

MATERIALS AND TECHNOLOGIES FOR SELF-SUSTAINED ENVIRONMENT

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The increase tendency of more rigid patterns of environmental control, as well as the necessity of efficient recourse management, has induced not only the good and service's surveyor but universities and research centers to development of new tools and methods which aim to aid on compression, control and/reductions of residues created by its productive process. In this sense the management of industrial hazardous waste and your safe destination, imply in very complex considerations by the environmental, sanitary, economic, industrial and marketing order, and are needed a solution in a close future.

Research activities at Materials Science and Technology Center are concerned to use the science materials and technologies of the processing related to attend the industrial process need to solve the final waste problem, like as control of production, inertization, recycling or incorporation in materials with economic value aggregated. Several industrial wastes like as galvanic slugs from metallurgical industries, residues from aluminum extractions of the mineral, constructions and demolition wastes and include the platinum recuperation from fuel cell technologies have been the aim of our studies.

The recycling and valuation of wastes coming from industrial processes has become, in a word-wide concern, very important in the last years and claim for a solution in a close future.

The vitrification of hazardous residues has been industrially applied as the treatment of radioactive wastes as the inertization of ashes from urban garbage incinerators. This process is available to incorporate simultaneously wastes from different sources in glass matrix. Besides the wastes may contribute with glass formers and improving its chemical resistance properties. Fine silica powder restrained in industrial filters and galvanic solid wastes from metalurgical process were chosed as start material to obtain glass silicate with good chemical stability. By using the phase equilibria diagrams to be possible to find the best fusion conditions compositions. The (FIG. 1 and 2) show the cross section of the samples from different series composition illustrating the surface aspect after the hydrolitic attack assay. Theses glasses with high concentration of galvanic waste incorporated show better resistance to the hydrolitic and alkaline attack than the common glass with the same basic composition. The complete inertization or the decrease of the health hamerful potential of both residues, the galvanic waste and the fine powder of silica for all the studied compositions were attained.

In Brazil the accelarated urbanization and rapid increase in density of medium and large sized cities has produced innumerable problems in the disposal of the large volume of residual waste created by construction of buildings and urban infrastructure projects (Construction and Demolition Wastes RCD), causing public officials to adopt more efficient solutions to manage liability (FIG.3).

The environmental socioeconomic results brought about by these businesses and their importance in the Integrated Management of the RCD, it shows that the principle obstacles for the consolidation of these undertakings and points out some alternatives for the final arrangement of the RCD with the main of sustainable urban development.

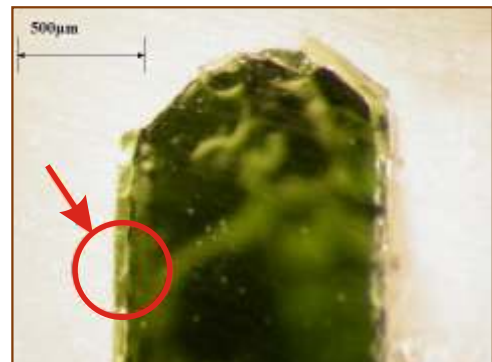


FIGURE 1 - Transversal section of the KFR10 sample with industrial waste after 14 days hydrolytic attack (mag.100X and 1,0 mm thickness).

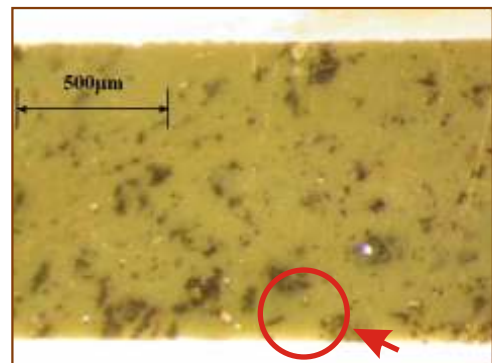


FIGURE 2 - Transversal section of the KFR40 sample after 14 days hydrolytic attack. (mag.100X and 1,0 mm thickness).



FIGURE 3 - Irregular disposal in S.Paulo south region.