

**STUDY OF ICA DIATOMITES AS A RAW MATERIAL IN THE MANUFACTURE OF ARTIFICIAL ARIDS OF CLAY FOR USE AS LIGHT AGGREGATES IN CONCRETE MIXTURE DESIGNED BASED ON THE NTP AND ASTM REQUIREMENTS**

Jamie Galvez-Alvarado, Carlos Barzola-Gastelú, Rosmery Gómez-Minaya, Ana Torre-Carrillo

**ABSTRACT**

The present study was developed in order to reduce the unit weight of concrete through the use of artificial lightweight aggregate, as a replacement for conventional aggregates (stone and sand of natural origin). The investigation examines the sintered diatomite material at temperatures above 1000 °C as a light aggregate proposal. This material has an approximate unit weight of 60 % of corresponding to conventional aggregates. The diatomite that forms the raw material for the manufacture of this aggregate was studied under the same quality standards used in conventional aggregates, in compliance with ASTM and NTP standards. The results obtained show cooked diatomite aggregates with average compressive strengths of 45 MPa, unit weights of 970 kg/m<sup>3</sup> for coarse aggregate and 1170 kg/m<sup>3</sup> for fine aggregate in addition to chemical resistances according to the requirements of ASTM C1260 - 14. In concrete tests with diatomite aggregate, unit weight values were found around 1785 kg/m<sup>3</sup>, showing an adequate compression behavior for design resistance  $f_c$  of 21 MPa.

**Keywords:** Diatomite, Artificial Aggregate, Sintering, Refractory Materials, Burning, Concrete, Lightweight.

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