



Unit V - Topic 2
Brix, Acidity and its Ratio

Brix

Degrees Brix (symbol °Bx) is a measure of the dissolved solids in a liquid, and is commonly used to measure dissolved sugar content of an aqueous solution. One degree Brix is 1 gram of sucrose in 100 grams of solution and represents the strength of the solution as percentage by mass. If the solution contains dissolved solids other than pure sucrose, then the °Bx only approximates the dissolved solid content. For example, when one adds equal amounts of salt and sugar to equal amounts of water, the degrees of refraction (BRX) of the salt solution rises faster than the sugar solution. The °Bx is traditionally used in the wine, sugar, carbonated beverage, fruit juice, fresh produce, maple syrup and honey industries.

Comparable scales for indicating sucrose content are: the Plato scale (°P), which is widely used by the brewing industry; the Oechsle scale used in German and Swiss wine making industries, amongst others; and the Balling scale, which is the oldest of the three systems and therefore mostly found in older textbooks, but is still in use in some parts of the world.

A sucrose solution with an apparent specific gravity (20°/20 °C) of 1.040 would be 9.99325 °Bx or 9.99359 °P while the representative sugar body, the International Commission for Uniform Methods of Sugar Analysis (ICUMSA), which favours the use of mass fraction, would report the solution strength as 9.99249%. Because the differences between the systems are of little practical significance (the differences are less than the precision of most common instruments) and wide historical use of the Brix unit, modern instruments calculate mass fraction using ICUMSA official formulas but report the result as °Bx.

Ratio

The empirical Brix/acid ratio, found by dividing the acid-corrected and temperature-corrected Brix by the % titratable acidity w/w as citric acid (*B/A* ratio), is one of the most commonly used indicators of juice quality as well as fruit maturity. In California, the fruit harvested for the fresh fruit markets needs a *B/A* ratio of at least 8:1 or 8, whereas the fruit harvested for juice in Florida must have a *B/A* ratio of at least 10:1 or 10. Even through fruit destined for juice in Florida requires a *B/A* ratio of 10, commercial Florida juices must have a *B/A* ratio of at least 13, which can be achieved through blending. Consumers of citrus juices generally prefer a *B/A* ratio of 15 to 18, depending on the product and individual tastes.

Single strength juice

Single-strength juice,” also known as 100% juice, is either NFC juice, as defined below, or **juice reconstituted from a concentrate by dilution with water to the natural single-strength Brix**. Both kinds of single-strength juice belong to the category of “ready to serve RTS” or “ready to drink RTD” juices.