World Academy of Science, Engineering and Technology
International Journal of Geological and Environmental Engineering
Vol:16, No:05, 2022

Toughness of a Silt-Based Construction Material Reinforced with Fibers

Authors : Y. Shamas, S. Imanzadeh, A. Jarno, S. Taibi

Abstract : Silt-based construction material is acknowledged since forever and lately received the researchers' attention more than before as being an ecological and economical alternative for typical cement-based concrete. Silt-based material is known for its worldwide availability, cheapness, and various applications. Some rules should be defined to obtain a standardized method for the use of raw earth as a modern construction material; but first, its mechanical properties should be precisely studied to better understand its behavior in order to find new aspects in making it a better competitor for the cement concrete that is high energy-demanding in terms of gray energy. Some researches were performed on the raw earth material to enhance its characteristics as strength and ductility for their importance and their wide use for various materials. Yet, many other mechanical properties can be used to study the mechanical behavior of raw earth materials such as Young'smodulus and toughness. Studies concerning the toughness of material were rarely conducted previously except for metals despite its significant role associated to the energy absorbed by the material under loading before fracturing. The purpose of this paper is to restate different toughness definitions used in the literature and propose a new definition.

Keywords : silt-based material, raw earth concrete, stress-strain curve, energy, toughness
Conference Title : ICEMC 2022 : International Conference on Earth Materials and Construction
Conference Location : Paris, France
Conference Dates : May 16-17, 2022