

**Optimum NDT solutions
at cost effective prices**

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Ultrasonic Velocity Table

Acoustical Properties Of Common Materials					
Material	Ultrasonic Velocity				
	Longitudinal		Transverse (Shear)		Impedance Z
	in / us	mm / us	in / us	mm / us	
METALS					
Aluminum 1100-0	0.248	6.229	0.121	3.073	17.1
Aluminum 2024-T4	0.251	6.375	0.124	3.150	17.6
Aluminum 6061-T6	0.248	6.299	0.124	3.150	17.0
Beryllium	0.507	12.878	0.350	8.890	23.5
Brass (70% Cu - 30% Zn)	0.172	4.369	0.083	2.108	37.1
Bronze (Phosphor 5%)	0.139	3.531	0.088	2.235	31.3
Copper (CP)	0.187	4.750	0.092	2.337	42.5
Gold	0.128	3.251	0.047	1.194	62.6
Hastelloy C	0.230	5.842	0.114	2.896	52.2
Hastelloy X	0.228	5.791	0.108	2.743	47.7
Inconel (Wrought)	0.308	7.823	0.119	3.023	64.5
Iron (Cast), Various Alloys	0.138-0.220	3.505-5.588	0.087-0.126	2.210-3.200	24.3-41.2
Lead (94Pb-6Sb)	0.085	2.159	0.032	0.813	23.5
Magnesium, Various Alloys	0.215-0.228	5.461-5.791	0.119-0.122	3.023-3.099	9.24-10.6
Monel	0.211	5.359	0.107	2.718	47.2
Nickel (CP)	0.222	5.639	0.117	2.972	50.0
Silver (0.99 Fine)	0.142	3.607	0.063	1.600	37.8
Steel 1020	0.232	5.893	0.128	3.251	45.4
Steel 4340	0.230	5.842	0.128	3.251	45.6
Steel , CRES 300 Series	0.221-0.226	5.613-5.740	0.120-0.123	3.048-3.124	44.6-45.4
Steel , CRES 400 Series	0.212-0.237	5.385-6.020	0.118-0.132	2.997-3.353	41.3-46.3
Titanium, 6Al-4V	0.243	6.172	0.130	3.302	27.3
Zircaloy	0.186	4.724	0.093	2.362	44.2
Zirconium	0.183	4.648	0.089	2.261	30.1

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POLYMERS					
Acrylics	0.105-0.109	2.667-2.769	0.044-0.057	1.118-1.448	3.15-3.51
Cellulose Acetate	0.096	2.438	No Shear Component		3.19
Nylon	0.016	2.692	No Shear Component		-----
Phenolic	0.056	1.422	No Shear Component		1.90
Polycarbonate	0.090	2.286	No Shear Component		2.71
Polyethylene	0.105	2.667	No Shear Component		2.94
Polystyrene	0.094	2.388	0.045	1.143	2.52
Rubber (Natural)	0.061	1.549	No Shear Component		1.74
Rubber (Carbon Filter)	0.066	1.676	No Shear Component		-----
Rubber (Silicone)	0.037	0.94	No Shear Component		1.40
Teflon	0.054	1.372	0.250	6.35	3.00
MISCELLANEOUS SOLIDS					
Alumina (Al ₂ O ₃)	0.427	10.846	No Shear Component		43.1
Concrete	0.167-0.207	4.242-5.258	0.135	3.429	12.4
Glass (Plate)	0.227	5.766	No Shear Component		14.5
Granite	0.156	3.962	0.076	1.93	10.9
Ice (-16C)	0.150	3.81	No Shear Component		3.60
Quartz, Natural	0.226	5.74	0.139	3.531	15.2
Quartz, Fused	0.219	5.563	0.302	7.671	14.5
Sapphire	0.469	11.913	0.157	3.988	47.2
Tungsten Carbide	0.262	6.655	No Shear Component		67.6
COMPOSITE MATERIALS					
Fiberglass (50 v/o)	0.124	3.15	0.068	1.727	6.04
Graphite/Epoxy (60 v/o)	0.117	2.972	0.077	1.956	4.65
Boron/Epoxy (50v/o)	0.131	3.327	0.072	1.829	6.38
LIQUIDS					
Ethylene Glycol	0.064	1.626	No Shear Component		1.80
Glycerin	0.076	1.93	No Shear Component		2.42
Oil (SAE 20)	0.069	1.753	No Shear Component		1.51
Water (20C)	0.058	1.473	No Shear Component		1.48
Gases					
Air (20°C)	0.014	0.356	No Shear Component		0.00041
Nitrogen (20°C)	0.014	0.356	No Shear Component		0.00041
Oxygen (20°C)	0.013	0.33	No Shear Component		0.00043