

Use of rice rusk ash and spent catalyst as a source of raw material for the production and characterization of soda-lime silicate glasses destined for packaging

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In this study, the use of two industrial solid wastes (ISW), generated in large quantities in Brazil, were presented in production of soda-lime silicate glasses destined for packaging. The evaluated wastes were rice husk ash (RHA) and the spent catalyst at the Petrochemical Fluid Catalytic Cracking units (ECAT), both may be classified as a class II solid waste according to NBR 10.004. This new proposal for the allocation of such wastes is an alternative to current provisions, seeking not only to minimize environmental impacts, but also enrich them as raw materials. For the formulation of the glasses was taken as the base region of the equilibrium diagram of the $\text{Na}_2\text{O}-\text{CaO}-\text{SiO}_2$ system which corresponds to the commercial compositions. Then, for the production of the samples, besides ISW were used melting oxide (Na_2CO_3) and stabilizer oxide (CaO). The results demonstrate that both can be used in their raw form (without treatment) replacing important raw materials, sources of Al_2O_3 and SiO_2 , essential for glass formation. The samples obtained presented amber color due to the presence of nickel (Ni^{2+} ion) from ECAT. They also showed a good homogeneity, i.e., absence of bubbles and striae. Thus, the obtained glass is suitable for applications requiring low light transmittance such as colored glasses containers in general, which does not require perfect visibility and transparency. The authors thank Prof. Dr. José Roberto Martinelli (in memoriam), CNPq for scholarship and IPEN.

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