

652-1110 (05-010) Hygrometer



Introduction: In basic meteorology, humidity is one of the more difficult problems. Humidity cannot be read directly, as temperature can, except by specialized equipment. Some electronic methods measure changes in electrical capacitance to determine humidity, for example.

However, these instruments were not available many years ago, and today remain too expensive for student's use. Instead, a device called a hygrometer is used.

The hygrometer is a nineteenth century device that is still in use today. One common variant is the sling psychrometer, which is spun in circles for several minutes before readings are taken. Our hygrometer is of the stationary type. It uses evaporation to determine relative humidity. The unit consists of two thermometers. One is kept dry, while the other has a piece of wet cloth wrapped around the bulb. Ideally, the hygrometer should be placed in gently moving air. The wet bulb will cool due to evaporation, becoming colder than the dry bulb. The difference in temperature is used to calculate the relative humidity.

Note: directions on how to use your hygrometer are printed on the unit. This instruction manual is intended to supplement these directions.

Operation: To use the hygrometer, you will first need to examine the instrument. One of the thermometers should have a *sock* wrapped around the bulb, with a tail that hangs down into the plastic reservoir. If this wick is absent, you'll need to fashion one out of cotton or contact us for a replacement.

Next, fill the reservoir with water. The sock will draw water up to the bulb through capillary action. The other thermometer needs to remain dry for accurate results.

Next, observe the behavior of the thermometers. The dry bulb should read ambient temperature, whereas the

wet bulb should be cooler. Note: if relative humidity is 100%, the thermometers will read the same temperature.

After a few minutes, record the temperature of each thermometer. Subtract the wet bulb temperature from the dry bulb temperature.

When you have calculated the difference in temperature, consult a psychrometric chart. On the center of the unit is a very useful table that gives the relative humidity as a percentage. When you have computed the difference in temperature between the thermometers, find that value at the top of one of the columns on the table. The columns range from one to nine degrees Celsius.

Follow the column downwards until the top of the dry bulb thermometer is reached. The red alcohol will be level with a number on the table. This number is the relative humidity, as a percentage.

Warranty and Parts:

We replace all defective or missing parts free of charge. Additional replacement parts may be ordered toll-free. We accept MasterCard, Visa, checks and School P.O.s. All products warranted to be free from defect for 90 days. Does not apply to accident, misuse or normal wear and tear. Intended for children 13 years of age and up. This item is not a toy. It may contain lead or small parts that can be choking hazards. Adult supervision is required.

May we suggest:

652-1015 Weather Instrument Box: Our triple painted weather instrument box is designed to hold thermometers, hydrometers, and other similar apparatus. Excellent for the GLOBE program. 23" by 11" by 9". Comes with 2 keys.

652-1115 Sling Psychrometer: Measure relative humidity and correlate with other instruments while studying the phenomenon known as weather. This kit consists of wet and dry bulbs and Celsius thermometers that revolve on a plastic handle.

Also available in packs of 15

652-1220 Weather Station: This versatile meter mounts in your classroom window, where it can be monitored easily. Use it to track the daily and total readings for:

Rainfall; Wind-chill; Wind speed and direction; Temperature