center of beam. Beam specimens were assessed to obtain the strength-displacement profiles. Consequently, fracture energy was determined based on Hillerborg, Bazant and CEB models. It was found that the cracks propagate from the finger tip of notch to upper surface of beam. Surprisingly, the fracture energy of foamed concrete with compressive strength 6.4MPa and 14MPa are relatively high around 18N/m to 25N/m. Furthermore, the fracture energy of foamed concrete is only a fraction of fracture energy of normal concrete.

fracture energy; foamed concrete; beam V-notch; three-point bending test