



Premium Liquid Yeast *and* Cultures *for* Professional Wild & Sour Brewing

Wyeast Laboratories, Inc. Technical Data Sheet

PRODUCTS

Premium Liquid Yeast

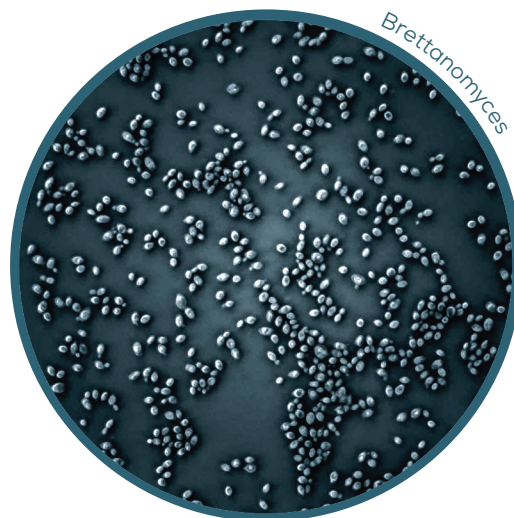
- › *Brettanomyces bruxellensis*
- › *Brettanomyces lambicus*
- › *Brettanomyces claussenii*

Premium Liquid Lactic Acid Bacteria

- › *Lactobacillus buchneri*
- › *Lactobacillus brevis*
- › *Pediococcus damnosus*

Premium Mixed Culture Blends

- › Saison-Brett Blend (*S. cer. var. diastaticus*, *Brettanomyces*)
- › Berliner Weisse Blend (*S. cerevisiae*, *Brettanomyces*, *Lactobacillus*)
- › Oud Bruin Ale Blend (*S. cerevisiae*, *Lactobacillus*)
- › Belgian Lambic Blend (*S. cerevisiae*, *Brettanomyces*, *Lactobacillus*, *Pediococcus*)
- › Roeselare Ale Blend (*S. cerevisiae*, *Brettanomyces*, *Lactobacillus*, *Pediococcus*)
- › Belgian Style Blend (*S. cerevisiae*, *Brettanomyces*)
- › Old Ale Blend (*S. cerevisiae*, *Brettanomyces*)



DESCRIPTION

A liquid suspension of brewing cultures grown in a sterile, nutrient-rich medium.

CERTIFICATION

Every yeast and bacteria strain is certified Kosher by the Orthodox Union.



PACKAGING

Available from 1.0 liter and up per strain or blend, in 0.5 and 1.0 liter increments in any volume or split.

INOCULATION RATES

PRODUCT TYPE	APPLICATION	Million Cells/mL/°P	Liters/BBL (hectoliter)
Blended Cultures	Direct Pitch	Proprietary	varies *
	Primary & Secondary Fermentation		
Brettanomyces	Primary Brett-only Fermentation	6.5	1.0 liter
	Secondary Fermentation	3.25	0.5 liter
Lactic Acid Bacteria	Souring Wort	varies *	varies *
	Souring Beer (Berliner Weisse)	varies *	varies *
	Secondary Fermentation	0.5	0.5 liter

* This chart serves as a guideline but does not cover all possible fermentation styles, parameters, or brewer preferences. Pitch rates will vary depending on your brewing goals, time, temperature, and beer style. Contact us for a customized recommendation.

STABILITY

Store at 34-40 °F (1-4 °C) immediately upon arrival. Best when used fresh. Use within 14 days.

Brettanomyces cultures take 3-6 months to fully develop character once fermentation is underway, and can age for years under traditional cellaring conditions. Lactic acid bacteria cultures develop character and acidity with cellaring, but may also be used following the fast souring method known as kettle souring.

INSTRUCTIONS FOR USE

Allow to come to ambient temperature just prior to use. Sanitize package before opening. Homogenize contents and pour the contents into wort, following the instructions below:

- ▶ ***Brettanomyces* in Primary:** If used as the only microorganism, pitch the Brett into wort with little aeration. Too much oxygen will stress the cell membrane.
- ▶ ***Brettanomyces* in Secondary:** The beer in primary fermentation is transferred to another vessel keep at 60-75 °F (15-24 °C). Do not aerate the fermented beer to avoid contaminations and oxidation. Brett strains can be pitched directly into the fermented beer.
- ▶ **Mixed *Saccharomyces* & *Brettanomyces*:** If *Saccharomyces* yeast is used in combination with a Brett strain, slightly aerate the wort.
- ▶ **Mixed *Saccharomyces* & Lactic Acid Bacteria:** The yeast will lead the fermentation and later the LAB will start its process, so the wort can be aerated as usual. In some cases, separate fermentations can be completed and later blended.
- ▶ **Mixed *Saccharomyces*, *Brettanomyces*, & Lactic Acid Bacteria:** If a blend is used, slightly aerate so the *Saccharomyces* can start fermentation. The Brett and LAB will start later as fermentation progresses. Direct pitch into the wort.
- ▶ **Lactic Acid Bacteria Souring:** No hops are added to the wort. Boil for 15 minutes, then cool to 100 °F (38 °C). Pour the bacteria contents into the wort. The wort can be aerated with CO₂.
- ▶ **Lactic Acid Bacteria in Secondary:** Results in less souring because of reduced available sugars left after primary fermentation. Do not aerate the fermented beer to avoid contaminations and oxidation. The LAB can be pitched directly into the fermented beer.

PRODUCTION

All strains are produced in Wyeast's licensed food manufacturing facility from an archival -80 °F (-62 °C) ultra-low temperature bank in order to maintain genomic stability and assure that cultures have consistent fermentation kinetics, flavor profiles, and flocculation characteristics.

Cultures are propagated on premium malt extract as the primary carbohydrate source, ensuring they are conditioned to an environment similar to brewers wort, and propagation environments are optimized for every strain. *Brettanomyces* are produced on a specialized oxygenation schedule to meet reduced species requirements. LAB are produced with genus-specific nutrient additions and monitored for lactic acid production and pH decrease. Minimal processing is required once propagations are complete, therefore having no detectable effect on culture integrity, and the possibility of contamination is significantly limited.

INTEGRITY

- Base *Saccharomyces* cultures are standardized at 1.2 billion viable cells/mL, resulting in > 99.9% viability of the your pitch rate and the blend ratio of these cultures.
- Base *Brettanomyces* cultures are standardized at 750 million viable cells/mL, resulting in > 99.9% viability of your pitch rate and the blend ratio of these cultures.
- Lactic acid bacteria cultures are standardized at ≥ 100 million cells/mL prior to packaging or culture blending.
- All cultures meet or exceed strict quality standards and specifications prior to shipment. A combination of traditional and innovative technologies are used to prove product purity for every phase of propagation to the finished product.
- Quality assurance samples are archived and routinely tested for ongoing confirmation of product integrity.
- Yeast, bacteria, and mixed cultures are guaranteed by our Product Warranty to produce a healthy and complete fermentation under typical brewing, barrel aging, and beer/wort souring conditions.

PROFESSIONAL SPECIFICATIONS OF BASE CULTURES

Saccharomyces in Wild & Sour Blends

ANALYSIS	METHOD	
Viable yeast cell concentration	Image Cytometry with Propidium Iodide stain	1.2×10^9 cells per mL
Colony Morphology	ASBC Microbial Control - 2 (WLN)	single morphology
Anerobic Bacteria	ASBC Microbial Control - 5 (UBA with Cycloheximide)	< 1 CFU / 7.5×10^7 yeast cells
Aerobic Bacteria	ASBC Microbial Control - 5 (UBA with Cycloheximide)	< 1 CFU / 7.5×10^7 yeast cells
Non-Saccharomyces Wild Yeast	ASBC Microbial Control - 5 (LCSM)	varies by strain *
Saccharomyces Wild Yeast	ASBC Microbial Control - 5 (LWYM)	varies by strain *
<i>S. cerevisiae</i> var. <i>diastaticus</i> (STA1+)	qPCR GEN-IAL QuickGEN P1 and <i>Diastaticus</i>	varies by strain *
<i>Megasphaera/Pectinatus</i> spp.	qPCR GEN-IAL QuickGEN P1 and <i>Diastaticus</i>	not detected
<i>Lactobacillus/Pediococcus</i> spp.	qPCR GEN-IAL QuickGEN P1 and <i>Diastaticus</i>	not detected
* request a Certificate of Analysis with your order for exact specification and conformity		

Brettanomyces Strains

ANALYSIS	METHOD	SPECIFICATION
Viable yeast cell concentration *	Cellometer with oxonol stain	7.5×10^8 cells per mL
Cell Morphology	ASBC Yeast - 2A	single morphology
Anerobic Bacteria	ASBC Microbial Control - 5 (UBA with Cycloheximide)	< 1 CFU / 7.5×10^7 yeast cells
Aerobic Bacteria	ASBC Microbial Control - 5 (UBA with Cycloheximide)	< 1 CFU / 7.5×10^7 yeast cells
Non-Saccharomyces Wild Yeast	ASBC Microbial Control - 5 (LCSM)	positive growth
Saccharomyces Wild Yeast	ASBC Microbial Control - 5 (LWYM)	< 1 CFU / 1.0×10^6 yeast cells
<i>S. cerevisiae</i> var. <i>diastaticus</i> (STA1+)	qPCR GEN-IAL QuickGEN P1 and <i>Diastaticus</i>	not detected
<i>Megasphaera/Pectinatus</i> spp.	qPCR GEN-IAL QuickGEN P1 and <i>Diastaticus</i>	not detected
<i>Lactobacillus/Pediococcus</i> spp.	qPCR GEN-IAL QuickGEN P1 and <i>Diastaticus</i>	not detected

Lactic Acid Bacteria Strains

ANALYSIS	METHOD	SPECIFICATION
Bacteria Cell Morphology	Microscope analysis	single morphology
Total Yeast	ASBC Microbial Control - 2 (WLN)	< 1 CFU / 1 mL bacteria cells
Non Lactic Acid Bacteria	ASBC Microbial Control - 5 (UBA with Cycloheximide)	< 1 CFU / 1 mL bacteria cells
<i>S. cerevisiae</i> var. <i>diastaticus</i> (STA1+)	qPCR GEN-IAL QuickGEN P1 and <i>Diastaticus</i>	not detected
<i>Megasphaera/Pectinatus</i> spp.	qPCR GEN-IAL QuickGEN P1 and <i>Diastaticus</i>	not detected
<i>Lactobacillus/Pediococcus</i> spp.	qPCR GEN-IAL QuickGEN P1 and <i>Diastaticus</i>	detected