

## **ABSTRACT**

*Indonesia is a tropical country with high temperatures, so when casting in hot weather, the use of retarders can help prevent the concrete from hardening too quickly, thus preventing cracks in the concrete. In long-distance ready-mix concrete projects, the addition of retarders ensures that the concrete remains workable during transportation and casting. According to Nugraha and Antoni (2007), retarders can also prevent cold joints in massive castings. Although it offers many benefits, the addition of retarders will affect the characteristics of fresh and hardened concrete. Therefore, it is necessary to analyze the compressive strength and modulus of elasticity of concrete with various retarder additions.*

*The purpose of this study is to determine the effect of the addition of retarder on the compressive strength and modulus of elasticity of concrete and to determine the optimum addition of retarder so that the maximum compressive strength and modulus of elasticity of concrete are produced. The method used in this study is the experimental method. The study was designed with 4 treatments for concrete compressive strength and modulus of elasticity tests, each repeated 3 times. The treatments tested included Concrete with a variation of 0% retarder addition (Normal Concrete), Concrete with a variation of 0,25% retarder addition, Concrete with a variation of 0,50% retarder addition and Concrete with a variation of 0,75% retarder addition.*

*The results of the study showed that the addition of retarder affected the compressive strength and modulus of elasticity of concrete, where there was an increase in compressive strength and modulus of elasticity of concrete in the variation of retarder addition of 0,25% with a compressive strength value of 32,26 Mpa and a concrete modulus of elasticity of 26.446 Mpa. In the variation of retarder addition of 0,50% and 0,75% there was a decrease in compressive strength and modulus of elasticity of concrete with a compressive strength value of 29,43 Mpa and 27,16 Mpa, the value of the modulus of elasticity of concrete of 25.412 Mpa and 24.351 Mpa. The optimum retarder addition of 0,195%, producing a maximum concrete compressive strength of 34,50 Mpa, and a maximum modulus of elasticity of 26.574 Mpa was obtained from the optimum retarder addition of 0,168%.*

**Keywords:** *Compressive Strength, Modulus of Elasticity, Retarder*