

## ABSTRAK

Peningkatan kebutuhan akan material konstruksi yang berkelanjutan mendorong penelitian tentang penggunaan bahan alternatif, salah satunya adalah serbuk kaca. Penelitian ini mengevaluasi pengaruh penambahan serbuk kaca terhadap kuat tekan dan modulus elastisitas beton.

Uji eksperimental dilakukan dengan variasi penambahan serbuk kaca sebesar 0%, 1%, 2%, 3%, dan 4% dari berat agregat. Beton diuji untuk mengetahui kuat tekan dan modulus elastisitasnya, dengan pengujian dilakukan di Laboratorium Teknik Sipil.

Hasil penelitian menunjukkan bahwa penambahan 2% serbuk kaca memberikan peningkatan optimal pada kuat tekan beton, mencapai 20,75 MPa dibandingkan beton tanpa serbuk kaca yang memiliki kuat tekan 17,27 MPa. Penambahan 3% dan 4% juga meningkatkan kuat tekan, namun sedikit lebih rendah dibandingkan penambahan 2%. Sebaliknya, penambahan 1% serbuk kaca menyebabkan penurunan kuat tekan menjadi 16,78 MPa. Modulus elastisitas beton mengalami peningkatan signifikan dengan penambahan 3% serbuk kaca, mencapai 2.924,670 MPa, lebih tinggi dari beton tanpa serbuk kaca (2.353,373 MPa). Peningkatan terbesar terjadi saat penambahan serbuk kaca dari 1% ke 2%. Namun, pada penambahan 4%, terjadi sedikit penurunan modulus elastisitas.

**Kata Kunci:** beton, serbuk kaca, modulus elastisitas, bahan konstruksi berkelanjutan.

## **ABSTRACT**

*The increasing demand for sustainable construction materials has prompted research into alternative materials, one of which is glass powder. This study evaluates the effect of adding glass powder on the compressive strength and modulus of elasticity of concrete.*

*An experimental method was conducted with variations in glass powder content of 0%, 1%, 2%, 3%, and 4% by aggregate weight. The concrete was tested to determine its compressive strength and modulus of elasticity, with testing carried out at the Civil Engineering Laboratory.*

*The results showed that the addition of 2% glass powder provided the optimal increase in compressive strength, reaching 20.75 MPa, compared to concrete without glass powder, which had a compressive strength of 17.27 MPa. The addition of 3% and 4% also improved compressive strength, though slightly lower than the 2% addition. Conversely, the 1% glass powder addition reduced the compressive strength to 16,78 MPa. The modulus of elasticity of the concrete increased significantly with the addition of 3% glass powder, reaching 2,924.670 MPa, which is higher than concrete without glass powder (2,353.373 MPa). The most significant increase occurred between 1% and 2% glass powder. However, with 4% glass powder, there was a slight decrease in the modulus of elasticity.*

*Keywords: concrete, glass powder, modulus of elasticity, sustainable construction materials.*