

## **Digital Hygrometers, Hair Hygrometers, ThermaViewer**

[Hair Hygrometers](#) were invented during the 1700s and were used to measure the amount of water in the air. They were used as an aid to predict weather changes and are still used today for that purpose. They are also used to monitor the environment where cigars and other moisture sensitive materials are stored. They are not very accurate and if moved around must be allowed to 'adapt' to the new environment of a period of time before they can be used at all.

In an effort to improve the accuracy of these instruments [digital hygrometers](#) were created in the late years of the 21<sup>st</sup> century. They are indeed more accurate but they are also much more expensive. But in museums where high humidity promotes mold growth and biodeterioration the cost is not as important as reliability and stability.

Levels at 60% [RH](#) are considered the threshold for damage - over that level and the museum will eventually have trouble. Because many collections are hygroscopic, the humidity levels affect dimensional stability. For example, some types of wood board can vary up to one inch in length over a foot between 10% and 90% RH. Variation in relative humidity can loosen furniture joints, cause paint to chip from canvas, and cockle paper. In addition, fluctuating relative humidity can lead to chemical reactions which cause metals to corrode, dyes to fade, and damage to glass and mineral collections. In short it is critical that the RH levels be accurately monitored and maintained at the proper levels.

The [ThermaViewer](#), a recent addition to the ranks of hygrometers. It uses thermistor and electronic RH sensors to sample temperature and humidity every 10 minutes and save the results. A chart is drawn on the large LCD display that employees, maintenance personnel, and docents can read. Ten months of information is stored and displayed by the [ThermaViewer](#). Periodically the information is downloaded to a computer that maintains an archived copy of the environmental conditions. The [ThermaViewer](#) is a giant step forward from the hair hygrometer as far as accuracy and reliability goes.