Solid-State NMR Consumables & Accessories

Wilmad-LabGlass
SP SCIENCEWARE

Solid State Significance

MAS Rotors provide the NMR spectroscopist with the ultimate alternative for analysis of solid samples. The need to solvate is eliminated!

Properties of MAS-NMR Rotors & Caps

	Rotors	Caps & Plugs			
	Zirconia	Kel-F®	Macor®	Torlon®	Vespel®SP1
Minimum Temperature	-150° C	-20° C	-100° C	-100° C	-100° C
Maximum Temperature	650° C	70° C	200° C	200° C	200° C
Studies Commonly Used for	—	^{1}H	^{13}C	Multi-nuclei (except ^{13}C)	—
Fits Probe Size (mm)	2.5, 3.2, 4.0, 5.0, 7.0	2.5, 3.2, 4.0, 5.0, 7.0	4.0, 7.0	4.0, 5.0, 7.0	2.5, 3.2, 4.0
Compatible with Probe Manufacturer	Bruker® Agilent/Varian®	Bruker® Agilent/Varian®	Bruker®	Bruker® Agilent/Varian®	Bruker®
Contains a Detachable O-ring for a Gas-tight Seal	—	Yes	Yes	Yes	Yes
Available with Venting Axial Hole	—	Yes	No	Yes	No

Rotor & Cap for Bruker® & Agilent/Varian® MAS–NMR

MAS–NMR rotor bodies are manufactured from the highest quality Zirconia, Kel–F, Torlon®, & Vespel® providing the ultimate solution for analysis of solid samples.

- MAS rotors and caps are 100% compatible with most solid state NMR spectrometers
- Thoroughly inspected before and after the precision machining process to ensure there are no material irregularities
- Spin testing is performed to only the highest specified spinning speed, assuring performance without overspinning the rotor
- Spinning speeds of up to 12 kHz for 7mm O.D. rotors
- Some caps are fitted with O–rings for improved sealing
- Zirconia rotor body has a strength of 1,000MPa, greater than Si_3N_4

Note: "DB" is the abbreviation for Bruker® "**D**ouble **B**earing" style rotor.
"BL" is the abbreviation for Bruker® "**B**oden **L**ager" (Bottom Bearing) style rotor.

Rotor & Cap for Bruker®MAS Probe

Catalog No.	For Bruker® MAS Probe	Temperature Range	Description	Material	Remarks
WP–501–2180	2.5mm	–150to 650° C	Both Ends Open Rotor	Zirconia	V_{max}=35kHz
WP–602–2181	2.5mm	–30to 70° C	Cap	Vespel®	
WP–602–2182	2.5mm	–30to 70° C	Bottom Plug	Vespel®	
WP–501–2180–SET1	2.5mm	–30to 70° C	One 2.5mm Rotor, Two Vespel® Caps and Bottoms	Various	V_{max}=35kHz
WP–501–3180	3.2mm	–150to 650° C	Rotor Body, Both Ends Open	Zirconia	V_{max}=24kHz
WP–501–3180–SET1	3.2mm	–30to 70° C	One 3.2mm Rotor, Two Vespel® Caps and Bottoms	Various	V_{max}=24kHz
WP–602–3181	3.2mm	–30to 70° C	Rotor Cap	Vespel®	
WP–602–3182	3.2mm	–30to 70° C	Bottom Plug	Vespel®	
WP–603–3181	3.2mm	–20to 70° C	Rotor Cap	Kel–F®	
WP–603–3182	3.2mm	–20to 70° C	Bottom Plug	Kel–F®	
WP–501–4180	4mm	–150to 650° C	Rotor Body	Zirconia	V_{max}=18kHz
WP–501–4181	4mm	–150to 650° C	Rotor Body w/ Laser Marked Serial Number and Tachometer Mark on the Base	Zirconia	V_{max}=18kHz
WP–601–4181	4mm	Ambient	Cap	Kel–F®	
JK–601–4181	4mm	–20to 70° C	Cap with One O–ring	Kel–F®	
JK–602–4181	4mm	–100to 200° C	Cap with One O–ring	Macor®	
JK–603–4181	4mm	–100to 200° C	Cap with One O–ring	Torlon®	

Rotor & Cap for Bruker®MAS Probe (continued)

Catalog No.	For Bruker® MAS Probe	Temperature Range	Description	Material	Remarks
JK-604-4181	4mm	-100to 200° C	Cap with One O-ring	Vespel®	
WP-501-4180-SET-1	4mm	-100to 200° C	One Rotor, Two Kel-F®Caps, One Torlon®Cap	Various	V_{max}=18kHz
WP-501-4180-SET-2	4mm	-100to 200° C	Two Rotors, Four Kel-F®Caps, One Torlon®Cap	Various	V_{max}=18kHz
WP-501-4180-SET-5	4mm	-100to 200° C	Five Rotors, Ten Kel-F®Caps and Three Torlon®Caps	Various	V_{max}=18kHz
WP-501-7180	7mm	-150to 650° C	Rotor Body	Zirconia	V_{max}=8kHz
WP-601-7181	7mm, BL	-20to 70° C	Cap	Kel-F®	
JK-601-7181	7mm, BL	-20to 70° C	Cap with One O-ring	Kel-F®	
JK-601-7181-L	7mm, BL	-20to 70° C	Long Cap with Two O-rings	Kel-F®	
JK-601-7181LWH	7mm, BL	-20to 70° C	Long Cap with Two O-rings and Axial Hole	Kel-F®	
JK-601-7181-WH	7mm, BL	-20to 70° C	Cap with One O-ring and Axial Hole	Kel-F®	
JK-603-7181	7mm, BL	-100to 200° C	Cap with One O-ring	Torlon®	
WP-501-7180-SET-1	7mm	-100to 200° C	One Rotor with Two Kel-F®Caps and One Torlon®Cap	Various	
WP-501-7180-SET-2	7mm	-100to 200° C	Two Rotors with Four Kel-F®Caps and Two Torlon®Caps	Various	
WP-501-7180-SET-5	7mm	-100to 200° C	Five Rotors with Ten Kel-F®Caps and Five Torlon®Caps	Various	

Solid State NMR Rotor Cap Remover

One of the most challenging parts of a solid state NMR experiment is to remove the end cap or base plug. This zero turn cap remover eliminates possible damage to the cap and rotor.

Solid State NMR Rotor Cap Remover

Catalog No.	Compatability	Material
RS-301-2180	2.5mm Rotors	Stainless Steel
RS-301-3180	3.2mm Rotors	Stainless Steel
RS-301-4180	4mm Rotors	Stainless Steel

Pyrex® Tube for Varian® Nano Probe

Wilmad Varian Nanoprobe tubes are 100% compatible with the Varian NanoProbe system in analysis of solids and semi-solids.

- Manufactured to tight tolerances that enable a maximum rotating speed of 2.5kHz
- Tube body is manufactured from Type 1 Class A borosilicate glass for optimized variable temperature performance
- Cap and bottom plugs are made of Kel-F® or Ertalyte®, allowing for excellent chemical resistance

Properties of Cap and Plug Materials

Material	Chemical Components	Temperature Range	Additional Remarks	Finished Length	Overall Length
Ertalyte®	C, H, O, Polyethylene Tetraphthalate Polyester (PET-P) F, Cl, C	Ambient to 99°C	Not for strong acids, strong bases or chlorinated solvents; otherwise, excellent chemical resistance	11.5mm	23mm
Kel-F®	F, Cl, C	-20to 70° C	Excellent chemical resistance commonly used for 1Hstudies	14.0mm	25mm

Non-GHXtype Varian®NanoProbe

Catalog No.	Temperature Range	Description	Material	Volume
WP-502-4225/C		Tubewith bottom	Pyrex®	
WP-502-4225/O		Tubewithout bottom	Pyrex®	

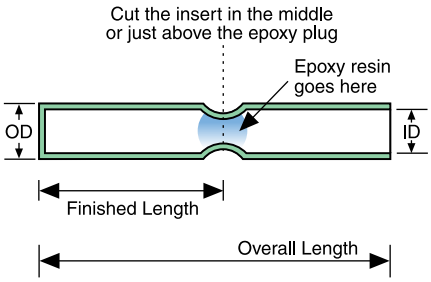
GHX type Varian®NanoProbe

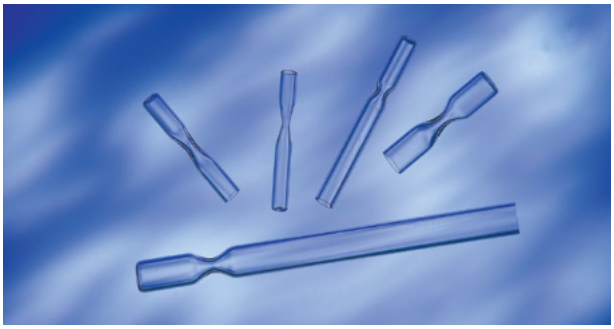
Catalog No.	Temperature Range	Description	Material	Volume
WP-7021-4225F/110	-20to 70° C	Tube with bottom and Kel-F®cap	Various	110 µL
WP-7021-4225F/40	-20to 70° C	Tube with Kel-F®capand bottom plug	Various	40 µL

Pyrex® MAS Rotor Inserts

Wilmad's Pyrex®MAS Rotor Inserts are designed for air-sensitive samples and semi-solid samples such as gels or highly viscous liquids. The sample can be sealed into the insert tube by heat-sealing with a torch or applying a small drop of epoxy (we recommend E-6000®Craft Adhesive) to the constricted part as shown in the picture below. After the epoxy is set and dry (24 hours), the sealed insert is then cut through the constriction with a glass saw.

Using a small funnel powder samples can be packed into the insert. Gelatinous samples can be warmed and transferred to the insert using a syringe. A glove box may be required for the sealing of air-sensitive samples.





Pyrex®MAS Rotor Inserts

Catalog No.	For MAS Rotor	O.D.	I.D.	Finished Length	Overall Length
DWGSK2576-1	WP-501-4180 Bruker®4mm	2.99mm	2.24mm	14.0mm	25mm
DWGSK2356	WP-501-7180 Bruker®7mm	5.59mm	4.57mm	13.2mm	68mm
DWGSK2594	WP-501-7180 Bruker®7mm	5.59mm	5.00mm	13.2mm	68mm

Stainless Steel Micro-Spatula

- Fits into most 4mm or larger OD NMR tubes
- Makes solid state and gel-phase sample transfers easier

Stainless Steel Micro Spatula

Catalog No.	Length	Material
806	250mm	Stainless Steel