GOLD STANDARD PHANTOMS

MULTISAMPLE Prefilled Vials

with SI-Traceable NIST certification

in standard configurations for Diffusion and Relaxometry

Pre-filled vials to accompany the MultiSample series of phantoms. Vials are filled from batches of phantom materials where the National Institute of Standards and Technology (NIST) in the USA has characterised their MR properties over a range of temperatures, and these values and their corresponding uncertainties provided as a report that accompanies the vials.

Relaxometry

For MR relaxometry purposes we offer the following aqueous solutions of manganese chloride:

Order code	Nominal Manganese Chloride Concentration (mM)	Nominal T1 at 1.5 Tesla (ms)	Nominal T2 at 1.5 Tesla (ms)	Nominal T1 at 3.0 Tesla (ms)	Nominal T2 at 3.0 Tesla (ms)
MNCL-0017	0.017	2279	767	2327	492
MNCL-0027	0.027	1995	488	2013	328
MNCL-0039	0.039	1705	342	1756	235
MNCL-0055	0.055	1429	237	1505	170
MNCL-0078	0.078	1179	172	1251	123
MNCL-0110	0.110	973	131	994	90
MNCL-0159	0.159	707	86	758	60
MNCL-0195	0.194	593	70	649	50
MNCL-0245	0.245	492	56	544	40
MNCL-0320	0.320	390	42	435	30
MNCL-0480	0.480	260	27	306	20
MNCL-0630	0.630	191	19	236	15

T1 and T2 relaxation times are estimated based on NIST reference measurements. The actual relaxation times will vary on a batch to batch basis, however these will be provided based on NIST's SI traceable characterisation (NIST SP 250-97).

Other materials *Available!* on request.

Isotropic Diffusion

For isotropic diffusion, we provide aqueous solutions of poly-vinylpyrrolidone (PVP) K-30, doped with Nickel Chloride so that T1's and T2's are not excessively long. Each batch has their Diffusivity, T1 and T2 SI traceably characterised by NIST (NIST SP 250-100) at temperatures of 0, 16, 18, 20, 22, 24, 26, and 37 °C, and a field strength of 3.0 T.

Order code	Nominal PVP Concentration (% by weight)	Nominal Nickel Chloride Concentration (mM)	Diffusivity at 0°C (10^{-3}mm^2/s)	Diffusivity at 20°C (10^{-3}mm^2/s)
PVP - 0000	0.0	1.0	1.10	2.02
PVP - 0025	2.5	0.96	1.03	1.91
PVP - 0050	5.0	0.92	0.98	1.82
PVP - 0100	10.0	0.83	0.83	1.59
PVP - 0150	15.0	0.74	0.73	1.37
PVP - 0200	20.0	0.64	0.58	1.18
PVP - 0250	25.0	0.55	0.48	1.00
PVP - 0300	30.0	0.45	0.38	0.84
PVP - 0400	40.0	0.23	0.23	0.54
PVP - 0500	50.0	0.0	0.12	0.32

Values listed are based on a batch of manufactured solutions. Future batches may vary.

The certification on the MR property values is valid for 18 months, after which it is recommended that a new set is purchased to continue having the same level of assurance. All materials contain a highly effective, non-toxic, broad-spectrum preservative.

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