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Grain size influence on ultrasonic velocities and attenuation

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Abstract: During the last two decades, ultrasonic testing was developed as an efficient tool for materials characterization. Acoustical waves by their passage through materials, carry out a multitude of information contained in the signal on the mechanical and physical properties of the material under inspection. In this paper, an experimental study on steel samples has been performed to study the evolution of some ultrasonic parameters such as wave velocities and attenuation coefficients as function of the steel grains size. The experimental results obtained are discussed and analyzed in order to develop an ultrasonic non-destructive technique to grains size determination.

Keywords : Ultrasonic, Grain Size, Velocity, Attenuation, Scattering