



Maple syrup in the comb of a waffle. Image Credit: Unsplash user nabil boukala

Growing up in New England, I was raised to pay attention to my maple syrup. We were allowed to eat as much “table syrup” as we liked, but when it came to the real stuff—the good stuff—we had to ration and apportion each perfect drop. When we were able to use it on our pancakes, waffles, or french toast, we were over the moon. We’d carefully drizzle the sticky bottle over our dishes, savoring each bite so long our meal would be cold by the time we were done. To this day, when it comes time for me to buy maple syrup, only the real thing will do.

#### Maple Syrup Grades Assigned By Color

Of course, not all maple syrup is the same. Maple syrup exhibits a wide range of color, turbidity, viscosity, and flavor, [depending on the properties](#) of the raw maple sap and the particularities of processing. Some are dark and stormy, like a blizzard on the mountain, while some are so light and airy they seem to be the food of angels.

For many years, maple syrups were classified and graded according to United States Department of Agriculture (USDA) color standards, with a significant bias toward lighter syrups. Lighter syrups were grade A, while darker syrups were relegated to grade B. This created a consumer perception that lighter syrups were preferable to darker syrups.

While this color-based grading system was voluntary, not mandatory, it nonetheless created difficulties for manufacturers of darker syrups. This resulted in multiple deleterious effects, including the reduction of manufacturer revenue. Grade B syrups, regarded as inferior, could not sell for the same price as grade A syrups, reducing the amount of yield each manufacturer could glean from their harvest.



Maple trees display their fall foliage. Image Credit: Unsplash User Dennis Buchner

### The Reinvention of Maple Syrup Grading

Thanks in part to the efforts of the International Maple Syrup Institute, a non-profit society dedicated to the maple syrup industry, the USDA changed their grading system in 2015 to describe maple syrup without creating a bias. [1](#). The new classifications for color are:

- U.S. Grade A Golden (delicate taste,  $\geq 75.0$  percent light transmittance (%Tc))
- U.S. Grade A Amber (rich taste, 50.0-74.9%Tc)
- U.S. Grade A Dark (robust taste, 25.0-49.9%Tc)
- U.S. Grade A Very Dark (strong taste,  $< 25.0$ %Tc)

As you can see, these new standards classify even “Very Dark” syrups as grade A, increasing their value to manufacturers and broadening the palates of consumers. While different syrups may have different uses and appeal to different customers, all grade A syrups are of the highest quality. Only syrups which have been damaged or contain off flavors or odors are classified as grade B under the new standards.



Maple syrup on pancakes. Image credit: Unsplash user Herson Rodriguez

#### Using Spectrophotometers to Assess Maple Syrup Color

The earlier standards relied on color grading kits supplied by the USDA to determine maple syrup color. Manufacturers would receive physical color samples from the agency and match their syrups to the standards. This presented many problems with accuracy. Depending on lighting conditions, maple syrup can appear to be different colors. This is because, [as a translucent liquid](#), its color is a function of the light transmitted through it, in combination with the light reflected off of it. So, under different lighting conditions, a manufacturer, a regulator, and a consumer could perceive the same sample of maple syrup as being different grades. Additionally, inherent variation in human sight can cause significant differences in color perception and lead to inaccurate grading.

With the improvement of the grading system came improvement of measurement systems. Now, spectrophotometric measurement is required to assess the color of maple syrup and determine its grade. According to the USDA regulations:

The four color and flavor classes of maple syrup will be determined by using a spectrophotometer that provides a measure of percent of light transmission using matched square optical cells with a 10 millimeter (mm) light path at a wavelength of 560 nanometers (nm), with the color values expressed in percent of light transmission as compared to analytical reagent glycerol fixed at one hundred percent transmission, and symbolized by %Tc values; or by any method that provides equivalent results.

[Spectrophotometers can rapidly assess](#) the color of maple syrup and assign it a value on the appropriate scale. Better yet, spectrophotometers can indefinitely replicate the same lighting conditions for each measurement. This guarantees that syrups graded on this scale will all be measured to the same standard, reducing mislabeling and miscommunication.

## The HunterLab Difference

Having worked closely with the maple syrup industry, HunterLab uses industry experience and knowledge to design superior spectrophotometric instrumentation for maple syrup measurement. HunterLab spectrophotometers are fast, reliable, and easily integrated in production lines . By using a HunterLab spectrophotometer, your maple syrup operation will be able to accurately and efficiently assign the appropriate grades your products regardless of operator. To find the spectrophotometer that's ideally suited for your needs, [contact us today](#).

1. "United States Standards for Grades of Maple Sirup (Syrup),"

2015, <https://www.regulations.gov/document?D=AMS-FV-15-0006-0001>