# INCORPORATION OF RESIDUAL AND RECYCLABLE AGGREGATES TO STRUCTURAL INPUTS OF CONSTRUCTION AS AN ECOLOGICAL STRATEGY

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**RESUMO**

The use of recyclable aggregate for materials such as bricks, tiles, mortar, among other inputs for construction demonstrates a great ecological benefit by enabling the reduction of the volume of waste through reuse and financial benefit due to the decrease in the demand for industrialized raw material of the sector construction and, in addition to these, economic and energy advantages are also observed in relation to the destination of the constituents for the recycling industry. Depending on factors such as composition of the processed waste, equipment used, percentage of impurities, particle size of the aggregate and the matrix, among others, the ecological input (blocks, mortar, concrete) can also have very advantageous specific properties such as durability, impermeability or resistance mechanics. Several studies treat with the testing of new ecological materials or the evaluation of the properties of materials with a well-known application; for certain applications, there is even a technical regulatory standard for the use of recyclable aggregate materials, such as paving and concrete applications without structural functions; however, much remains to be clarified as to the relationship between structural properties and the nature of the aggregate, which in the future will enable its use for adverse purposes of the current ones. In order to study advances in the area of reuse of discarded materials, a survey was carried out with the intention of observing the most recent advances associated with the use of recyclable, non-recyclable plastics and construction waste. The data indicate that there is an annual consumption in Brazil of approximately 250 billion units of PET bottles (ABIPET, 2011); however, there are no significant figures that point to such initiatives in the scope of civil construction as adding or replacing part of the fine aggregate with recycled PET bottles. Studies on the addition of crushed PET in the manufacture of ceramic blocks have shown excellent results when subjected to absorption and compression tests compared to the same tests with conventional ceramic blocks. According to DOS SANTOS; 2020, demolition debris, when applied to concrete, allows the production of blocks with quality standards within the commercial criteria, but they do not have resistance to minimal compression so that there is vehicle transit; expanded polystyrene presents considerable permeability, greater resistance and lightness in relation to other specimens, being suitable for use on interlocking floors. The results demonstrate the environmental benefits of the use of recyclable constituents for making construction inputs due to the possibility of reducing the volume of material discarded in landfills and dumps; lower energy expenditure in relation to the traditional destination of aggregate component materials and lower cost of civil construction works. In some situations, the need for a more accurate sorting process and the subdivision of the applied waste led to an increase in the production cost, which may even make it economically unfeasible or the tests demonstrated inadequacy for certain applications.

**PALAVRAS-CHAVE**: ceramic blocks, concrete, ecological aggregates, construction, sustainability

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