



Ultrasonic Testing Student Guide, Second Edition

Errata – 1st Printing 02/15

The following text correction pertains to the second edition of the *Ultrasonic Testing Student Guide*. Subsequent printings of the document will incorporate the corrections into the published text.

The attached corrected page applies to the first printing. In order to verify the print run of your book, refer to the copyright page. Ebooks are updated as corrections are found.

Page	Correction
4	<p>Table 1: The columns under Shear Waves should show shear-wave velocity represented by V_S instead of V_L.</p> <p>The speed of longitudinal waves (V_L) in air should be: <u>13</u> $\times 10^3$ in./s and <u>330</u> m/s.</p>

6. Longitudinal (or compressional) waves cause particle movement that is parallel to wave movement.
7. This atomic movement is constrained by the elastic properties of the carrier (the material in which the wave is traveling), but even the slightest movement of the atoms is passed along through the densely packed molecular structure in the form of mechanical energy.
8. It is the density as well as the elasticity of the host material that significantly determines the velocity of sound within that material. Another factor determining how fast the sound will travel within a given material is the mode of that sound. For example, the student is directed to a standard velocity chart for ultrasound in various materials. (Refer to Table 1 below and to the tables in the Appendix, reprinted from

Table 1: Nominal material sound velocities.

MATERIAL	LONGITUDINAL WAVES		SHEAR WAVES	
	$V_L = 10^3 \text{ in./s}$	$V_L = \text{m/s}$	$V_S = 10^3 \text{ in./s}$	$V_S = \text{m/s}$
AIR	13	333	—	—
ALUMINUM, GALVANIZED	246	6250	122	3100
BARIUM TITANATE	217	5500	—	—
BERYLLIUM	504	12 800	343	8710
BRASS (NAVAL)	174	4430	83	2120
BRONZE (P-5%)	139	3530	88	2230
CAST IRON	177	4500	94	2400
COPPER	183	4660	89	2260
GLYCERINE	76	1920	—	—
LEAD, PURE	85	2160	28	0700
MAGNESIUM, AM 35	228	5790	122	3100
MOLYBDENUM	248	6290	132	3350
NICKEL	222	5630	117	2960
PLASTIC (ACRYLIC RESIN-PLEXIGLASS)	105	2670	44	1120
POLYETHYLENE	60	1530	—	—
QUARTZ, FUSE	233	5930	148	3750
SILVER	142	3600	63	1590
STEEL	230	5850	127	3230
STAINLESS 302	223	5660	123	3120
STAINLESS 410	291	7390	118	2990
TIN	131	3320	66	1670
TITANIUM (T1 150A)	240	6100	123	3120
TUNGSTEN	204	5180	113	2870
WATER	59	1490	—	—
ZINC	164	4170	95	2410

Note: Values are approximate and may vary depending on the source of data; multiplying a number N by $10^3 = N \times 1000$.