

# NORELL® Fluoropolymer NMR Tube Liners & Fluoropolymer Liner Tube Kits for <sup>29</sup>Si & <sup>11</sup>B

## *Description & Instructions for Use*

### **These instructions apply to the following Item Numbers:**

TL-5-7 Fluoropolymer NMR Tube Liner for 5mm use  
TL-5-TUBEKIT Fluoropolymer Liner Tube Kit for 5mm spinners

TL-10-7 Fluoropolymer NMR Tube Liner for 10mm use  
TL-10-TUBEKIT Fluoropolymer Liner Tube Kit for 10mm spinners

### **Description:**

The following detailed description references the 5mm assembly, but the 10mm assembly contains similar components and functions in like fashion when used with a standard 10mm spinner turbine and probe.

The Fluoropolymer NMR Tube Liner (Item Number TL-5-7) is a 4mm nominal O.D. tube, closed on one end to contain the sample, designed to be used with the Fluoropolymer Liner Tube Kit (Item Number TL-5-TUBEKIT). The Tube Kit contains a short length (4 inch, 102mm) of a 5mm O.D. open ended glass NMR tube and two fluoroelastomer o-rings.

The 5mm open ended glass tube fits into a standard 5mm spinner turbine, while the smaller Fluoropolymer NMR Tube Liner fits through the open ended glass tube and on into the 5mm probe. The open ended glass tube DOES NOT enter the active region of the probe. Only the fluoropolymer tube liner, consisting solely of carbon and fluorine, enters the probe, allowing acquisition of <sup>29</sup>Si and <sup>11</sup>B spectra without interference from the silicon and boron components contained within glass NMR tubes.

When inserted through the open ended glass tube, the fluoropolymer tube liner is held in position by the two o-rings, one located above and against the end of the glass tube and the other below and against the glass tube. The o-rings slip over and grip the liner tube firmly in position when they are pushed tightly against, but not over, the ends of the glass tube.

### **Assembly:**

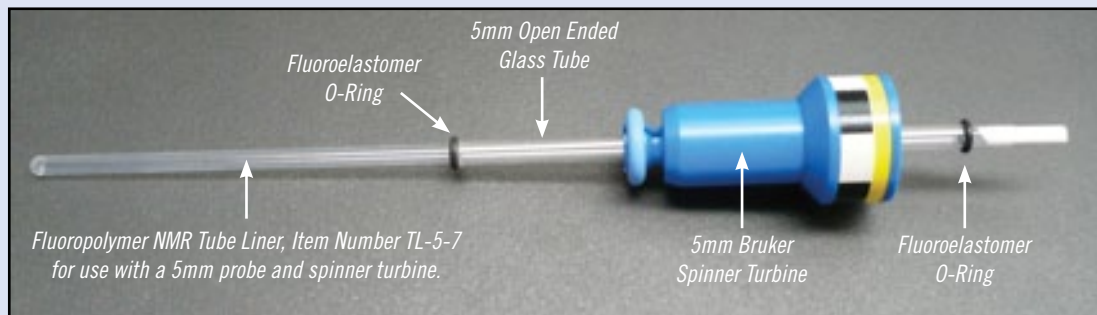
1. Insert the open ended glass tube from the Fluoropolymer Liner Tube Kit into the matching size spinner turbine.
2. Push one of the o-rings over the top open end of the corresponding size Fluoropolymer NMR Tube Liner, and slide it down a short distance of about 5mm to 10mm.
3. Insert the Fluoropolymer NMR Tube Liner into and through the open ended glass tube, with the closed bottom end facing downwards in order to enter the probe, until the o-ring contacts the top end of the glass tube.
4. Push the remaining o-ring onto the bottom end of the Fluoropolymer NMR Tube Liner and slide it upwards until it contacts the bottom of the open ended glass tube.
5. The Fluoropolymer NMR Tube Liner can now be adjusted for proper insertion depth into the probe by sliding the glass tube within the spinner turbine and/or the Fluoropolymer NMR Tube Liner within the glass tube, repositioning the o-rings as necessary to maintain the proper height.

Copyright ©2016 NORELL® No. 1.7.16

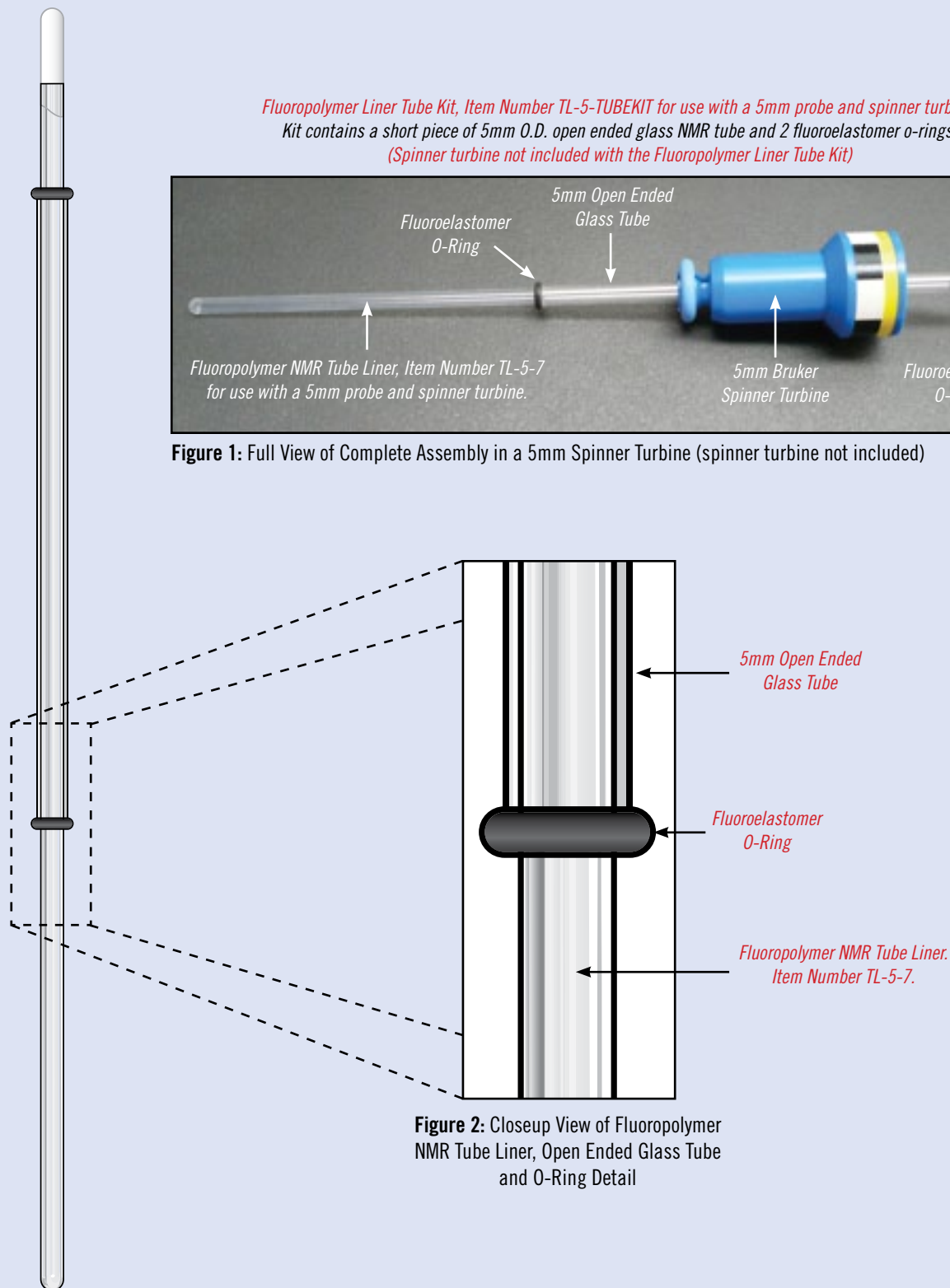
# NORELL® Fluoropolymer NMR Tube Liners & Fluoropolymer Liner Tube Kits for $^{29}\text{Si}$ & $^{11}\text{B}$

## Description & Instructions for Use

*Fluoropolymer Liner Tube Kit, Item Number TL-5-TUBEKIT for use with a 5mm probe and spinner turbine.  
Kit contains a short piece of 5mm O.D. open ended glass NMR tube and 2 fluoroelastomer o-rings.  
(Spinner turbine not included with the Fluoropolymer Liner Tube Kit)*



**Figure 1:** Full View of Complete Assembly in a 5mm Spinner Turbine (spinner turbine not included)



**Figure 2:** Closeup View of Fluoropolymer NMR Tube Liner, Open Ended Glass Tube and O-Ring Detail