

# 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
NE-230-3 NE-230-3J	3mm 3mm	straight body, 10mm OD with 24/40 inner joint
NE-230-5 NE-230-5J	5mm 5mm	straight body, 10mm OD with 24/40 inner joint
NE-230-10 NE-230-10J	10mm 10mm	straight body, 14mm OD with 24/40 inner joint



## VACUUM FLASK

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

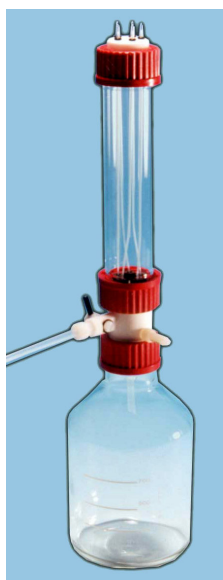
Catalog Number	Description
NE-240	Vacuum Flask, 500ml



## 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
NE-232-3 NE-232-5	3mm - 5 Tube Washer, complete 5mm - 5 Tube Washer, complete



# 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
NE-231-RC3 NE-231-RC5 NE-231-RC10	3mm NMR Tube Washer, Teflon 5mm NMR Tube Washer, Teflon 10mm NMR Tube Washer, Teflon
NE-240	Vacuum Flask, 500ml

### Standard Components

Catalog Number	Description
NE-231-B NE-231-R	Base only, PTFE    Reservoir only, PTFE



### 3mm Components

Catalog Number	Description
NE-231-C3 NE-231-G NE-231-S3	Cap Gasket, 3mm, PE Glass Body only Solvent Capillary, PEEK, 1/16"
NE-231-N3 NE-231-F3	Nut, PPS, 1/16" Ferrule, ETFE, 1/16"

PE = Polyethylene  
PPS = Polyphenylene Sulfide  
PEEK = Polyetheretherketone  
ETFE = Ethylenetetrafluoroethylene  
PTFE = Polytetrafluoroethylene

### 5mm Components

Catalog Number	Description
NE-231-C5 NE-231-G NE-231-S5	Cap Gasket, 5mm, PE Glass Body only Solvent Capillary, PEEK, 1/8"
NE-231-N5 NE-231-F5	Nut, PPS, 1/8" Ferrule, ETFE, 1/8"

### 10mm Components

Catalog Number	Description
NE-231-C10 NE-231-G10 NE-231-S5	Cap Gasket, 10mm, PE Glass Body only Solvent Capillary, PEEK, 1/8"
NE-231-N5 NE-231-F5	Nut, PPS, 1/8" Ferrule, ETFE, 1/8"

# 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
NE-310-3 NE-310-5	3mm 5mm	LD Polyethylene, Red only EVA; Blue, Green, Red, Yellow, White, Black; specify color
NE-310-5S NE-310-8	5mm 8mm	Serum Stopper, sleeve type LD Polyethylene, Neutral only
NE-310-10 NE-310-15	10mm 15mm	LD Polyethylene, Red only LD Polyethylene, Red only
NE-310-16 NE-310-20	16mm 20mm	LD Polyethylene, Red only LD Polyethylene, Neutral only
NE-310-25 NE-310-27	25mm 27mm	LD Polyethylene, Red only LD Polyethylene, Red only

## 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
NE-312-5-10 NE-312-5-25 NE-312-5-50	Cap, PTFE, 0.8mm wall x 15mm long with circular external groove

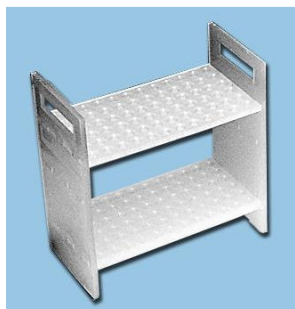
# NMR SAMPLING ACCESSORIES



## 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
NE-201	Long Tip Pipet for 5mm x 7" tubes; 7.5" tip, 10.5" OAL, Bx/100
NE-201-A	Extra Long Tip Pipet for 5mm x 8-9" tubes; 9.25" tip, 12.5" OAL, Bx/100
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
NE-301-50	Rubber Bulbs, Pk/50



## SAMPLE TUBE HOLDER

This sturdy polypropylene tube holder is 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. For 5mm OD sample tubes.

Catalog Number	Size	Description
NE-330-5	8" x 4" x 9"	Sample Tube Holder, 5mm x 72 positions

## 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.

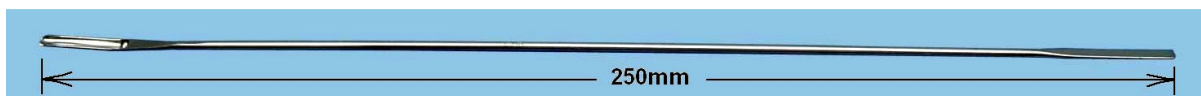
Catalog Number	Description
NE-343-5	Brush, for 5mm OD thin-wall tubes, 50mm of bristles, 240mm OAL



# NMR SAMPLING ACCESSORIES

## 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  $\approx 3\text{mm}$  wide). Samples can be freeze-dried in the tube and then removed easily.



Catalog Number	Description
NE-342	Micro Spatula - Stainless Steel

## 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
NE-7407	NMR Tube Labels, Clear, for 5mm OD Tubes



## 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
NE-7301	Blue ink, fine point, fast drying
NE-7302	Black ink, fine point, fast drying
NE-7303	Red ink, fine point, fast drying
NE-7304	Green ink, fine point, fast drying



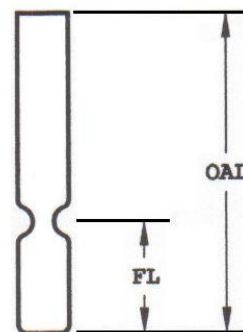
# NMR SAMPLING ACCESSORIES

## 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.

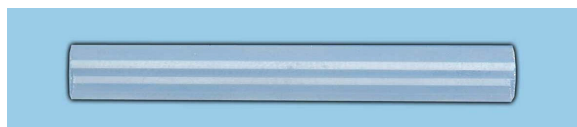
Some researchers choose to flame-seal the insert. In this case, samples are usually frozen and quickly sealed. If the seal is too long, it may be ground down, or in some cases, a hole is drilled in the center of the cap to accommodate the length. In any case, this method requires some practice to produce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

The most common Bruker inserts are described below.



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

## 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
NE-295-5	5mm	Precision, thin wall quartz sleeve, 5.8mm x 6.8mm x 64mm. Replacement for Bruker spectrometers. Conc.= 0.001" TIR.
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.
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.
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.
NE-295-12	12mm	Precision, thin wall quartz sleeve, 11mm x 12mm x 75mm. For micro imaging systems.
NE-295-22.8	22.8mm	Precision, thin wall quartz sleeve, 21mm x 22.8mm x 75mm. For micro imaging systems.
NE-295-30	30mm	Precision, thin wall quartz sleeve, 28mm x 30mm x 75mm. Replacement for Bruker micro imaging spectrometers.

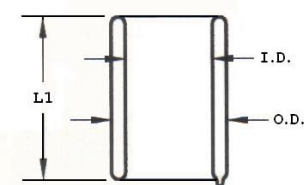
# DEWARS FOR NMR APPLICATIONS

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.

