

**PAIRED REFERENCE METHODS FOR MOISTURE IN COTTON AND PREPARATION OF ASTM
DRAFT STANDARD METHODS**

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Abstract

Because cotton fiber moisture is such a critical parameter, precise accurate and quick measurements are needed. Based on the chemical reaction between water, iodine and sulfur dioxide in a non-aqueous medium, Karl Fischer Titration (KFT) seems a logical choice. This technology is widely used in a variety of industries and receives accolades for its ability to measure just moisture. However, to become a reference method, KFT needs to be compared to other methods. One such other method is low temperature distillation (LTD). This method involves a Mason jar that was modified to allow air flow into the vessel. Weighing bottles containing 1.0 gram samples were left open and placed in the mason jar, in which various dry gases were passed through 50ft of copper tubing housed in a variable temperature gravity convection oven. The samples were weighed every half hour on an analytical balance and moisture content was determined. Near Infrared analysis determined that the samples were free of all moisture. These two methods then can be compared to each other as well as to the commonly used oven drying measure. The LTD also yields data on any non aqueous volatiles present, which may account for some of the differences between the standard oven techniques and KFT. Submitting a draft KFT test methos to ASTM is of top priority. For this to be accomplished, single laboratory precision data for a set of cottons run on KFT as well as round robin studies are needed. Laboratories to be included SRRC in New Orleans, Metrohm in Riverview, Florida, CQRS in Clemson, SC, a gin or mill, labs in Australia, Germany and China. The authors also plan to educate potential users through workshops and collaborations.