

## ABSTRACT

### **COMPRESSIVE STRENGTH OF GEOPOLYMER CONCRETE WITH NYLON FIBER ADDITION**

Jesse Widodo. <sup>1)</sup>, Agustinus Agus S. <sup>2)</sup> Pratika Riris P. <sup>2)</sup>

<sup>1)</sup> Civil Engineering Student, Pembangunan Jaya University

<sup>2)</sup> Lecturer, Civil Engineering Program, Pembangunan Jaya University

*This research aims to evaluate the influence of adding nylon fibers on the compressive strength of geopolymer concrete. The method employed involves creating 36 cylindrical test specimens with dimensions of 10 x 20 cm. The test specimens were cured using an oven-drying method at a constant temperature of 60°C for 4 hours. The measurement of the compressive strength values of the test specimens was conducted at ages 7, 14, and 28 days. The test results revealed that the addition of nylon fibers significantly increased the compressive strength of geopolymer concrete. The optimum percentage of nylon fibers that produced the maximum compressive strength was found to be 1% at a concrete age of 28 days, with a compressive strength value of 30.28 MPa. The analysis of compressive strength growth indicated an increase of 263.99%. The research findings also show that the addition of 1% nylon fibers resulted in a slump value of 10.4 cm and caused a significant decrease in the slump value of the concrete, namely, a reduction of 48% compared to fiberless concrete. In terms of bulk density, it was observed that the optimum bulk density occurred in concrete at 28 days of age with a nylon fiber content of 1%. There was an increase in the bulk density of the concrete by 19.57% in the case of concrete with a 1% fiber composition compared to fiberless concrete.*

*Keywords: geopolymer concrete, nylon fibers, compressive strength, slump, bulk density, oven curing.*