

# About New Era



## ***Our pledge to you...***

*To provide the highest quality products,  
personalized customer service, prompt  
delivery and competitive prices.*

***Quality and value you can rely on!***



## **President's Message...**

*For more than 30 years the New Era "family" of employees has produce the quality products vital to your research and we will continue to do so into the future. Our entire staff proudly appreciates that our efforts have been met with great enthusiasm by our many customers. If you haven't purchased New Era NMR products, come try our products and become part of our "family" of satisfied customers. You will be glad that you did!*

*Look for the announcement of new sampling products along with the launch of our new and improved website in the coming months.*

***We look forward to hearing from you!***

## **Why choose New Era NMR Sample Tubes...**

- **Most uniform sample column**
- **Tube configurations for most applications**
- **Attain spin rate and auto-shim quickly**
- **Collect the best data in the shortest time**
- **More efficient use of spectrometer time**
- **Move through your research more quickly**
- **The best overall quality and value**

**Visit us at EAS, ENC, PANIC and SMASH**

# Table of Contents

## NMR Micro Tubes

Micro Sample Tubes .....	5
Micro Tube / Capillary Compatibility Chart.....	6
Capillaries .....	6
Adapters / Support Rods .....	7
Micro Tube / Capillary Kits .....	7
5mm Cryo-Probe Sample Cell .....	8
Auto Prep Short Micro Sample Tubes .....	10
Sample Tube Inserts for Off-Coil Lock .....	10
Capillary Tubes, 1.7mm .....	10

## NMR Sample Tubes

Sample Tubes – 3mm .....	10
Sample Tubes – 5mm (QC, Routine Analysis, Research) .....	11
Sample Tubes – 5mm (Superior Research, Pyrex or equivalent, including Quartz).....	12
Sample Tubes – 5mm (Medium, Heavy Wall) .....	13
Sample Tubes – 5mm (Disposable) .....	13
Sample Tubes – 8mm, 10mm (including 10mm Quartz) .....	14
Sample Tubes – 15mm to 30mm .....	15

## Glass Sample Cells

Glass Sample Cells, Round and Rectangular (Protein and Tissue Studies, Imaging).....	16
--	----

## Specialty NMR Sample Tubes

Light Sensitive Sample Tubes .....	17
Screw Thread Sample Tubes (including caps and septa) .....	17
Controlled Atmosphere Valve, Pressure Valve Sample Tubes .....	18
Gel Sample Stretch Device .....	19-21
Gel Sample Compression Device .....	22
Sample Reaction System, 5mm .....	24
Tip-Off Sample Tubes and techniques (flame seal) .....	25
Tip-Off Sample Tube Adapter/Valve, Tip-Off Dewar.....	26
Non-Glass Poly Sample Cells and Accessories (Boron, Fluorine and Silicon Studies) .....	27
Coaxial Insert Cells .....	28
Hazardous Sample Cell System .....	28
Teflon Tube Liners .....	28

## EPR (ESR) and Raman Sample Tubes

EPR Sample Tubes (Quartz) .....	29
Raman Sample Tubes .....	29

## NMR Sampling Accessories

Sample Tube Washers and Vacuum Flask .....	30-31
Sample Tube Caps (including Teflon 5mm caps) .....	32
Pipets and Rubber Bulbs .....	33
Sample Tube Holders, 5 and 10mm (Racks) .....	33
Cleaning Brush for 5mm sample tubes .....	33
Micro Funnel .....	34
Micro Spatula .....	34
Labels, clear for sample tubes .....	34
Marking Pens .....	34
MASS Rotor Inserts (Pyrex) .....	35
Probe Inserts, Quartz .....	35
Dewars for NMR Applications .....	36

## Food Science/Biodiesel Sampling Glassware

10mm OD TD NMR Tubes .....	37
Rancimat Glassware, Reaction Vessels, Air Tubes.....	37
Conductivity Vessels .....	37

Distributor Listing .....	38
Product Cross-Reference .....	39-41
Catalog Number Index .....	42

### How to Reach New Era

#### Domestic

Phone 1-800-821-4667  
Fax 1-856-697-8727

#### International

Phone ++ 856-794-2005  
Fax ++ 856-697-8727

e-mail: [cs@newera-spectro.com](mailto:cs@newera-spectro.com)

Web page: <http://newera-spectro.com/>

### Remittance and Correspondence

New Era Enterprises, Inc.  
PO Box 747  
Vineland, NJ 08362-0747 USA

### Ordering

Place orders directly with New Era or one of our domestic distributors. Our international customers may direct their orders to the nearest distributor in their area. See **Page 38** for our distributor listing.

*To ensure the best service, when ordering be sure to include the following information:*

- shipping and invoicing addresses
- purchase order number
- complete catalog numbers and quantity
- a brief description of each item

### Payment

US Payments are accepted by check or by credit card.

International Payments, in US Dollars only, are accepted by credit card or by prepayment with a check drawn on a US bank or electronic transfer.

We accept Visa, MasterCard and American Express.

Conditions may vary with our distributors. Please contact them for details.

### Prices

All prices are in US Dollars and are subject to change without notice. If you have any questions, contact New Era or your nearest distributor for updates.

For international requests, a Pro Forma Invoice, showing all costs along with delivery time and payment terms, will be prepared for your review. No actions will be taken until a purchase order is received from you.

### Minimum Order / Terms / FOB

Minimum Order: \$50 USA, \$100 outside USA.

Terms: Net 30 Days

FOB: Vineland, NJ USA

### Delivery

Items are shipped promptly via UPS, FedEx or Air Parcel Post as you indicate when ordering. In the event of backorders, a partial shipment would be made at your request.

### Returns

Before a return is made, contact New Era to discuss the nature of the return. The original purchase order number, the catalog number and quantity of the item(s) in question are needed to resolve the matter quickly.

A restocking fee may be applied for items that are returned. All items will be inspected and a credit will be issued only on parts that have not been used or damaged and the original packaging is unopened.

### Warranty

New Era Enterprises, Inc. warrants that the products listed in this catalog meet the descriptions and/or specifications so given. No other expressed or implied warranty is given. This supersedes all other warranties, representations and guarantees.

### Trademarks used in this catalog

Teflon, PTFE, Viton, Nylon - E.I. DuPont

Pyrex - Corning Glass Works

Kel-F - 3M Co.

FETFE - Ace Glass Co.

# Sample Tube Quality

## Why use QUALITY NMR sample tubes?

### THE QUALITY....

"Collecting the highest quality data in the least amount of time." It's fundamentally paramount and yet often overlooked. New Era creates sample tubes that produce consistent, high quality results to reveal all the data your spectrometer is capable of delivering. New Era quality gives accurate, reproducible answers for increased experimental efficiency and a boost in your productivity.

### THE CONTRAST....

A poor quality tube\* precesses within the magnetic field presenting an inhomogeneous, unstable sample to your NMR probe.

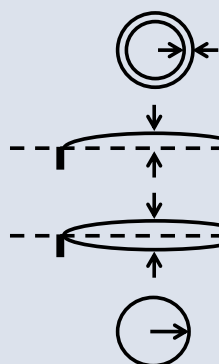
### THE CONSEQUENCES with poor quality tubes

- Shimming will be time consuming, if not impossible.
- Time averaged data collection will be inefficient, resulting in lost sensitivity and productivity.
- Line broadening may obscure important minor spectral components.
- Early time points in kinetic studies may be missed with loss of meaningful peaks.
- Spinning side bands may produce spectral artifacts leading to wrong conclusions.
- Delayed research and missed instrument time slots.
- Poor spinning can cause costly damage to probe and solenoids.

**NEW ERA NMR SAMPLE TUBES... give you high quality and consistent results.**

## IMPORTANT SPECIFICATIONS

The following specifications are very important parameters to consider when choosing the best tube to use for your application. Generally, the higher the field, the better the dimensional uniformity needed. Following is a brief explanation of what these specifications represent.



#### CONCENTRICITY

The maximum variation in wall thickness, which represents how centered the I.D. is to the O.D.

#### CAMBER

Deviation from the theoretical axis of the tube, which represents the amount of bow in the tube.

#### CAMBER TIR

The Total Indicator Reading or runout from the theoretical axis. Both notations are used in this catalog. They may represent the same absolute straightness, i.e.: camber 0.0005" = camber TIR 0.001".

#### ROUNDNESS

Symmetry around the theoretical axis of the tube.

## PRESSURE / VOLUME DATA

This information is presented for reference only. It is not a guarantee of performance, which will be dependent upon your applications and handling. **Static testing** is highly recommended before actual experiments are performed. The calculation for pressure includes a safety factor of four. Volume data is approximate.

Sample Tube	Wall Thickness	Pressure	Volume at Sample Height	
			50mm	60mm
5mm O.D.	0.38mm	154 psi	0.67ml	0.83ml
5mm O.D.	0.77mm	307 psi	0.50ml	0.56ml
5mm O.D.	1.4mm	565 psi	0.19ml	0.23ml
10mm O.D.	0.46mm	94 psi	3.30ml	4.00ml
10mm O.D.	1.00mm	203 psi	2.50ml	3.00ml
10mm O.D.	1.7mm	340 psi	1.7ml	2.0ml

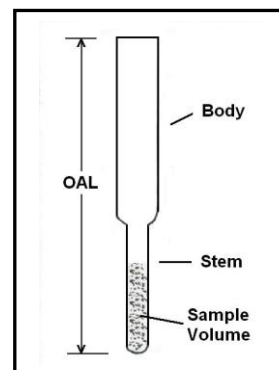
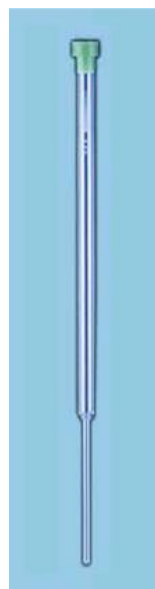
# Micro NMR Sample Tubes

## Micro NMR Sample Tubes

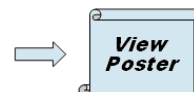
Whether you want to study metabolites, degradation products, bio-fluids, any mass limited samples or just want to conserve sample, these Micro Tubes can be very useful. They are designed for use with reduced sample volumes in cryo/cold probes as well as micro and all standard 5mm probes. The upper portion (body) of the tube is precision 5mm to fit all standard 5mm probes. The body also accommodates the Teflon Adapters used to secure a central capillary to further reduce the sample volume. In all cases the narrow sample column eliminates any susceptibility issue. Coaxial alignment is maintained to give the most stable sample column.

All volumes are calculated for a 30mm sample height and they are approximate values. Proper filling factors will vary for various probes. Inquire about large quantity prices.

To learn more about how Micro Tubes and capillaries can be useful in studying small sample volumes follow the link below. It will take you to a poster describing work completed using these products.



Ref: **A Simple and Versatile NMR Tube Construct for Sensitive and Multinuclear Analysis**  
Istvan Pelczer, Dept. of Chemistry, Princeton University, Princeton NJ 08544  
[ipelczer@princeton.edu](mailto:ipelczer@princeton.edu)



Catalog No. (body/stem)	Sample Volume μl	Stem Length mm	OAL mm	Applications	Price / each		
					1-4	5-9	10+
NE-H5/4	264	60	200	Varian 5mm probes w/wo auto-changer. Bruker and JEOL 5mm probes.	\$ 31.51	\$ 29.93	\$ 27.03
NE-H5/4-Br	264	60	179	Bruker 5mm probes w/wo auto-changer. JEOL and Varian 5mm probes.	31.51	29.93	27.03
NE-H5/3	130	60	200	Varian 3-5mm probes w/wo auto-changer. Bruker and JEOL 5mm probes.	30.04	28.56	25.71
NE-H5/3-Br	130	60	179	Bruker 5mm probes w/wo auto-changer. JEOL and Varian 5mm probes.	30.04	28.56	25.71
NE-H5/2.5	115	47	165	Bruker 2.5-5mm probes w/wo auto-changer.	30.04	28.56	25.71
NE-H5/2.5-V	115	60	200	Varian 3-5mm probes w/wo auto-changer. Bruker and JEOL 5mm probes.	30.04	28.56	25.71
NE-H5/2.5-V-Br	115	60	179	Bruker 2.5-5mm probes w/wo auto-changer. JEOL 5mm and Varian 5mm probes w/wo auto-changer.	30.04	28.56	25.71
NE-H5/2-V-Br	35	60	179	Bruker 2.5-5mm probes w/wo auto-changer. JEOL 5mm and Varian 3-5mm probes.	30.04	28.56	25.71

**All volumes** are calculated at **30 mm sample height** and are for reference, only.  
Proper filling factors may vary with the probe.



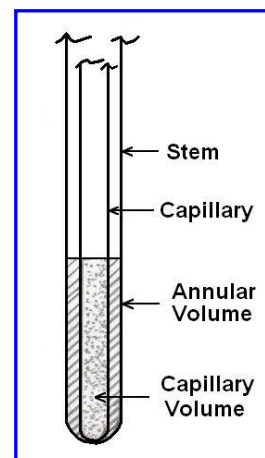
## Micro Tube / Capillary Compatibility Chart

All Micro Tubes are designed to fit 5mm probes and/or specific micro probes. Find the combination that will best suit your sample size and probe. Adapters for securing the capillary coaxially in the tube are described on [Page 7](#).

The micro tubes and capillaries, made of Type 1, Class A borosilicate glass, have uniform round bottoms and a light fire polish on the open end. They can be used for small sample volumes or for an external reference.

The capillary systems are ideal for the NMR studies of:  
Isolated Metabolites & Mixtures, Cell Extracts, Biofluids, Cell Suspensions and all other Mass Limited Samples.

Beyond speeding up experiments for very soluble samples, sub-mM concentrations and sample volumes of 15 to 115µl are easily handled by the systems. Samples are placed into disposable capillaries and gradient - shims are done only on the sample itself. Other advantages include the possible reduction of temperature gradient effects on the water signal in a 5mm tube and potentially better resolution on smaller diameter samples. The residual (annular) space between the capillary and the tube can be filled with a lock or reference material as opposed to adding these materials directly into the sample. This not only keeps your sample as concentrated as possible, it allows easy access to multinuclear ( $^1\text{H}$ ,  $^{19}\text{F}$ ,  $^2\text{H}$ ) measurements.



Capillary	1mm OD		1.7mm OD		2mm OD		2.5(A)mm OD		2.5mm OD	
Micro Tube	Cap. Vol.	Anu. Vol.	Cap. Vol.	Anu. Vol.	Cap. Vol.	Anu. Vol.	Cap. Vol.	Anu. Vol.	Cap. Vol.	Anu. Vol.
NE-UP5-7	15µl	391µl	50µl	347µl	35µl	321µl	97µl	268µl	115µl	268µl
NE-H5/4	15	240	50	196	35	170	97	117	115	117
NE-H5/4-Br	15	240	50	196	35	170	97	117	115	117
NE-H5/3	15	106	50	62	35	36	-	-	-	-
NE-H5/3-Br	15	106	50	62	35	36	-	-	-	-
NE-H5/2.5	15	91	50	47	-	-	-	-	-	-
NE-H5/2.5-V	15	91	50	47	-	-	-	-	-	-
NE-H5/2.5-V-Br	15	91	50	47	-	-	-	-	-	-
NE-H5/2-V-Br	15	11	-	-	-	-	-	-	-	-

## Capillaries

All capillaries are made of Type 1, Class A borosilicate glass. They have uniform round bottoms and have a light fire polish on the open end.

**NEW!!** 1mm OD capillaries are available with a protective polymer sleeve to reduce breakage and potential loss of a valuable sample. The addition of the sleeve will also allow for repeated use of the Adapter, NE-325-5/1, which is required and is designed for use with NE-262-1-PS and NE-263-1-PS, only. Large quantity prices are available upon request.



Capillary Size mm	Volume at 30mm Height	Cat. No. 75mm Long	Price / Pk/10			Cat. No. 100mm Long	Price / Pk/10		
			1-4	5-9	10+		1-4	5-9	10+
1 x 0.8	15µl	NE-262-1	\$ 43.55	\$ 40.22	\$ 36.85	NE-263-1	\$ 56.85	\$ 52.42	\$ 47.98
1 x 0.8-PS	15µl	NE-262-1-PS	56.85	53.47	50.15	NE-263-1-PS	67.88	64.56	61.29
1.7 x 1.4	50µl	NE-262-1.7	43.55	40.22	36.85	NE-263-1.7	56.85	52.42	47.98
2 x 1.2	35µl	NE-262-2	43.55	40.22	36.85	NE-263-2	56.85	52.42	47.98
2.5 x 2	97µl	NE-262-2.5-A	43.55	40.22	36.85	NE-263-2.5A	56.85	52.42	47.98
2.5 x 2.2	115µl	NE-262-2.5	43.55	40.22	36.85	NE-263-2.5	56.85	52.42	47.98

## ADAPTERS

For use with capillary series NE-262-, NE-263- and precision thin-wall 5mm NMR sample tubes and all Micro Tubes. Made of Teflon with a blind hole to hold and seal the capillary. An internal thread in the top end of the Adapter accommodates the Extraction Rod, NE-341-5.

Catalog Number	For use with these Capillaries	Price / each		
		1-4	5-9	10+
NE-325-5/1	NE-262-1-PS, NE-263-1-PS	\$ 24.07	\$ 21.85	\$ 19.85
NE-325-5/1.7	NE-262-1.7, NE-263-1.7	24.07	21.85	19.85
NE-325-5/2	NE-262-2, NE-263-2	24.07	21.85	19.85
NE-325-5/2.5	NE-262-2.5, -2.5A; NE-263-2.5, -2.5A	24.07	21.85	19.85

## EXTRACTION ROD

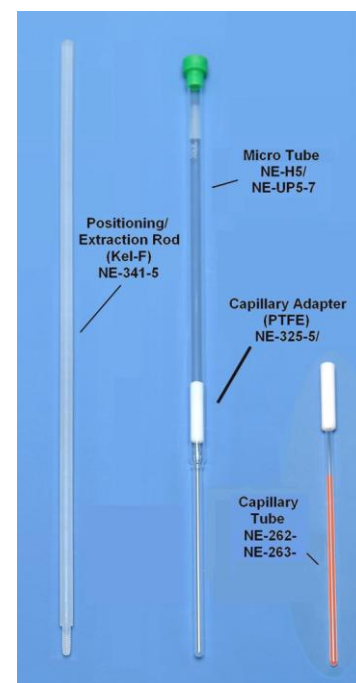
For use with all 5mm Adapters.

Catalog Number	Description	Price / each		
		1-4	5-9	10+
NE-341-5	Extraction Rod, Kel-F, 1/8 x 8", 4-40 thread	\$ 16.05	\$ 15.10	\$ 14.57

## MICRO TUBE / CAPILLARY KITS

Refer to the Compatibility Chart (see **Page 6**) to select the Micro Tube and Capillary size that would best suit your sample volume and probe. The kits offer an inexpensive way to get started with micro sampling and additional components are all available separately. If you don't find what you need, please inquire.

Beyond speeding up experiments for very soluble samples, sub-mM concentrations and sample volumes of 15 to 115µl are easily handled by the systems. Samples are placed into disposable capillaries and gradient - shims are done only on the sample itself. Other advantages include the possible reduction of temperature gradient effects on the water signal in a 5mm tube and potentially better resolution on smaller diameter samples. The residual (annular) space between the capillary and the tube can be filled with a lock or reference material as opposed to adding these materials directly into the sample. This not only keeps your sample as concentrated as possible, it allows easy access to multinuclear (<sup>1</sup>H, <sup>19</sup>F, <sup>2</sup>H) measurements.



Each kit contains one micro tube / sample tube, one adapter, one extraction rod and 5 capillaries.

Catalog Number (Kit)	Micro Tube	Capillary	Capillary OD	Capillary Volume	Annular Volume	Price / each
NE-380-A	NE-H5/3	NE-262-2	2mm	35µl	36µl	\$ 83.40
NE-380-B	NE-H5/2.5	NE-262-1.7	1.7mm	50µl	47µl	83.40
NE-380-C	NE-UP5-7	NE-262-2.5	2.5mm	115µl	268µl	71.26
NE-380-D	NE-H5/3-Br	NE-262-2	2mm	35µl	36µl	83.40
NE-380-E	NE-H5/2.5-V-Br	NE-262-1.7	1.7mm	50µl	47µl	83.40

All volumes are calculated at 30 mm sample height and are for reference, only.  
Proper filling factors may vary with the probe.

Ref: **A Simple and Versatile NMR Tube Construct for Sensitive and Multinuclear Analysis**  
Istvan Pelczer, Dept. of Chemistry, Princeton University, Princeton NJ 08544  
[mpelczer@princeton.edu](mailto:mpelczer@princeton.edu)



# 5mm Cryo-Probe Sample Cell

Salty samples greatly reduce cryoprobe (cold probe) efficiency by degrading sensitivity and extending the 90 degree pulse width. This can be resolved by "taking a tube with smaller OD than that of the probe introducing an air gap and increasing the distance between the body of the sample and the coil."<sup>1</sup>

Our 5mm Cryo-Probe Sample Cell accomplishes this while separating lock and shim. "It is most useful for (biological) samples in water but can be beneficial for all samples of high ionic strength. A relatively large OD (typically 4.1mm) tube is used to carry the sample while the lock solvent is between the walls of the 5mm OD container tube and the insert."<sup>1</sup> "This tube construct largely resolves the above issues, retains the highest sensitivity, and makes it possible to avoid any dilution of the sample itself, next to additional smaller benefits."<sup>1</sup>

"The simple construct with 4.1 mm OD insert introduces better tuning conditions, reduces the actual 90 deg. pulse width, and leads to improved sensitivity in cryoprobes thanks to the insulating effect of the pure lock material between the salty sample and the coil.

This inexpensive tube construct is not only a simple alternative to the more sophisticated, in the same time more complicated and more expensive solutions, but also offers all the advantages of separating lock and shim and allows using the original samples in their native condition."<sup>1</sup>

1. Pelczer, I " A simple and effective tube construct for salty samples in cryoprobes" 14th CPSA, Oct. 3-6, 2011

A PDF file of the poster is available upon request.



## Starter Kit and Accessories

Catalog Number	Description	Price / each		
		1-4	5-9	10+
NE-318-SCSK	Sample Cell Starter Kit (5 cells, 1 rod, 1 adapter)	\$ 83.72	\$ 81.56	\$ 77.23
NE-318-4.1	Adapter Plug (Teflon with internal thread and vent hole)	24.65	22.86	21.48
NE-341-5	Extraction Rod (Kel-F, 8" Long)	16.05	15.10	14.57
NE-318-C	Cap, Sample Cell (Polyethylene)	\$4.06 / Pk/10		

## 5mm Cryo-Probe Sample Cells

Catalog Number	Description	Price / each		
		1-49	50-99	100+
NE-4.1-74-RB	4.1mm OD x 3.38mm ID x 74mm long; sample volume at 30mm height is 270µl; annular volume (for lock) at 50mm height is 40µl; for use with NE-HP5-7, NE-UP5-7 or NE-SP5-7, 5mm sample tubes	\$ 8.60	\$ 7.92	\$ 7.44



# A simple and effective tube construct for salty samples in cryoprobes

Istvan Pelczer

*Department of Chemistry, Frick Chemical Laboratory, Rm. B09  
Princeton University, Princeton, NJ 08544  
[mipelczer@princeton.edu](mailto:mipelczer@princeton.edu))*

## Abstract

High ionic (usually salt) concentration seriously reduces the efficiency of cryoprobes (cold probes) degrading sensitivity and extending the 90 degree pulse width, and good quality tune/match can be difficult. There are various solutions which have been proposed, some are quite sophisticated using special tubes (of oval shape, for example – “Bruker” solution) or double smaller concentric, side-by-side inserts (“Agilent” solution). A “poor man’s” choice can be simply taking a tube with smaller OD than that of the probe, introducing an air gap and increasing the distance between the body of the sample and the coil itself.

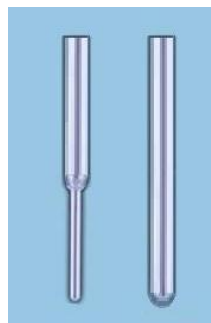
We describe a simple and inexpensive refined version of this latter approach which also utilizes the concept of separating lock and shim. It is most useful for (biological) samples in water but can be beneficial for all samples of high ionic strength. A relatively large OD (typically 4.1mm) tube is used to carry the sample while the lock solvent is between the walls of the 5mm container tube and the insert. Other size combinations are also possible, of course. This tube construct largely resolves the above issue, retains the highest sensitivity, and makes it possible to avoid any dilution of the sample itself, next to additional smaller benefits.

For PDF file [click here](#).

## AUTO PREP / SAMPLING SYSTEMS - SAMPLE TUBES / MICRO

For automated sample prep/changer systems using 5mm x 101.5mm (4") sample tubes.  
All sample volumes taken at 30mm sample height. ***Inquire about large quantity prices.***

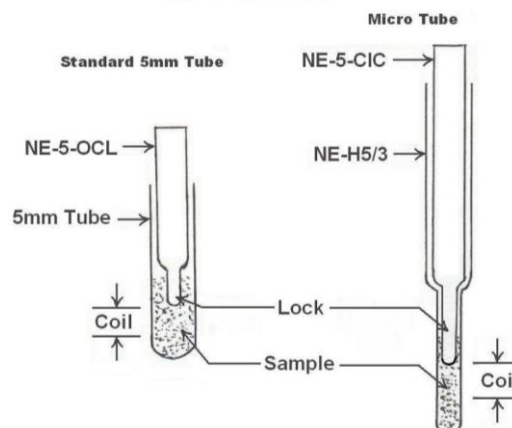
Catalog Number	Sample Volume $\mu$ l	Body OD	Stem OD	Price / each		
				1-24	25-99	100+
NE-HL5-4-AS	415	5mm	-	Inquire	Inquire	Inquire
NE-H5/2-AS	35	5mm	2.0mm	\$ 19.95	\$ 17.05	\$ 14.52
NE-H5/2.5-AS	115	5mm	2.5mm	19.95	17.05	14.52
NE-H5/3-AS	135	5mm	3.0mm	19.95	17.05	14.52



## OFF-COIL LOCK

- Separate lock and shim materials.
- Changing lock for other nuclei is easily accomplished.
- Ideal for cells and other bio-fluids.
- Fill active area of coil with native sample for maximizing sensitivity and place the lock in a special insert positioned just at the top edge of the coil.
- The D<sub>2</sub>O lock is sufficient to stabilize the magnetic field and gradient shimming can be done on the <sup>1</sup>H signal of the water in the sample.
- Use NE-5-OCL for standard thin wall 5mm tubes.
- Use NE-5-CIC for micro tube NE-H5/3.
- A work in progress, it can be useful for such biomolecular samples.

### Off-Coil Lock



Catalog Number	Lock Volume	Price / each		
		1-9	10+	
NE-5-OCL	~110 $\mu$ l	\$ 24.76	\$ 24.23	
NE-5-CIC	~60 $\mu$ l	24.65	24.12	
		1-4	5-9	10+
NE-H5/3	Outer Tube	\$ 30.04	\$ 28.56	\$ 25.71

Ref: **The Advantageous Separation of Lock and Shim for High-Resolution NMR**  
Istvan Pelczer, Dept. of Chemistry, Princeton University, Princeton NJ 08544 [ipelczer@princeton.edu](mailto:ipelczer@princeton.edu)



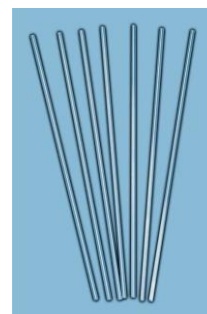
## 1.7mm MICRO NMR CAPILLARY

For use with Nalorac 1.7mm micro probes. These capillaries have a 7% larger ID than others available and offer a 15% increase in filling factor.

These capillaries have open ends, which allows you to easily clean them just prior to use in order to ensure that your sample will remain clean. A self-contained micro torch, available from major lab supply companies, is most convenient for sealing the tubes.

SPECIFICATIONS: 1.7mm OD x 1.4mm ID x 125mm long, open ends. Approximate volume per 10mm height is 60  $\mu$ l.

Catalog Number	Description	Price / Vial/25	
		1-4	5+
NE-1.7-125	Micro NMR Capillary, 1.7mm OD	\$ 37.43	\$ 33.73



## 3mm NMR SAMPLE TUBES (0.1175" - 0.1180")



Improved design allows for increased sample volume while maintaining adequate wall thickness to help reduce breakage. For use in **Nalorac 3mm micro probes**.

Catalog Number	Specifications	Length	Price / each	
			1-99	100+
NE-H3-7	400+ MHz; 3mm OD x 2.36mm ID x 0.32mm Wall Filling Factor: 118 $\mu$ l per 27mm height Concentricity 0.001" TIR, Camber 0.001" TIR	7" (178mm)	\$ 8.92	\$ 8.50
NE-H3-8		8" (203mm)	10.19	9.87

# NMR SAMPLE TUBES

## 5mm NMR SAMPLE TUBES

### 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](mailto: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 / each	
					1-99	100+
NE-LL5-7 (yellow) NE-LL5-8	100 - 300	0.010	0.025	7" (178mm)	\$ 4.06	\$ 4.01
				8" (203mm)	4.38	4.33
NE-ML5-7 (red) NE-ML5-8	300 - 400	0.0075	0.019	7" (178mm)	4.38	4.33
				8" (203mm)	4.59	4.54
NE-HL5-7 (green) NE-HL5-8	400 - 500	0.0065	0.0065	7" (178mm)	5.28	5.07
				8" (203mm)	6.60	6.28
NE-UL5-7 (blue) NE-UL5-8	500 - 700	0.003	0.003	7" (178mm)	9.19	8.92
				8" (203mm)	10.50	10.24
NE-SL5-7 (white) NE-SL5-8	700 - 900+	0.001	0.002	7" (178mm)	10.50	9.98
				8" (203mm)	11.93	11.35

# NMR SAMPLE TUBES

## 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 / each	
						1-99	100+
NE-LP5-7 NE-LP5-8 NE-LP5-9	100 - 300	0.38	0.025	0.019	7" (178mm) 8" (203mm) 9" (229mm)	\$ 5.75 6.02 6.28	\$ 5.75 6.02 6.28
NE-MP5-7 NE-MP5-8 NE-MP5-9	300 - 400	0.38	0.019	0.010	7" (178mm) 8" (203mm) 9" (229mm)	6.97 7.60 8.39	6.92 7.55 8.34
NE-HP5-7 NE-HP5-8 NE-HP5-9	400 - 500	0.38	0.010	0.006	7" (178mm) 8" (203mm) 9" (229mm)	11.51 12.62 14.09	10.29 11.51 12.72
NE-UP5-7 NE-UP5-8 NE-UP5-9	500 - 700	0.38	0.006	0.003	7" (178mm) 8" (203mm) 9" (229mm)	15.20 16.47 18.32	14.73 15.99 16.58
NE-SP5-7 NE-SP5-8	700 - 900+	0.38	0.002	0.002	7" (178mm) 8" (203mm)	23.54 25.76	22.49 24.70

### HIGH TEMPERATURE / UV STUDIES

The "Q" Series 5mm Quartz NMR sample tubes are useful in applications requiring temperatures above 150°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<sub>2</sub>. 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 / each	
					1-24	25+
NE-MQ5-7 NE-MQ5-8	200	0.002"	0.001"	7" (178mm) 8" (203mm)	\$ 27.71 31.04	\$ 25.50 27.71
NE-HQ5-7 NE-HQ5-8	300 - 500	0.001"	0.0005"	7" (178mm) 8" (203mm)	32.15 35.42	28.82 32.15

# NMR SAMPLE TUBES

## 5mm NMR SAMPLE TUBES, cont'd

### 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.

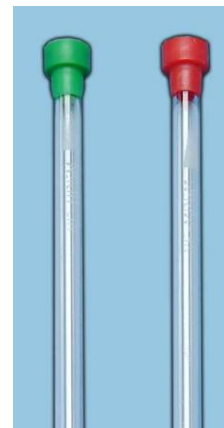
The reduced sample volume (9.3µl versus 13.8µl cross-sectional volume for thin wall tubes) is useful for running limited sample volumes at medium fields.

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	100+
NE-MP5-M-7 NE-MP5-M-8	100 - 200	0.77mm	0.006"	0.002"	7" (178mm) 8" (203mm)	\$8.60 9.61	\$ 7.81 8.82
NE-HP5-M-7 NE-HP5-M-8	300 - 400	0.77mm	0.003"	0.001"	7" (178mm) 8" (203mm)	14.15 14.67	12.51 13.57

#### "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	
						1-24	25+
NE-MP5-H-7 NE-MP5-H-8	100 - 200	1.4mm	0.006"	0.002"	7" (178mm) 8" (203mm)	\$ 18.42 20.64	\$16.68 18.63
NE-HP5-H-7 NE-HP5-H-8	300 - 400	1.4mm	0.003"	0.001"	7" (178mm) 8" (203mm)	20.75 22.96	18.79 20.75

### 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)

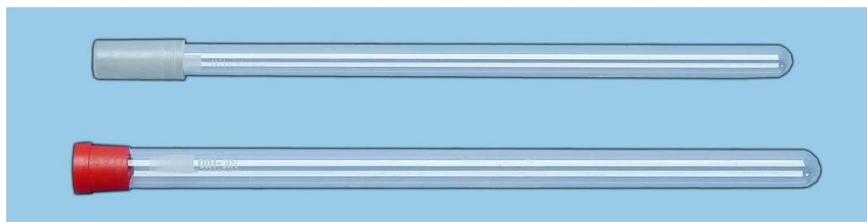
Catalog Number	Usage MHz	Maximum Wall Variation	Camber TIR	Length	Price / Pkg/50	
					1-5	6+
NE-RG5-7 NE-RG5-8	100	0.004"	0.004"	7" (178mm) 8" (203mm)	\$ 121.25 135.29	\$109.64 122.52



# LARGE VOLUME NMR SAMPLE TUBES

## REFERENCE NOTE

All large volume NMR sample tubes are made of Type 1, Class A Borosilicate glass (Pyrex or equivalent), except as noted.



### 8mm NMR SAMPLE TUBES (0.3145 - 0.3150" OD) ROUND BOTTOM

Catalog Number	Usage MHz	Wall	Maximum Wall Variation	Camber TIR	Length	Price / each	
						1-24	25+
NE-L8-7 NE-L8-8	100 - 300	0.50mm	0.003"	0.002"	7" (178mm) 8" (203mm)	\$14.04 15.15	\$13.25 14.36
NE-H8-7 NE-H8-8	400 - 500	0.50mm	0.0015"	0.001"	7" (178mm) 8" (203mm)	22.86 24.02	21.80 22.86

### 10mm NMR SAMPLE TUBES (0.3932 - 0.3937" OD) ROUND BOTTOM

Catalog Number	Usage MHz	Wall	Maximum Wall Variation	Camber TIR	Length	Price / each	
						1-24	25+
NE-L10-7 NE-L10-8	100 - 300	0.50mm	0.003"	0.002"	7" (178mm) 8" (203mm)	\$10.98 11.77	\$10.50 11.35
NE-H10-7 NE-H10-8	400 - 500	0.46mm	0.0015"	0.001"	7" (178mm) 8" (203mm)	19.48 20.75	19.06 19.85
NE-U10-7 NE-U10-8	600+	0.46mm	0.001"	0.0005"	7" (178mm) 8" (203mm)	23.81 24.97	21.64 22.70
NE-H10-MW-7	400	1.00mm	0.0015"	0.001"	7" (178mm)	24.02	21.80
NE-H10-HW-7	400	1.7mm	0.003"	0.001"	7" (178mm)	30.14	27.13

## HIGH TEMPERATURE / UV STUDIES

These 10mm NMR sample tubes are made of Clear Fused Quartz, 99.8% SiO<sub>2</sub>. Quartz tubes are useful in applications requiring temperatures above 150°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.

### 10mm QUARTZ NMR SAMPLE TUBES (0.3932 - 0.3937" OD) ROUND BOTTOM

Catalog Number	Usage MHz	Wall	Maximum Wall Variation	Camber TIR	Length	Price / each	
						1-24	25+
NE-MQ10-7	200	0.50mm	0.002"	0.002"	7" (178mm)	\$ 61.20	\$ 58.10
NE-HQ10-7	300 - 500	0.50mm	0.0015"	0.001"	7" (178mm)	62.20	59.10

# LARGE VOLUME NMR SAMPLE TUBES

## REFERENCE NOTE

All large volume NMR sample tubes are made of Type 1, Class A Borosilicate glass (Pyrex or equivalent), except as noted.



### 15mm NMR SAMPLE TUBES (0.5900 - 0.5910" OD) ROUND BOTTOM

Catalog Number	Usage MHz	Wall	Maximum Wall Variation	Camber TIR	Length	Price / each	
						1-9	10+
NE-L15-7	200 - 400	0.70mm	0.002"	0.001"	7" (178mm)	Request	Request
NE-L15-M-7	200 - 400	1.30mm	0.003"	0.001"	7" (178mm)	Request	Request

### 16mm NMR SAMPLE TUBES (0.6294 - 0.6304" OD) ROUND BOTTOM

Catalog Number	Usage MHz	Wall	Maximum Wall Variation	Camber TIR	Length	Price / each	
						1-9	10+
NE-L16-7	200 - 400	0.72mm	0.002"	0.001"	7" (178mm)	Request	Request
NE-L16-8					8" (203mm)	Request	Request

**Note:** 20-30mm OD sample tubes are suitable for imaging applications.  
Lengths and Bottom Style are optional.

### 20mm NMR SAMPLE TUBES (0.7870 - 0.7880" OD) FLAT BOTTOM

Catalog Number	Usage MHz	Wall	Maximum Wall Variation	Camber TIR	Length	Price / each	
						1-9	10+
NE-L20-7	200 - 400	0.80mm	0.002"	0.001"	7" (178mm)	\$ 41.02	\$ 38.80
NE-L20-8					8" (203mm)	44.34	42.12
NE-L20-MP-7	200 - 400	0.97mm	0.002"	0.001"	7" (178mm)	Request	Request
NE-L20-MP-8					8" (203mm)	Request	Request

### 25mm NMR SAMPLE TUBES (0.9838 - 0.9848" OD) FLAT BOTTOM

Catalog Number	Usage MHz	Wall	Maximum Wall Variation	Camber TIR	Length	Price / each	
						1-9	10+
NE-L25-7	200 - 400	0.90mm	0.002"	0.001"	7" (178mm)	Request	Request
NE-L25-8					8" (203mm)	Request	Request

### 27mm NMR SAMPLE TUBES (1.0625 - 1.0635" OD) FLAT BOTTOM

Catalog Number	Usage MHz	Wall	Maximum Wall Variation	Camber TIR	Length	Price / each	
						1-9	10+
NE-L27-7	200 - 400	0.90mm	0.002"	0.001"	7" (178mm)	Request	Request
NE-L27-8					8" (203mm)	Request	Request

### 30mm NMR SAMPLE TUBES (1.18 ± 0.02" OD) ROUND OR FLAT BOTTOM

Catalog Number	Usage	OD	Wall	Length	Price / each
NE-SL30-	Imaging	30 ± 0.5mm	1.4mm	Optional	Request

## Glass Sample Cells

### *For Protein and Tissue studies, and Imaging applications in specialized probes*

#### Round Cells

These cells can be produced with flat (most common), round, or no bottom. Lengths are optional with some of the most common listed below. Some examples are:

OD (mm)	Length (mm)	Wall (mm)
3.9	15	≤0.5
5.0	15	≤0.5
5.0	22	≤0.5
5.0	25	≤0.5
5.0	40	≤0.5
5.0	75	≤0.5
10.0	75	≤0.5
10.0	100	≤0.5
20.0	100	≤0.5
30.0	100	1.4



#### Glass Calibration Cells

Flat bottom.

ID (mm)	Length (mm)	Wall (mm)
1.8	20	≤0.5
2.4	20	≤0.5

This list represents some of the items that have been made for special sampling applications. Please inquire about any sampling accessories you may need for your special applications.

Prices upon request.

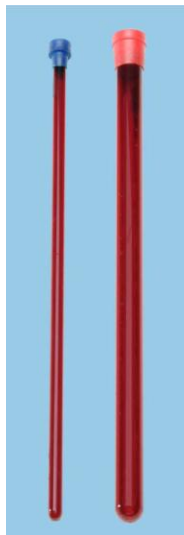
#### Rectangular Cells

These cells can be produced with flat bottoms or open-ended. Lengths are optional. Some examples are:

Inside Dimensions (mm)	Length (mm)	Wall (mm)
2.2 x 7.2	20	<0.5
4.3 x 6.3	20	<0.5

## SPECIALTY NMR SAMPLE TUBES

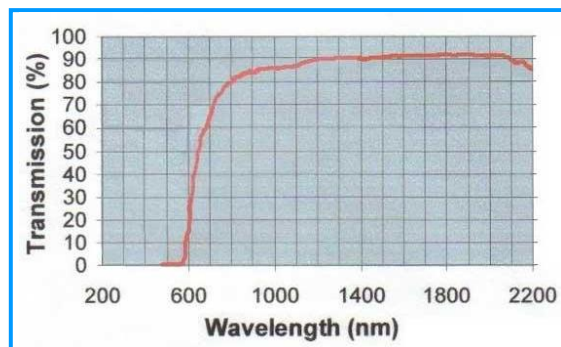
### LIGHT SENSITIVE SAMPLE TUBES



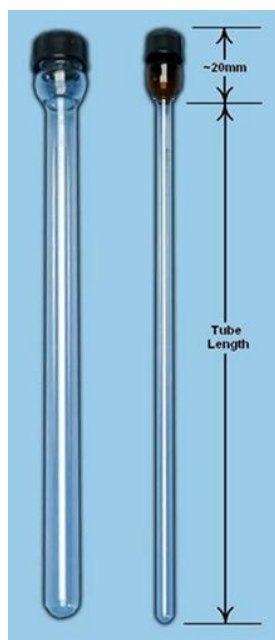
For containment of NMR samples that are sensitive to light. Constructed from Pyrex glass, the tubes are subjected to a high temperature ion exchange reaction to impart the light blocking properties to the glass surfaces.

In order to form stronger bonding, a special optical coating technique is used (as opposed to the usual amberization of other tubes found on the market). A maximum blocking per cent results for wavelengths <600nm.

Results may vary and depend on the nature of the sample.



Catalog Number	Usage MHz	Tube OD	Tube Length	Price / each	
				1-9	10+
NE-UP5-LS-7	Up to 700	5mm	7" (178mm)	\$ 34.36	\$ 31.04
NE-H10-LS-7	Up to 500	10mm	7" (178mm)	41.49	37.43



### SCREW THREAD SAMPLE TUBES

The convenience of a screw cap — the security of a Teflon / glass seal. Each tube includes an open-top cap and a Teflon / Silicone septum. A 22 gauge, standard point needle is recommended for a clean puncture. To maintain spinning quality, choose the tube length that places the threads closest to the spinner. Optional lengths are available on special order.

#### Application Note:

These tubes are ideally suited for glove box preparation of air or moisture sensitive samples. The screw cap provides easy access for kinetic studies. Another proven application has been tracking the evolution of hydrolysis products within bioabsorbable materials.

Catalog Number	Usage MHz	Tube OD (mm)	Cap Size (mm)	Length (mm)	Price / each	
					1-9	10+
NE-HL5-ST-158	400 - 500	5	8	158	\$ 20.38	\$ 18.74
NE-UL5-ST-158	500 - 700	5	8	158	25.02	22.22
NE-HL5-ST-168	400 - 500	5	8	168	20.38	18.74
NE-HP5-ST-168	400 - 500	5	8	168	25.97	23.75
NE-UL5-ST-168	500 - 700	5	8	168	25.02	22.22
NE-UP5-ST-168	500 - 700	5	8	168	29.88	27.19
NE-H10-ST-178	400 - 500	10	15	178	31.78	30.19

### Extra Caps and Septums

Additional screw caps and septums are conveniently packaged for use with the Screw Thread sample tubes. White silicone rubber lined solid caps resist most solvents; Teflon lined solid caps (see below) are used where solvent attack occurs with the white silicone rubber. The open-top cap and Teflon / Silicone septum combine to give the most inert closure with needle access.



Catalog Number	Description	Cap Size (mm)	Thread	Price / Pk/12
3008	Cap, Open-Top	8	8-425	\$ 8.97
3015	Cap, Open-Top	15	15-425	9.71
3108	Cap, Solid Top, Silicone white rubber liner	8	8-425	9.71
3108T	Cap, Solid, Teflon liner	8	8-425	13.62
3115	Cap, Solid Top, Silicone white rubber liner	15	15-425	13.41
3208	Septum, Teflon / Silicone	8	-	9.71
3215	Septum, Teflon / Silicone	15	-	13.41

# 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.

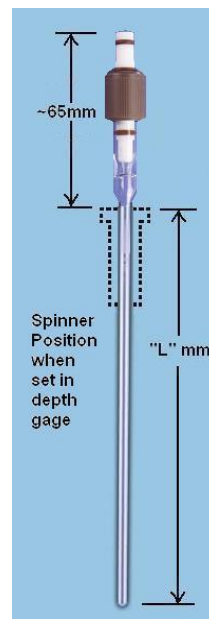
This system is very useful in the study of organometallics or other moisture and air sensitive samples.

**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	
				1-9	10+
NE-CAV5-XXX	NE-HP5	0.38	400-500	\$ 93.17	\$ 88.52
NE-CAV5-M-XXX	NE-HP5-M	0.77	300-400	104.26	96.50
NE-CAV5-H-XXX	NE-HP5-H	1.4	300-400	115.34	106.85
NE-CAV10-XXX	NE-H10	0.46	300-500	103.41	95.60
NE-CAV10-M-XXX	NE-H10-MW	1.00	300-400	110.06	102.30
NE-CAV10-H-XXX	NE-H10-HW	1.7	300-400	131.12	120.04
NE-CAV5-Q-XXX	NE-HQ5	0.50	300-500	240.66	229.52
NE-CAV10-Q-XXX	NE-HQ10	0.50	300-500	274.02	260.98

## 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 compatibility and the "L" Dimension.

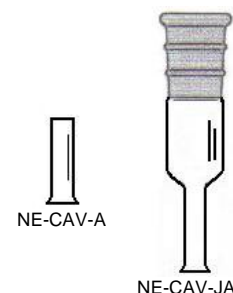


Top of PCAV

Catalog Number	Sample Tube	Wall (mm)	Usage MHz	Price / each	
				1-9	10+
NE-PCAV5-XXX	NE-HP5	0.38	400-500	\$ 132.92	\$ 122.04
NE-PCAV5-M-XXX	NE-HP5-M	0.77	300-400	144.27	133.18
NE-PCAV5-H-XXX	NE-HP5-H	1.4	300-400	171.40	163.11
NE-PCAV10-XXX	NE-H10	0.46	300-500	138.73	130.97
NE-PCAV10-M-XXX	NE-H10-MW	1.00	300-400	146.54	138.73
NE-PCAV10-H-XXX	NE-H10-HW	1.7	300-400	159.79	150.92

## CAV / PCAV Spare Parts

Catalog Number	Description	Tube	Price / each	
			1-9	10+
NE-CAV5-G-XXX	Valve Body, only, Thin-Wall Tube	CAV, PCAV	\$ 64.14	\$ 59.70
NE-CAV5-M-G-XXX	Valve Body, only, Medium-Wall Tube	CAV, PCAV	65.77	61.39
NE-CAV5-H-G-XXX	Valve Body, only, Heavy-Wall Tube	CAV, PCAV	72.48	67.99
NE-CAV-P	Plug, TFE with knob and sealing O-ring	CAV	\$ 52.26	
NE-PCAV-P	Plug, TFE with knob, o-rings and fittings	PCAV	69.84	
NE-CAV-SO	Sealing O-ring, Viton	CAV, PCAV	2.69	
NE-CAV-SO-A	Sealing O-ring, Aegis	CAV, PCAV	38.22	
NE-CAV-RO	Retaining O-ring, Viton, to retain valve knob	CAV, PCAV	2.69	
NE-CAV-RO-A	Retaining O-ring, Aegis, to retain valve knob	CAV, PCAV	38.32	
NE-CAV-A	Adapter, only, glass	CAV	12.04	
NE-CAV-JA	Adapter, with 24/40 outer joint, glass	CAV	32.57	
NE-PCAV-FN	Ferrule/Nut Set, one ferrule and one nut	PCAV	9.92	



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)<sub>2</sub> nacnac]MCl<sub>2</sub>(THF)<sub>2</sub> (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



# SPECIALTY NMR SAMPLE TUBES

## GEL NMR SAMPLE TUBES and ACCESSORIES

The Gel Apparatus and accessories are designed for RDC studies of uniformly aligned proteins and detergent micells by NMR. The precision Gel Chamber casts consistently uniform gels. Samples can then be uniformly stretched, with repeatability, and loaded into the active area of the sample tube, assuring maximum sample concentration in the coil. The precision of the apparatus will give repeatable sample conditions.

The accessories described here are designed for forming and stretching gel samples of 6mm, 5.4mm and 5mm diameter to the 4.2mm ID of the sample tube as it is being loaded into the tube. All hardware components are easily cleaned and are reusable.

### GEL KITS

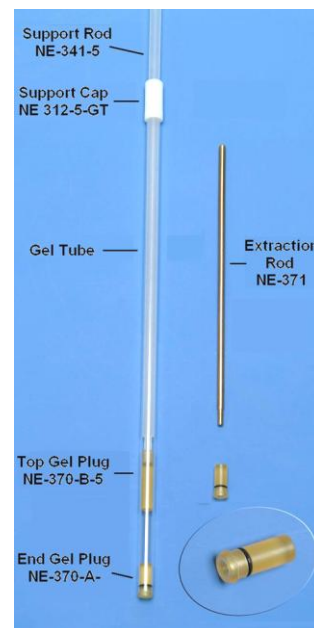
These kits are designed for the first-time user and provide all of the hardware items needed to cast and stretch the samples. For the science of RDC measurements as related to gels and proteins, one must search the many papers available, only a few of which are cited on [Page 21](#). Additional and replacement components are all available separately.

#### Gel NMR Starter Kits

(includes a gel press assembly, all plugs and accessories, and a special gel NMR sample tube)

Add “-Br” suffix to Cat. Nos. for Bruker that requires a short end plug (8mm Length).

Gel Diameter		500 MHz	700 MHz	900+ MHz
6mm to 4.2mm	Cat. No.	NE-373-A-6/4.2	NE-373-B-6/4.2	NE-373-C-6/4.2
5.4mm to 4.2mm	Cat. No.	NE-373-A-5.4/4.2	NE-373-B-5.4/4.2	NE-373-C-5.4/4.2
5mm to 4.2mm	Cat. No.	NE-373-A-5/4.2	NE-373-B-5/4.2	NE-373-C-5/4.2
Price / each		\$ 438.14	\$ 441.30	\$ 448.69



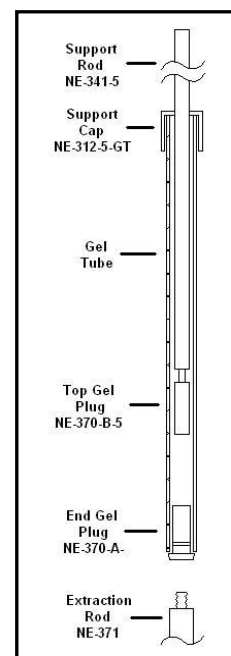
### Additional / Replacement Parts

#### Sample Tubes

	500 MHz	700 MHz	900+ MHz
Cat. No.	NE-HP5-GT-7	NE-UP5-GT-7	NE-SP5-GT-7
Price / each (1-10)	\$ 12.56	\$ 16.63	\$ 24.34
(11-99)	12.04	15.47	23.28
(100+)	11.51	14.67	22.17

#### Plugs and Accessories (for all Starter Kits)

Cat. No.	Description	Price / each		
		1-4	5-9	10+
NE-370-A-5	Gel End Plug, Ultem	\$ 32.99	\$ 26.34	\$ 23.70
NE-370-A-5-S	Gel End Plug, Ultem, Short	32.99	26.34	23.70
NE-370-A-5-O	Gel End Plug Spare O-Ring, Buna-N	\$ 4.86		
NE-370-B-5	Gel Top Plug, Ultem	\$ 24.65	\$ 22.43	\$ 20.22
NE-371	Extraction Rod, for end plug	18.11	16.31	14.67
NE-341-5	Support Rod, Kel-F, for top plug	16.05	15.10	14.57
NE-312-5-GT	Support Cap, PTFE	8.87	8.08	7.34



# SPECIALTY NMR SAMPLE TUBES

## GEL PRESSES and ADDITIONAL / REPLACEMENT COMPONENTS

### Some operational suggestions to help getting started

The gel press should be assembled as shown in the sketch. Please note that the arrow on the body of the Gel Chamber must point downward towards the thread of the Funnel. This will provide a smooth transition through which the gel will pass.

It is also suggested that several "gel only" samples be tried first to get the feel of how the press will operate.

It is very important that the Gel sample tube be oriented in the correct way. Since both ends of this tube are opened, the "bottom end" with the special finish is opposite to the catalog mark on the tube. This is the end that must be inserted into the bottom of the Funnel. The special end finish is necessary to allow the End Plug to seal the tube without breaking it.

### Gel Presses

(includes piston driver, cap, piston, gel chamber and funnel)

Size	6mm to 4.2mm	5.4mm to 4.2mm	5mm to 4.2mm	Price / each		
				1-4	5-9	10+
Cat. No.	NE-372-6/4.2	NE-372-5.4/4.2	NE-372-5/4.2	\$ 352.62	\$ 320.95	\$ 288.22

### Additional / Replacement Parts

#### Pistons, PTFE, w/Buna O-Ring

Size	6mm to 4.2mm	5.4mm to 4.2mm	5mm to 4.2mm	Price / each		
				1-4	5-9	10+
Cat. No.	NE-372-C-6	NE-372-C-5.4	NE-372-C-5	\$ 32.20	\$ 29.35	\$ 26.66

#### Piston Spare O-Rings, Buna-N

Cat. No.	NE-372-C-6-O	NE-372-C-5.4-O	NE-372-C-5-O	\$ 4.86		
----------	--------------	----------------	--------------	---------	--	--

#### Gel Chambers, PTFE

Size	6mm to 4.2mm	5.4mm to 4.2mm	5mm to 4.2mm	Price / each		
				1-4	5-9	10+
Cat. No.	NE-372-D-6	NE-372-D-5.4	NE-372-D-5	\$ 88.68	\$ 81.56	\$ 71.74

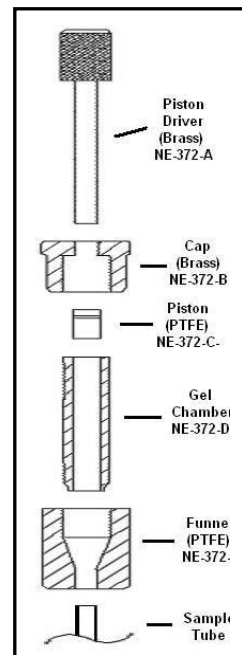
#### Funnels, PTFE

Size	6mm to 4.2mm	5.4mm to 4.2mm	5mm to 4.2mm	Price / each		
				1-4	5-9	10+
Cat. No.	NE-372-E-6	-	-	\$ 88.68	\$ 81.56	\$ 71.74
Cat. No.	-	NE-372-E-5.4	NE-372-E-5	95.02	89.74	84.46

### Piston Driver and Cap

(for all Gel Presses)

Cat. No.	Description	Price / each		
		1-4	5-9	10+
NE-372-A	Piston Driver, Brass	\$ 72.85	\$ 65.46	\$ 59.12
NE-372-B	Cap, Brass	72.85	65.46	59.12



# SPECIALTY NMR SAMPLE TUBES

## Some Reflection on Gel NMR Sample Preparation

The information presented below is intended to be used as a guide in developing your procedure and not as a set of specific instructions. A technique needs to be developed by the user that works best, and the first attempt will be a learning experience.

*What stretch ratio can give the optimal size of RDC?*

*Version 6 to 4.2mm: works well with proteins like protein G.*

*Version 5.4 to 4.2mm: generally good for strong aligning proteins.*

*Version 5 to 4.2mm: generally good for proteins that are both large and elongated.*

*Experimentation with different stretch ratios may be necessary to determine which one is best for the samples at hand.*

Allow 2-3 days for complete sample preparation.

Some gel solutions may be basic and/or contain unreacted components which could affect the stability of the protein if it were added to the initial solution.

Approximately 250µl of gel solution would make a sample column height of about 20mm.

Assuming protein has not been added, seal the bottom of the Gel Chamber (parafilm) and fill with gel solution. Allow to polymerize for at least 1-2 hours. The seal (parafilm) can then be taken off the chamber.

Carefully remove the gel with the use of the Piston and an appropriate tool for pushing it through the chamber. Be careful not to scratch the inner surface of the chamber.

Dialyze the gel against deionized water overnight to remove unreacted chemicals.

While the gel is still soft, it may be cut to some appropriate length. Allow for the length of the Piston and for some air space between it and the surface of the gel.

As a guide line, the gel length should be about  $\frac{1}{2}$  the length of the Gel Chamber allowing room for an air space and the Piston. The air space will allow more of the gel to be expelled.

Dry overnight at room temperature or for some hours at an elevated temperature (40-45°C). The gel will become somewhat rigid and smaller in diameter.

Place the "dried" gel back into the Gel Chamber, seal the bottom (parafilm) and add protein until the gel swells to the full diameter of the chamber. Let it sit for 24 hours or longer to allow the protein to diffuse in.

Remove any excess protein that has not been diffused into the gel.

Assemble the Gel Press and load the gel into the sample tube.

The Piston will only go as far as the top of the actual funnel area which may still contain some gel. With the Gel Chamber removed from the Funnel, the action of an auto-pipet may be used to apply enough air pressure to expel the remaining gel.

Seal the bottom of the sample tube by gently pressing the Gel End Plug in to place, in such a manner as to avoid trapped air bubbles (the Extraction Rod is used only to remove the Gel End Plug from the sample tube).

Insert the Gel Top Plug on top of the gel column with the Support Rod.

Ideally, the sample column should be centered in the receiver coil area. It may take a few trials to find the optimum sample position for this application in the probe.

### Some references:

- Bax, A. Tjandra, N. (1997) J. Biomol. NMR, **10**, 289-292  
Chou, J.J., Li, S., Klee, C.B. and Bax, A. (2001) Nat. Struct. Biol., **8**, 990-997  
Chou, J.J., Gaemers, S., Howder, B., Louis, J.M. and Bax, A. (2001) J. Biomol. NMR, **21**, 377-382  
Tycko, R., Blanco, F.J. and Ishii, Y. (2000) J. Am. Chem. Soc., **122**, 9340-9341

# Compression Gel Device

## Useful for the NMR of Small Molecules in Anisotropic Media

- To be used with flexible and reusable PMMA based gels.
- Replaces the plunger and Teflon tape described in the work published in Chemistry, A European Journal 2012, 16(12), 3622-3626.
- Compression of the gel is variable and can be locked in position.
- Provides accurate and precise regulation of the degree of alignment.

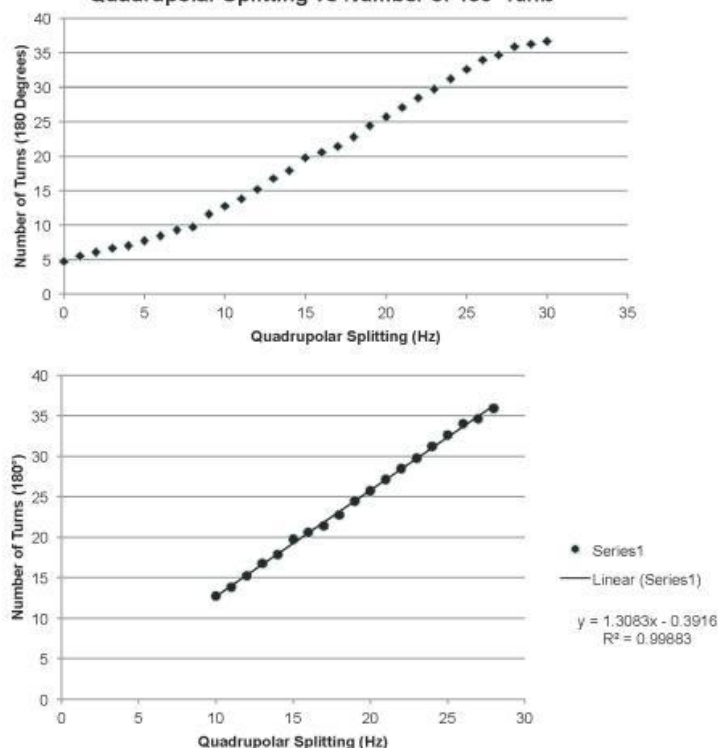
A full communication regarding the use and application of the Compression Gel Device is available here. *"Structural Analysis of Small Organic Molecules Assisted by Residual Dipolar Couplings"*, Roberto R. Gil, Carnegie Mellon University. Excerpts can be found on [page 23](#).



Catalog Number	Description	Price / each		
		1-4	5-9	10+
NE-375-5	Compression Gel Device, complete, includes one tube	\$ 319.89	\$ 305.11	\$ 290.33
NE-375-5-A	Compression Adapter, 2-piece	167.86	160.47	153.08
NE-375-5-B	Plunger, Teflon with thread and with brass pin	112.97	107.69	102.41
NE-375-5-C	Lock Nut, Teflon	22.49	21.43	20.32
NE-UP5-CGT	5mm Sample Tube, modified for compression gel	16.63	15.47	14.67

## Development of a Device for Precise Control of the Degree of Alignment

Quadrupolar Splitting vs Number of 180° Turns



### HOW RDCs ARE MEASURED

Most common RDCs in small organic molecules:

$^1D_{CH}$  One-Bond Proton Carbon (Easily Measured)

$^2D_{CH}$  Two-Bond Proton Carbon

$^3D_{CH}$  Three-Bond Proton Carbon

$^2D_{HH}$  Two-Bond Proton-Proton

Not very common because of the lack of sensitivity:

$^1D_{CC}$  One-Bond Carbon-Carbon

To view the full presentation [click here](#).



# SPECIALTY NMR SAMPLE TUBES

## Sample Reaction System

A two-chamber 5mm glass system for mixing and monitoring a reaction by NMR.

Easy to use-no special equipment is needed.  
The Inner Chamber, with Teflon Tip, makes a positive seal before mixing.

### Basic Operation:

With the central tube (Inner Chamber) pressed against the bottom of the outer tube (the set screw will help maintain the seal), load one component into the chamber.

The Outer Chamber can be loaded, with a syringe, through a side port at the top of the device.

Take initial spectra of the isolated materials.

Eject the system, loosen the set screw and gently raise the inner tube to a position above the receiver coil. This will begin the mixing of the components.

Lower the device and begin collecting data on the progress of the reaction.

Support data illustrating the Fischer Esterification Reaction is available by [clicking here](#).



Catalog No.	Description	Price each
NE-377-5	Complete System as shown	\$242.93
NE-377-A	Inner Chamber , 3mmTube only	7.38
NE-377-TP	Teflon Sealing Tip	43.05
NE-377-SC	Solid Cap, 15mm	2.46
NE-377-AB	Adapter Body w/ Set Screw, Sealing Cap	147.60
NE-377-ORT	Outer Reaction Tube, 5mm tube w/screw thread	42.44

# SPECIALTY NMR SAMPLE TUBES

## TIP-OFF SEALING SYSTEMS APPLICATION NOTES

### FLAME-SEALING NMR SAMPLE TUBES:

There are two basic ways to prepare flame-sealed samples. One method, suitable for both Pyrex and non-Pyrex tubes, is to use a “vacuum adapter” to attach the tube to the vacuum line via a hose or other mechanical means. Sample tubes are held in place by an o-ring compressed finger tight by a threaded bushing.

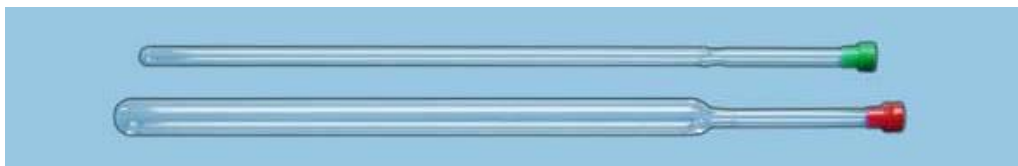
The second way, for Pyrex tubes only, starts with “flame-sealing the sample tube” to the port on the vacuum line. Although more difficult to attain a good seal, this method ensures the integrity of the sample system and allows for vacuum transfers under very controlled conditions. Many researchers, adept at glassblowing, prefer this method.

### FLAME-SEALING TECHNIQUES:

Hand-held micro torches (available from major lab supply dealers) provide a small, yet very hot, flame to easily seal tubes. A very uniform, concentric seal is important to maintain good spinning quality. The way to accomplish this is by heating the glass evenly around the tube. The best seals are made with pre-constricted tubes. Increased glass thickness in the seal area reduces the chance of the hot glass imploding due to the vacuum in the tube. It is important that only the seal area be heated. Finally, the key to making good seals is practice.

### FREEZE / THAW DEGASSING:

This method is often used to remove Oxygen from samples. However, with aqueous samples, it can be difficult to complete the process without breaking the tube. One effective technique is as follows: Once the sample is loaded and the tube is secured under vacuum, immerse the tube into the freezing medium (liquid N<sub>2</sub>, dry ice/alcohol) very slowly so that the sample freezes from the bottom, up. Likewise, in the thaw cycle, remove the tube very slowly so that the sample melts from the top, down. The use of a small cylindrical lab dewar (see [Page 26](#)) and a lab jack greatly aid in this process. Some practice is recommended before valuable samples are used.



## TIP-OFF SAMPLE TUBES

Both Pyrex and non-Pyrex tubes are offered. Pyrex tubes are necessary if you need to reopen the tube and do additional glassblowing. The non-Pyrex tubes are ideal for samples that will be archived. In both cases, a 50mm section of 5mm OD tubing is sealed to a 7-inch sample tube. The extra tubing allows the tube to be secured in the Tip-Off Adapter (see [Page 26](#)) with ample length for safe flame sealing. A uniform constriction, with a 2mm ID, is placed just above the 7-inch length.

Catalog Number	Usage MHz	Tube OD (mm)	Wall (mm)	Glass Type	Price / each	
					1-9	10+
NE-HL5-TTO	400 - 500	5	0.38	non-Pyrex	\$ 13.46	\$ 12.09
NE-UL5-TTO	500 - 700	5	0.38	non-Pyrex	17.63	15.89
NE-HP5-TTO	400 - 500	5	0.38	Pyrex	19.90	17.68
NE-HP5-M-TTO	300 - 400	5	0.77	Pyrex	22.12	19.90
NE-UP5-TTO	500 - 700	5	0.38	Pyrex	23.28	21.06
NE-SP5-TTO	700 - 900+	5	0.38	Pyrex	32.15	28.87
NE-H10-TTO	400 - 500	10	0.46	Pyrex	28.45	25.13

## ACCESSORIES FOR TIP-OFF SAMPLE TUBES

### TIP-OFF ADAPTER, basic

The Tip-Off Adapter consists of an internal glass thread with a mating Nylon bushing fitted with a stainless steel heat shield. The shank of the adapter (1/2" OD x 4" long) is secured to the vacuum manifold. Sample tubes are held in place by an extra thick FETFE o-ring compressed by the threaded bushing, finger tight. Tested to  $10^{-7}$  Torr.

Catalog Number	Description	Price / each
NE-250	Adapter, complete with one bushing and o-ring	\$ 55.74
NE-250-B	Bushing only, with heat shield and two o-rings	17.31
NE-250-O	O-Ring, FETFE, extra thick	3.64



### TIP-OFF ADAPTER / VALVE

The Tip-Off Adapter / Valve features a high vacuum valve with a sturdy Teflon plug and two Teflon-clad o-rings.

The bulbous plug tip makes an inert and positive seal to isolate the vacuum line.

The valve has a 0-4mm orifice.

The Tip-Off Adapter / Valve can be mounted easily with a clamp to a lab rack.

Catalog Number	Description	Price / each
NE-253-5	Tip-Off Adapter / Valve, complete	\$111.33
NE-253-B	Bushing only, Nylon with heat shield and two o-rings	23.91
NE-253-O	O-Ring, FETFE, extra thick	5.65
NE-253-G	Glass Body, only	56.01
NE-253-P	Teflon Plug / Cap, only	39.64



### TIP-OFF DEWAR and CAP

A sturdy Pyrex dewar, fully silvered, with an aluminum base. Measuring 48mm ID x 150mm internal depth, this dewar has a full capacity of 250ml. It is designed for use in the freeze/thaw method of degassing NMR samples (see [Page 25](#)). The large ID allows for easy inspection of the process so that it may be controlled more exactly.

An optional styrofoam dewar cap, sold separately, greatly reduces boil-off.

Catalog Number	Description	Price / each
NE-8025	Dewar, 48mm ID x 150mm depth, 190mm OAL	\$ 155.30
NE-8348	Cap, styrofoam, with vent slot	24.28



# SPECIALTY NMR SAMPLE TUBES

## NON-GLASS SAMPLE CELLS

A precision, non-glass sample cell for the study of Boron, Fluorine, Silicon and other types of samples that may be deemed "hazardous". Available in 5mm and 10mm versions, these precision machined cells fit smoothly into the respective standard thin wall sample tubes. A cap, made of the same material, screws into the top of the cell, providing a positive closure and the means for removing the cell with a threaded rod.

Boron and Silicon samples can be studied by supporting the cell in a glass sleeve so that only the cell is in the receiver coil area. With the cap secured to the top of the cell, a threaded rod is screwed into the top of the cap. This unit is slipped through a glass sleeve and is held in place by the support rod with a modified tube cap. **Depending on the positioning of the poly cell in the RF coil area, it may be desirable to cut off excess length of the support rod.**

Tests with Chloroform-d / TMS samples have shown line widths comparable to using the sample tube alone. Some additional shimming may be necessary. Individual results may vary and are dependent upon how well the instrument is tuned. We can offer no guarantee on performance and safety, especially with "hazardous" samples.



### SPECIFICATIONS

Sample Cell, 5mm version:	3.3mm ID x 4.1mm OD x 90mm long, 80mm maximum sample height
Sample Cell, 10mm version:	7.5mm ID x 8.9mm OD x 90mm long, 80mm maximum sample height
Cap, 5mm version:	20mm long with 4-40 internal thread
Cap, 10mm version:	20mm long with 1/4-20 internal thread

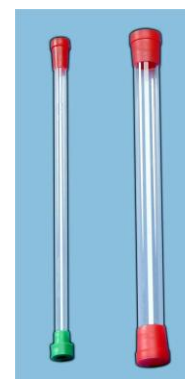
### SAMPLE CELL with CAP

Catalog Number	Tube OD (mm)	Material	Useful Temp Range	Volume @ 60mm Sample Height	Price / each	
					1-4	5+
NE-362-T-5	5	PTFE	-73 to +204°C	304 µl	Request	Request
NE-362-T-10	10	PTFE	-73 to +204°C	2.6 ml	Request	Request
NE-362-K-5	5	Kel-F	-240 to +204°C	304 µl	Request	Request
NE-362-K-10	10	Kel-F	-240 to +204°C	2.6 ml	Request	Request
NE-362-P-5	5	P/P	0 to +80°C	304 µl	Request	Request
NE-362-P-10	10	P/P	0 to +80°C	2.6 ml	Request	Request

PTFE = Polytetrafluoroethylene Kel-F = PCTFE = Polychlorotrifluoroethylene P/P = Polypropylene

### GLASS SLEEVE and SUPPORT ROD

Catalog Number	Description	Price / each		
		1-4	5-9	10+
NE-205-5	Glass Sleeve, precision, 5mm OD x 120mm long	-----	\$ 14.94	-----
NE-205-10	Glass Sleeve, precision, 10mm OD x 120mm long	-----	24.49	-----
NE-341-5	Support Rod, Kel-F, 1/8" x 8", 4-40 thread	\$ 16.05	\$ 15.10	\$ 14.57
NE-341-10	Support Rod, PVC, 1/4" x 8", 1/4-20 thread	23.49	22.49	21.27



### EXTRA SAMPLE CELLS and CELL CAPS

Material	Version	Sample Cell			Cap		
		Catalog Number	Price / each		Catalog Number	Price / each	
			1-4	5+		1-4	5+
PTFE	5mm	NE-360-T-5	Request	Request	NE-361-T-5	Request	Request
PTFE	10mm	NE-360-T-10	Request	Request	NE-361-T-10	Request	Request
Kel-F	5mm	NE-360-K-5	Request	Request	NE-361-K-5	Request	Request
Kel-F	10mm	NE-360-K-10	Request	Request	NE-361-K-10	Request	Request
P/P	5mm	NE-360-P-5	Request	Request	NE-361-P-5	Request	Request
P/P	10mm	NE-360-P-10	Request	Request	NE-361-P-10	Request	Request

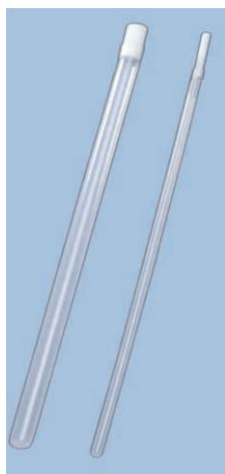
## SPECIALTY NMR SAMPLE TUBES



### COAXIAL INNER CELLS

A precision inner cell for use with 5mm and 10mm thin-wall NMR tubes. Ideal for “external” reference solvents or as a “micro tube”. For use with 7” outer tubes. Both Bruker and Varian versions are available.

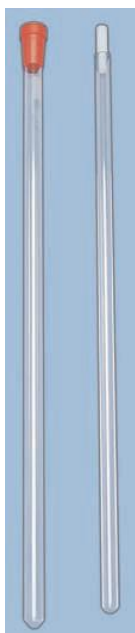
Catalog Number	Tube / Probe	OD	Stem Length	Capacity	Sample Capacity	Price / each	
						1-9	10+
NE-5-CIC	5mm / Bruker	2mm	50mm	60 µl	530 µl	\$ 24.65	\$ 24.12
NE-5-CIC-V	5mm / Varian	2mm	60mm	72 µl	636 µl	24.65	24.12
NE-10-CIC	10mm / Bruker	3mm	50mm	225 µl	2.8 ml	36.79	33.26
NE-10-CIC-V	10mm / Varian	3mm	60mm	270 µl	3.36 ml	36.79	33.26



### TEFLON LINERS

An inexpensive way to handle corrosive samples that may react with the glass sample tube. The thin wall, round bottom liners are supplied with a Teflon plug closure. For use in standard thin wall 5mm and 10mm sample tubes. Results may vary and some higher order shimming may be necessary. For a precision alternative, see our **Non-Glass Sample Cells** on **Page 27**.

Catalog Number	Tube	Description	Price / each
NE-350-5	5mm x 7”	Round bottom, 8” long with solid Teflon plug; Volume @ 50mm height is ≈ 0.35ml	\$ 9.20
NE-350-10	10mm x 7”	Round bottom, 8” long with solid Teflon plug; Volume @ 50mm height is ≈ 2.0ml	22.54



### HAZARDOUS NMR SAMPLE TUBE SYSTEM

An effective way to run 5mm NMR samples deemed “hazardous” in some respect. This system was designed to significantly enhance the high field spectral quality, while maintaining a measure of safety in running these samples. The results have shown a marked improvement over the use of traditional Teflon liners.

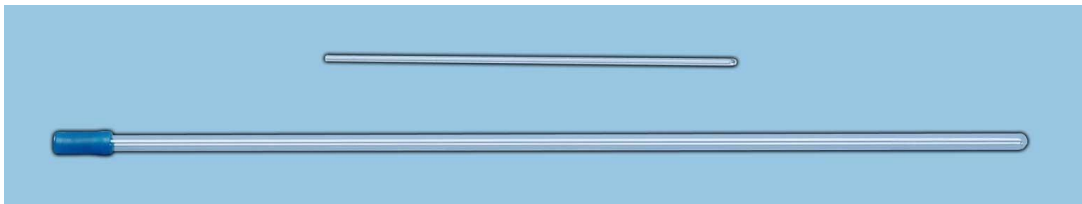
A specially designed Teflon plug seals the heavy wall (0.75mm) glass inner tube which then fits completely into our NE-HP5-7, 5mm sample tube. The inner tube has a sample volume of 125µl for a 30mm sample height. A longer version of the 5mm tube cap seals the system.

Once the instrument is shimmed for the sample tube system, additional samples can be shimmed easily. At 500 MHz, spectral quality can be comparable to that of routine samples. Actual performance will vary and is dependent upon the condition of the instrument. The improved quality of spectra is a viable trade-off for the careful handling required for such samples. However, there is no expressed or implied warranty against breakage. An all-Pyrex system, not recommended for Fluorides.

Catalog Number	OD (mm)	Usage MHz	Description	Price / each	
				1-9	10+
NE-HP5-HSTS	5	Up to 500	Complete system, inner tube with plug, outer tube with cap	\$ 36.21	\$ 32.57
NE-HSTS-I	4	-	Inner tube with Teflon plug	23.70	20.64



## QUARTZ SAMPLE TUBES FOR EPR (ESR) SPECTROSCOPY



The sample tubes listed here are manufactured from commercial grade quartz material processed for use in EPR applications. For sizes **not shown**, please request.

Catalog Number	OD	ID	Length	Price / each	
				1-24	25+
NE-400-1.6-120	1.6mm	1mm	120mm	\$ 12.51	\$ 11.98
NE-400-2.9-160	2.9mm	2.5mm	160mm	19.27	18.74
NE-400-3.9-180	3.9mm	3.0mm	180mm	19.37	18.85
NE-400-4-250	4mm	3mm	250mm	13.04	12.51
NE-400-5-178	5mm	4mm	178mm	17.68	17.16
NE-400-5-250	5mm	4mm	250mm	18.32	17.79

## SAMPLE TUBES FOR RAMAN SPECTROSCOPY

A thin wall 5mm OD Borosilicate glass tube, 4" long.

Packed 25 tubes per package with caps packed separately.



Catalog Number	Description	Price / Pk/25	
		1-4	5+
NE-Raman-5	Raman Sample Tube, 5mm	\$ 85.89	\$ 75.38

# NMR SAMPLING ACCESSORIES

## CLEANING NMR SAMPLE TUBES

It is important to understand that NMR sample tubes are NOT laboratory glassware and should not be treated as such. Because of the precision tolerances and the very thin wall weights, conditions suitable for labware will adversely affect these tubes.

If one is not overly concerned with cross-contamination, NMR tubes may be soaked in a mild cleaning solution and rinsed with deionized water. Follow this with a rinse of clean methanol or acetone, after which they may be air dried. A basic tube washer, such as shown here, will help with this procedure.

If moisture presents a problem, the tubes may be placed in a vacuum oven on a very flat surface (never standing and only in one layer). Heating should not exceed 100°C and one hour duration. When dried, cap and store the tubes in a desiccator.

For samples that are most difficult to remove, it is safer and more efficient to avoid radical and extensive cleaning methods - use of strong acids, etc.. Discard the tube and avoid cross-contamination. This is most practical when standard 5mm tubes are used.

## NMR SAMPLE TUBE WASHERS



This basic style washer is an economical, convenient, and effective way to clean NMR sample tubes. Insert the washer body into a vacuum flask, invert the sample tube over the central capillary, and secure it in place with a modified tube cap. When a vacuum is applied and the reservoir is filled with solvent, a spray of solvent washes the tube and is collected in the flask. Several solvents may be used in sequence followed by an "air rinse" to dry the tube.

Available with a straight body or with a 24/40 inner joint. The reservoir capacity is 8ml.

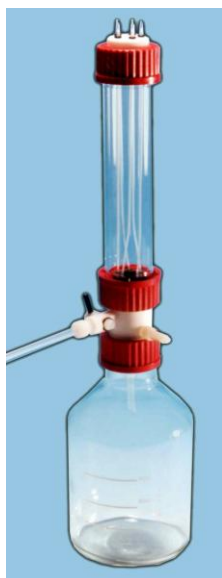
Made in 3, 5, and 10mm versions.

Catalog Number	Tube OD	Description	Price / each
NE-230-3	3mm	straight body, 10mm OD	\$ 35.21
NE-230-3J	3mm	with 24/40 inner joint	49.20
NE-230-5	5mm	straight body, 10mm OD	35.21
NE-230-5J	5mm	with 24/40 inner joint	49.20
NE-230-10	10mm	straight body, 14mm OD	37.58
NE-230-10J	10mm	with 24/40 inner joint	52.68

## VACUUM FLASK

A standard heavy-wall flask with hose connector and 24/40 outer joint.

Catalog Number	Description	Price / each
NE-240	Vacuum Flask, 500ml	\$ 49.15



## MULTIPLE SAMPLE TUBE WASHER, 3 and 5mm versions

Wash 5 thin wall sample tubes at once. Take up solvent directly from a bulk container for extended solvent capacity. The sturdy construction of the washer and the 1000ml heavy-wall vacuum flask add durability, while the PTFE, PFA, and Pyrex components make the system inert to most solvents. A special 3-way valve allows for evacuation of the chamber, washing and air drying with just a turn of the handle. Some assembly of components is required (no tools are needed). Furnished complete as shown, less sample tubes. Full details are available upon request.

Catalog Number	Description	Price / each
NE-232-3	3mm - 5 Tube Washer, complete	\$ 480.26
NE-232-5	5mm - 5 Tube Washer, complete	412.64

# NMR SAMPLING ACCESSORIES

## NMR SAMPLE TUBE WASHERS

The NE-231-RC tube washers consist of inert polymer and glass components only; all components are replaceable (see below). The unique non-breakable polymer solvent tube can accommodate both 7" and 8" length sample tubes. Simply insert the washer body into a vacuum flask, invert the sample tube over the polymer solvent capillary, securing the sample tube in place with the modified tube cap. Apply a vacuum and introduce solvent (squeeze bottle) into the reservoir until the tube is cleaned. Spent solvent is collected in the flask. Continued application of the vacuum will air-dry the tube once the solvent is depleted.

The tube washers fit standard vacuum flasks with a 24/40 joint. Made in 3mm, 5mm and 10mm versions.

**Tube Washers and Flasks are sold separately.**

### NMR SAMPLE TUBE WASHERS

Catalog Number	Description	Price / each
NE-231-RC3	3mm NMR Tube Washer, Teflon	\$110.01
NE-231-RC5	5mm NMR Tube Washer, Teflon	112.23
NE-231-RC10	10mm NMR Tube Washer, Teflon	132.65
NE-240	Vacuum Flask, 500ml	49.15

### Standard Components

Catalog Number	Description	Price / each
NE-231-B	Base only, PTFE	\$ 53.47
NE-231-R	Reservoir only, PTFE	32.46
NE-231-RAK	Reservoir Adapter Kit (1/8" Nut and Ferrule, 2' of 1/8" FEP Tubing Replaces Reservoir for direct feed from Bulk solvent container)	24.12

### 3mm Components

Catalog Number	Description	Price / each
NE-231-C3	Cap Gasket, 3mm, PE	\$ 1.48
NE-231-G	Glass Body only	9.82
NE-231-S3	Solvent Capillary, PEEK, 1/16"	5.54
NE-231-N3	Nut, PPS, 1/16"	5.81
NE-231-F3	Ferrule, ETFE, 1/16"	3.33

### 5mm Components

Catalog Number	Description	Price / each
NE-231-C5	Cap Gasket, 5mm, PE	\$ 1.48
NE-231-G	Glass Body only	9.82
NE-231-S5	Solvent Capillary, PEEK, 1/8"	8.08
NE-231-N5	Nut, PPS, 1/8"	5.81
NE-231-F5	Ferrule, ETFE, 1/8"	3.33

### 10mm Components

Catalog Number	Description	Price / each
NE-231-C10	Cap Gasket, 10mm, PE	\$ 1.74
NE-231-G10	Glass Body only	31.30
NE-231-S5	Solvent Capillary, PEEK, 1/8"	8.08
NE-231-N5	Nut, PPS, 1/8"	5.81
NE-231-F5	Ferrule, ETFE, 1/8"	3.33



FEP = Fluorinated Ethylene Propylene    PE = Polyethylene  
PPS = Polyphenylene Sulfide    PEEK = Polyetheretherketone  
ETFE = Ethylenetetrafluoroethylene    PTFE = Polytetrafluoroethylene

# NMR SAMPLING ACCESSORIES

## SAMPLE TUBE CAPS

NMR sample tube caps fit tightly on the tube and provide adequate closure for many applications. To avoid cracking the tube, the cap should be eased off without twisting. Since these caps are disposable, they may be easily cut off. Long-term exposure to certain solvents may cause discoloration of the cap and leaching of plasticizers.

EVA=Ethylene Vinyl Acetate



Catalog Number	Tube Size	Description	Price	
			Pk/100	Pk/1000
NE-310-3	3mm	LD Polyethylene, Blue only	\$ 7.44	\$ 42.49
NE-310-4	4mm	LD Polyethylene, Red only	7.44	42.49
NE-310-5	5mm	EVA; Blue, Green, Red, Yellow, White, Black; specify color	8.08	54.37
NE-310-5S	5mm	Serum Stopper, sleeve type	43.55	-
NE-310-8	8mm	LD Polyethylene, Neutral only	13.14	71.21
NE-310-10	10mm	LD Polyethylene, Red only	13.14	71.21
NE-310-15	15mm	LD Polyethylene, Red only	26.50	230.63
NE-310-16	16mm	LD Polyethylene, Red only	26.50	230.63
NE-310-20	20mm	LD Polyethylene, Neutral only	26.50	230.63
NE-310-25	25mm	LD Polyethylene, Red only	26.50	230.63
NE-310-27	27mm	LD Polyethylene, Red only	26.50	230.63

## 5mm TEFLON SAMPLE TUBE CAPS

Made of PTFE, these caps are the most inert 5mm tube cap. The precision machined cylindrical design maintains good spinning quality. A snug push fit ensures solvent retention, and a circular external groove aids in removal. The easiest way to remove the cap is to grasp under the cap with your finger nails and pull straight up and off. Clean and reuse.



### Application Note:

In experiments where D<sub>2</sub>O solutions are heated to 90°C to speed up reaction times, the standard 5mm tube cap will “pop” off the tube. It is also difficult to secure it squarely to the tube. Alternatively, use of a 5mm Teflon cap and a few turns of parafilm form a secure, symmetrical closure that stays in place. When finished, cut the parafilm off and salvage the cap for reuse. Individual performance will vary with solvent and temperature parameters.

Catalog Number	Description	Price
NE-312-5-10 NE-312-5-25 NE-312-5-50	Cap, PTFE, 0.8mm wall x 15mm long with circular external groove	\$ 42.49 / Pk/10 95.97 / Pk/25 156.41 / Pk/50

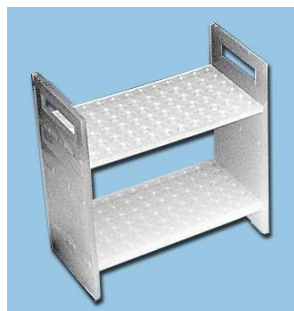
# NMR SAMPLING ACCESSORIES

## PIPETS / RUBBER BULBS

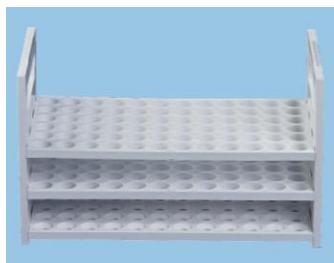


For easy sample transfer in 3mm and 5mm sample tubes. The long tips fit to the bottom of the sample tube. Avoid cross contamination by using these disposable pipets. Rubber pipet bulbs are also available.

Catalog Number	Description	Price
NE-201	Long Tip Pipet for 5mm x 7" tubes; 7.5" tip, 10.5" OAL, Bx/100	\$ 50.46 / Bx
NE-201-A	Extra Long Tip Pipet for 5mm x 8-9" tubes; 9.25" tip, 12.5" OAL, Bx/100	53.21 / Bx
NE-201-B	Long Tip Pipet for 3mm x 7" tubes; gaged to fit to the bottom of the tube; 7.5" tip 10.5" OAL, Bx/100	57.70 / Bx
NE-301-50	Rubber Bulbs, Pk/50	28.51 / Pk



NE-330-5



NE-332-10

## SAMPLE TUBE HOLDERS

These sturdy polypropylene tube holders are ideal for staging samples during preparation, in transporting samples between labs, and for sample storage. It is convenient for storing regularly used standards near the spectrometer. The 10mm version is suitable for water bath applications.

Available in 5mm OD and 10mm OD versions.

Catalog Number	Size	Description	Price / each	
			1-4	5+
NE-330-5	8" x 4" x 9"	Sample Tube Holder, 5mm x 72 positions	\$ 37.22	\$ 35.31
NE-332-10	8" x 4" x 5"	Sample Tube Holder, 10mm x 72 positions	\$ 56.43	

## CLEANING BRUSH

Clean your standard thin-wall 5mm sample tubes easily with this special brush. With its snug fit and bristles that reach to the bottom of the tube, it helps ensure that old samples are completely removed. Especially suited for students who need to reuse their sample tubes.

Catalog Number	Description	Price / each	
		1-4	5+
NE-343-5	Brush, for 5mm OD thin-wall tubes, 50mm of bristles, 240mm OAL	\$ 10.19	\$ 8.50



## NMR SAMPLING ACCESSORIES

### MICRO FUNNEL

Made of Pyrex or equal, the Micro Funnel aids in solvent transfer and may be used for very dry powder samples followed with solvent.

Fits precision thin wall 5mm NMR tubes.

Catalog Number	Description	Price / each
NE-203	Micro Funnel - Glass	\$ 16.63



### MICRO SPATULA

Made of stainless steel, the Micro Spatula is ideal for small powder samples introduction into 5mm OD NMR tubes. Since the very bottom of the tube can be reached, removing a sample becomes easy. The round end of the Micro Spatula is used as a scoop and the sharp-edged flat end can be used to pry stiff samples (round and flat ends are both  $\approx 3$ mm wide). Samples can be freeze-dried in the tube and then removed easily.



Catalog Number	Description	Price / each
NE-342	Micro Spatula - Stainless Steel	\$ 24.96

### SAMPLE TUBE LABELS

A self-adhesive **clear transparent** label ideally suited for labeling **5mm OD** NMR tubes. Furnished on a roll, the labels are convenient for hand-writing identification information. The label length allows for extra wrap-around to protect the descriptive information from rubbing off. Tube balance is also maintained for proper spinning quality.

The  $\frac{1}{2}$ " width gives ample space for descriptive information.  
There are 500 labels / roll.

Catalog Number	Description	Price / roll
NE-7407	NMR Tube Labels, Clear, for 5mm OD Tubes	\$ 39.43



### MARKING PENS

Suitable for marking glass and most other materials. Quick drying, water resistant, and permanent. Not suitable for writing on wet surfaces. Suitable with above sample tube labels.

Catalog Number	Description	Price / each
NE-7301	Blue ink, fine point, fast drying	\$ 3.11
NE-7302	Black ink, fine point, fast drying	3.11
NE-7303	Red ink, fine point, fast drying	3.11
NE-7304	Green ink, fine point, fast drying	3.11





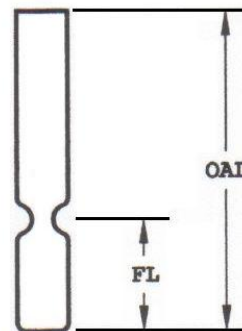
## NMR SAMPLING ACCESSORIES

### PYREX MASS ROTOR INSERTS

These precision Pyrex inserts are machined to fit closely into the rotor. A uniform and symmetrical constriction helps maintain spinning quality. For samples that cannot readily be contained in the rotor itself. Load the sample, seal with epoxy and cut through the constriction to obtain the desired finished length.

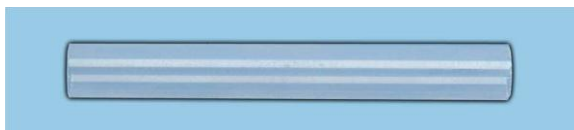
Some researchers choose to flame-seal the insert. In this case, samples are usually frozen and quickly sealed. If the seal is too long, it may be ground down, or in some cases, a hole is drilled in the center of the cap to accommodate the length. In any case, this method requires some practice to produce good seals.

The most common Bruker inserts are described below.



Catalog Number	Description	ID (mm)	OD (mm)	FL (mm)	OAL (mm)	Price / each	
						1-9	10+
NE-5001	Bruker 4mm Rotor, BN <sub>3</sub> Cap	2.26	2.99	14	25	request	request
NE-5002	Bruker 4mm Rotor, Kel-F Cap	2.26	2.99	15	25	request	request
NE-5010	Bruker 7mm Rotor	4.57	5.59	13.2	68	request	request
NE-5012	Bruker 7mm MSL Rotor	5.01	5.59	13.2	68	request	request

## QUARTZ PROBE INSERTS



### PROBE INSERTS

Precision, thin wall replacement quartz inserts for high field and micro imaging spectrometers. Please inquire about other sizes that may be of interest to you.

Catalog Number	Probe Size	Description	Price / each
NE-295-5	5mm	Precision, thin wall quartz sleeve, 5.8mm x 6.8mm x 64mm. Replacement for Bruker spectrometers. Conc.= 0.001" TIR.	\$ 65.98
NE-295-5A	5mm	Precision, thin wall quartz sleeve, 5.6mm x 6.1mm x 64mm. For late model Bruker probes. Conc.= 0.001" TIR.	69.31
NE-295-5B	5mm	Precision, thin wall quartz sleeve, 5.6mm x 6.1mm x 54.5mm. For Bruker dual flow probes. Conc.= 0.001" TIR.	69.31
NE-295-V-5	5mm	Precision, thin wall quartz sleeve, 5.5mm x 6.0mm x 58.6mm. For Varian probes. Conc.= 0.001" TIR.	69.31
NE-295-12	12mm	Precision, thin wall quartz sleeve, 11mm x 12mm x 75mm. For micro imaging systems.	54.48
NE-295-22.8	22.8mm	Precision, thin wall quartz sleeve, 21mm x 22.8mm x 75mm. For micro imaging systems.	75.49
NE-295-30	30mm	Precision, thin wall quartz sleeve, 28mm x 30mm x 75mm. Replacement for Bruker micro imaging spectrometers.	81.03

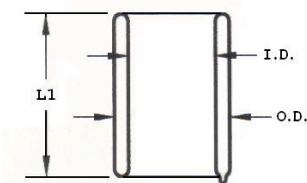
# DEWARs FOR NMR APPLICATIONS

Production of custom and replacement dewars as well as dewar repairs are part of the special services that New Era provides to its NMR clients. Our dewars are made to established industry standards and are evacuated to  $10^{-7}$  Torr, minimum.

Typical dewar designs are shown here, including basic dimensions that require consideration. We encourage your inquiries and are happy to suggest dewar designs to best suit your needs.

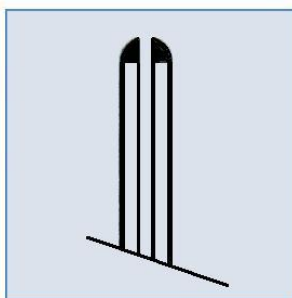
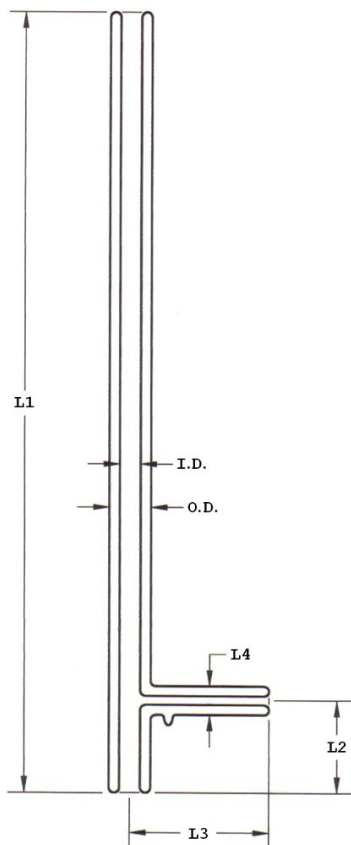
## INSERT DEWARs

Made of Quartz or Pyrex, unsilvered. Consider special designs for solid state applications.

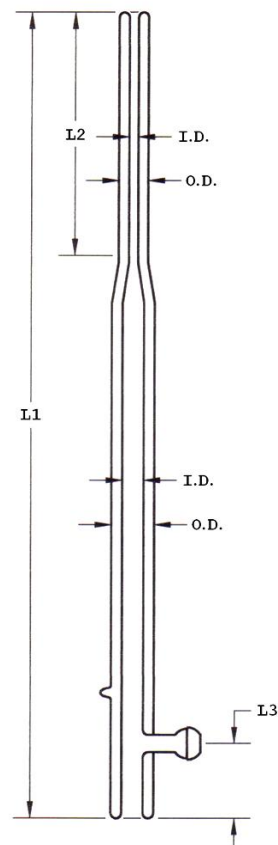


## VT DEWARs

Made of Quartz or Pyrex, partially or fully silvered. Side arms may be plain or terminate with a 12/5 ball joint. For some heater applications, a special 10/18 outer joint is built into the bottom of the dewar.



OPTIONAL END DETAIL



## Food Science Sampling Glassware

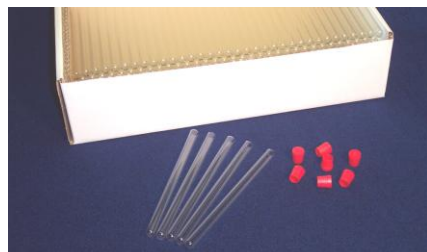
### Solid Fat Content Oxidative Stability Biodiesel Analysis

#### 10mm OD PULSED (TD) NMR TUBES

For use with Bruker MiniSpec systems.

- ▶ Results are reproducible and well within acceptable experimental limits.
- ▶ Ideal for the analysis of **Solid Fat Content** in oil and fat samples.
- ▶ Caps fit securely to allow for the use of every tray position.

Caps are **not included** and must be **ordered separately**.



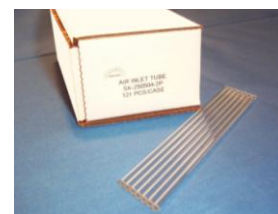
Catalog Number	Description	Bottom	Length	Price
NE-10PT-6-RB	Pulsed NMR Sample Tubes	Round	6"	request
NE-10PT-7-FB	Pulsed NMR Sample Tubes	Flat	7"	79.00 / Bx/220
NE-10PT-7-RB	Pulsed NMR Sample Tubes (For Autosampler Application)	Round	7"	85.00 / Bx/220
NE-10PT-8-RB	Pulsed NMR Sample Tubes	Round	8"	request
NE-310-10	Sample Tube Caps LD Polyethylene, Red	—	—	13.14 / Pk/100 71.21 / Pk/1000

## Brinkman Rancimat Glassware

Catalog Number	Description	OD	Length	Price
SK-250504-1C	Reaction Vessel (Round Bottom)	24mm	150mm	\$ 203.00 / Cs/100
SK-250504-2P	Air Inlet Tube	4mm	148mm	61.00 / Pk/100



Reaction  
Vessel



Air Inlet Tube

## Conductivity Vessels

- ▶ 130cc capacity.
- ▶ Durable (Pyrex or equivalent) laboratory glass.
- ▶ Washable and Autoclavable.
- ▶ Outlasts plastic versions.
- ▶ Eliminates "memory effects" (which can result using porous polymers) from one sample to the next.

Catalog Number	Description	Price
SK-110604-1C	Flat Bottom Vessel, 45mm x 90mm	\$ 139.00 / Cs/16



# NEW ERA NMR PRODUCTS AROUND THE WORLD

## CORPORATE HEADQUARTERS NEW ERA ENTERPRISES, INC.

P.O. BOX 747  
VINELAND, NJ 08362-0747  
Ph: 1-800-821-4667 Fax: 1-856-697-8727  
e-mail: [cs@newera-spectro.com](mailto:cs@newera-spectro.com) web: <http://newera-spectro.com/>

AT-MAR GLASS  
611 WEST STATE STREET  
KENNETT SQUARE, PA 19348  
Ph: 1-610-444-5903  
Fax: 1-610-444-1868  
e-mail: [sales@atmarglass.com](mailto:sales@atmarglass.com)  
web: <http://atmarglass.com/>

CORTECNET LLC  
411 ASH STREET  
MILL VALLEY, CA 94941  
Ph: 1-415-578-3392  
Fax: 1-415-230-5796  
e-mail: [aamzallag@cortecnet.com](mailto:aamzallag@cortecnet.com)  
[pcorcos@cortecnet.com](mailto:pcorcos@cortecnet.com)  
web: <http://cortecnet.com/>

QUARK ENTERPRISES, INC.  
P.O. BOX 2396  
VINELAND, NJ 08362-2396  
Ph: 1-800-955-0376  
Fax: 1-856-455-3373  
e-mail: [sales@quarkglass.com](mailto:sales@quarkglass.com)  
web: <http://quarkglass.com/>

## INTERNATIONAL DISTRIBUTORS

### AUSTRALIA

Novachem Pty Ltd  
100 Dight Street  
Collingwood Vic 3066  
Australia  
Ph: +61 3 8415 1255  
Fax: +61 3 8415 1366  
e-mail: [novachem@novachem.com.au](mailto:novachem@novachem.com.au)  
web: <http://novachem.com.au>

### BRAZIL

Tedia Brazil  
Rua Souza Barros  
567-Engenho Novo-Rio de Janeiro/RJ  
Brazil Cep 20961-150  
Ph: 55 21 2582 9020  
Fax: 55 21 2582 9020  
e-mail: [tediabrazil@tediabrazil.com.br](mailto:tediabrazil@tediabrazil.com.br)  
web: <http://tediabrazil.com.br>

### CANADA

ACP Chemicals, Inc.  
4601 boul. des Grandes Prairies  
St-Leonard, Quebec H1R 1A5  
Canada  
Ph: 1-800-363-9861  
Fax: 1-888-363-9861  
Contact: Peter Seccareccia  
e-mail: [sales@acpchem.com](mailto:sales@acpchem.com)  
web: <http://acpchem.com>

### EUROPE

CortecNet  
15/17 Rue des Tilleuls  
78960 Voisins le Bretonneux  
France  
Ph: 33 1 30 12 11 31  
Fax: 33 1 30 43 86 54  
Contact: Philippe Corcos  
e-mail: [pcorcos@cortecnet.com](mailto:pcorcos@cortecnet.com)  
web: <http://cortecnet.com>

### INDIA

EuTech Scientific Services India Pvt Ltd  
99 Manoranjan Park, Saket Road  
Meerut(UP) 250 001  
India  
Ph: 121-266-8830  
Fax: 121-266-8831  
e-mail: [eutech@optonetwork.com](mailto:eutech@optonetwork.com)  
e-mail: [info@eutechscientific.co](mailto:info@eutechscientific.co)

### ISRAEL

Tzamal D-Chem Laboratories Ltd  
20 Hamagshimim St. Kiryat Matalon  
Petach Tikva 49170  
Israel  
Ph: +972 73 7151137  
Fax: +972 3 7782314  
e-mail: [sophie@tzamal-medical.co.il](mailto:sophie@tzamal-medical.co.il)  
web: <http://d-chem.co.il>

### ITALY

Spectra2000 Srl  
Via Vico Vigano, 55  
00133 Roma  
Italia  
Ph: +39-06-20630997  
Fax: +39-06-20685490  
e-mail: [info@spectra2000.it](mailto:info@spectra2000.it)  
web: <http://spectra2000.it>

### JAPAN

Magnetic Resonance Technology Ltd  
2-6-6 Ozakudai  
Hamurashi  
Tokyo  
Japan  
Ph: 81 42 570 1321  
Fax: 81 42 570 1320  
e-mail: [mrt@mr-techno.co.jp](mailto:mrt@mr-techno.co.jp)  
web: <http://mr-techno.co.jp>

### SINGAPORE

Achema Pte Ltd  
45 Jalan Pemimpin #03-03  
Foo Wah Industrial Building  
Singapore 577197  
Ph: +65 6356 9081  
Fax: +65 6356 9082  
e-mail: [achema@magix.com.sg](mailto:achema@magix.com.sg)  
web: <http://achema-sg.biz>

### SOUTH KOREA

T & J Tech Inc.  
648-12 Banghwa-Dong Kangseo-Ku  
Seoul  
Korea  
Ph: 82-2-2665-4004  
Fax: 82-2-2665-4033  
e-mail: [info@tnjtech.co.kr](mailto:info@tnjtech.co.kr)  
web: <http://tnjtech.co.kr>

### TAIWAN / CHINA

Alere Health Corp.  
3F, 64T' A Cheng Street  
Taipei 10343  
Taiwan  
Ph: 886-2-2552-2605  
Fax: 886-2-2552-1269  
Contact: Walter Yen  
e-mail: [ywalter@chainet.com.tw](mailto:ywalter@chainet.com.tw)  
web: <http://chainet.com.tw>

### UNITED KINGDOM

Analysco Ltd  
11 Woodlands Close  
Milton under Wychwood  
Chipping Norton  
Oxfordshire OX7 6LS  
United Kingdom  
Ph: +44(0) 1993 832907  
Fax: +44(0) 1993 832907  
Contact: Chris Jackson  
e-mail: [chris.jackson@analysco.co.uk](mailto:chris.jackson@analysco.co.uk)  
web: <http://analysco.co.uk>

## USEFUL INTERNET SITES

ACD Labs ..... <http://www.acdlabs.com>  
Agilent ..... <http://www.agilent.com>  
AMMRL ..... <http://www.ammrl.org>  
Bruker ..... <http://www.bruker-biospin.com>

Doty Scientific ..... <http://www.dotynmr.com>  
JEOL ..... <http://www.jeol.com>  
Mestrelab ..... <http://www.mestrelab.com>  
NMR Associates ..... <http://www.nmr-associates.com>

## NMR PRODUCT CROSS-REFERENCE

New Era NMR Sample Tubes are produced to the highest industrial standards and are individually inspected to ensure that each tube meets the published specifications. These tubes will give the highest quality spectra with the most repeatable results. Each tube is marked with the catalog number and is capped, except as noted †. Closest equivalent ‡.

The most popular 3 and 5mm sample tubes are listed below along with a cross-reference to other suppliers.

All tubes are made of Type 1, Class A Borosilicate Glass (Pyrex or equal), except as noted \*.

“Q” in the catalog number indicates the tube is made of Clear Fused Quartz.

New Era	Wilmad	Kimble/Kontes	Aldrich	Aldrich/Wilmad	Chemglass/Norell
NE-H5/2.5	520-1A	N/A	N/A	Z276243	BMT-S-5-800-W/2.5
NE-H3-7	328-PP-7	897835-0000	N/A	Z274380	C-S-3-500-7
NE-H3-8	328-PP-8	897835-0008	N/A	Z274399	C-S-3-500-8
NE-RG5-7**	512-7	897193-0050	N/A	Z276308	C-502-7
NE-LL5-7*	507-PP-7	897110-0007	N/A	N/A	C-506-P-7
NE-LL5-8*	WG-1208-7 507-PP-8 WG-1208-8	897110-0008	N/A	N/A	C-506-P-8
NE-ML5-7*	528-PP-7	897130-0007	N/A	N/A	C-507-HP-7
NE-ML5-8*	WG-1228-7 528-PP-8 WG-1228-8	897130-0008	N/A	N/A	C-507-HP-8
NE-HL5-7*	535-PP-7	897140-0007	N/A	N/A	C-508-UP-7
NE-HL5-8*	WG-1235-7 535-PP-8 WG-1235-8	897140-0008	N/A	N/A	C-508-UP-8
NE-UL5-7*	541-PP-7	897150-0007	N/A	N/A	C-509-UP-7
NE-UL5-8*	WG-1241-7 541-PP-8 WG-1241-8	897150-0008	N/A	N/A	C-509-UP-8
NE-SL5-7*	542-PP-7	N/A	N/A	N/A	N/A
NE-SL5-8*	WG-1242-7 542-PP-8 WG-1242-8	N/A	N/A	N/A	N/A

\* Made of Type 1, Class B Borosilicate Glass. Offers comparable spectral quality.

New Era	Wilmad	Kimble/Kontes	Aldrich	Aldrich/Wilmad	Chemglass/Norell
NE-LP5-7	507-PP-7	897225-0000	Z569313	Z271993	C-S-5-200-7
NE-LP5-8	507-PP-8	897225-0008	Z569321	Z274461	C-S-5-200-8
NE-LP5-9	507-PP-9	897225-0009		Z272116	
NE-MP5-7	528-PP-7	897240-0000	Z569348	Z272019	C-S-5-500-7
NE-MP5-8	528-PP-8	897240-0008	Z569356	Z274291	C-S-5-500-8
NE-MP5-9	528-PP-9	897240-0009		Z274542	
NE-HP5-7	535-PP-7	897241-0000	Z569364	Z272027	C-S-5-600-7
NE-HP5-8	535-PP-8	897241-0008	Z569372	Z274550	C-S-5-600-8
NE-HP5-9	535-PP-9	897241-0009		Z274569	
NE-UP5-7	541-PP-7	897245-3000	Z569380	Z412007	C-S-5-800-7
NE-UP5-8	541-PP-8	897245-0008	Z569399	Z412015	C-S-5-800-8
NE-SP5-7	542-PP-7	897250-3000	Z569402	Z412023	C-S-5-900-7
NE-SP5-8	542-PP-8	897250-0008	Z569410	Z412031	C-S-5-900-8

## NMR PRODUCT CROSS-REFERENCE

New Era NMR Sample Tubes are produced to the highest industrial standards and are individually inspected to ensure that each tube meets the published specifications. These tubes will give the highest quality spectra with the most repeatable results. Each tube is marked with the catalog number and is capped, except for screw-thread and valve tubes. Closest equivalent †.

The most popular 5, 8 and 10mm sample tubes are listed below along with a cross-reference to other suppliers.

All tubes are made of Type 1, Class A Borosilicate Glass (Pyrex or equal), except as noted \*.

\* Made of Type 1, Class B Borosilicate Glass. Offers comparable spectral quality.

“Q” in the catalog number indicates the tube is made of Clear Fused Quartz.

New Era	Wilmad	Kimble/Kontes	Aldrich	Aldrich/Wilmad	Chemglass/Norell
NE-MP5-M-7	504-PP-7	N/A	N/A	N/A	S-5-300-MW-7
NE-MP5-M-8	504-PP-8	N/A	N/A	N/A	S-5-300-MW-8
NE-HP5-M-7	524-PP-7	N/A	N/A	N/A	S-5-500-MW-7
NE-HP5-M-8	524-PP-8	N/A	N/A	N/A	S-5-500-MW-8
NE-MP5-H-7	502-PP-7	N/A	N/A	N/A	S-5-300-HW-7
NE-MP5-H-8	502-PP-8	N/A	N/A	N/A	S-5-300-HW-8
NE-HP5-H-7	522-PP-7	N/A	N/A	N/A	S-5-500-HW-7
NE-HP5-H-8	522-PP-8	N/A	N/A	N/A	S-5-500-HW-8
NE-MQ5-7	507-PP-7QTZ	N/A	N/A	N/A	N/A
NE-MQ5-8	507-PP-8QTZ	N/A	N/A	N/A	N/A
NE-HQ5-7	528-PP-7QTZ	N/A	N/A	N/A	S-5-600-QTZ-7
NE-HQ5-8	528-PP-8QTZ	N/A	N/A	N/A	S-5-600-QTZ-8
NE-L8-7	513A-3PP-7	N/A	N/A	Z271888	N/A
NE-L8-8	513A-3PP-8	N/A	N/A	Z274607	N/A
NE-H8-7	513A-7PP-7	N/A	N/A	Z271896	N/A
NE-H8-8	513A-7PP-8	N/A	N/A	Z274666	N/A
NE-L10-7	513-3PP-7	897325-0000	N/A	Z272035	C-1005-P-7
NE-L10-8	513-3PP-8	897325-0008	N/A	Z274712	C-1005-P-8
NE-H10-7	513-7PP-7	897335-0000	N/A	Z272051	C-1008-UP-7
NE-H10-8	513-7PP-8	897335-0008	N/A	Z274755	C-1008-UP-8
NE-U10-7	N/A	N/A	N/A	N/A	N/A
NE-U10-8	N/A	N/A	N/A	N/A	N/A
NE-HQ10-7	513-7PP-7QTZ	N/A	N/A	N/A	N/A
NE-L16-7	16-7PP-7	N/A	N/A	N/A	N/A
NE-L16-8	16-7PP-8	N/A	N/A	N/A	N/A
NE-HL5-ST-168*	535-TR	N/A	N/A	Z271942	N/A
NE-HP5-ST-168	535-TR	N/A	N/A	Z271942	C-S-5-600-SC
NE-UL5-ST-168*	N/A	N/A	N/A	Z271950	N/A
NE-UP5-ST-168	N/A	N/A	N/A	Z271950	N/A
NE-H10-ST-178	513-7TRA-7	897735-1300	N/A	Z271977	N/A
3008	TR-OC-01	410116-0825	N/A	Z162531	N/A
3015	TR-OC-05	410116-1525	N/A	Z106453	N/A
3108	TR-SC-01†	410141-0825	N/A	Z188808	N/A
3108T	TR-SC-01	410121-0825	N/A	N/A	N/A
3115	TR-SC-05†	410141-1525	N/A	Z106410	N/A
3208 (Pk/12)	TR-LS-01	774161-0008	N/A	Z162566	N/A
3215 (Pk/12)	TR-LS-05	774161-0015	N/A	Z106518	N/A
NE-CAV5-XXX	535-JY-7	N/A	N/A	Z514160	C-S-5-600-JY-7
NE-CAV5-XXX	535-JY-8	N/A	N/A	Z514179	C-S-5-600-JY-8
NE-CAV10-XXX	513-7JY-7	897535-0000	N/A	N/A	N/A



# NMR PRODUCT CROSS-REFERENCE

New Era NMR Sample Tubes are produced to the highest industrial standards and are individually inspected to ensure that each tube meets the published specifications. These tubes will give the highest quality spectra with the most repeatable results. Each tube is marked with the catalog number and is capped, except for tip-off tubes. Closest equivalent †.

Sample tubes and accessories are listed below with a cross-reference to other suppliers.  
NMR tubes are made of Type 1, Class A Borosilicate Glass (Pyrex or equal).

EPR tubes are made of Clear Fused Quartz.

New Era	Wilmad	Kimble/Kontes	Aldrich	Aldrich/Wilmad	Chemglass/Norell
NE-HP5-TTO	535-PP-7-CONS	897750-0240	N/A	N/A	C-S-5-600-7C
NE-UP5-TTO	541-PP-7-CONS	897750-0245	N/A	N/A	C-S-5-800-7C
NE-SP5-TTO	542-PP-7-CONS	N/A	N/A	N/A	N/A
NE-H10-TTO	513-7PP-7-CONS	N/A	N/A	N/A	N/A
NE-5-CIC	WGS-5BL	N/A	N/A	Z278513	C-Ni5CCI-B
NE-5-CIC-V	N/A	N/A	N/A	N/A	C-Ni5CCI-V
NE-10-CIC	N/A	N/A	N/A	N/A	C-Ni10CCI-B
NE-10-CIC-V	N/A	N/A	N/A	N/A	C-Ni10CCI-V
NE-400-4-250	707-SQ	N/A	N/A	N/A	N/A
NE-400-5-250	710-SQ	N/A	N/A	N/A	N/A
NE-341-5	529-C	N/A	N/A	N/A	N/A
NE-350-5	6005	N/A	N/A	Z286397	C-TL-5-7
NE-350-10	6010	N/A	N/A	Z286419	C-TL-10-7
NE-230-5	WG-1207-5	897030-0005	Z282383†	N/A	N/A
NE-230-5J	WG-1207-J5	N/A	Z174793†	N/A	N/A
NE-230-10	WG-1207-10	N/A	N/A	N/A	N/A
NE-230-10J	WG-1207-J10	N/A	Z174807†	N/A	N/A
NE-240	LG-7800-104	953760-0000†	N/A	N/A	CG-1550-04
WG-232-3	N/A	897033-0003	Z513466	N/A	N/A
WG-232-5	WG-2506†	897033-0005	Z422843	N/A	CG-1852-01†
NE-310-3	521-P	897093-0001	N/A	Z272078	C-TC-3-LPE
NE-310-5	521	897095-00XX	N/A	Z118079 (Red)	CG-1842-XX†
NE-310-5S	521-S	897097-0001	N/A	Z153XX-X (Others)	TC-5-EVA
				Z100706	N/A
NE-310-8	521-B	N/A	N/A	Z27,208-6	N/A
NE-310-10	521-C	897095-1001	N/A	Z11,808-7	C-TC-10-LPE
NE-310-16	521-N	N/A	N/A	N/A	N/A
NE-312-5	WG-1264-5	897096-0005	N/A	Z220612	N/A
NE-201	803	897085-0007	Z255661	N/A	NG120
NE-201-A	803A	897085-0009	Z25,568-8	N/A	NG124
NE-201-B	N/A	N/A	N/A	N/A	N/A
NE-301-50	804	N/A	Z111589	N/A	N/A
NE-330-5	820-A	897080-0005	Z118257	N/A	C-TR500
NE-342	806	N/A	N/A	N/A	N/A
NE-5001	DWGSK2576-1	N/A	N/A	N/A	N/A
NE-5002	N/A	N/A	N/A	N/A	N/A
NE-5010	DWGSK2356	N/A	N/A	N/A	N/A
NE-5012	DWGSK2594	N/A	N/A	N/A	N/A

# Catalog Number Index

Incomplete catalog numbers in the listing below end with a hyphen (-) e.g.  
Cat. No. NE-231- would include NE-231-RC5, NE-231-S3, NE-231-G, NE-231-C10, etc.

Cat. No.	Page No.	Cat. No.	Page No.	Cat. No.	Page No.
3008 to 3215 .....	17	NE-400- .....	29	NE-HP5-ST- .....	17
NE-1.7-125 .....	10	NE-4.1-74-RB .....	8	NE-HP5-TTO .....	25
NE-10-CIC .....	28	NE-5-CIC .....	28	NE-HP5-M-TTO .....	25
NE-10-CIC-V .....	28	NE-5-CIC-V .....	28	NE-HQ5- .....	12
NE-10PT- series .....	37	NE-5-OCL .....	10	NE-HQ10-7 .....	14
NE-201 .....	33	NE-5001 .....	35	NE-HSTS-I .....	28
NE-201- .....	33	NE-5002 .....	35	NE-L8- .....	14
NE-203 .....	34	NE-5010 .....	35	NE-L10- .....	14
NE-205- .....	27	NE-5012 .....	35	NE-L15- .....	15
NE-230- .....	30	NE-7301 .....	34	NE-L16- .....	15
NE-231- .....	31	NE-7302 .....	34	NE-L20- .....	15
NE-232- .....	30	NE-7303 .....	34	NE-L25- .....	15
NE-240 .....	30, 31	NE-7304 .....	34	NE-L27- .....	15
NE-250 .....	28	NE-7407 .....	34	NE-LL5- .....	11
NE-250- .....	26	NE-8025 .....	26	NE-LP5- .....	12
NE-253- .....	26	NE-8348 .....	26	NE-ML5- .....	11
NE-262- .....	6	NE-CAV- .....	18	NE-MP5- .....	12
NE-263- .....	6	NE-CAV5- .....	18	NE-MP5-H- .....	13
NE-295- .....	35	NE-CAV10- .....	18	NE-MP5-M- .....	13
NE-301-50 .....	33	NE-H3- .....	10	NE-MQ5- .....	12
NE-310- .....	32	NE-H5/2-AS .....	10	NE-MQ10-7 .....	14
NE-310-10 .....	32, 37	NE-H5/2.5-AS .....	10	NE-PCAV- .....	18
NE-312- .....	32	NE-H5/3-AS .....	10	NE-PCAV5- .....	18
NE-312-5-GT .....	19	NE-H5/2-V-Br .....	5	NE-PCAV10- .....	18
NE-318- .....	8	NE-H5/2.5 .....	5	NE-Raman-5 .....	29
NE-325-5/1 .....	7	NE-H5/2.5-V .....	5	NE-RG5- .....	13
NE-325-5/1.7 .....	7	NE-H5/2.5-V-Br .....	5	NE-SL5- .....	11
NE-325-5/2 .....	7	NE-H5/3 .....	5, 10	NE-SL30- .....	15
NE-325-5/2.5 .....	7	NE-H5/3-Br .....	5	NE-SP5- .....	12
NE-330-5 .....	33	NE-H5/4 .....	5	NE-SP5-GT-7 .....	19
NE-332-10 .....	33	NE-H5/4-Br .....	5	NE-SP5-TTO .....	25
NE-341-5 .....	7, 8, 19, 27	NE-H8- .....	14	NE-U10- .....	14
NE-341-10 .....	27	NE-H10- .....	14	NE-UL5- .....	11
NE-342 .....	34	NE-H10-LS-7 .....	17	NE-UL5-ST- .....	17
NE-343-5 .....	33	NE-H10-ST- .....	17	NE-UL5-TTO .....	25
NE-350- .....	28	NE-H10-TTO .....	25	NE-UP5-7 .....	7, 12
NE-360- .....	27	NE-HL5- .....	11	NE-UP5- .....	12
NE-361- .....	27	NE-HL5-4-AS .....	10	NE-UP5-CGT .....	22
NE-362- .....	27	NE-HL5-ST- .....	17	NE-UP5-GT-7 .....	19
NE-370- .....	19	NE-HL5-TTO .....	25	NE-UP5-LS-7 .....	17
NE-371- .....	19	NE-HP5- .....	12	NE-UP5-ST- .....	17
NE-372- .....	20	NE-HP5-GT-7 .....	19	NE-UP5-TTO .....	25
NE-373- .....	19	NE-HP5-HSTS .....	28	SK-250504-1C .....	37
NE-375- .....	22	NE-HP5-H- .....	13	SK-250504-2P .....	37
NE-377 .....	24	NE-HP5-M- .....	13	SK-110604-1C .....	37
NE-380- .....	7				