

PERMEABILITY OF HIGH VOLUME FLY ASH CONCRETE

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Forum topics	<input checked="" type="checkbox"/> Energy in 21st Century	<input type="checkbox"/> Cultural Heritage in Digital World
	<input type="checkbox"/> Engineering Capacity Building	<input type="checkbox"/> Disaster Risk Management & Governance for Resilient Communities
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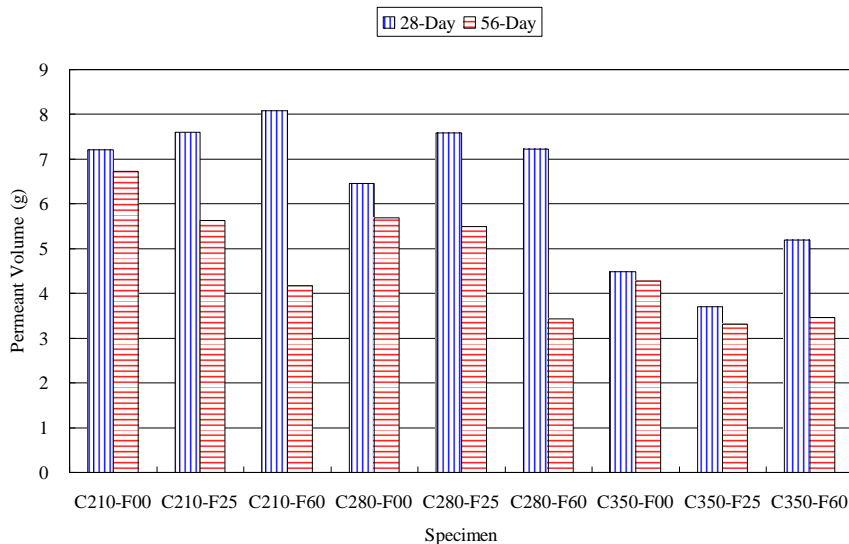
Abstract: (250 to 500 words: for each heading use the bullet points or narrative - the submission including graphics should not exceed one page)

Problems - Issues / Challenges-Needs	In Taiwan, Taiwan Power Company's coal-fired power plants produce 2 million tons coal ash every year, the output of fly ash is about 1.6 million tons, and the bottom ash is about 400,000 tons. All of them are good concrete mineral admixtures, and the utilization value is quite high. It is a well-recognized approach to reduce CO ₂ emissions by substituting fly ash to cement, especially taking high volume fly ash. Therefore, the study aims to discuss the permeability of high volume fly ash concrete.
Solutions - Methods / Results - Findings	In presence of water, fly ash can react with calcium hydroxide at ordinary temperatures to produce cementitious compounds, improving the pore structure of concrete. Hence, high volume fly ash concrete (HVFA) should be more durable than the ordinary portland concrete (OPC). The test variables in this study include three compressive strengths of concrete (21MPa, 28MPa and 35MPa), three contents of fly ash (0%, 25% and 60%) and two testing ages (28-day and 56-day). The permeability test used 0.3 MPa of water pressure upon the top surface of saturated surface dried specimens (φ150 × 50 mm) for 3 hours. Test result shows that water permeation of HVFA is obviously small than that of OPC, especially at the later age (56-day). However, the phenomenon at the age of 28-day is not obvious. It may be the portland reaction not entirely at this age.
Novelty - Value / Relevance to ...	This study obtains a ideal permeability of HVFA incorporating Taiwan Power Company's fly ash, it shows that HVFA is more durable than the OPC. HVFA is a kind of green building materials, it is low cost and friendly to our environment.
Forum statement	It aims at providing the engineer and decision-making officers with updated information regarding the waste management, costs, influence on climate change, emissions, global trends, challenges.

Keywords: (up to 5 keywords)

High volume fly ash concrete; compressive strength; durability; permeability

Graphics: (please use the gray area below for *representative graphics* or *graphical summary*: select the gray area below and paste your graphics)



Permeant volume of high volume fly ash concrete