

**TABLE 2.7** Attenuation in water as a function of frequency.<sup>A</sup>

Frequency, $f$ (MHz)	Attenuation, $\alpha$ (dB/cm)	Frequency, $f$ (MHz)	Attenuation, $\alpha$ (dB/cm)
1.0	0.0022	26.0	1.4669
2.0	0.0087	27.0	1.5819
3.0	0.0195	28.0	1.7013
4.0	0.0347	29.0	1.8250
5.0	0.0543	30.0	1.9530
6.0	0.0781	31.0	2.0854
7.0	0.1063	32.0	2.2221
8.0	0.1389	33.0	2.3631
9.0	0.1758	34.0	2.5085
10.0	0.2170	35.0	2.6583
11.0	0.2626	36.0	2.8123
12.0	0.3125	37.0	2.9707
13.0	0.3667	38.0	3.1335
14.0	0.4253	39.0	3.3006
15.0	0.4883	40.0	3.4720
16.0	0.5555	41.0	3.6478
17.0	0.6271	42.0	3.8279
18.0	0.7031	43.0	4.0123
19.0	0.7834	44.0	4.2011
20.0	0.8680	45.0	4.3943
21.0	0.9570	46.0	4.5917
22.0	1.0503	47.0	4.7935
23.0	1.1479	48.0	4.9997
24.0	1.2499	49.0	5.2102
25.0	1.3563	50.0	5.4250

<sup>A</sup>Calculated using  $\alpha = 2.17 \times 10^{-15} \cdot f^2$  (dB/cm) as reported by Krautkramer [6].

**TABLE 2.8** Ultrasonic attenuation in selected materials at selected ultrasonic frequencies [7].

Material	$\alpha$ (dB/cm)			
	1.0 MHz	2.5 MHz	5.0 MHz	10 MHz
Aluminum	<0.01	0.02	0.07	0.26
Glass	0.02	0.06	0.12	0.24
Lucite	1.5	3.5	7	
Quartz, fused		<0.007	0.01	0.02
Air	1.7	11	40	170