



**INVESTIGATION OF THE UTILIZATION OF POLYVINYL ALCOHOL AS SURFACE
TREATMENT IN MORTARS USING END-OF-LIFE TIRE**

Asena Karshođlu Kaya

Institute of Graduate School, Engineering Faculty, Civil Engineering, Eskiřehir Technical University, Eskiřehir,
Türkiye
0000-0001-5178-4069

Mehmet İnanç Onur

Engineering Faculty, Civil Engineering, Eskiřehir Technical University, Eskiřehir, Türkiye
0000-0002-2421-4471

ABSTRACT

This study explores the potential benefits of employing polyvinyl alcohol (PVA) as a surface treatment in mortars incorporating end-of-life tire (ELT) particles. The investigation focuses on assessing the mechanical, physical, and thermal properties of cementitious mortars with the incorporation of PVA and end-of-life tire materials. The research aims to enhance the sustainability and performance of mortars by utilizing waste materials and innovative surface treatments. The mechanical properties of the mortars were evaluated through compressive strength, flexural strength, and tensile strength tests. The addition of end-of-life tire particles with PVA exhibited notable effects on the strength characteristics of the mortars. The physical properties, including porosity, density, and water absorption, were examined to understand the material's structural integrity and durability. The study also delved into the thermal behavior of the mortars using techniques such as thermal conductivity and thermal expansion analysis. Results indicate that the incorporation of PVA as a surface treatment contributes to improved mechanical strength, reduced porosity, and enhanced durability of the mortars. The synergy between PVA and end-of-life tire particles demonstrates promising outcomes in terms of sustainable construction materials. The study provides insights into the potential of utilizing waste materials for enhancing the performance of mortars, contributing to both environmental conservation and construction industry sustainability.

Keywords: ELT, PVA, Silica Fume, Surface treatment, Sustainability