

Viability and Vitality in Winemaking: What's the difference?

What you should know to ensure a healthy wine fermentation?

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Viability and Vitality are two terms that are used and commonly confused in wine yeast microbiology¹, so much so that some people mistakenly use the terms interchangeably.

The confusion arises from the similar (yet different) definitions of the two terms, along with the similarity in the structure of the words themselves which often make people think they are homonyms.

So what do they mean and how can you easily remember what they mean?

Viability is the more objective term. In short the viability informs the winemaker if the yeast cells are living or if they are dead². It is measured as a percentage, so a viability of 75% would mean that 75% of the yeast cells you are measuring are living, while the remaining 25% are dead. Viability can be accurately and quickly measured with a microscope or with specialized yeast cell counting machines.

Vitality is a little more complex. In short, the vitality will look at the health of the living cells³. Like people, cells can be alive, yet on a wide spectrum of healthiness from poor to very robust. Vitality is also very difficult to measure, and there is no agreed upon method to do so. So while you can not measure vitality easily in your cellar, viability will give you a great indication of the vitality. For example, if half of your yeast are dead (50% viability), something in their environment is amiss and killing them (e.g., lack nutrients), and thus you should not expect the remaining living cells to be healthy or at peak performance (i.e. have a high vitality).

Knowing and understanding your viabilities before and during fermentation are crucial to

ensuring your fermentation is strong and successful. Remember – you cannot metabolize grape sugars with dead yeast! Knowing viability is also key for a successful tirage process to build up a strong wine yeast culture to ensure your Champagne, Cava or Cremant do not stall during secondary fermentation. A rapidly diminishing viability percentage is an early indicator that your fermentation is not doing well. Thankfully, early diagnosis of fermentation problems allows you time to rectify the situation.

Oculyze Fermentation Wine, a yeast cell counting machine, is able to accurately, quickly and cheaply measure your yeast's viability percentage along with the yeast concentration as part of your wine quality control tests. To do this, the winemaker will mix a small sample with either methylene violet (suggested) or methylene blue. These dyes permeate yeast cells. Living cells will work to keep the dye from permeating the cell, while dead cells will simply absorb the dye. Our wine yeast microscope algorithm will then expertly provide the winemaker with a report on the how many yeast cells the winemaker has in their sample, along with the percentage of these cells that are living.

For more information about checking your yeast viability (or concentration) with the ultimate automated yeast cell counter Oculyze, drop us a line at sales@oculyze.de

1 – Layfield, J. B., & John D. Sheppard, J. D. (2015) *What Brewers Should Know About Viability, Vitality, and Overall Brewing Fitness: A Mini-Review*. MBAA TQ. 55(3), pp. 132 – 140.

2 – Probrewer - *Yeast terminology and definitions* (sponsored by Lallemand): <https://www.probrewer.com/library/yeast/yeast-terminology-and-definitions/>

3 – White, C., & Zainacheff, Z. (2010) *Yeast: the practical guide to beer fermentation*. Boulder, Brewers Publications.