

EFFECT OF REPLACEMENT PART OF CEMENT BY SILICA FUME TO STRENGTH TO SEVERE TYPE OF LIGHTWEIGHT CONCRETE PRESS

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ABSTRACT

On the use of a pumice stone (pumice) as a aggregate in the manufacture of lightweight concrete would be very appropriate to use because it will be easy to obtain because it is very abundant in the area and quickly. This study aims to determine the value of specific gravity and compressive strength of lightweight concrete using pumice aggregate using *Silica Fume* addition materials as partial replacement of cement.

Addition of *Silica Fume* in research using 6 (six) variants, namely: 0%, 3%, 6%, 9%, 12% and 15% *Silica Fume*. The concrete set with $f_{as} 0.45$, $s_{ikamen} NN 3.98$ and $plastimenvz 0.7$ of cement weight. Tests were performed on the compressive strength of concrete made after the age of 56 days. Data for each variation of *Silica Fume* mixture obtained from 3 (three) cylinder specimens measuring 15x30cm.

Addition of *Silica Fume* at 0%, 3%, 6%, 9%, 12% and 15% respectively and $1.846.333 \text{ kg/m}^3$, 1825.912 kg/m^3 , 1852.339 kg/m^3 , 1863.151 kg/m^3 , 1868.557 kg/m^3 , 1834.321 kg/m^3 , 0% and 12% increase in the optimal density of 1.203%. From the density of the lightweight concrete was included because its value is still below the rate 1900 kg/m^3 . Average compressive strength test value of lightweight aggregate concrete with the addition of pumice breccias *Silica Fume* at 0%, 3%, 6%, 9%, 12% and 15% and 18.1609 respectively MPa, MPa 20.0015, 20.1292 MPa, 21.20 MPa, MPa 18.8072, 20.3979 MPa. The result showed that the compressive strength of concrete cylinders with the addition of 9% *silica fume* can increase the compressive strength of concrete at 16.734%.

Key Word: Lightweight, *Silica Fume*, compressive strength.

