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WASTE SOLIDIFICATION USING CRT GLASS FOR RETARDATION OF HAZARDOUS ELEMENTS IN SPENT RESIN

Spent ion exchange resins were generated from TRIGA PUSPATI Reactor (RTP). Spent resins were used in water purification in nuclear facilities. Spent resins can be classified low level waste and intermediate-low level radioactive waste depend on concentration activity for water treatment and time taken for treatment. Generally, these spent ion exchange resins are used 10–15 times in nuclear reactor depending on the exchange capacity and regeneration efficiency. A new ion exchange resins will be used to replace resins which have been contaminated with radioactive. The RTP produces approximately 50 kg per year of spent ion exchange resins. Thus, a treatment and disposal method is needed due to continuous generation of spent ion exchange resins and limited storage capacity. According to IAEA, immobilisation is one of the effective ways to overcome this problem. Thus, in this research vitrification is applied. Spent resins were mixed with glass to produce glass waste form. From the result, the optimum composition of spent resins mixed with CRT glass were between 10% -15%. Then, the waste glass form was tested XRD to identify crystal in the sample. The waste glass form is amorphous phase. For chemical durability, leaching test had been conducted and used Product Consistency Test. The normalized released for B (0.001 - 0.006 g/m²) and Na (0.010–0.088 g/m²) and the result were within standard environmental-assessment glass which is for B (5.36–8.35 g/m²) and Na (4.28–7.61 g/m²). Then, these normalized releases were compared with previous study for ceramics glass waste form for B and Na which are 27.8 g/m² and 23.7 g/m², respectively.

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