



Evaluation of Crystallographic Texture in SS316L Steel by Ultrasonic Signal Analysis

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An approach was made to analyze the ultrasonic signal for the characterization of texture in SS316L steel. Results of ultrasonic signal analysis and birefringence effect were compared with orientation distribution function (ODF) of the crystallographic orientation of the grains along the macroscopic texture direction using conventional X-Ray diffraction analysis. In polycrystalline aggregates, ultrasonic wave velocities were strongly affected by crystallographic texture. In this work, SS316L rolled steel was annealed at temperatures 4500C to 7500C with 500C interval (i.e. total 07 temperatures) with holding time of 30 minutes at each temperature. Ultrasonic longitudinal and transverse velocities were measured in each annealed sample. Power spectrum of the windowed ultrasonic signal as well as peak shift of the shear wave signal were analyzed and co-related with the result of texture from X-ray diffraction. It was seen that power spectrum analysis of windowed signal could be a potential tool for evaluation of crystallographic texture in polycrystalline materials.

Keywords: Texture, Ultrasonic signal, Power spectrum, SS316L

