

## MECHANICAL PERFORMANCE OF ALKALI ACTIVATED MIXTURES BASED ON ELECTRIC ARC FURNACE SLAG

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Nowadays there is a challenge to introduce different waste materials, generated by several areas of the industrial sector, in a valorisation chain, allowing it to play a more useful role, which is one of the premises of the circular economic paradigm. The main aim of the present work was to evaluate, through uniaxial compression and flexural strength tests, the mechanical performance of mixtures composed by electric arc furnace slag, aluminium anodizing sludge and phosphate sludge. The mixtures were activated with an alkaline solution, containing sodium hydroxide and sodium silicate, and were cured for 20 hours, at 80°C. The results of the investigation, which included a thorough characterization of the wastes, show that the addition of aluminium anodizing sludge and phosphate sludge decrease the compression strength, relatively to the mixtures prepared only with slag. Nevertheless, the strength values are still encouraging, justifying further research and, inclusive, opening the possibility of using such mixtures in specific applications, less demanding in terms of mechanical performance. The results obtained are seen as a key step to define the framework associated with this type of mixtures, in the development of applications that could be compatible with the strength levels achieved.