

# Increasing Efficiency In Viscosity

The pharmaceutical industry requires viscosity measurement for multiple reasons. The product must behave acceptably to the customer in terms of how it flows, pours, spreads, etc. which is inherently a viscosity issue. Successful processing of materials in pharmaceutical manufacturing depends on proper selection of pumps, mixers, piping and fill lines to produce consistent product economically – again, a viscosity issue. Finally, the cost of the raw materials can be significant, which means that viscosity test equipment must be designed to evaluate small sample volumes for good economy.



**Figure 1**  
**Brookfield Small**  
**Sample Adapter**



**Figure 2**  
**Spindle and Chamber**  
**Choices for Small Sample**  
**Adapter**

One popular workhorse in the pharmaceutical world for testing viscosity is the Small Sample Adapter (see Figure 1). The chamber and spindle are selected based on the required viscosity measurement range and the amount of sample available to test. (See Figure 2) The spindle connects to the viscometer by a wire link and a coupling which screws onto the viscometer using a left-hand thread. A new advancement which saves operator time is the EZ-Lock connection system (see Figure 3) which allows the spindle to be inserted directly into a chuck on the viscometer. For busy analytical lab testing many samples every day, this improvement is most beneficial.



**Figure 3**  
**EZ-Lock System for Rapid**  
**Spindle Attachment**

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Sample size for viscosity testing with the Small Sample Adapter can range from 2mL to 16mL, depending on the spindle/chamber combination selected. Because the sample volume is relatively small, testing viscosity at any given temperature is fairly rapid because equilibration time is insignificant. Testing for viscosity-temperature behavior over multiple temperatures is a time consuming process which can be automated with the right equipment. Programmable temperature baths accomplish this requirement with only a small added investment. (See Figure 4)



**Figure 4**  
**Integrated System for Testing**  
**Viscosity and Temperature**  
**Simultaneously**

Increased efficiencies in viscosity testing are an important component of best practices in the pharma industry. Use of the Small Sample Adapter with the EZ-Lock spindle coupling system is an opportunity that should not be overlooked. Most important to note is that existing viscometers can be retrofit with EZ-Lock for relatively small money, making the decision easy for the astute Lab Manager.

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