

## NMR SPECTROSCOPY – NMR TUBES AND ACCESSORIES

*“Designed for repeated use in high resolution NMR”*

### Kimble/Kontes NMR Tubes

Kimble/Kontes has provided superior quality products to the nuclear magnetic resonance (NMR) market for more than a quarter of a century. Kimble/Kontes NMR tubes are manufactured from ASTM Type 1 borosilicate glass and their performance is assured by state of the art manufacturing and inspection processes for camber and concentricity.

We guarantee these high resolution tubes to meet stated dimensional specifications and to produce accurate results according to the field strength of the NMR spectrometer. Each Kimble/Kontes NMR tube is supplied with a cap and features a sandblasted marking spot for easy sample identification.

If you are unsure which tube is best for your needs then please do give us a call – We are happy to help!

*Please do ask for bulk discounts on all our tubes*

#### NMR tubes – 3mm

Catalogue number	Approx. MHz	Length inches	Wall Thickness TIR	Wall Variation TIR	Wall Camber TIR	Price £/tube
897840-0000	>400	7	0.01118	0.0005	0.00025	9.40
897840-0008		8	0.01118	0.0005	0.00035	10.40
897840-0009		9	0.01118	0.0005	0.00045	11.50
897835-0000	360	7	0.01118	0.0010	0.0005	8.10
897835-0008		8	0.01118	0.0010	0.0006	9.00
897835-0009		9	0.01118	0.0010	0.0007	10.00
897830-0000	270	7	0.01118	0.0015	0.0010	7.30
897830-0008		8	0.01118	0.0015	0.0011	8.10
897830-0009		9	0.01118	0.0015	0.0012	9.10
897825-0000	200	7	0.01118	0.0020	0.0005	7.30
897825-0008		8	0.01118	0.0020	0.0006	8.10
897825-0009		9	0.01118	0.0020	0.0007	9.10
897820-0000	150	7	0.01118	0.0020	0.0010	6.80
897820-0008		8	0.01118	0.0020	0.0011	7.30
897820-0009		9	0.01118	0.0020	0.0012	8.20
897805-0000	100	7	0.01118	0.0025	0.0020	6.75
897805-0008		8	0.01118	0.0025	0.0020	6.85
897805-0009		9	0.01118	0.0025	0.0020	7.75
897800-0000	80	7	0.01118	0.0030	0.002	6.60
897800-0008		8	0.01118	0.0030	0.002	6.75
897800-0009		9	0.01118	0.0030	0.002	7.60

O.D. Inches – 0.1186" (+0.0000/-0.0005) I.D. Inches – 0.0945" (+0.0005/-0.0000)

TIR – Total indicator reading inches



*“For smaller samples use an NMR microcell system”*

### NMR Microcell System

Our unique NMR microcell assembly allows you to analyse micro-sized samples in standard 5mm NMR tubes. Just dispense your micro-sample or external reference into either a 5µl or 30µl microcell and slide the microcell into the PTFE holder. Then, thread the microcell holder onto the black nylon positioning rod and insert the entire assembly into a 5mm 897200 or 897205 series NMR tube until the microcell is properly positioned for analysis. Now, simply unscrew the positioning rod and remove it, leaving the microcell and PTFE holder in the tube. It's that simple.

Catalogue No.	Description	Price £
897000-0000	NMR Microcell Rod – Black nylon rod used to position microcell holder 897010-0000 and microcells 897020-0000 and 897022-0000	10.50
897010-0000	NMR Microcell Holder, PTFE – Threaded to accept microcell rod for positioning spherical or capillary microcells within the NMR tube	19.90
897020-0000	NMR Spherical 30µl Microcell – 30 microlitre capacity sample bulb with short neck for insertion in an 897010-0000 microcell holder. Pack of 10	29.00
897022-0000	NMR Capillary 5µl Microcell – Closed end capillary cell holds 3-6 microlitres. This cell may also be used to hold an external reference standard while the sample to be analysed is placed in the space between the capillary cell and the outer NMR tube. Designed to fit the 897010-0000 microcell holder. Pack of 10	32.50

*“Valved tubes make it easier to study difficult compounds”*

### J.Young Valved NMR Tubes

Wilmad NMR tubes fitted with a J.Young valve are designed to improve sample handling during the investigation of volatile, air-sensitive or toxic compounds. Condensation of sample occurs directly into the NMR tube through the use of vacuum techniques. A special valve maximises sample recovery and permits resealing as opposed to the permanent “seal-off” method. The valve features a borosilicate glass body and PTFE plug so that the sample is in contact with inert materials. The valve is greaseless, thereby eliminating the risk of sample contamination. The rotationally symmetrical design, permits use at higher temperatures. A glass tube with a Viton<sup>®</sup> O-ring seal is used to connect the valved NMR tube to a vacuum system.

Valved NMR tubes				Valved NMR tubes			
Catalogue Number	Tube Dia./mm	Length inches	Price £/tube	Catalogue Number	Tube Dia./mm	Length inches	Price £/tube
505-JY-7	5	7	45.00	528-JY-7	5	7	55.00
505-JY-8	5	8	45.00	528-JY-8	5	8	55.00
505-JY-9	5	9	45.00	528-JY-9	5	9	55.00
507-JY-7	5	7	50.00	513-7JY-7	10	7	90.00
507-JY-8	5	8	50.00	513-7JY-8	10	8	POA
507-JY-9	5	9	50.00	513-7JY-9	10	9	POA

ASK FOR BULK DISCOUNTS – ASK FOR PRICE ON J.YOUNG VALVE

## NMR SPECTROSCOPY – NMR TUBES AND ACCESSORIES

*“Threaded tubes facilitate reaction studies and sample storage”*

### Threaded NMR tubes

KONTES threaded NMR tubes with caps and septa facilitate sample storage and allow access to the sample with a syringe. These tubes can easily be cleaned and reused; replacement caps and septa are available. KONTES threaded NMR tubes can be used for air-sensitive samples and reaction studies where compounds may be added through the septum cap. Tubes are available in 5mm and 10mm diameters and both sizes are suitable for instruments with field strengths greater than 360MHz.

Catalogue No.	Description	Tube O.D. mm	Price £
897635-0800	NMR Tube 8-425 thread	5	15.75
897335-1300	NMR Tube 13-425 thread	10	24.90

#### Replacement Parts

410116-0825	Cap, Open Top, 8-425 GPI Thread (Pack of 48)		3.35
410116-1325	Cap, Open Top, 13-425 GPI Thread (Pack of 48)		3.75
774161-0008	Septum, PTFE/Silicone, fits 8mm cap (Pack of 48)		11.75
774161-0013	Septum, PTFE/Silicone, fits 13mm cap (Pack of 48)		20.20

### NMR Sealing Manifolds

Now there is an easy way to evacuate and tip-off NMR tubes without additional sealing to other glass apparatus. The KONTES NMR single and double port sealing manifolds have Kontes HI-VAC<sup>R</sup> valves for individual control of each port. The double port manifold permits sealing one tube while the other remains under vacuum.

NMR manifolds feature BEVEL-SEAL<sup>TM</sup> threaded connections and specially designed caps with aluminum shields for heat deflection. Insert the NMR tube through the open top cap, place the O-ring over the open end of the tube, insert the tube into the BEVEL-SEAL thread and tighten the cap onto the thread to make a vacuum seal.

The longer 5mm NMR tubes (8 and 9 inch) are recommended for use with manifolds. A #2 hose connection is used for attaching the vacuum line (vacuum tubing is recommended). All O-rings supplied are Viton<sup>R</sup>. Valve plugs are 826501-0008.

Catalogue No.	Description	O-ring sizes		Price £
		Shaft	Tip	
897047-0001	NMR Manifold, Single, Complete	110	011	60.00
897047-0002	NMR Manifold, Double, Complete	110	011	120.00

#### Component Parts

897048-0001	NMR Manifold Only, Single		46.00
897048-0002	NMR Manifold Only, Double		91.00
897049-0005	Cap, Shielded, No. 5 Thread, Size 106 O-ring		17.50

*“Sealing Manifolds and adaptors provide easier, faster and more economical ways to evacuate and seal NMR tubes”*

## NMR SPECTROSCOPY – NMR TUBES AND ACCESSORIES

### NMR Sealing Adaptors

NMR sealing adaptors are used on existing vacuum systems having ports with standard taper or O-ring connections. These adaptors utilise the same BEVEL-SEAL™ thread and aluminium shielded caps as the 897047 series manifolds. Other joint and o-ring connectors can be made upon request.

Catalogue No.	Description	Price £
897040-1405	Adaptor, 14/20 to BEVEL-SEAL Thread	28.00
897040-1905	Adaptor, 19/22 to BEVEL-SEAL Thread	28.50
897040-2405	Adaptor, 24/40 to BEVEL-SEAL Thread	28.50
897045-1505	Adaptor, 15 O-ring to BEVEL-SEAL Thread	28.00

#### Replacement Parts

897049-0005	Cap, Shielded, No. 5 Thread, Size 106 O-ring	17.50
758252-0116	O-ring, Size 116 Viton (Pack of 10)	20.00
758252-0106	O-ring, Size 106 Viton (Pack of 10)	13.50

*“Colour-code sample tubes with NMR pressure caps”*

### NMR Sample Tube Pressure Cap

A tight fitting, polyethylene cap which stays in place even with a build-up of internal vaporisation pressures.

Catalogue No.	Fits Tube Size (mm)	Colour	Quantity/Pack	Price £
897095-0001	5	Red	100	3.90
897095-0021	5	Black	100	3.90
897095-0061	5	White	100	3.90
897095-0071	5	Green	100	3.90
897095-0081	5	Yellow	100	3.90
897095-1001	10	Red	100	6.40
897095-1021	10	Black	100	6.40
897095-1071	10	Green	100	6.40
897095-1081	10	Yellow	100	6.40

### NMR Sample Tube Septum

Useful as a closure or for sample outgassing. Soft, natural rubber allows easy penetration with a syringe needle

Catalogue No.	Fits Tube Size (mm)	Quantity/Pack	Price £
897097-0001	5	100	15.00

### NMR Pipettes

Extended tip NMR pipettes for retrieving and adding sample in the NMR tube.

Catalogue No.	Tip length, inches	Quantity/Pack	Price £
897085-0007	7	100	36.00
897085-0009	9	100	37.50

## NMR SPECTROSCOPY – NMR TUBES AND ACCESSORIES

*“Remove particulate matter with an NMR sample filter”*

### NMR Sample Filter

Pressure-type filter for removal of particulate matter in samples prior to analysis. Upper part is fitted with a #00 stopper. Sample is pipetted into the filter. A rubber bulb, with valve, provides pressure to force the sample through the fine porosity filter. 897050-0021 has a bottom with a plain drip tip. 897050-022 has an inner luer joint as a tip.

Catalogue No.	Style	Quantity/Pack	Price £
897050-0021	21	1	25.50
897050-0022	22	1	33.50

### NMR Funnel

Polypropylene construction with a lower fitting sized to accommodate 5mm NMR tubes. Disposable feature eliminates the possibility of cross contamination. Filter is a polyethylene disc or glass wool. Complete set consists of a reservoir, a column and a lower fitting.

Catalogue No.	Description	Quantity/Pack	Price £
420160-0000	Funnel set (Unassembled)	100	60.00

#### Replacement Parts

420164-1000	Reservoir only	50	15.00
420168-1000	Lower fitting only	50	11.00

#### Accessories

420162-0000	Polyethylene Disc, 30-50 microns	100	17.00
420162-0020	Polyethylene Disc, 20 microns	100	17.00

### NMR Sample Tube Rack

Polypropylene rack with carrying handles.

Catalogue No.	Accommodate	Quantity/Pack	Price £
897080-0005	72 x 5mm NMR Tubes	1	24.00
897080-0010	18 x 10mm NMR Tubes	1	29.00

### Cuvette Washer

Recommended for 10mm NMR tubes. For rapid, safe washing and drying of cuvettes, cells, tubes and small scale volumetric items up to approximately 22mm O.D. Operates efficiently on a conventional sink aspirator. Flushing is activated by lightly pressing the inverted cell onto a neoprene gasket. Complete unit is supplied with one gasket.

Catalogue No.	Description	Quantity/Pack	Price £
459960-0000	250ml Capacity flask (vacuum joint is 24/25, and flask joint is 24/40)	1	110.00

#### Component Parts

459961-0000	Cuvette Washer Only	1	50.00
459951-0000	Neoprene Gasket	12	19.50
179850-2224	Vacuum Adaptor, size 22, joint 24/25	1	43.00
617000-0424	Erlenmeyer flask, joint 24/40, 250ml	1	14.50

## NMR SPECTROSCOPY – NMR TUBES AND ACCESSORIES

### Utility Washer

Designed for rapid, safe washing of NMR tubes, cuvettes and small scale volumetric items up to approximately 22mm O.D. (see over)

Washing action is activated by lightly pressing the inverted cell onto the PTFE gasket. A high pressure stream is then expelled from the small diameter PTFE tubing. A built in check valve keeps contaminated cleaning solution from backwashing into the supply vessel.

The Utility Washer is supplied with one PTFE gasket and one 18" length of PTFE tubing, but without a rubber stopper or filter flask. Tubing may be cut to length to accommodate the item being washed. Use a suitable size rubber stopper with a #6 hole (approximately 7/16" in diameter) to insert the unit into the filter flask.

Catalogue No.	Approx. Overall Height x Width (mm)	Quantity/Pack	Price £
459970-0000	175x50	1	65.00

### Wilmad NMR Tubes

Wilmad-LabGlass is the world-leading manufacturer of NMR tubes and accessories, with over 60 years of experience. Their products are manufactured using state-of-the-art processing equipment producing components of the highest quality and tolerances in the industry.

Apollo Scientific are delighted to be able to offer Wilmad-LabGlass quality NMR tubes at a competitive price. Please remember we do also offer bulk discounts on all these tubes.

#### NMR tubes – 3mm

Catalogue number	Approx. MHz	Length TIR	Wall Thickness mm	Wall Variation TIR	Wall Camber TIR	Price £/tube
335-PP-7	600	7	0.29	0.0005	0.00025	8.35
335-PP-8		8	0.29	0.0005	0.00025	9.05
328-PP-7	500	7	0.29	0.001	0.0005	8.35
328-PP-8		8	0.29	0.001	0.0005	7.75
327-PP-7	400	7	0.29	0.001	0.001	6.20
327-PP-8		8	0.29	0.001	0.001	6.90
307-PP-7	300	7	0.29	0.002	0.001	5.80
307-PP-8		8	0.29	0.002	0.001	6.10
305-PS-7	200	7	0.29	0.003	0.002	4.45
305-PS-8		8	0.29	0.003	0.002	4.75

O.D. Inches – 0.1186" (+0.0000/-0.0005) I.D. Inches – 0.0945" (+0.0005/-0.0000)

TIR – Total indicator reading inches

## NMR SPECTROSCOPY – NMR TUBES AND ACCESSORIES

### NMR tubes – 5mm Precision

Catalogue number	Approx. MHz	Length inches	Wall Thickness mm	Wall Variation TIR	Wall Camber TIR	Price £/tube
542-PP-7	900	7	0.38	0.0001	0.00015	19.15
542-PP-8		8	0.38	0.0001	0.00015	20.00
541-PP-7	800	7	0.38	0.00015	0.00015	15.30
541-PP-8		8	0.38	0.00015	0.00015	16.70
535-PP-7	600	7	0.38	0.0005	0.00025	10.45
535-PP-8		8	0.38	0.0005	0.00025	11.30
528-PP-7	500	7	0.38	0.001	0.0005	7.45
528-PP-8		8	0.38	0.001	0.0005	8.15
527-PP-7	400	7	0.38	0.001	0.001	6.40
527-PP-8		8	0.38	0.001	0.001	7.10
526-PP-7	360	7	0.38	0.002	0.0005	6.40
526-PP-8		8	0.38	0.002	0.0005	7.10
507-PP-7	300	7	0.38	0.002	0.001	4.90
507-PP-8		8	0.38	0.002	0.001	5.50
506-PP-7	200	7	0.38	0.002	0.002	3.80
506-PP-8		8	0.38	0.002	0.002	4.50
505-PS-7	100	7	0.38	0.003	0.002	3.40
505-PS-8		8	0.38	0.003	0.002	3.65

O.D. Inches – 0.1955" (+0.0000/-0.0005) I.D. Inches – 0.1655" (+0.0005/-0.0000)

### NMR tubes – 5mm Economy

WG-1235-7	>400	7	0.43	0.0005	0.00025	3.50
WG-1235-8		8	0.43	0.0005	0.00025	3.90
WG-1228-7	400	7	0.43	0.0010	0.0005	2.70
WG-1228-8		8	0.43	0.0010	0.0005	3.15
WG-1226-7	300	7	0.43	0.002	0.0005	1.85
WG-1226-8		8	0.43	0.002	0.0005	2.30
WG-1208-7	200	7	0.43	0.002	0.001	1.80
WG-1208-8		8	0.43	0.002	0.001	1.60
WG-1206-7	>100	7	0.43	0.002	0.002	1.30
WG-1206-8		8	0.43	0.002	0.002	1.50
WG-5mmEC-7	100	7	0.43			0.80
WG-5mmEC-8		8	0.43			0.95

O.D. Inches 0.190-0.197 I.D. Inches 0.161-0.169 TIR – Total indicator reading inches