

## References (material database, v5.0, 21.08.2025)

**References for the air and fluid properties** listed in our database. Values for fluids of which the properties are not available in the literature are substituted with values from other fluids. In these cases, the fluid used for the value is listed instead of a reference. The rationale for each individual substitution is provided in the Rationale for Tissue Substitutions.

Fluid/Gas	Density	Heat Capacity	Thermal Conductivity	Dynamic Viscosity	Dielectric Properties
Air	<a href="http://engineeringtoolbox.com">engineeringtoolbox.com</a> <a href="#">Montgomery, 1947</a>	<a href="http://engineeringtoolbox.com">engineeringtoolbox.com</a>	<a href="http://engineeringtoolbox.com">engineeringtoolbox.com</a> <a href="#">Montgomery, 1947</a> <a href="#">Kadoya, 1985</a>	<a href="http://engineeringtoolbox.com">engineeringtoolbox.com</a> <a href="#">Montgomery, 1947</a> <a href="#">Kadoya, 1985</a>	Not in Database
Blood	See Material Properties References	See Material Properties References	See Material Properties References	<a href="#">Rand et al., 1964</a> <a href="#">Valant et al., 2011</a> <a href="#">Lowe, 1987</a> <a href="#">Walter Seibt, Physik für Mediziner</a>	See Material Properties References
Blood Plasma	See Material Properties References	See Material Properties References	See Material Properties References	<a href="#">Lowe, 1987</a>	Not in Database
Blood Serum	See Material Properties References	Not in Database	Not in Database	<a href="#">Lowe, 1987</a>	Not in Database
Cerebrospinal Fluid	See Material Properties References	See Material Properties References	See Material Properties References	<a href="#">Bloomfield et al., 1998</a>	See Material Properties References
Lymph	See Material Properties References	Not in Database	Not in Database	<a href="#">Bouta et al, 2014</a>	See Material Properties References
Urine	See Material Properties References	See Material Properties References	See Material Properties References	<a href="#">Inman et al., 2013</a>	See Material Properties References
Vitreous Humor	See Material Properties References	See Material Properties References	See Material Properties References	<a href="#">Sharif-Kahani et al., 2011</a>	See Material Properties References
Water	See Material Properties References	See Material Properties References	See Material Properties References	<a href="#">Korson et al., 1969</a> <a href="#">Parry et al., 2009</a> <a href="http://engineeringtoolbox.com">engineeringtoolbox.com</a>	Not in Database

**Not in Database:** Values for that property are not yet included in the fluid properties database.