Contribution ID: **43**   Type: **Poster**

DETERMINATION OF FLASH POINT, FIRE POINT, AND PENETRATION VALUE ON IMMOBILIZATION 88Sr(NO3)2 WITH ZEOLITE AS ION EXCHANGER USING POLYETHYLENE TEREPHTHALATE MATRIX AND POLYSTYRENE ADITIVE

Wednesday, 26 June 2019 16:15 (15 minutes)

The immobilization of 90Sr liquid waste simulated by 88Sr(NO3)2 solution with polyethylene terephthalate matrix mixed with a polystyrene additive had been carried out. These materials were selected due to its properties that is suitable for immobilization of radioactive waste. In addition, the usage of polyethylene terephthalate and polystyrene are able to reduce plastic waste. Zeolite was used to adsorp 88Sr. Polystyrene additive was varied to 10%, 20%, and 30%. Polyethylene terephthalate and polystyrene were heated at 250℃ for 20 minutes to melt. Zeolite which has adsorbed 88Sr(NO3)2 was added into the mixture and stirred to homogenous mixture. Then, the mixture was molded and cooled. Flash-fire point testing was performed with the Cleveland Open Cup whereas the penetration testing was carried out with a penetrometer. Results of the flash and fire point testing shown that there is an effect of adding polystyrene additive on the waste-polymer block. The highest thermal resistance is on the 30% polystyrene additive. The highest flash and fire point are (340.67 ± 0.58)℃ and (356.33 ± 0.58)℃, respectively. In a penetration testing, there isn't the effect of polystyrene additive because the test results 0 mm value for all variations. All of the above test results meet the specified standard (GOST/Russian's ANSI) or better than the average value of the previous product.

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Session Classification: Track 6 Poster Session

Track Classification: Track 6: Disposal