

BEST PRACTICES

DRY YEAST VIABILITY & PITCHING RATES

VALUE = MORE VIABLE CELLS FOR LESS COST

When comparing commercially available quantities to pitch a 5-10 hL fermentation, a 500g brick of Lallemmand Premium dry brewing yeast contains a similar or greater number of viable cells at 1/3 of the cost per viable cell compared to a typical 1L liquid culture.

TABLE 1: Comparison of commercially available quantities to pitch a 5-10 hL fermentation.

	1L LIQUID CULTURE ¹	500g LALLEMAND PREMIUM DRY YEAST
VIABLE CELL COUNT ²	2 x 10 ⁹ viable cells/ml 2 x 10 ¹² viable cells/L	6 x 10 ⁹ viable cells/g 3 x 10 ¹² viable cells/500g
COST (\$USD) ³	\$330 + \$50 shipping = \$380	\$172 (shipping often included)
COST PER BILLION VIABLE CELLS ³	\$0.19	\$0.06

¹ Viability and pricing for liquid culture is based on an average 1L propagation produced by the Siebel Institute of Technology.

² Viability is representative of typical analysis, but will vary for each lot.

³ Cost of yeast and shipping will vary based on your supplier and location.

ROBUST CELLS RICH IN STEROLS AND NUTRIENTS:

Prior to drying, the yeast is conditioned to be resistant to dehydration and rehydration. Nevertheless, some weaker cells are killed during the drying process. A typical dry yeast sample contains 60-80% viable cells and the remaining dead yeast cells contribute additional sterols, nitrogen, vitamins and minerals to aid the fermentation.

WHY DO CELLS APPEAR DEAD WHEN STAINING WITH METHYLENE BLUE?

Dry yeast contains cells that were killed during the drying process (20-40% of total cells). Additionally, viable cells of rehydrated yeast have a diminished ability to reduce methylene blue to a colorless product and may appear stained by the dye (Fig. 1A). Methylene blue is not an effective tool for measuring the viability of dry yeast samples and should be reserved for actively fermenting yeast, finished beer samples or liquid yeast slurry. Dry yeast viability is best measured by counting the number of colony forming units (CFU) per gram of rehydrated dry yeast when plated on nutrient agar (Fig. 1B).

STABLE VIABILITY = CONSISTENT PITCH RATES

Dry yeast is very stable with no significant decrease in viability for several years when stored cold and under vacuum. Consistent pitch rates are achieved simply by measuring dry yeast by weight without the need to count cells or measure viability.

Typical pitch rate calculators are designed for liquid yeast. Since liquid yeast viability declines rapidly after production, these calculators compensate by recommending higher pitch rates.

MOST CALCULATORS OVERESTIMATE PITCH RATES FOR DRY YEAST

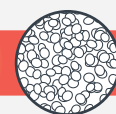
TYPICAL CALCULATOR
1.0 million cells/ml/°P



15°P wort

15 million cells/ml

3g/L



DRY YEAST
5 billion cells/g

3-6 x HIGHER THAN RECOMMENDED RATE OF 0.5 - 1.0 g/L !

LALLEMAND DRY YEAST PITCH RATE CALCULATOR

<https://www.lallemmandbrewing.com/brewers-corner/brewing-tools/pitching-rate-calculator/>

Consult our pitch rate calculator specifically designed for dry yeast. These pitch rates are tested for every production using a test fermentation to assess lag phase, attenuation, total fermentation time and flavor.

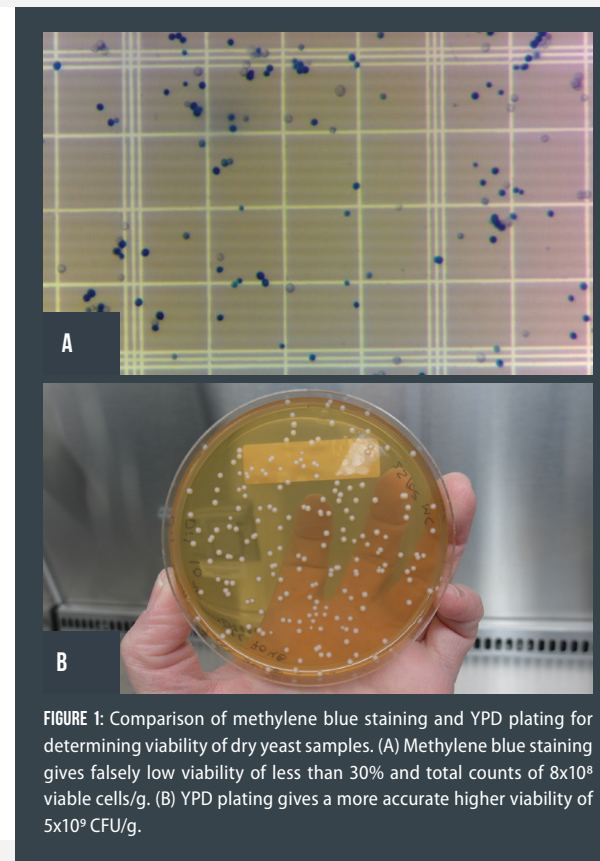


FIGURE 1: Comparison of methylene blue staining and YPD plating for determining viability of dry yeast samples. (A) Methylene blue staining gives falsely low viability of less than 30% and total counts of 8x10⁸ viable cells/g. (B) YPD plating gives a more accurate higher viability of 5x10⁹ CFU/g.