

What makes a good cup of coffee? For some, the lightness, high acidity, and robust caffeine levels of a Nordic roast is the perfect way to start the day. Others prefer a medium roast for its pleasantly complex aroma and delicate mix of body and acidity. Dark roasts let the flavors of the roasting process shine through, offering a full-bodied, smokey-sweet experience with lower caffeine levels that make them perfect for enjoying later in the day. Whatever their preference, today's consumers are more discriminating than ever when it comes to their coffee, raising the bar for quality amongst both well-established coffee giants and independent up-and-comers just joining this \$100 billion worldwide industry.¹ [Integrating spectrophotometric color measurement throughout the coffee manufacturing process allows you to constantly monitor your product to ensure it conforms to your high standards while minimizing waste and reducing cost.](#)

Color Measurement from Start to Finish

Whatever the final form your coffee will take, excellence starts with the beans. Measuring the color of raw coffee beans ensures that you are starting with the best possible quality ingredients to ensure satisfying roasting results. The color of raw beans varies depending on growing conditions, which affects the taste of the final product, and an inconsistent mix can impede your ability to create blend you are looking for. Spectrophotometric analysis allows you to be sure that the beans you have chosen will respond consistently to roasting.

Once the beans have been selected, the roasting process begins, allowing for each blend to develop the flavor and aroma your customers desire. The heat of roasting removes moisture, breaks starches down to simple sugars that caramelize, alters acidity levels, impacts caffeine content, and leads to the development of caffeol, the oil that gives coffee its distinctive smell.² [The exact aesthetic, aromatic, and taste qualities of the final product will depend on the specific reaction of the raw product to the roasting process. Measuring the color of the beans during roasting gives you optimal control over the final result and spectral analysis of the ground beans ensures that the qualities you are seeking are consistent throughout the blend.](#)

Roast Classification

Agtron/SCAA: The Specialty Coffee Association of America has produced eight visual color standards for roast classification of ground coffee. Classification is normally done via visual inspection by comparing the color of a roast to a set of 8 colored disks, each varying 10% in shade and ranging from #95 ("Very Light") to #25 ("Very Dark").³ [This measurement method depends on the subjectivity of human perception, requires precise sample preparation, and can easily be skewed by factors such as light source and texture, leading to imprecise results.](#)

HCCI: The HunterLab Coffee Color Index measures the spectral reflectance of ground coffee at 640nm, the optimal setting for defining the degree of a roast. To optimize your roasting process, HCCI is best measured during roasting, allowing you to end the process when the coffee reaches its desired color and ensuring batch-to-batch consistency. This sophisticated measuring system does not limit you to matching one of eight pre-set standards, but allows infinite possibilities for creating the perfect roast.

Full article with photos available here:

<https://www.hunterlab.com/blog/color-food-industry/spectrophotometric-solutions-utilizing-color-measurement-to-optimize-coffee-quality/>