

عنوان مقاله:

The Effect of Ferrite Grain Size on the Fatigue Behavior of Ferrite-martensite Dual-phase Steels

محل انتشار:

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نویسندگان:

H. Sharifi - *Department of Materials Science, Faculty of Engineering, Shahrekord University, Shahrekord, Iran*

M. Salehi - *Department of Materials Engineering, Isfahan University of Technology, ۸۴۱۵۶-۸۳۱۱۱, Isfahan, Iran*

M.R. Saeri - *Department of Materials Science, Faculty of Engineering, Shahrekord University, Shahrekord, Iran*

خلاصه مقاله:

The effect of ferrite grain size on the fatigue and tensile properties of dual phase steels with a ۰.۲۵ volume fraction of martensite (Vm) under different heat treatments was investigated. The heat treatments were homogenized at ۱۲۰۰ °C along with several subsequent normalizations at ۹۱۰ °C, resulting in different microstructures and mechanical properties. After heat treatment, the obtained steels, with different ferrite grain sizes, were heat treated to obtain a dual phase ferritic-martensitic microstructure. In order to process the dual phase steels, low carbon manganese steel was used. Fatigue tests were carried out at room temperature and the fracture surfaces of the fatigue specimens were studied by SEM. The data obtained by the fatigue tests indicated that the fatigue strength at ۱۰^۷ cycles had a linear increase with decreasing the grain size of ferrite, while higher applied stress had a little effect on the grain size and the fatigue strength. The fracture surface of the fatigue specimens showed two distinct regions, namely, the fatigue fracture and the final fracture. Striation lines were clearly seen in the region of the fatigue failure. Furthermore, for all microstructures, the final fracture was mainly brittle.

کلمات کلیدی:

Dual phase steels, fatigue, Ferrite-martensite, Grain size, Heat treatment

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