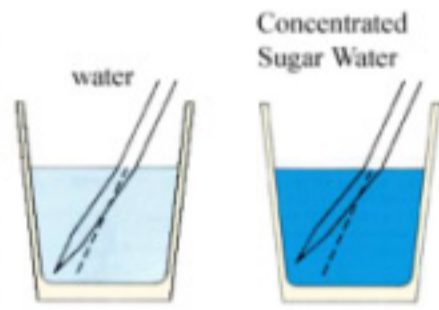


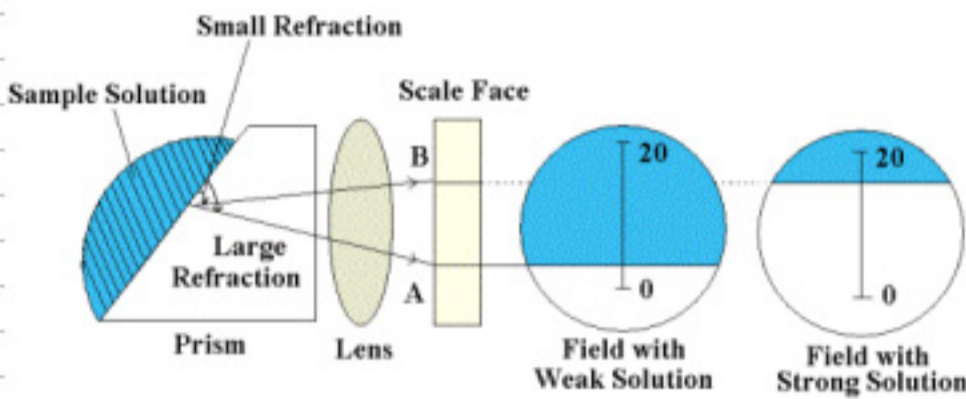
Theory of Refraction:

If you place a pencil in a cup of water, the tip will appear bent. If you then put concentrated sugar water in a cup and try the same experiment, the tip of the pencil should appear even more bent. This is an example of the phenomenon of light refraction. Refractometers are measuring instruments in which this phenomenon of light refraction is put to a practical use. Refractometers are based on the principle that as the density of a substance increases (e.g. when sugar is dissolved in water), its refractive index rises proportionately.

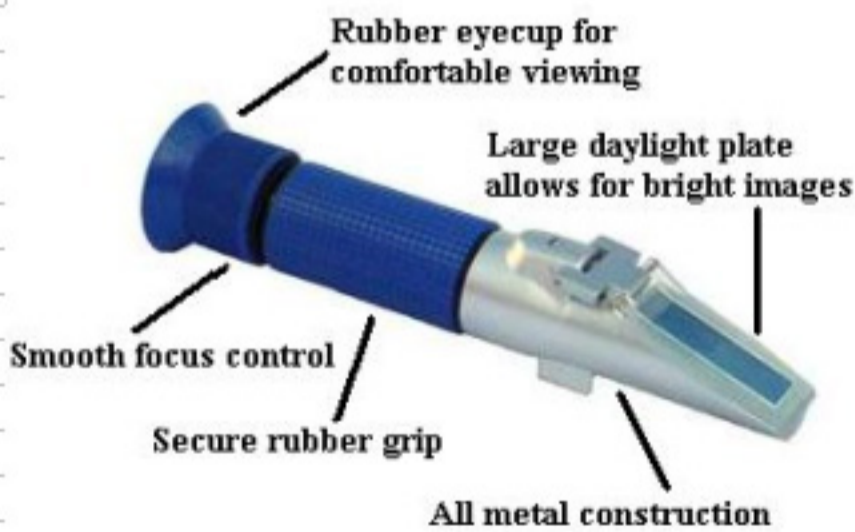


Principles of Refractometer:

1. Refractometers utilise a prism which possesses a much a greater refractive index than the sample solution to be measured. Measurements are made possible using the refractive phenomena which arise at the interface of the prism and the sample solution.
2. In the case of a weak sample solution, the difference between the refractive index of the solution and that of the prism is great, therefore the angle of refraction is large (see A on the diagram below).
3. In the case of a strong sample solution, the difference between the refractive index of the prism is smaller and therefore the angle of refraction is smaller (see B on the diagram below).



Calibration Procedure:

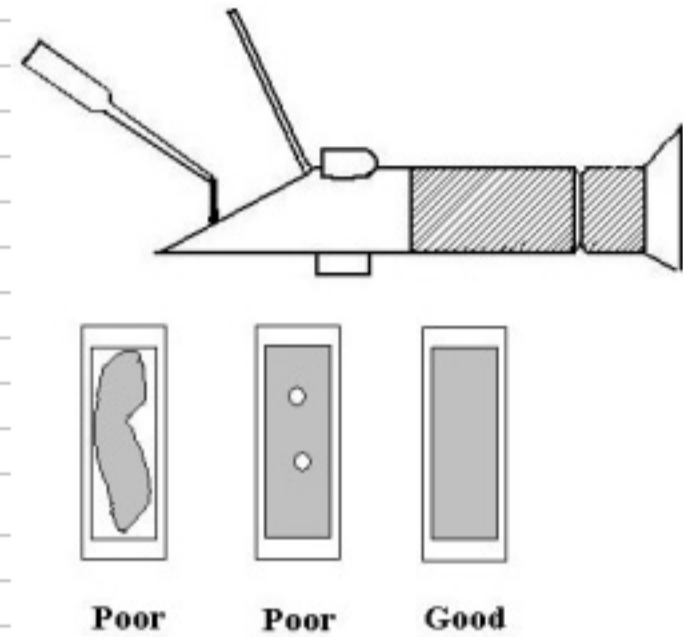


1. Aim the front end of the refractometer to the direction of bright light and adjust the adjusting ring of the smooth focus control until the scale face can be seen clearly.
2. Open the daylight plate and place a few drops of deionized water on the prism. Close the daylight plate so that the water spreads across the entire surface of the prism without air bubbles or dry spots.
3. Hold daylight plate in direction of the light source and look into the eyepiece. Turn calibration screw until the boundary between the upper blue field and the lower white field meet exactly on the zero scale.
4. Some of the window views may vary.

Refractometer Type:MR100ATC

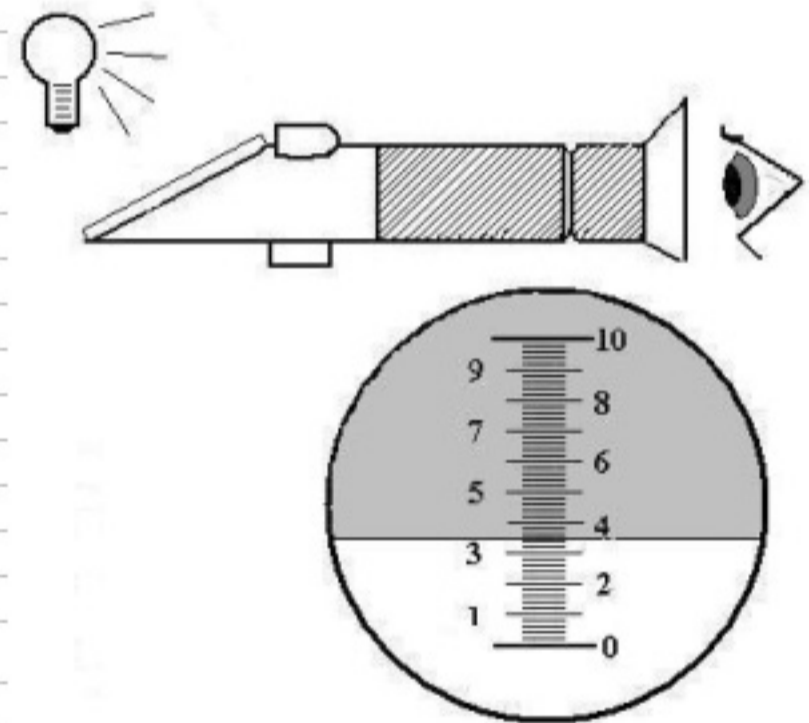
Step 1.

Flip open the daylight plate on top of the refractometer. Place 2-3 drops of the specimen on the main prism. Close the daylight plate so the sample spreads across the entire surface of the prism without air bubbles or dry spots.



Step 2.

Hold the refractometer (daylight plate) in the direction of a light source and look into the eyepiece. You will see a circular field with graduations down the center (you may have to focus the eyepiece to clearly see the graduations). The upper portion of the field should be blue, while the lower portion should be white.



Step 3. MR100ATC

