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ENVIRONMENTAL IMPACT ASSESSMENT FOR TRADITIONAL VERSUS RECYCLED ROAD ASPHALT MIXTURES

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Abstract

The evaluation of the environmental impact of transport infrastructure entails a complex characterization of factors, attitudes and consequences. In the frame of an ecologically friendly approach, sustainable alternatives and solutions for road asphalt pavements production and exploitation must be identified. A comparative evaluation of the environmental impact for recycled and traditional road pavements asphalt mixtures, expressed as the amount of equivalent carbon dioxide, per ton of mixture has been carried out in the present study. The Life Cycle Assessment (LCA) methodology, used to perform the evaluation, has been divided into two analytical perspectives, “cradle to site” and “cradle to grave”. The application of this methodology in road engineering proved its usefulness by pointing out the consequences of the construction process on the environment. For a proper analysis and reliable results, have been used two computer software that support the LCA methodology, asPECT (asphalt Pavement Embodied Carbon Tool) and PRAS (Pavement Rehabilitation Analysis System). The analysis intended to highlight the benefits of the recyclability process, the applicability of LCA methodology on the environmental impact of Reclaimed Asphalt Pavement (RAP), resulted from the road construction process. As a main outcome, the research found that by enforcing sustainability to the transport infrastructure sector, the environmental effect will have a positive trend due to the reductions obtained in kg carbon dioxide equivalent (CO₂e) emissions.

Key words: carbon footprinting, environmental impact, LCA methodology, road pavements

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