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A refractometer is an instrument used to measure the refractive index of gases, liquids, and translucent solids like gemstones. Liquids are tested for things such as blood proteins, salinity, fluid concentrations, and specific gravity of urine. The refractive index is a measurement for how much the speed of light is reduced in a solution, gas, or solid. A shadow line appears inside the refractometer and is created by prisms and lenses. The user will view the shadow line through a magnifying eye piece.

Erst Abbe is credited with creating the first refractometer during the 1800's. These first refractometer were created exclusively in-house for Carl Zeiss Inc. They included built-in thermometers with circulating water baths which were required to maintain control over the instrument and fluid temperatures. Later they would be offered for sale along with microscopes in their catalog, but without a sketch. The first sketch would appear in the 1893 catalog.

The evolution of the refractometer has left the world with four basic types. The analog or traditional refractometer, the digital refractometer, the lab or Abbe refractometer, and inline process refractometer. The analog and digital refractometers both work in similar ways and are primarily handheld. The use the critical angle principle, the digital differs by supplying an LED light source that focuses on the prism element. The lab, or Abbe, refractometers are larger and not handheld. They are primarily used for solids and have a digital display. Special filters can offer highly accurate readings by using multi-wavelengths to find a sample result. Inline process refractometers record the flow of a solution through a container, like a pipe or a tank. They use a sensor inside the container to measure the solution and compare it to a similar container where a control is held.

One of the most common uses for handheld refractometers is in wine-making. Measuring the sugar content of the fruit or grapes helps to determine ripeness. Sugar manufacturers needrefractometers to determine the solution percentage of sugar in saps, syrups, and concentrated sap. Veterinarians may use refractometers to find the concentration of protein in blood samples. Serious marine aquarists will use one to determine the salinity of their tanks.

No matter why you are using a refractometer, you'll find them to be pretty common and to come in a variety of price ranges. Be sure to read and follow manufacturer's instructions for calibrating your new instrument. Calibration is important to getting an accurate reading. When you're ready to test be sure that you use fresh samples of sugar or blood for the best readings concerning the concentrations of those fluids.

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a Ruks Eade is Australian Author. Te2 is a leading supplier in Refractometers. He has applied his knowledge and understanding to a wide variety of a refractometer supplier business.

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