

GLYCERIN-WATER MIXTURES FOR USE IN ULTRASOUND TEST OBJECTS

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Using a specially developed sample chamber, the pulse-echo overlap method(1) has been adapted to measure acoustic velocity in various mixtures of glycerin and distilled degassed water throughout the physiological temperature range from 20°C to 50°C. The system has been used with band limited pulses centered at 3.5 MHz. The temperature accuracy is 0.1°C and the velocity accuracy is better than 0.1%. Comparison of the present results for acoustic velocity in water to other work(2) has been done and good agreement has been found.

Since the temperature coefficient of acoustic velocity in water is positive and the temperature coefficient of acoustic velocity in glycerin is negative, the glycerin-water mixture with constant acoustic velocity has been obtained.

A mixture like this can be used in wire test phantoms for testing of medical ultrasonic scanners(3). It is especially useful for linear array scanner testing, but can be used for sector scanners as well, provided the angular correction has been taken into account.

References:

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3. A. Goldstein and L.N. Langrill, J. Clin. Ultrasound 7, 465 (1979)