

## ABSTRACT

### *Non-Cement Geopolymer Concrete With Coarse Aggregate Iron Slag As An Anti-Radiation Material*

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*This research aims to analyze the use of iron slag as a substitute for coarse aggregate in geopolymer concrete as an anti-radiation material. In this program, 45 cylindrical 15 × 30 cm test objects were used. Treatment of the specimens was carried out by immersing them in a pool for 7 days, 14 days and 28 days. Variations in iron slag in this study were taken at 0%, 20%, 25%, 30% and 35%. The radiation test is carried out by exposing the test object to X-rays, which is carried out in the Radiotherapy room at the Dharmais Cancer Hospital, Jakarta. The results of radiation tests with a dose of 100 kV, geopolymer concrete with 35% iron slag was able to absorb 17.63% higher radiation than normal test objects without slag. Apart from that, the addition of iron slag with a content of 35% was able to reduce the reduction in compressive strength of concrete exposed to radiation. It was recorded that with 35% slag there was a reduction in compressive strength of 5.09% after radiation. Based on its specific gravity, geopolymer concrete with 35% iron slag produces a specific gravity of up to 3,162.34 kg/m<sup>3</sup>, or an increase of 31.76% from the specific gravity of normal concrete.*

*Keyword: geopolymer concrete, iron slag, compressive strength, radiation*