

ACTIVE DRY BREWING YEAST

Crisp Sour

product information

Pinnacle Crisp Sour is a unique *Lachancea thermotolerans* species isolated from nature and selected for its ability to produce lactic acid and its excellent performance in beer production.

Pinnacle Crisp Sour produces acids and alcohol during fermentation, without the need for a pre-fermentation acidification step (like kettle souring) or cofermentation.

Product contains material patented by US11008539. Patent valid in US.

Ingredients: Yeast (*Lachancea thermotolerans*), emulsifier (E491).

Typical analysis at packaging:

% dry weight	> 93%
Viable Yeast Count (cfu/g)	> 6.0E+09
<i>Non Saccharomyces spp.</i>	This strain will grow on Wild Yeast Media* (e.g. lysine)
Total Bacteria	< 1 cfu per 10 ⁶ yeast cells

Packaging: 500 g vacuum packs, 10 kg vacuum packs & 11.5 g sachets.

Shelf life: Three years from production date.

Storage conditions: Product should be stored under dry conditions at 39-50°F (4-10°C). The vacuum package is hard until the seal is broken. Opened packs should be resealed if not completely used, and stored at 39°F (4°C) used within five days.

Pitching rate: The pitching rate varies with original gravity of the wort as well as brewing conditions. We advise to inoculate a minimum of 50-100 g/hL for a regular wort and 100-200 g/hL for a high gravity wort above 14°P.

The yeast can be direct pitched successfully but if you prefer to rehydrate, follow these steps:

1. Prepare the rehydration medium:
10 times the weight of yeast (5 litres for a 500 g package), using either sterile wort (<5° Plato) or sterile water at 82-95°F (28-35°C), optimum 86°F (30°C). Do not use demineralized water.
2. Open the 500 g package with sterile scissors. Sprinkle on surface gently to avoid clumping.
3. Gently stir then leave for 15-20 minutes. A slow rehydration allows yeast membranes to reform.
4. Never subject the yeast to temperature shock: adjust the temperature of the rehydrated yeast to within 9°F (5°C) of the wort to be inoculated by adding wort.
5. Gently stir and leave for 5-10 minutes.
6. Stir well and pour into the wort to start fermentation. Use the rehydrated yeast within 30 minutes of rehydration.

*Wild Yeast Media: this strain is known to grow on some wild yeast media including LCSM

for Craft Brewers from craft beer lovers

Attenuation:
70-82%

Pitching rate:
50-200 g/hL

Fermentation temperature:
64-88°F (18-30°C)

Fermentation rate:
Medium

Flocculation:
Medium

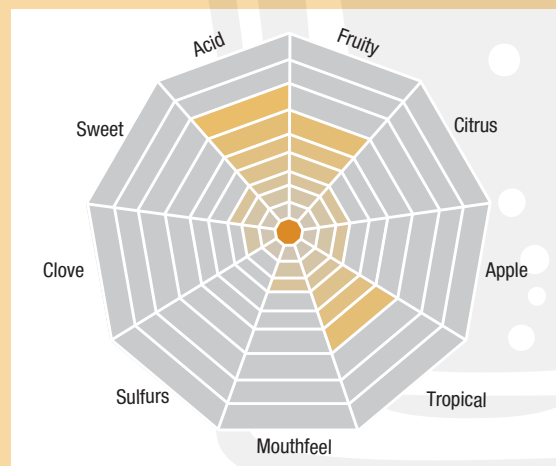
Alcohol tolerance:
Up to 6-8% abv
(increase pitching rate for higher tolerance)

Beer styles

Pinnacle Crisp Sour is a great choice to produce traditional and modern sour beer styles, like Sour IPA, Berliner Weisse, Gose, Lambic/Geuze-style and Fruit Sour.

Flavor and aroma

Pinnacle Crisp Sour is selected for its unique ability to produce lactic acid, resulting in a smooth and refreshing acidity with a subtle to moderate intensity, depending on the brewing conditions. This strain brings on a lovely aroma of tropical fruit, citrus. A subtle hint of traditional Belgian sour beer aromas is possible in recipes with low flavor complexity.



ACTIVE DRY BREWING YEAST

Origin of Pinnacle Crisp Sour From Our Partners At Lachancea LLC

The story of **Pinnacle Crisp Sour** brewers yeast starts not in a research lab or a brewery, but instead with a scientist hanging from a rafter, collecting a live wasp nest for the yeast inside it. This is not where most yeast comes from...even wild yeast. At the time, a research group from **North Carolina State University** was starting an outreach project to make a wild yeast beer for a local science education festival.

But when we began looking for wild yeast, our team didn't look where most explore – sugary locations in which yeast is typically found like malted grains, fruit, nectar or even tree sap. Instead, we looked to that buzzing in the air. **Wasps**. Interestingly, research at the time and work by other researchers in Europe, indicated that some wild wine yeast hitched rides on paper **wasps** and **hornets**, using them as airplanes to get from one source to another.

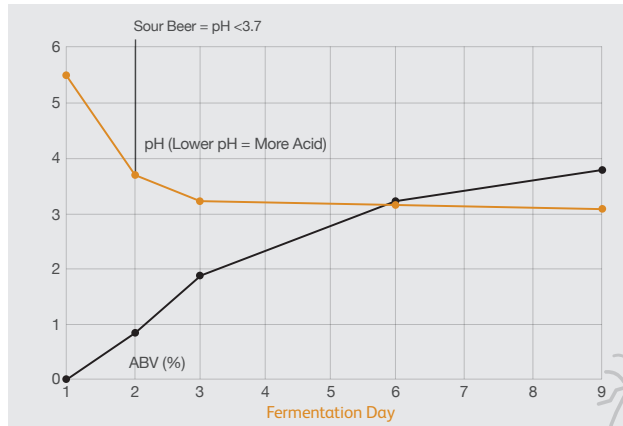
Upon returning to the lab, our team determined that there were many strains of yeast found among the thousands of microorganisms in wasps. So, we separated out the yeast, and one clearly stood out. It smelled like sour apples in a petri dish and was not a wild ale or lager yeast. Particularly, it wasn't a species of *Saccharomyces* at all; it was a species named **Lachancea thermotolerans**. In fact, there was no record of it ever being used to make beer which was not surprising due to its unique characteristics.

If we had only managed to look at that name, we would have been fortunate to see that it's derived from the French terminology, "la chance" meaning "lucky." And this wasp yeast was in fact lucky because it made beer that was both crisp and flavorful.

Technical Insights

What we found, looking at this first **wasp yeast**, was the unique metabolism found in yeast. Going further, we noticed that alcohol by volume increased as the yeast continued to make alcohol. But in doing so, the yeast also rapidly produced acids that made the beer tart. In fact, the yeast created **sour beer** within the first 48 hours of brewing and then continued to produce more alcohol.

Additionally, there was a surprising absence of off-flavors like those that are prevalent in wild yeast and that plague kettle sours.



Lachancea produces valuable flavors & no off-flavors

- | | |
|--|---|
| ✓ Lactic Acid
(Preferred Tartness) | ✓ Glycerol
(Preferred Mouthfeel) |
| ✗ Diacetyl Acid
(Butterscotch) | ✗ Phenolics (Band aids,
Funk, Horsiness, Barnyard) |
| ✗ High Acetic Acid
(Harsh vinegar notes) | ✗ THP - Tetrahydropyridine
(Cheerios, Mousy, Urine) |

Wasp yeast flocculated is extremely efficient at fermenting grains, even creating a strong beer of up to 7% alcohol by volume (ABV). Also, it is **hop tolerant** and remarkably **easy to clean** inside brewery equipment, not presenting a contaminant risk like most wild yeast and bacteria.

Soon after, this yeast began getting more attention as other scientists tried to find rapidly souring **Lachancea yeast**. Other brewers found some of these strains often produced green or leafy off-flavors, even needing adjuvants like sugar or added yeast added to make beer, while others could not produce as high a sour note. Still others could not produce as much alcohol. **This was not the case for our insect associated Lachancea yeast.**

Why Is Lachancea Yeast So Unique

Part of this has remained a mystery, but part of it we eventually worked out. The answer was **ancient** and related to the yeast-providing **wasps**. Glycerol produced by this yeast protected the yeast from a harsh life living inside insect bodies. What about some of the strong aromas that the yeast produces, like **floral, fruity and honey notes**, you ask? Well, the yeast produced these aromas in order to attract other wasps on the prowl for sugar sources on which to feed, thereby providing an airplane-like ride for the yeast from sugar source to sugar source.

AB Biotek Pinnacle Crisp Sour Brewers Yeast

The original **Lachancea wasp yeast** is now available as a dehydrated dry yeast product exclusively from **AB Biotek** under the **Pinnacle Crisp Sour** label.

- ✓ Glycerol protects the yeast in its unique environment
- 🐝 Yeast aromas attract wasps, helping the yeast hail rides on the wasps
- 🔍 Some mysteries remain...

Some of these **flavors** aren't random, they're an **ancient yeast secret**