

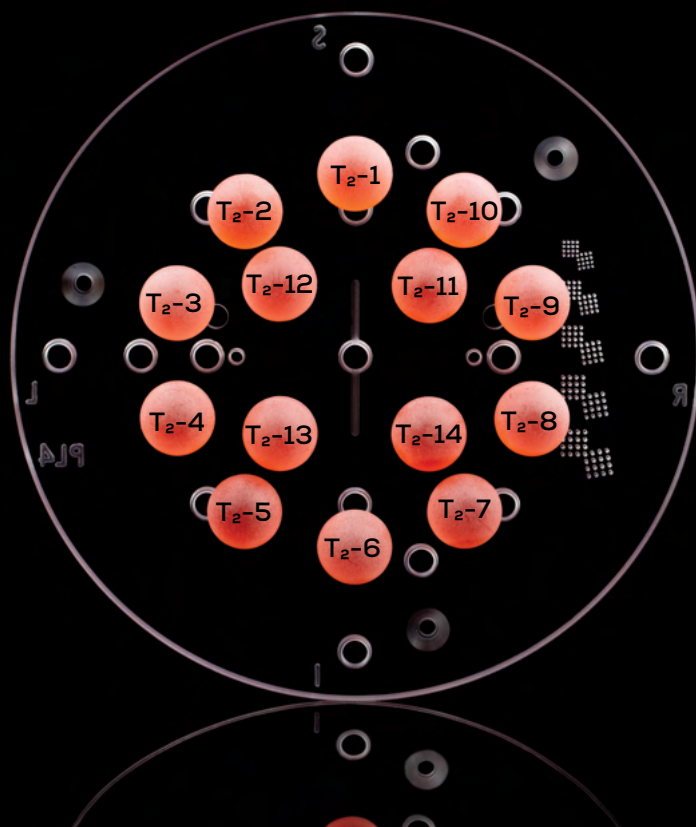
# $T_2$ 3.0 T measurements, performed at NIST

$T_2$  contrast spheres values at 3.0 T.

Batch #2 used. Measured at 20°C at NIST Boulder.

	Nominal Concentration, $\text{MnCl}_2$ ( $\pm 5\%$ mM)	$T_1$ (ms)	$T_1$ Standard Deviation, $\text{SD}_{3R}$ (ms)	$T_2$ (ms)	$T_2$ Standard Deviation, $\text{SD}_{3R}$ (ms)
$T_2$ -1	0.0113	3025.17	75.63	1928.33	18.13
$T_2$ -2	0.0181	2185.54	54.64	379.48	3.57
$T_2$ -3	0.0282	1901.28	47.53	267.29	2.51
$T_2$ -4	0.0434	1549.98	38.75	175.05	1.65
$T_2$ -5	0.0673	1510.76	37.77	166.90	1.57
$T_2$ -6	0.0934	1026.43	25.66	88.89	0.84
$T_2$ -7	0.1353	805.10	20.13	63.42	0.60
$T_2$ -8	0.193	599.96	15.00	44.24	0.42
$T_2$ -9	0.2768	431.22	10.78	29.88	0.28
$T_2$ -10	0.4276	292.87	7.32	19.40	0.18
$T_2$ -11	0.5555	226.53	5.66	14.74	0.14
$T_2$ -12	0.7902	158.17	3.95	10.52	0.10
$T_2$ -13	1.1274	116.70	2.92	7.27	0.070
$T_2$ -14	1.5996	87.08	2.18	5.28	0.050

*\*Contrast sphere numbering is as appears when the phantom is viewed inferiorly\**



**T<sub>2</sub> contrast spheres values at 3.0 T.**  
**Batch #2 used. Measured at 16°C at NIST Boulder.**

	Nominal Concentration, MnCl <sub>2</sub> (± 5% mM)	T <sub>1</sub> (ms)	T <sub>1</sub> Standard Deviation, SD <sub>3R</sub> (ms)	T <sub>2</sub> (ms)	T <sub>2</sub> Standard Deviation, SD <sub>3R</sub> (ms)
T <sub>2</sub> -1	0.0113	2669.83	66.75	1705.84	16.03
T <sub>2</sub> -2	0.0181	1874.96	46.87	357.4	3.36
T <sub>2</sub> -3	0.0282	1657.68	41.44	247.93	2.33
T <sub>2</sub> -4	0.0434	1341.07	33.53	161.07	1.51
T <sub>2</sub> -5	0.0673	1307.88	32.70	154.07	1.45
T <sub>2</sub> -6	0.0934	892.29	22.31	81.86	0.77
T <sub>2</sub> -7	0.1353	711.11	17.78	59.45	0.56
T <sub>2</sub> -8	0.193	531.6	13.29	41.53	0.39
T <sub>2</sub> -9	0.2768	384.99	9.62	28.04	0.26
T <sub>2</sub> -10	0.4276	262.14	6.55	18.22	0.17
T <sub>2</sub> -11	0.5555	203.53	5.09	13.94	0.13
T <sub>2</sub> -12	0.7902	141.21	3.53	9.88	0.090
T <sub>2</sub> -13	1.1274	104.57	2.61	6.83	0.060
T <sub>2</sub> -14	1.5996	73.65	1.84	4.79	0.050

**T<sub>2</sub> contrast spheres values at 3.0 T.**  
**Batch #2 used. Measured at 18°C at NIST Boulder.**

	Nominal Concentration, MnCl <sub>2</sub> (± 5% mM)	T <sub>1</sub> (ms)	T <sub>1</sub> Standard Deviation, SD <sub>3R</sub> (ms)	T <sub>2</sub> (ms)	T <sub>2</sub> Standard Deviation, SD <sub>3R</sub> (ms)
T <sub>2</sub> -1	0.0113	2862.34	71.56	1823.56	17.14
T <sub>2</sub> -2	0.0181	2073.94	51.85	370.54	3.48
T <sub>2</sub> -3	0.0282	1783.21	44.58	257.47	2.42
T <sub>2</sub> -4	0.0434	1466.78	36.67	169.02	1.59
T <sub>2</sub> -5	0.0673	1417.53	35.44	159.77	1.50
T <sub>2</sub> -6	0.0934	972.48	24.31	85.92	0.81
T <sub>2</sub> -7	0.1353	757.34	18.93	61.31	0.58
T <sub>2</sub> -8	0.193	563.86	14.1	42.63	0.40
T <sub>2</sub> -9	0.2768	408.05	10.2	28.93	0.27
T <sub>2</sub> -10	0.4276	277.38	6.93	18.78	0.18
T <sub>2</sub> -11	0.5555	214.8	5.37	14.28	0.13
T <sub>2</sub> -12	0.7902	149.28	3.73	10.17	0.10
T <sub>2</sub> -13	1.1274	110.49	2.76	7.04	0.070
T <sub>2</sub> -14	1.5996	77.93	1.95	4.93	0.050

**T<sub>2</sub> contrast spheres values at 3.0 T.**  
**Batch #2 used. Measured at 22°C at NIST Boulder.**

	Nominal Concentration, MnCl <sub>2</sub> (± 5% mM)	T <sub>1</sub> (ms)	T <sub>1</sub> Standard Deviation, SD <sub>3R</sub> (ms)	T <sub>2</sub> (ms)	T <sub>2</sub> Standard Deviation, SD <sub>3R</sub> (ms)
T <sub>2</sub> -1	0.0113	3191.54	79.79	2023.15	19.02
T <sub>2</sub> -2	0.0181	2302.78	57.57	392.49	3.69
T <sub>2</sub> -3	0.0282	2009.05	50.23	276.98	2.60
T <sub>2</sub> -4	0.0434	1626.53	40.66	181.48	1.71
T <sub>2</sub> -5	0.0673	1589.88	39.75	172.51	1.62
T <sub>2</sub> -6	0.0934	1083.42	27.09	92.3	0.87
T <sub>2</sub> -7	0.1353	848.64	21.22	65.65	0.62
T <sub>2</sub> -8	0.193	634.59	15.86	45.86	0.43
T <sub>2</sub> -9	0.2768	454.82	11.37	30.92	0.29
T <sub>2</sub> -10	0.4276	308.92	7.72	20.07	0.19
T <sub>2</sub> -11	0.5555	238.33	5.96	15.24	0.14
T <sub>2</sub> -12	0.7902	166.64	4.17	10.88	0.10
T <sub>2</sub> -13	1.1274	123.22	3.08	7.49	0.07
T <sub>2</sub> -14	1.5996	87.08	2.18	5.28	0.05

**T<sub>2</sub> contrast spheres values at 3.0 T.**  
**Batch #2 used. Measured at 24°C at NIST Boulder.**

	Nominal Concentration, MnCl <sub>2</sub> (± 5% mM)	T <sub>1</sub> (ms)	T <sub>1</sub> Standard Deviation, SD <sub>3R</sub> (ms)	T <sub>2</sub> (ms)	T <sub>2</sub> Standard Deviation, SD <sub>3R</sub> (ms)
T <sub>2</sub> -1	0.0113	3365.05	84.13	2139.79	20.11
T <sub>2</sub> -2	0.0181	2424.62	60.62	406.02	3.82
T <sub>2</sub> -3	0.0282	2119.34	52.98	287.48	2.7
T <sub>2</sub> -4	0.0434	1715.06	42.88	187.21	1.76
T <sub>2</sub> -5	0.0673	1687.39	42.18	180.80	1.70
T <sub>2</sub> -6	0.0934	1141.5	28.54	95.97	0.90
T <sub>2</sub> -7	0.1353	892.41	22.31	67.82	0.64
T <sub>2</sub> -8	0.193	669.56	16.74	47.66	0.45
T <sub>2</sub> -9	0.2768	478.81	11.97	32.06	0.30
T <sub>2</sub> -10	0.4276	325.23	8.13	20.78	0.20
T <sub>2</sub> -11	0.5555	250.61	6.27	15.8	0.15
T <sub>2</sub> -12	0.7902	175.31	4.38	11.25	0.11
T <sub>2</sub> -13	1.1274	129.67	3.24	7.76	0.070
T <sub>2</sub> -14	1.5996	91.82	2.3	5.48	0.050

**T<sub>2</sub> contrast spheres values at 3.0 T.**

**Batch #2 used. Measured at 26°C at NIST Boulder.**

	Nominal Concentration, MnCl <sub>2</sub> (± 5% mM)	T <sub>1</sub> (ms)	T <sub>1</sub> Standard Deviation, SD <sub>3R</sub> (ms)	T <sub>2</sub> (ms)	T <sub>2</sub> Standard Deviation, SD <sub>3R</sub> (ms)
T <sub>2</sub> -1	0.0113	3536.79	88.42	2205.31	20.73
T <sub>2</sub> -2	0.0181	2546.04	63.65	420.75	3.96
T <sub>2</sub> -3	0.0282	2232.44	55.81	299.08	2.81
T <sub>2</sub> -4	0.0434	1801.61	45.04	192.23	1.81
T <sub>2</sub> -5	0.0673	1774.24	44.36	188.16	1.77
T <sub>2</sub> -6	0.0934	1202.4	30.06	99.89	0.94
T <sub>2</sub> -7	0.1353	937.12	23.43	70.57	0.66
T <sub>2</sub> -8	0.193	703.51	17.59	49.26	0.46
T <sub>2</sub> -9	0.2768	503.3	12.58	33.25	0.31
T <sub>2</sub> -10	0.4276	341.74	8.54	21.56	0.20
T <sub>2</sub> -11	0.5555	263.09	6.58	16.39	0.15
T <sub>2</sub> -12	0.7902	184.07	4.6	11.67	0.11
T <sub>2</sub> -13	1.1274	136.34	3.41	8.06	0.080