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**Influence of particle diameter in mechanical performance of Al expanded clay syntactic foams**

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**Abstract**

The present research shows the use of Lightweight Expanded Clay (LECA) as a space holder to obtain an aluminium based syntactic foams manufactured by gravity casting assisted by mechanical vibration. Results show that higher LECA particle diameters enhance yield strength, strain densification value and compression energy, although there is a tendency for property stabilization according to an exponential rise to maximum function. It is suggested that when particles with diameters higher than 7 [mm] are employed, the referred properties tend to 32.21 [MPa], 0.43 [-] and 32.22 [MJ/m<sup>3</sup>] in what concern to strength, strain densification value and compression energy, respectively. In conclusion, this kind of composite shows properties that may be advantageous and viable for future low-cost and lightweight casted structural components.

**Keywords:** Syntactic foams; Casting vibration; Aluminium alloy; Expanded Clay; Lightweight.

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