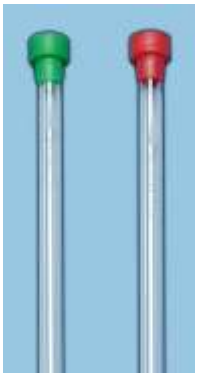
NMR Sample Tubes

Quality and value you can rely on!®

The products shown here represent a small portion of the many NMR items that can be found in our full NMR Catalog. Full product listings along with current prices may be viewed at www.newera-spectro.com.

STUDENT TRAINING / SAMPLE LIMITED / PRESSURE STUDIES



The "M" Series Pyrex 5mm NMR sample tubes are especially useful in training new students to prepare and run samples. The 0.77mm wall thickness greatly reduces the chances of breakage, allowing the student to concentrate on technique. Although more costly than "low end" tubes, the student may only need one tube (cleaned and reused) to complete the course, thus providing a savings.
The reduced sample volume (9.3µl versus 13.8µl cross-sectional volume for thin wall tubes) is useful for running limited sample volumes at medium fields.
The **medium wall thickness** makes these tubes more suitable for sealed samples that may develop elevated pressures during an experiment. Also, in the freeze/thaw method (see **Page 25**) of degassing a sample, the added wall thickness limits breakage due to stresses produced, especially by aqueous samples.

The "H" Series Pyrex 5mm NMR sample tubes offer a **heavier wall** (1.4mm) for further reduced sample volumes (3.8µl versus 9.3µl cross-sectional volume for medium wall tubes) and added safety in degassing samples by the freeze/thaw method (see **Page 25**).
There is no guarantee on performance due to the nature of the product.
Made of Pyrex, each tube is marked and capped.

"M" Series 5mm NMR SAMPLE TUBES (0.1950 - 0.1955" OD x 0.1345 - 0.1355" ID)

Catalog Number	Usage MHz	Wall	Maximum Wall Variation	Camber	Length	Price / each 1-99	Price / each 100+
NE-MP5-M-7 NE-MP5-M-8	100 - 200	0.77mm	0.006"	0.002"	7" (178mm) 8" (203mm)	$10.19 11.38	$ 9.26 10.44
NE-HP5-M-7 NE-HP5-M-8	300 - 400	0.77mm	0.003"	0.001"	7" (178mm) 8" (203mm)	16.76 17.39	14.82 16.07

"H" Series 5mm NMR SAMPLE TUBES (0.1950 - 0.1955" OD x 0.085" ID)

Catalog Number	Usage MHz	Wall	Maximum Wall Variation	Camber	Length	Price / each 1-25	Price / each 26+
NE-MP5-H-7 NE-MP5-H-8	100 - 200	1.4mm	0.006"	0.002"	7" (178mm) 8" (203mm)	$ 21.83 24.45	$ 19.76 22.08
NE-HP5-H-7 NE-HP5-H-8	300 - 400	1.4mm	0.003"	0.001"	7" (178mm) 8" (203mm)	24.58 27.21	22.27 24.58

ROUTINE GRADE / SAMPLE SCREENING

The "R" Series 5mm NMR sample tubes offer an ECONOMICAL way to do quick screening on a large number of "routine" samples that are usually disposed of afterwards. However, unlike other "disposable""NMR tubes, this product has a closely selected OD (0.1935-0.1955") to ensure that every tube fits the spinner with a minimum of variation. Another enhancement is our tighter camber specification of 0.004" TIR. Other brands may vary as much as 0.008-0.010". It is very important to note that the use of low quality tubes, with excessive camber, may be causing as yet undetected damage to the insert.
These tubes are not recommended for student training. They are ideally suited for high-throughput industrial and pharmaceutical laboratories with experienced personnel. Made of Type 1, Class B Borosilicate glass. Packed 50 tubes per package, unmarked, with caps packed separately.

"R" Series 5mm NMR SAMPLE TUBES (5mm nominal OD x 0.4mm nominal wall)

Catalog Number	Usage MHz	Maximum Wall Variation	Camber TIR	Length	Price / Pkg/50 1-5	Price / Pkg/50 6+
NE-RG5-7 NE-RG5-8	100	0.004"	0.004"	7" (178mm) 8" (203mm)	$ 143.66 160.30	$ 129.90 145.16

Ph: 1-800-821-4667 Fax: 1-856-697-8727 cs@newera-spectro.com www.newera-spectro.com

NMR SAMPLE TUBES

5mm NMR SAMPLE TUBES

The New Standard in NMR Sampling

APPLICATION CHART

Matching the sample tube to the application will give the quickest and most effective results. This chart indicates the most appropriate tube to use for various applications and MHz. If you are not sure, please contact us for help: **cs@newera-spectro.com** or **1-800-821-4667**.

Enhanced dimensional uniformity --- for greater performance, reliability and repeatability. Improved straightness, wall uniformity and roundness all add to make the most stable sample column.

MHZ	GENERAL APPLICATION	SAMPLE TUBES
100 - 300	Routine organic chemistry Educational applications	NE-LL5-, NE-LP5-
300 - 400	Routine organic chemistry Educational applications Routine synthetic chemistry research High throughput	NE-ML5-, NE-MP5-
400 - 500	Routine synthetic chemistry research High throughput	NE-HL5-, NE-HP5-
500 - 700	Organic chemistry research Metabolic mixture analysis (biofluids) High throughput	NE-UL5-, NE-UP5-
700 - 900+	Structural biology, Metabolic analysis Multi-Purpose research	NE-SL5-, NE-SP5-

QC / Routine Analysis / Research

Ideal for biological samples, hands-on and high throughput / autosampler, and samples not requiring special handling. Suitable for all experiments when matched to the application and instrument field strength.

Made of Type 1, Class B Borosilicate glass. These tubes are not suitable for flame sealing to Pyrex or equivalent. Each tube is capped and marked with the catalog number.

"L" Series 5mm NMR SAMPLE TUBES
(4.960 ± 0.006mm OD; 0.40mm nominal wall; 0.0025mm roundness)

CATALOG NUMBER (cap color)	USAGE MHz	WALL VARIATION (±mm)	CAMBER (±mm)	LENGTH	PRICE / EA 1-99	PRICE / EA 100-UP
NE-LL5-7 (yellow)	100-300	0.010	0.025	7" (178mm)	$5.27	$5.20
NE-LL5-8				8" (203mm)	5.65	5.59
NE-ML5-7 (red)	300-400	0.0075	0.019	7" (178mm)	5.65	5.59
NE-ML5-8				8" (203mm)	5.92	5.85
NE-HL5-7 (green)	400-500	0.0065	0.0065	7" (178mm)	6.39	6.13
NE-HL5-8				8" (203mm)	7.99	7.61
NE-UL5-7 (blue)	500-700	0.003	0.003	7" (178mm)	10.88	10.57
NE-UL5-8				8" (203mm)	12.45	12.13
NE-SL5-7 (white)	700-900+	0.001	0.002	7" (178mm)	12.45	11.82
NE-SL5-8				8" (203mm)	14.13	13.45

5mm NMR SAMPLE TUBES, cont'd

Superior Research / Air-Moisture Sensitive / Vacuum Studies

Suitable for all experiments when matched to the application and field strength. These sample tubes are useful for air-moisture sensitive samples, organometallics, kinetics and other samples requiring carefully controlled environments

Made of Type 1, Class A Borosilicate glass (Pyrex or equivalent). Each tube is capped and marked with the catalog number.

"P" Series 5mm NMR SAMPLE TUBES
(4.960 ± 0.006mm OD; 4.200 ± 0.006mm ID; 0.0025mm roundness)

CATALOG NUMBER	USAGE MHz	WALL (mm)	WALL VARIATION (±mm)	CAMBER (±mm)	LENGTH	PRICE / EA 1-99	PRICE / EA 100-UP
NE-LP5-7	100-300	0.38	0.025	0.019	7" (178mm)	$6.82	$6.82
NE-LP5-8					8" (203mm)	7.13	7.13
NE-LP5-9					9" (229mm)	7.44	7.44
NE-MP5-7	300-400	0.38	0.019	0.010	7" (178mm)	8.26	8.19
NE-MP5-8					8" (203mm)	9.01	8.94
NE-MP5-9					9" (229mm)	9.94	9.88
NE-HP5-7	400-500	0.38	0.010	0.006	7" (178mm)	13.63	12.20
NE-HP5-8					8" (203mm)	14.95	13.63
NE-HP5-9					9" (229mm)	16.70	15.07
NE-UP5-7	500-700	0.38	0.006	0.003	7" (178mm)	18.01	17.45
NE-UP5-8					8" (203mm)	19.51	18.95
NE-UP5-9					9" (229mm)	21.70	19.64
NE-SP5-7	700-900+	0.38	0.002	0.002	7" (178mm)	27.89	26.64
NE-SP5-8					8" (203mm)	30.52	29.27

NE-HP5-7-5pk	400-500	0.38	0.010	0.006	7" (178mm)	68.16/pk	
NE-HP5-8-5pk	400-500	0.38	0.010	0.006	8" (203mm)	74.74/pk	

High Temperature / UV Studies

The "Q" Series 5mm Quartz NMR sample tubes are useful in applications requiring temperatures above 150^{o}C and in studies requiring UV irradiation (>80% above 255 nm). With a composition containing 0-0.1 ppm Boron, by weight, these tubes have been helpful in studying this nucleus. Made of Clear Fused Quartz, 99.8% SiO_2. Each tube is marked and capped.

"Q" Series Quartz 5mm NMR SAMPLE TUBES
(0.1950 - 0.1955" OD x 0.50mm Wall)

CATALOG NUMBER	USAGE MHz	WALL VARIATION	CAMBER	LENGTH	PRICE / EA 1-25	PRICE / EA 26+
NE-MQ5-7	200	0.002"	0.001"	7" (178mm)	$32.84	-------
NE-MQ5-8				8" (203mm)	36.78	---------
NE-HQ5-7	300-500	0.001"	0.0005"	7" (178mm)	38.09	34.15
NE-HQ5-8				8" (203mm)	41.97	38.09

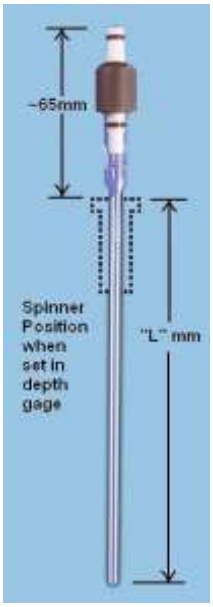
SPECIALTY NMR SAMPLE TUBES

CONTROLLED ATMOSPHERE VALVE (CAV) SAMPLE TUBE

A linear valve system for performing controlled atmosphere experiments by NMR. The concentric valve mechanism consists of a sturdy, precision machined TFE plug with a Viton o-ring seal. A glass vacuum adapter is supplied with each system. It is secured to the top of the valve with a press fit sealed by an o-ring.

Application Note:

To use the CAV, the glass adapter is first secured to the vacuum line. With the valve attached and in the open position, vacuum transfers can be made to and from the sample tube. Once the proper sample environment is attained, the valve can be closed and the system can be removed from the vacuum line. The process is repeated to retrieve the sample.



This system is very useful in the study of organometallics or other moisture and air sensitive samples.

Note: It is not recommended to use ketones, aldehydes, ethers or aliphatic esters with Viton rubber. Aegis o-rings are available for use with these compound types (see below) and must be ordered separately.

Note: To the catalog number, add the length "L" (XXX), in mm, that places the valve directly on top of the spinner. This is necessary to maintain good spinning quality. **Example: NE-CAV-170 indicates L=170mm**.

Note: To the catalog number after the length, add **"-SX"** if using with the **Bruker SampleXpress** auto-changer system. This will provide a smaller OD on the knob for proper fitting. **Example: NE-CAV-170-SX.** Prices remain as below.

Catalog Number	Sample Tube	Wall (mm)	Usage MHz	Price / each
NE-CAV5-XXX	NE-HP5	0.38	400-500	$110.39
NE-CAV5-M-XXX	NE-HP5-M	0.77	300-400	123.52
NE-CAV5-H-XXX	NE-HP5-H	1.4	300-400	136.66
NE-CAV10-XXX	NE-H10	0.46	300-500	122.52
NE-CAV10-M-XXX	NE-H10-MW	1.00	300-400	130.40
NE-CAV10-H-XXX	NE-H10-HW	1.7	300-400	155.36
				285.13
				324.66

PRESSURE VALVE (PCAV) SAMPLE TUBE

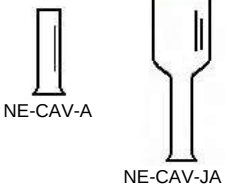
Constructed as the CAV Sample Tube above; except, the PCAV Sample Tube allows for easy connection to a gas manifold with a nut and ferrule for 1/16" tubing. The extended plug tip gives finer control of flow. When the valve is completely closed, the gas line is easily disconnected from the top of the valve body. The system has been successfully tested to **20 atmospheres** with the 5mm **medium-wall** tube.
Individual results may vary and cannot be guaranteed.
The above "Notes" also apply here for o-ring chemical compatability and the "L" Dimension.


Top of PCAV

Catalog Number	Sample Tube	Wall (mm)	Usage MHz	Price / each
NE-PCAV5-XXX	NE-HP5	0.38	400-500	$ 157.48
NE-PCAV5-M-XXX	NE-HP5-M	0.77	300-400	170.93
NE-PCAV5-H-XXX	NE-HP5-H	1.4	300-400	203.08
				164.36
				173.62
NE-PCAV10-XXX	NE-H10	0.46	300-500	189.32

CAV / PCAV Spare Parts

Catalog Number	Description	Tube	Price / each
NE-CAV5-G-XXX	Valve Body, only, Thin-Wall Tube	CAV, PCAV	$ 75.99
NE-CAV5-M-G-XXX	Valve Body, only, Medium-Wall Tube	CAV, PCAV	77.93
NE-CAV5-H-G-XXX	Valve Body, only, Heavy-Wall Tube	CAV, PCAV	85.87
NE-CAV-P	Plug, TFE with knob and sealing O-ring	CAV	$ 61.92
NE-PCAV-P	Plug, TFE with knob, o-rings and fittings	PCAV	82.74
NE-CAV-SO	Sealing O-ring, Viton	CAV, PCAV	3.19
NE-CAV-SO-A	Sealing O-ring, Aegis	CAV, PCAV	45.41
NE-CAV-RO	Retaining O-ring, Viton, to retain valve knob	CAV, PCAV	3.19
NE-CAV-RO-A	Retaining O-ring, Aegis, to retain valve knob	CAV, PCAV	45.41
NE-CAV-A	Adapter, only, glass	CAV	14.26
NE-CAV-JA	Adapter, with 24/40 outer joint, glass	CAV	38.59
NE-PCAV-FN	Ferrule/Nut Set, one ferrule and one nut	PCAV	11.76



References: Constrained Geometry Chromium Catalysts for Olefin Polymerization; Y. Liang, G.P.A. Yap, A.L. Rheingold, K.H. Theopold, *Organometallics* 1996, 15, 5284
[$(Ph)_2$ nacnac]$MCl_2(THF)_2$ (M=Ti, V, Cr)-- A New Class of Homogeneous Olefin Polymerization Catalysts Featuring β-Diiminate Ligands, W.K. Kim, M.J. Fevola, L.M. Liable-Sands, A.L. Rheingold, K.H. Theopold *Organometallics* 1998, 17, 4541