



Onda Corporation  
 592 Weddell Drive, Suite 7, Sunnyvale, CA 94089  
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# Acoustic Properties of Gases

Ref	Material	$V_L$ mm/s	$\gamma$ m/s °C	D kg/m <sup>3</sup>	$Z_L$ kRayl	Loss dB/cm
CRC	Acetone vapor (C <sub>2</sub> H <sub>6</sub> O) at 97.1°C	0.239	0.32			
CRC	Air - dry at 0°C	0.33145	0.59	1.293	0.4286	
M	Air - at 0°C, 25 atm	0.332				
M	Air - at 0°C, 50 atm	0.335				
M	Air - at 0°C, 100 atm	0.351				
M	Air - at 20°C	0.344				
M	Air - at 100°C	0.386				
M	Air - at 500°C	0.553				
CRC	Ammonia (NH <sub>3</sub> ) at 0°C	0.415		0.771	0.320	
CRC	Argon - at 0°C	0.319	0.56	1.783	0.569	
CRC	Benzene vapor (C <sub>6</sub> H <sub>6</sub> ) at 97.1°C	0.202	0.3			
CRC	Carbon monoxide (CO) at 0°C	0.338	0.6	1.25	0.423	
CRC	Carbon dioxide (CO <sub>2</sub> ) at 0°C	0.259	0.4	1.977	0.512	
M	Carbon disulfate	0.189				
CRC	Carbon tetrachloride vapor (CCl <sub>4</sub> ) at 97.1°C	0.145				
CRC	Chlorine at 0°C	0.206		3.214	0.662	
CRC	Chloroform - CH(Cl) <sub>3</sub> at 97.1°C	0.171	0.24			
CRC	Deuterium at 0°C	0.890	1.6	0.19	0.1691	
CRC	Ethane - C <sub>2</sub> H <sub>6</sub> at 0°C	0.308		1.356	0.418	
CRC	Ethylene - C <sub>2</sub> H <sub>4</sub> at 0°C	0.317		1.260	0.400	
CRC	Ethanol vapor - C <sub>2</sub> H <sub>5</sub> OH at 97.1°C	0.269	0.4			
CRC	Ethyl ether - C <sub>4</sub> H <sub>10</sub> O at 97.1°C	0.206	0.3			
CRC	Helium at 0°C	0.965	0.8	0.178	0.172	
CRC	Hydrogen at 0°C	1.284	2.2	0.0899	0.1154	
CRC	Hydrogen bromide - HBr at 0°C	0.200		3.50	0.700	
CRC	Hydrogen chloride - HCl at 0°C	0.296		1.639	0.485	
CRC	Hydrogen iodide - HI at 0°C	0.157		5.66	0.889	
CRC	Hydrogen sulfide - H <sub>2</sub> S at 0°C	0.289		1.539	0.445	
CRC	Methane - CH <sub>4</sub> at 0°C	0.430		0.7168	0.308	
CRC	Methanol vapor - CH <sub>3</sub> OH at 97.1°C	0.335	0.46			
CRC	Neon - at 0°C	0.435		0.900	0.392	



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CRC	Nitric oxide - NO at 10°C	0.324		1.34	0.434	
CRC	Nitrogen - N2 at 0°C	0.334	0.6	1.251	0.418	
CRC	Nitrous oxide - N2O at 0°C	0.263	0.5	1.977	0.520	
CRC	Oxygen - O2 at 0°C	0.316	0.56	1.429	0.451	
M	Oxygen - O2 at 20°C	0.328		1.32	0.433	
CRC	Sulfur dioxide - SO2 at 0°C	0.213	0.47	2.927	0.623	
M	Water vapor at 0°C	0.401				
M	Water vapor at 100°C	0.405				
CRC	Water vapor at 134°C	0.494				