Ultrasonic C-Scan Imaging of Porcelain Tiles

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Abstract
Traditional methods of quality control are difficult to use when many affective factors in the event of defect evolution. Ultrasonic testing is one of the most widely used NDT techniques for quality control because of its relatively inexpensive cost and appropriate data for decision. Ultrasonic material analysis is based on a simple principle of physics: the motion of any wave will be affected by the medium through which it travels. It would be advantageous to detect defects in short time and nondestructively. In this paper, C-scan ultrasound was employed to detect defects of porcelain tiles. To this purpose, different size and sort defects were imbedded in standard porcelain tile granules before pressing. After sintered at 1200°C, tiles were inspected with ultrasonic C-scan system which provides two-dimensional presentation of defect-distribution. An immersion and 6-12 MHz frequency focused transducer was used to differentiate defects. Place of different sized aluminum foils, paper, different shaped plastics in tiles were determined and their sizes were measured.