

PROCEEDINGS

Study on Dynamic Mechanical Properties of Q245R Steel at High Temperature

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ABSTRACT

In order to study the dynamic mechanical properties at high temperature and high strain rate [1] of Q245R steel after corrosion, the electrochemical accelerated corrosion test by constant current method and the high strain rate tensile test at high temperature [2] by High Temperature Synchronous Hopkinson Tensile test device were carried out. The test results show that Q245R steel has obvious strain rate strengthening effect and temperature softening effect, and under certain conditions, temperature becomes the main factor affecting the material properties. In order to consider the heat treatment and corrosion effects, the traditional Johnson-Cook [3-4] constitutive equation was improved, and the constitutive equation with strain rate effect, temperature softening, heat treatment effect and corrosion weakening was fitted by MATLAB software. The fitting result of this model is consistent with the test data, which can provide a basis for dynamic mechanical analysis of Q245R steel under high temperature and high strain.

KEYWORDS

Q245R steel; high temperature; high strain

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