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**A pore water pressure diffusion model to predict formwork pressure exerted by
freshly mixed concrete**

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Abstract: The formwork pressure exerted by freshly mixed concrete is one of the most important considerations in ensuring the safety of construction in the field. The formwork pressure also affects the quality of concrete structures, determining the final shape of concrete members. Previous studies on the form pressure mostly investigated the intrinsic material effect. For example, the use of self-consolidating concrete increases the maximum pressure on the formwork. The extrinsic factor of a formwork system itself has rarely been considered. In the mockup tests and theoretical evaluations, it is identified that the bleed water-out controlled by the formwork tightness is critical. A pore water pressure diffusion model consistently addresses the high form pressure exerted by self-consolidating concrete, showing little bleeding, or by normally vibrated concrete placed in a waterproofed formwork.

Keywords: Bleeding; Formwork Pressure; Fresh Concrete; Rheology; Diffusion

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