

Using an Optical Brix Refractometer for Estimating the Milk Solids of Volac Milk Replacers

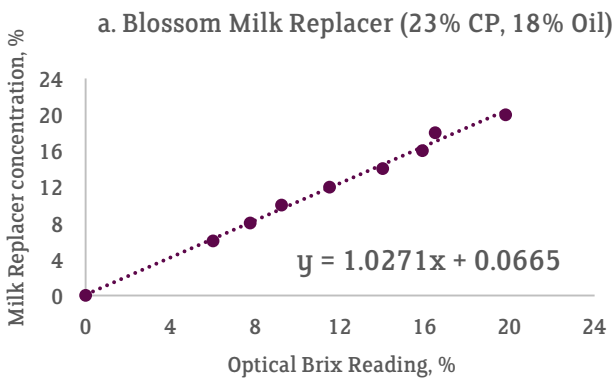
The Brix scale originated in the food industry and is primarily a unit of measure corresponding to the percent of sugar in a sugar and water solution. The actual Brix value represents the number of grams of cane sugar in a 100g cane sugar solution. The relationship of the Brix reading to a milk replacer solution must be created.

Methods & Results

Blossom (23% crude protein) and Heiferlac (26% crude protein) were mixed at a set of known concentrations, ranging from 6% to 20%. Using an optical refractometer, a Brix reading was taken for each solution, and a standard curve was created (Figure 1).

Using the formula displayed on each graph, the Brix reading % for a solution of milk replacer can be entered (i.e. x) to determine the actual total solids % of a milk replacer solution (i.e. y).

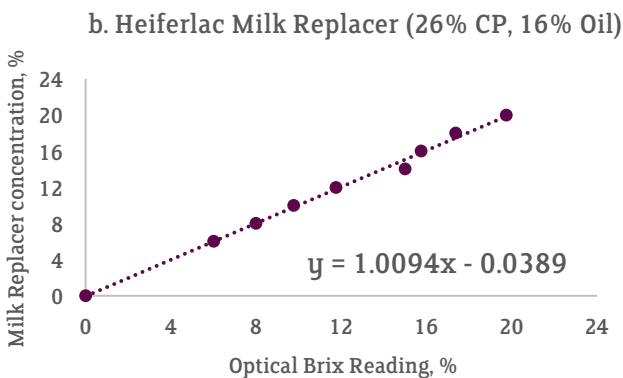
Figure 1. The total solids of the milk replacer solution (%) was compared with the Brix reading (%)



Example 1:

If the Brix reading was 12% for a sample of Blossom milk replacer, the actual concentration would equal:

Total solids of milk replacer = (1.0271 x 12) + 0.0665 = 12.4%.



Example 2:

If the Brix reading was 15% for a sample of Heiferlac milk replacer, the actual concentration would equal:

Total solids of milk replacer = (1.0094 x 15) - 0.0389 = 15.1%.

Conclusions:

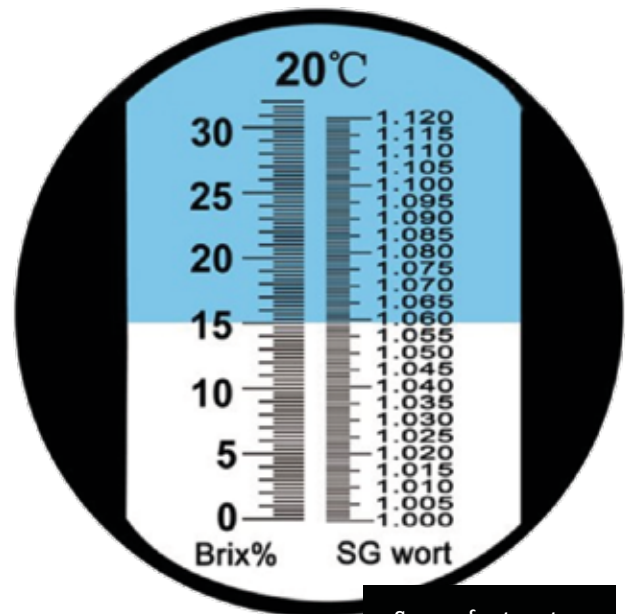
- There is a high correlation between the optical Brix reading and the actual total solids of the mixed milk replacer
- A Brix refractometer can be used to estimate the total solids level of a milk replacer solution
- There is a very small difference between the Brix reading and the actual total solids content of a milk replacer, therefore when determining if milk is being mixed correctly and consistently on farm, it is not necessary to apply a correction factor to the Brix reading

Points to Remember when using a Brix Refractometer on Farm:

1. To identify if milk is being mixed properly, use the actual Brix reading % to estimate the total solids content of a milk solution on farm
2. **For Heiferlac and Blossom milk replacer, there is no need to apply a correction factor**
3. When taking a reading, if the bottom of the blue section is not clearly defined, take the reading where the light and dark areas meet

TOP TIPS FOR USING A BRIX REFRACTOMETER:

- Refractometers should be free from any visual dirt
- Calibrate the refractometer, using distilled water, before each use. If the scale does not read zero (i.e. at the bottom of the blue section), adjust using the calibration screw
- Hold the refractometer up to natural light while looking down the eye piece
- Always wipe the slide and glass surface clean, with a clean soft cloth, after a reading



Some refractometers will display both the SG wort & Brix % scale - but always use the Brix % reading

Figure 2. Recommended Optical Brix Refractometer

