
CHEMICAL TREATMENT OF ELECTRIC ARC FURNACE DUST AND USE IN SYNTHESIS OF ZINC FERRITE

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This work presents a study on the use of solid inorganic residue from steel industry, electric arc furnace dust. The material in question is classified as a solid hazardous waste by various environmental protection agencies, representing high costs for companies that generate and risks to society and the environment. The development of research directed to the treatment of this material has been driven by the possibility of a better use of their associated economic potential, marked by the presence of elements of interest to some industry in reasonable quantities. The objective of this study was geared to realization of the process of chemical treatment of the waste, proposing the use of the recovered material as a base compound for the production of advanced ceramic Zinc Ferrite. The methodology developed in this process involved the use of a heated lixiviant solution for treatment of the residue, and use of a chemical synthesis route with different heat treatment conditions for obtaining the Zinc Ferrite. The results indicate that the treatment was able to extract of the composition of the material carbon, phases of lead and salt. The analysis of the number of synthesized samples enabled the definition of the appropriate conditions for obtaining the phase zinc ferrite, demonstrating that it is possible to produce this material in single phase with crystallite size in nano dimensions (16nm), from the recovered material. The research enabled the development of a process for the treatment and application of the material recovered in laboratory scale, envisioning the possibility of a destination for this material which enjoy their elementary potential associated.