

# SELECT SERIES™ FOR HIGH-RESOLUTION NMR

## Manufactured from ASTM Type 1 Class A Glass, Commonly Referred to as Pyrex®

Our "Select Series™" NMR tubes are manufactured out of ASTM Type 1 Class A glass, commonly referred to as Pyrex® 7740 (Corning), Duran® (Schott Glass), or Kimax® KG-33 (Kimble) glass. Key properties that make this glass type desirable for NMR are its high degree of thermal shock resistance and low expansion coefficient. This allows for a greater margin of safety from breakage when used in variable temperature applications and freeze/thaw cycling, or under any other application where large temperature variations are required in the experiment. Each NMR tube is checked for concentricity and camber specifications utilizing the latest computer technology. At Norell we have taken NMR tube manufacturing to a new level of science.

### 10mm Ultra-Precision NMR Sample Tubes

Item No.	MHz	Oa.D. (mm)	I.D. (mm)	Concentricity (mm)	Camber ±(mm)	Length (mm)	Packed In Lots of
S-10-600-7	600	10.00 ± 0.006	8.76 ± 0.012	0.004	0.006	178	5
S-10-600-8	600	10.00 ± 0.006	8.76 ± 0.012	0.004	0.006	203	5
S-10-500-7	500	10.00 ± 0.013	8.76 ± 0.025	0.005	0.007	178	5
S-10-500-8	500	10.00 ± 0.013	8.76 ± 0.025	0.005	0.007	203	5

### 5mm Ultra Precision NMR Sample Tubes

Item No.	MHz	O.D. (mm)	I.D. (mm)	Concentricity (mm)	Camber ±(mm)	Length (mm)	Packed In Lots of
S-5-1000-7	1000	4.97 ± 0.003	4.20 ± 0.006	0.0018	0.0027	178	5
S-5-1000-8	1000	4.97 ± 0.003	4.20 ± 0.006	0.0018	0.0027	203	5
S-5-900-7	900	4.97 ± 0.004	4.20 ± 0.006	0.0020	0.0030	178	5
S-5-900-8	900	4.97 ± 0.004	4.20 ± 0.006	0.0020	0.0030	203	5
S-5-800-7	800	4.97 ± 0.005	4.20 ± 0.012	0.0025	0.0038	178	5
S-5-800-8	800	4.97 ± 0.005	4.20 ± 0.012	0.0025	0.0038	203	5
S-5-600-7	600	4.97 ± 0.006	4.20 ± 0.012	0.0040	0.0060	178	5
S-5-600-8	600	4.97 ± 0.006	4.20 ± 0.012	0.0040	0.0060	203	5
S-5-500-7	500	4.97 ± 0.013	4.20 ± 0.025	0.0050	0.0130	178	5
S-5-500-8	500	4.97 ± 0.013	4.20 ± 0.025	0.0050	0.0130	203	5
S-5-400-7	400	4.97 ± 0.013	4.20 ± 0.025	0.0070	0.0190	178	5
S-5-400-8	400	4.97 ± 0.013	4.20 ± 0.025	0.0070	0.0190	203	5
S-5-300-7	300	4.97 ± 0.025	4.20 ± 0.025	0.0070	0.0250	178	5
S-5-300-8	300	4.97 ± 0.025	4.20 ± 0.025	0.0070	0.0250	203	5
S-5-200-7	200	4.97 ± 0.030	4.20 ± 0.030	0.0090	0.0350	178	5
S-5-200-8	200	4.97 ± 0.030	4.20 ± 0.030	0.0090	0.0350	203	5

NMR tubes are manufactured with round bottoms and are available with flat bottoms upon request.  
We manufacture all NMR tubes in any length upon request.



Select Series™

**NORELL®**

**E-MAIL:** [customerservice@nmrtubes.com](mailto:customerservice@nmrtubes.com)

**WEBSITE:** [nmrtubes.com](http://nmrtubes.com)

**TO ORDER CALL:** 1.828.584.2600 **FAX:** 1.828.584.2604

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## 3mm & 4mm Ultra-Precision & High-Throughput NMR Sample Tubes

Item No.	MHz	O.D. (mm)	I.D. (mm)	Concentricity (mm)	Camber ±(mm)	Length (in)	Packed In Lots of
S-3-1000-7	1000	2.99 ± 0.003	2.41 ± 0.006	0.0018	0.0027	178	5
S-3-1000-8	1000	2.99 ± 0.003	2.41 ± 0.006	0.0018	0.0027	203	5
S-3-900-7	900	2.99 ± 0.004	2.41 ± 0.006	0.0020	0.0030	178	5
S-3-900-8	900	2.99 ± 0.004	2.41 ± 0.006	0.0020	0.0030	203	5
S-3-800-7	800	2.99 ± 0.005	2.41 ± 0.010	0.0025	0.0038	178	5
S-3-800-8	800	2.99 ± 0.005	2.41 ± 0.010	0.0025	0.0038	203	5
S-3-600-7	600	2.99 ± 0.006	2.41 ± 0.012	0.0040	0.0060	178	5
S-3-600-8	600	2.99 ± 0.006	2.41 ± 0.012	0.0040	0.0060	203	5
S-3-500-7	500	2.99 ± 0.010	2.41 ± 0.015	0.0050	0.0130	178	5
S-3-500-8	500	2.99 ± 0.010	2.41 ± 0.015	0.0050	0.0130	203	5
S-3-400-7	400	2.99 ± 0.013	2.41 ± 0.020	0.0070	0.0190	178	5
S-3-400-8	400	2.99 ± 0.013	2.41 ± 0.020	0.0070	0.0190	203	5
S-3-300-7	300	2.99 ± 0.025	2.41 ± 0.025	0.0070	0.0250	178	5
S-3-300-8	300	2.99 ± 0.025	2.41 ± 0.025	0.0070	0.0250	203	5
S-3-200-7	200	2.99 ± 0.030	2.41 ± 0.030	0.0100	0.0380	178	5
S-3-200-8	200	2.99 ± 0.030	2.41 ± 0.030	0.0100	0.0380	203	5
S-3-HT-7	HT	2.99 ± 0.030	2.41 ± 0.030	0.0110	0.0400	178	25
S-3-HT-8	HT	2.99 ± 0.030	2.41 ± 0.030	0.0110	0.0400	203	25
S-4-600-7							
S-4-600-8							

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Select Series™

## SELECT SERIES™ FOR HIGH-RESOLUTION NMR

### Select Series™ NMR Sample Tubes for Ceramic Turbines

Ceramic spinner turbines, often relied upon for variable or high temperature applications, are manufactured to extremely precise dimensional specifications.

Unlike conventional room temperature turbines made from polymers such as POM (acetal, or polyoxymethylene) and Kel-F (PCTFE, or polychlorotrifluoroethylene) or even variable temperature turbines made from PEEK (polyetheretherketone) which can flex and accommodate larger diameter tubes to a certain degree, most ceramic turbines will not tolerate even a slightly larger diameter tube.

Ceramic turbines, composed of a very hard, rigid and brittle refractory substance, cannot flex in the slightest degree, and many of the ones currently available do not incorporate any design features permitting some degree of flexure.

To compensate for this inability, the inner diameter of ceramic turbines must be very precise and uniform from one to another, ensuring consistent performance across multiple turbines and tubes.

Accordingly, the NMR sample tubes used with ceramic turbines must meet stringent dimensional specifications as well.

When working under variable temperature conditions, the tube diameter specifications narrow and tighten even more to take account of any slight thermal expansions or contractions that can result.

To meet this stringent diameter requirement, Norell has developed a new line of NMR sample tubes, including both 5mm and 3mm O.D. sizes, that adhere to strict outside diameter specifications that are very tightly controlled.



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## Select Series™ NMR Sample Tubes for Ceramic Turbines

Item No.	MHz	O.D. (mm)	I.D. (mm)	Concentricity (mm)	Camber ± (mm)	Length (mm)	Packed In Lots Of
CTS-5-900-7	900	4.93 +0.000 -0.008	4.16 ±0.006	0.0020	0.0030	178	5
CTS-5-900-8	900	4.93 +0.000 -0.008	4.16 ±0.006	0.0020	0.0030	203	5
CTS-5-800-7	800	4.93 +0.000 -0.010	4.16 ±0.012	0.0025	0.0038	178	5
CTS-5-800-8	800	4.93 +0.000 -0.010	4.16 ±0.012	0.0025	0.0038	203	5
CTS-5-600-7	600	4.93 +0.000 -0.012	4.16 ±0.012	0.0040	0.0060	178	5
CTS-5-600-8	600	4.93 +0.000 -0.012	4.16 ±0.012	0.0040	0.0060	203	5
CTS-5-500-7	500	4.93 +0.000 -0.026	4.16 ±0.025	0.0050	0.0130	178	5
CTS-5-500-8	500	4.93 +0.000 -0.026	4.16 ±0.025	0.0050	0.0130	203	5
CTS-3-900-7	900	2.95 +0.000 -0.008	2.37 ±0.006	0.0020	0.0030	178	5
CTS-3-900-8	900	2.95 +0.000 -0.008	2.37 ±0.006	0.0020	0.0030	203	5
CTS-3-800-7	800	2.95 +0.000 -0.010	2.37 ±0.010	0.0025	0.0038	178	5
CTS-3-800-8	800	2.95 +0.000 -0.010	2.37 ±0.010	0.0025	0.0038	203	5
CTS-3-600-7	600	2.95 +0.000 -0.012	2.37 ±0.012	0.0040	0.0060	178	5
CTS-3-600-8	600	2.95 +0.000 -0.012	2.37 ±0.012	0.0040	0.0060	203	5
CTS-3-500-7	500	2.95 +0.000 -0.020	2.37 ±0.015	0.0050	0.0130	178	5
CTS-3-500-8	500	2.95 +0.000 -0.020	2.37 ±0.015	0.0050	0.0130	203	5

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