

**References (database v4.1, 22.2.2022)**

**References for the T1 and T2 relaxation times** listed in our material properties database. Values for tissues of which the properties are not available in the literature are substituted with values from other tissues. In these cases, the tissue used for the value is listed instead of a reference. The rationale for each individual substitution is provided in the Rationale for Tissue Substitutions.

Tissue	1.5T, T1	1.5T, T2	3.0T, T1	3.0T, T2
Blood	Greenman et al., 2003 Messroghli et al., 2004 Rooney et al., 2007 Stanisz et al., 2005	Stanisz et al., 2005	Greenman et al., 2003 Kawel et al., 2012 Kawel-Boehm et al., 2015 Stanisz et al., 2005	Stanisz et al., 2005
Blood Vessel Wall	Barth & Moser, 1997	Barth & Moser, 1997 Zhao et al., 2007	Lu et al., 2003 Lu et al., 2004	Not in Database
Bone Marrow (Red)	de Bazelaire et al., 2004	de Bazelaire et al., 2004	de Bazelaire et al., 2004	Not in Database
Bone Marrow (Yellow)	Gold et al., 2004	Gold et al., 2004	Gold et al., 2004	Not in Database
Brain (Grey Matter)	Henderson et al., 1999 Kingsley et al., 1998 Rooney et al., 2007 Stanisz et al., 2005 Steen et al., 2000 Thayyil et al., 2012 Whittall et al., 1997 Wright et al., 2007	Peters et al., 2007 Stanisz et al., 2005 Thayyil et al., 2012 Whittall et al., 1997	Ethofer et al., 2003 Gelman et al., 2001 Lee et al., 2006 Wansapura et al., 1999 Wright et al., 2007	Gelman et al., 1999 Lee et al., 2006 Peters et al., 2007 Stanisz et al., 2005 Wansapura et al., 1999
Brain (White Matter)	Henderson et al., 1999 Kingsley et al., 1998 Rooney et al., 2007 Steen et al., 2000 Thayyil et al., 2012 Whittall et al., 1997 Wright et al., 2007	Peters et al., 2007 Stanisz et al., 2005 Thayyil et al., 2012 Whittall et al., 1997	Ethofer et al., 2003 Gelman et al., 2001 Lee et al., 2006 Wansapura et al., 1999 Wright et al., 2007	Gelman et al., 1999 Lee et al., 2006 Peters et al., 2007 Wansapura et al., 1999

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Tissue	1.5T, T1	1.5T, T2	3.0T, T1	3.0T, T2
Breast Fat	<a href="#">Delile et al., 2005</a> <a href="#">Rakow-Penner et al., 2006</a>	<a href="#">Rakow-Penner et al., 2006</a>	<a href="#">Rakow-Penner et al., 2006</a>	<a href="#">Rakow-Penner et al., 2006</a>
Bronchi	Blood Vessel Wall	Blood Vessel Wall	Blood Vessel Wall	Not in Database
Cartilage	<a href="#">Gold et al., 2004</a> <a href="#">Stanisz et al., 2005</a>	<a href="#">Dunn, 2004</a> <a href="#">Gold et al., 2004</a> <a href="#">Stanisz et al., 2005</a>	<a href="#">Gold et al., 2004</a> <a href="#">Stanisz et al., 2005</a>	<a href="#">Gold et al., 2004</a> <a href="#">Smith et al., 2001</a> <a href="#">Stanisz et al., 2005</a>
Cerebrospinal Fluid	<a href="#">Henderson et al., 1999</a> <a href="#">Rooney et al., 2007</a>	Not in Database	Not in Database	Not in Database
Cervix	Uterus	Uterus	Uterus	Uterus
Commissura Anterior	Brain (White Matter)	Brain (White Matter)	Brain (White Matter)	Brain (White Matter)
Commissura Posterior	Brain (White Matter)	Brain (White Matter)	Brain (White Matter)	Brain (White Matter)
Diaphragm	Muscle	Muscle	Muscle	Muscle
Ductus Deferens	Blood Vessel Wall	Blood Vessel Wall	Blood Vessel Wall	Not in Database
Extracellular Fluids	CSF			
Eye (Aqueous Humor)	CSF			
Eye (Choroid)	Blood	Blood	Blood	Blood
Eye (Choroid)	Muscle	Muscle	Muscle	Muscle
Eye (Iris)	Muscle	Muscle	Muscle	Muscle
Eye (Retina)	Brain (Grey Matter)	Brain (Grey Matter)	Brain (Grey Matter)	Brain (Grey Matter)
Glandula Vesiculosa	Prostate	Prostate	Prostate	Prostate
Heart Lumen	Blood	Blood	Blood	Blood
Heart Muscle	<a href="#">Messroghli et al., 2004</a> <a href="#">Stanisz et al., 2005</a>	<a href="#">Aherne et al., 1997</a> <a href="#">Stanisz et al., 2005</a>	<a href="#">Kawel-Boehm et al., 2015</a> <a href="#">Kawel et al., 2012</a> <a href="#">Stanisz et al., 2005</a>	<a href="#">Stanisz et al., 2005</a>
Hippocampus	Brain (Grey Matter)	Brain (Grey Matter)	<a href="#">Lee et al., 2006</a>	<a href="#">Lee et al., 2006</a>
Hypothalamus	Brain (Grey Matter)	Brain (Grey Matter)	Brain (Grey Matter)	Brain (Grey Matter)
Intervertebral Disc	Cartilage	<a href="#">Kerttula et al., 2001</a> <a href="#">Marinelli et al., 2009</a>	Cartilage	Cartilage

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Tissue	1.5T, T1	1.5T, T2	3.0T, T1	3.0T, T2
Kidney (Cortex)	<a href="#">de Bazelaire et al., 2004</a>			
	<a href="#">Stanisz et al., 2005</a>			
Kidney (Medulla)	<a href="#">de Bazelaire et al., 2004</a>			
Larynx	Cartilage	Cartilage	Cartilage	Cartilage
Liver	<a href="#">de Bazelaire et al., 2004</a>	<a href="#">Cieszanowski et al., 2002</a>	<a href="#">de Bazelaire et al., 2004</a>	<a href="#">de Bazelaire et al., 2004</a>
	<a href="#">de Certaines et al., 1993</a>	<a href="#">de Bazelaire et al., 2004</a>	<a href="#">Stanisz et al., 2005</a>	<a href="#">Stanisz et al., 2005</a>
	<a href="#">Heye et al., 2012</a>	<a href="#">de Certaines et al., 1993</a>		
	<a href="#">Messroghli et al., 2004</a>	<a href="#">Heye et al., 2012</a>		
	<a href="#">Stanisz et al., 2005</a>	<a href="#">Stanisz et al., 2005</a>		
Lung	Not in Database	<a href="#">Bergin et al., 1991</a>	Not in Database	Not in Database
Medulla Oblongata	<a href="#">Kingsley et al., 1998</a>	Not in Database	<a href="#">Lee et al., 2006</a>	<a href="#">Lee et al., 2006</a>
Meniscus	Cartilage	Cartilage	Cartilage	Cartilage
Midbrain	Pons	Not in Database	Pons	Pons
Muscle	<a href="#">de Bazelaire et al., 2004</a>			
	<a href="#">Gold et al., 2004</a>	<a href="#">Gold et al., 2004</a>	<a href="#">Stanisz et al., 2005</a>	<a href="#">Gold et al., 2004</a>
	<a href="#">Stanisz et al., 2005</a>	<a href="#">Stanisz et al., 2005</a>		<a href="#">Stanisz et al., 2005</a>
Nerve	<a href="#">Kingsley et al., 1998</a>	<a href="#">Stanisz et al., 2005</a>	<a href="#">Stanisz et al., 2005</a>	<a href="#">Stanisz et al., 2005</a>
	<a href="#">Stanisz et al., 2005</a>			
	<a href="#">Steen et al., 2000</a>			
Pancreas	<a href="#">de Bazelaire et al., 2004</a>			
Penis	Blood Vessel Wall	Blood Vessel Wall	Blood Vessel Wall	Not in Database
Placenta	Blood	Blood	Blood	Blood
Pons	<a href="#">Kingsley et al., 1998</a>	Not in Database	<a href="#">Lee et al., 2006</a>	<a href="#">Lee et al., 2006</a>
Prostate	<a href="#">de Bazelaire et al., 2004</a>			

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Tissue	1.5T, T1	1.5T, T2	3.0T, T1	3.0T, T2
Salivary Gland	Prostate	Prostate	Prostate	Prostate
SAT (Subcutaneous Fat)	<a href="#">de Bazelaire et al., 2004</a>			
	<a href="#">Gold et al., 2004</a>			
Spinal Cord	<a href="#">Stanisz et al., 2005</a>			
Spleen	<a href="#">de Bazelaire et al., 2004</a>			
Thalamus	<a href="#">Kingsley et al., 1998</a>	<a href="#">Thayyil et al., 2012</a>	<a href="#">Gelman et al., 2001</a>	<a href="#">Lee et al., 2006</a>
	<a href="#">Rooney et al., 2007</a>	<a href="#">Whittall et al., 1997</a>	<a href="#">Lee et al., 2006</a>	
	<a href="#">Steen et al., 2000</a>			
	<a href="#">Thayyil et al., 2012</a>			
	<a href="#">Whittall et al., 1997</a>			
Trachea	Cartilage	Cartilage	Cartilage	Cartilage
Ureter\Urethra	Blood Vessel Wall	Blood Vessel Wall	Blood Vessel Wall	Not in Database
Uterus	<a href="#">de Bazelaire et al., 2004</a>			
Vagina	<a href="#">de Bazelaire et al., 2004</a>			

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