

Abstract Submitted
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Dynamic behaviors of various volume rate steel-fiber reinforced reactive powder concrete after high temperature burnt BAOJUN PANG, LIWEN WANG, ZHENQI YANG, RUNQIANG CHI, School of Astronautics, Harbin Institute of Technology, Harbin, China, 150001, HYPERVELOCITY IMPACT RESEARCH CENTER, HARBIN INSTITUTE OF TECHNOLOGY TEAM — Dynamic strain-stress curves of reactive powder concrete under high strain rate (10/s-100/s) were determined by improved split Hopkinson pressure bar (SHPB) system. A plumbum pulse shaper was used to ensure the symmetrical stress in the specimens before fracture and avoid the fluctuation of test data due to input shaky stress pulse. A time modified method was induced for data processing in order to get accurate SHPB results. The results of experiment showed after high temperature burnt, different volume rate (0.0%, 0.5%, 1.0%, 1.5%) steel-fiber reinforced reactive powder concrete had the same changing tendency of residual mechanics behaviors, e.g. after 400 centigrade burnt, the residual compression strength was about 70% of material strength without burnt under 100/s. After 800 centigrade burnt, the compression strength is about 30% under 100/s while the deformation ability increased. At meanwhile, steel fiber had improved the mechanism of reinforcing effect and toughening effect of concrete material after burnt. With increasing of steel fiber volume rate, dynamic residual behavior of samples was improved. Microcosmic characteristics and energy absorption were induced for explaining the experiment results.

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