

Five steps to using a Brix refractometer

When feeding calves whole milk, how do you know each batch is consistent? Do you have a method of routinely evaluating newborn calf colostrum quality?

A Brix refractometer is a highly accurate, convenient tool to improve consistency of whole milk and colostrum.

Ask yourself these five questions to achieve the best results from a digital Brix refractometer:

1. How to build a Brix refractometer plan?

Like any tool or other capital purchase on a dairy, a Brix refractometer is only of value if a plan is in place to use it. Determine who will take Brix readings and on what schedule. Testing newborn calf colostrum and every batch of whole milk should be part of your routine.

Be sure all calf feeders are trained to use and care for the Brix refractometer correctly. Recording and evaluating Brix readings over time also can help identify trends in your herd.

2. What is the best digital Brix refractometer?

A refractometer with a Brix scale of zero to 35 is sufficient for most dairies. At this level, you should be able to purchase a digital Brix refractometer at the lower end of the price range, from less than \$100 to several hundred dollars.

A model that shows the Brix reading in digital format is preferable. Unlike optical models, it requires no visual interpretation by the user. It also is worth the investment to choose a model with automatic temperature compensation (ATC), so the temperature of the newborn calf colostrum or whole milk being tested does not affect the reading.

3. How to read a Brix refractometer?

A Brix refractometer is designed to measure the percent of sucrose (sugar) in a liquid solution and express it in "degrees Brix." One degree of Brix is defined as 1 gram of sucrose in 100 grams of solution.

Brix readings should always be taken using raw, unhomogenized, whole milk or colostrum before pasteurization. Place a few drops of well-agitated whole milk or colostrum on the refractometer's prism and close the cover. Allow the sample to rest on the prism for 30 seconds before reading.

When evaluating total solids in whole milk, the rule of thumb is Brix plus two. In other words, a Brix refractometer reading of 10 would indicate a total solids estimate of 12 percent. If total solids are deficient, a milk [balancer](#) can be added to keep feedings consistent. Based on the prepasteurization Brix reading, a simple calculation process can determine the amount of balancer and water needed to achieve consistency.

A Brix reading of 22 or more is correlated with high-quality newborn calf colostrum, containing more than 50 milligrams of immunoglobulin G (IgG) per milliliter (50 grams/liter). If colostrum quality is low, supplement with a [calf colostrum replacer](#) to provide a newborn calf the nutrition it needs.

4. How to clean and maintain a Brix refractometer?

Residue from previous samples will affect the accuracy of future readings and could damage the Brix refractometer prism. The prism must be wiped clean of any milk or colostrum residue and cleaned with eyeglass solution after every use.

While a Brix refractometer is a sturdy tool, it's not indestructible. After cleaning, be sure to return the refractometer to its case after every use to avoid damage. Do not leave it in damp conditions or immerse it in water.

5. When to schedule Brix refractometer calibration?

On a set schedule, such as the first day of the month, calibrate your Brix refractometer using distilled water or a manufacturer-recommended calibration solution. The tool should be adjusted so these solutions produce a Brix reading of zero.

[Learn how](#) to create a consistent liquid calf ration.