

Acoustic Properties Of Materials

Material	Ultrasonic Velocity				Impedance	Material	Ultrasonic Velocity				
	Longitudinal (Compression)		Transverse (Shear)				Z	Longitudinal (Compression)		Transverse (Shear)	
	mm/us	in/us	mm/us	in/us				mm/us	in/us	mm/us	in/us
METALS						Phenolic	1.422	0.056			1.9
Aluminium 1100-0	6.229	0.248	3.073	0.121	17.1	Polycarbonate	2.286	0.09			2.71
Aluminium 2024-T4	6.375	0.251	3.15	0.124	17.6	Polyethylene	2.667	0.105			2.94
Aluminium 6061-T6	6.299	0.248	3.15	0.124	17	Polystyrene	2.388	0.094	1.143	0.045	2.52
Beryllium	12.878	0.507	8.89	0.35	23.5	Rubber	1.549	0.061			1.74
Brass	4.369	0.172	2.108	0.083	37.1	Silicone	0.94	0.037			1.4
Bronze	3.531	0.139	2.235	0.088	31.3	Teflon	1.372	0.054	6.35	0.25	3
Copper	4.75	0.187	2.337	0.092	42.5	COMPOSITES					
Gold	3.251	0.128	1.194	0.047	62.6	Fiberglass	3.15	0.124	1.727	0.068	6.04
Inconel	7.823	0.308	3.023	0.119	64.5	Graphite/Epoxy	2.972	0.117	1.956	0.077	4.65
Iron - Cast	3.505-5.588	0.138-0.220	2.210-3.200	0.087-0.126	24.3-41.2	Boron/Epoxy	3.327	0.131	1.829	0.072	6.38
Lead	2.159	0.085	0.813	0.032	23.5	OTHER SOLIDS					
Magnesium	5.461-5.791	0.215-0.228	3.023-3.099	0.119-0.122	9.24-10.6	Alumina (Al ₂ O ₃)	10.846	0.427			43.1
Monel	5.359	0.211	2.718	0.107	47.2	Concrete	4.242-5.258	0.167-0.207	3.429	0.135	12.4
Nickel	5.639	0.222	2.972	0.117	50	Glass	5.766	0.227			14.5
Silver	3.607	0.142	1.6	0.063	37.8	Granite	3.962	0.156	1.93	0.076	10.9
Steel	5.93	0.233	3.251	0.128	45.4	Tungsten Carbide	6.655	0.262			67.6
Titanium	6.172	0.243	3.302	0.13	27.3	LIQUIDS					
Zircaloy	4.724	0.186	2.362	0.093	44.2	Ethylene Glycol	1.626	0.064			1.8
Zirconium	4.648	0.183	2.261	0.089	30.1	Glycerin	1.93	0.076			2.42
POLYMERS						Oil	1.753	0.069			1.51
Acrylics	2.667-2.769	0.105-0.109	1.118-1.448	0.044-0.057	3.15-3.51	Water	1.473	0.058			1.48
Cellulose Acetate	2.438	0.096			3.19	Gases					
Nylon	2.692	0.016				Air	0.356	0.014			0.00041