

学术论文

活性粉末混凝土疲劳后剩余抗压强度试验研究

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摘要:

为研究经受疲劳荷载作用后活性粉末混凝土(RPC)的剩余抗压强度变化规律,对3组共24个RPC圆柱体试件,进行疲劳试验研究。通过静载试验建立RPC抗压强度和共振频率之间的关系,推算出各疲劳试件的初始抗压强度;在此基础上,对RPC试件进行轴压单级和两级疲劳加载试验,并实测试件在疲劳荷载作用一定次数后的剩余抗压强度。实测结果表明:RPC在单级疲劳后剩余抗压强度的衰减率随循环寿命比的增大而减小,而衰减速率则随着循环寿命比的增大而增大。根据实测值得到RPC单级和两级疲劳加载后剩余抗压强度衰减率与循环寿命比之间关系的拟合公式,计算结果与实测结果吻合良好。图4表8参13

关键词: 活性粉末混凝土 疲劳试验 疲劳性能 剩余抗压强度

Experimental study on residual compressive strength of RPC under fatigue loading.

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Abstract:

In order to investigate the evolution law of residual compressive strength for reactive powder concrete (RPC) under fatigue loading, the fatigue tests were carried out. 24 cylinders were cast for testing and divided into 3 groups. By measuring the compressive strength of some RPC specimens, the relationship between initial compressive strength and resonance frequency was established firstly. On that basis, the constant amplitude and two-stage amplitude fatigue tests were carried and the residual compressive strength of RPC specimens were measured after fatigue. Experimental results show that the attenuation of post-fatigue residual compressive strength of RPC decreased with increase of recycle ratio. On the other hand, the attenuation rate increased with increase of recycle ratio. An fitting formula about the attenuation of post-fatigue residual compressive strength and recycle ratio was deduced. The calculated values which come from fitting formula are in good agreement with measured values. 13Refs.In Chinese.

Keywords: reactive powder concrete fatigue test fatigue behavior residual compressive strength

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