

论文

低强度抗冻抗渗混凝土配合比设计及其力学特性

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摘要:

通过对低强度混凝土配合比进行优化设计, 并开展混凝土的抗冻、抗渗和力学等性能的试验研究。分别研究了最优水灰比、引气剂掺量等因素对混凝土抗冻性能的影响, 并在上述条件下研究了其对强度和抗渗等性能的影响, 以及饱和与自然养护条件下混凝土抗压强度变化特点。结果证明: 在严寒地区, 在满足工程结构混凝土强度和抗渗要求的情况下, 即使配制低强度混凝土, 通过掺适量引气剂和选用适当的水灰比能显著提高低强度混凝土在高寒干燥地区的抗冻耐久性。

关键词: 抗冻; 抗渗; 混凝土配合比设计; 力学特性; 引气剂

Mix proportion design of anti-freezing and anti-permeability low-strength concrete and its corresponding mechanical properties

Abstract:

Through carefully choosing the mix proportion design of low-strength concrete, the anti-freezing, anti-permeability and mechanical properties of concrete were studied. The effects of optimal water-to-cement ratio, mixing amount of air-entraining agent on anti-freezing and anti-permeability characteristics of concrete were researched. Furthermore, the compressive strength of concrete under condition of saturated situation and natural curing were also studied respectively. The researches show that by using of mixing proper amount of air-entraining agent and choosing suitable water-to-cement ratio, the anti-freezing and anti-permeability of low-strength concrete can be obviously improved without reducing concrete strength and anti-permeability properties in severe cold areas in China.

Keywords: anti-freezing; anti-permeability; the mix proportion of concrete; mechanical properties; air-entraining agent

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