

Teaching Accessory Kit for 1/16-inch Fittings

Conventions Used

Thank you for purchasing the Thermo Scientific™ picoSpin™ Teaching Accessory Kit. This kit will equip students in a typical chemistry laboratory class to conduct experiments on the picoSpin NMR spectrometer. These instructions describe how to inject samples into the spectrometer using the accessories in this kit.

Safety precautions and other important information use the following format:



WARNING Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

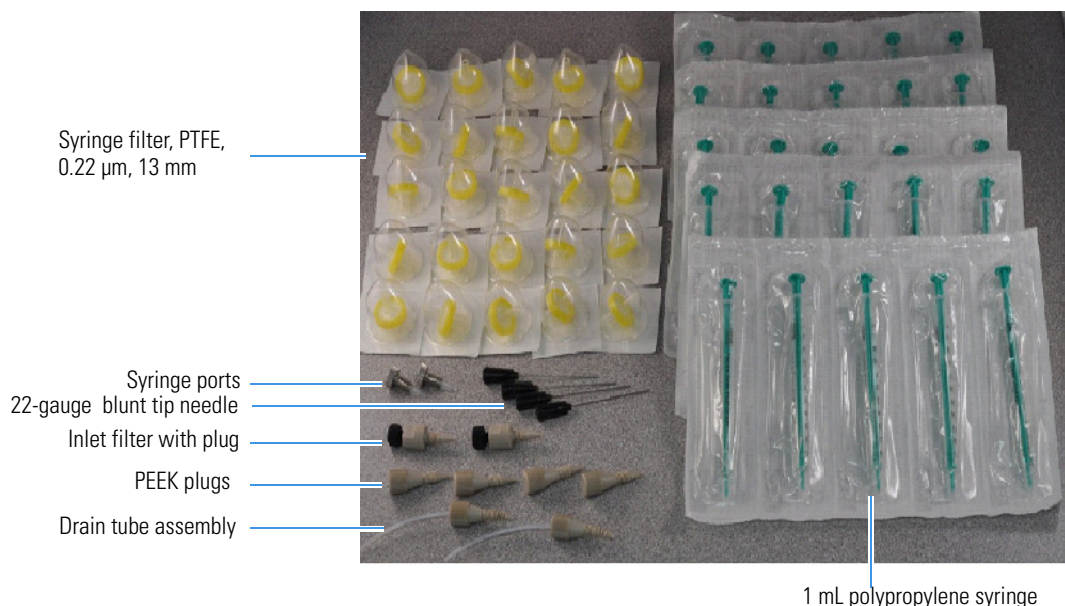


CAUTION Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE Follow instructions with this label to avoid damaging the system hardware or losing data.

What is in the Kit?

Figure 1. Accessory Kit contents



Injecting a Sample



CAUTION Avoid personal injury.

- Wear eye protection at all times when handling liquid chemicals
- Do not breathe hazardous vapors
- Avoid skin contact with hazardous liquids and vapors
- Eliminate ignition sources and prevent significant waste volume buildup

1. Insert the tip of one of the drain tube assemblies into the outlet fitting located on the right side of the cartridge sub-panel.
2. Using only gentle finger pressure, screw the PEEK nut of the drain tube assembly into the outlet fitting to secure it to the spectrometer.

Place the end of the drain tube into or above a small waste container to collect any overfilled or displaced sample, as shown in [Figure 3](#).



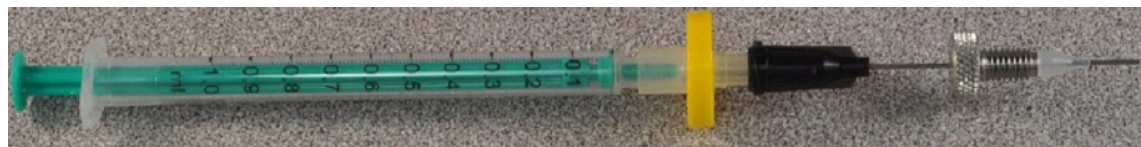
WARNING Avoid personal injury.

- Needles and syringes should be considered regulated waste regardless of use
- Follow your local EH&S guidelines for disposal
- Never throw these items into the regular trash or dumpsters

❖ To inject a sample

1. Using a 1 mL polypropylene syringe, draw up at least 0.1 mL of the sample solution (0.4 mL if using a syringe filter).
2. Attach the syringe filter (if used) and needle to the tip of the syringe as shown in [Figure 2](#).

Figure 2. Sample syringe and fill tube assembly ready for use



3. Gently push the plunger to eject any air bubbles out of the syringe assembly.



WARNING Avoid personal injury. Use a fume hood, if necessary, and wear appropriate protective equipment. Ejecting air bubbles from the syringe may eject a small volume of liquid that could be hazardous.

- a. If there is no inlet filter on the inlet fitting, remove the shipping plug from one of the inlet filters supplied in the kit.
- b. Gently screw the filter into the inlet fitting.
- c. Using gentle finger pressure, screw the syringe port into the inlet filter to secure it to the inlet fitting of the cartridge sub-panel, but do not tighten it.
- d. Slip the needle into the syringe port as shown in [Figure 3](#).
- e. Gently tighten the port.

Alternately, you can slip the syringe port onto the needle before you screw it into the inlet filter, as shown in [Figure 2](#)

- f. Gently press the syringe plunger while monitoring the drain tube to ensure that the capillary is filled with the new sample and that any residual bubbles from the syringe have passed through the capillary and have been discharged from the drain tube to the waste container.

It is important that no bubbles remain in the capillary cartridge. If a bubble were to remain in the capillary near the location of the NMR RF coil the signal will be degraded, or it may be absent altogether.

NOTICE Do not exceed the 100 psi (700 kPa) maximum pressure of the cartridge. This pressure corresponds to a force of 3 lbf (1.4 kgf) applied to the 1 mL syringe plunger.

4. Remove the needle and the syringe port from the inlet filter.
5. Cap the inlet filter with a PEEK plug included in this kit.
 - When the instrument is in continuous use, it is usually sufficient to cap only the inlet
 - If the instrument will be left for an extended period so that the sample might evaporate, the drain tube should be removed so that the outlet port can also be capped with a PEEK plug

Figure 3. Fill and drain tubes attached and ready for injection



Additional student samples can be injected using the procedure described above. In most cases, the next sample will completely displace the previous sample, so there is no need to flush the capillary between samples. After a laboratory session is completed, flush the capillary with clean solvent and cap both ports. Do not allow samples to evaporate in the cartridge. This can lead to solid deposits on the walls of the capillary, which can degrade the spectrometer resolution.

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