

VISCOSITY STANDARDS: MIXING FOR THE RIGHT BLEND

Food and beverage manufacturers run viscosity tests on all kinds of products, ranging from relatively thin water-like juices and soft drinks, to sauces with variable flow behavior, thick creams and pasty icings. Measurement of viscosity is necessary for QC purposes, certainly for the final product before shipment to the customer, but also at times in process to make sure that the evolution of the mixture is progressing correctly.

The popular workhorse in most QC labs is the rotational viscometer. (See Figure 1) This instrument can measure a broad viscosity range, depending on choice of spindle and rotational speed. Manufacturers with an array of products find this flexibility helpful, because they can use the same instrument for more than one item. Diligent use of the viscometer ensures that customer acceptance specs will always be satisfied, at least for anticipated flow behavior.



When the viscosity data from a QC test is out of spec, the first thought is that something may be wrong with the viscometer. Blaming the instrument is the easy way out. If the food or beverage item is not in spec, production may have to stop while the process is investigated to determine where the problem is originating. This level of hassle is the driving reason why operators want to pin the difficulty on the instrument. The instrument problem is easier to fix, at least in the short term.



Labs, which have carefully developed policies, know that the use of viscosity standard fluids is the right way to quickly resolve this type of potential problem. (See Figure 2) The viscosity standard has a known value, established by the manufacturer of the liquid, and the instrument should

measure that same value when testing the fluid.

Viscosity standards come in a number of stock values, ranging from 5 centipoise to 100,000 centipoise. (Values outside this range are also available, but this is the range most often considered by industrial QC labs that work with viscosity standards.) The customer will oftentimes select a standard with centipoise value that closely matches the actual viscosity of the product that they are making.

There are times when a stock value for available viscosity standards does not come close enough for the customer's purpose and they will request a special blend, say for example 2000 centipoise. The stock values that come close to this are 1000 and 5000 centipoise.

This new product is made by experimentally blending the two stock values in appropriate portions until the desired value of 2000 centipoise is achieved. While the cost may be slightly higher for the special blend, the need for precision in the QC lab becomes the higher objective and is ideally satisfied by using the correct viscosity standard.

The manufacturer produces each viscosity standard with a label on the fluid and a separate certificate, which clearly identifies the viscosity value and the temperature at which it was calibrated, in most cases 25°C. Customer may request additional calibration temperature(s), when needed. This document should be kept on file for reference and in case of audit. The regular use of viscosity standards to check your viscometer is an important practice to avoid the types of problems described above.

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Reprint Permission from VertMarkets - Food Online - May 2011