

ACTIVE DRY BREWING YEAST

Crisp Sour

product information

for **Craft Brewers**
from craft beer lovers

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 4-10°C (39-50°F). The vacuum package is hard until the seal is broken. Opened packs should be resealed if not completely used, and stored at 4°C (39°F) 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 28-35°C (82-95°F), optimum 30°C (86°F). Do not use demineralised 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 5°C (9°F) 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

Attenuation:
70-82%

Pitching rate:
50-200 g/hL

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

Fermentation rate:
Medium

Flocculation:
Medium

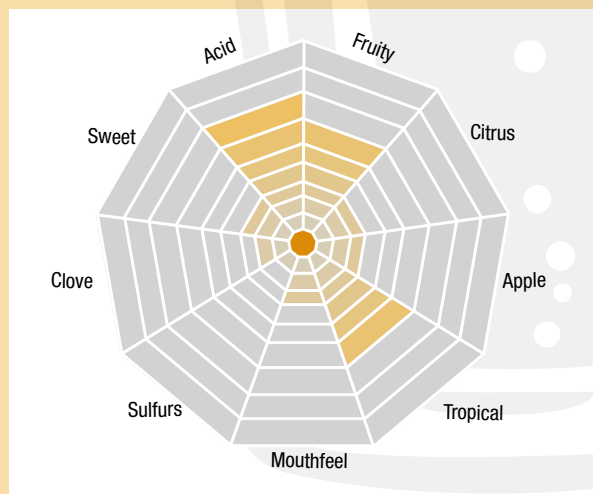
Alcohol tolerance:
Up to 6-8% abv
(increase pitching rate for higher tolerance)

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.

Flavour 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 flavour complexity.



PINNACLE™

ACTIVE DRY BREWING YEAST

Origin of Pinnacle™ Crisp Sour

The story of **Pinnacle™ Crisp Sour** yeast starts not in a research lab, or a brewery, but with a scientist hanging from a rafter, collecting a live wasp nest for the yeasts that be inside them. This is not where most yeast come from, even wild yeasts. At the time, the research team out of 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 a wild yeast, we didn't look where most people do — sugary locations in the world where you can often find yeast — in malted grains, or fruits, nectar, or tree sap. Instead, we looked in **wasps**. This is because the research at the time, and work by other researchers in Europe, was showing that some wild wine yeast hitch rides on paper **wasps** and **hornets** — using them as airplanes to get from one sugary source to another.

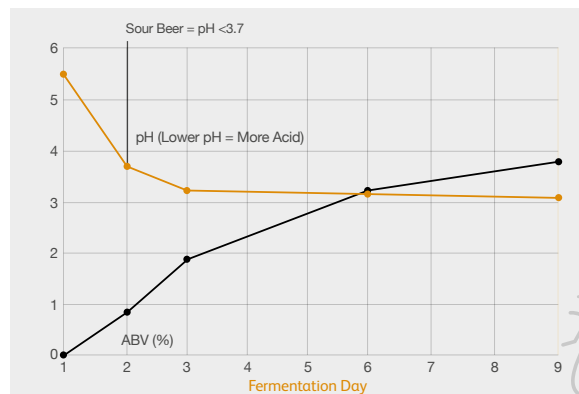
But when we got back to the lab, it turns out there are hundreds and thousands of microorganisms in wasps and many species and strain of yeasts. So, we separated out the yeasts. One yeast stood out. It smelled like sour apples on a petri plate. But it wasn't a wild ale or lager yeast. It wasn't a species of *Saccharomyces* at all. It was a species named "**Lachancea thermotolerans**". There was no record of it ever being used to make beer. This is not surprising because the yeast is nothing like ale and lager yeasts.

Because if we'd only managed to look at that name, to really look at it, we would have seen that it's derived from the French "La chance" which translates to "Lucky." And this **wasp yeast** was lucky, because it made beer. It made a beer that was **flavorful** and **crisp**.

Technical insides

What we found—looking at this first **wasp yeast**, is that the yeast has a unique metabolism. Furthermore, alcohol by volume increasing as the yeast continued to make alcohol. But as it does this, the yeast is also rapidly producing acids that make the beer tart. The yeast makes a **sour beer** within the first 48 hours of brewing then continues to make alcohol.

In addition to this, there was a surprising absence of off-flavours - the off flavors that are so prevalent in wild yeasts, and that plague kettle sours.



Lachancea produces valuable flavours & no off-flavours

- ✓ **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)

The **wasp yeast** flocculated, it is extremely efficient at fermenting grains — allowing it to make a strong beer of up to 6-7% ABV. It is **hop tolerant**. It is remarkably **easy to clean** from brewery equipment, not presenting a contaminant risk like most wild yeast or bacteria.

Soon, the yeast was getting a lot of attention and we began to hear about other scientists trying to find rapid souring **Lachancea yeasts**. But we also started to hear from brewers how some of these strains produced green or leafy off-flavours, or needed adjuvants like sugar or additional yeast added to make beer. Some couldn't produce as much sour notes. Others couldn't produce as much alcohol. **This was not the case for our insect-associated Lachanceas.**

What makes our Pinnacle™ Crisp Sour insect-associated Lachancea yeasts so unique?

Part of this remains a mystery. But part of it we eventually worked out - and the answer is **ancient** and relates to those **wasps**. The glycerol produced by this yeast—it likely protects the yeast from a harsh life living in insect bodies. Some of the aromas that the yeasts produce—those that are **floral**, **fruity** and **honey-like**. The yeast produces these aromas to attract wasps who are looking for sugar-sources to feed on. These yeast aromas attract the wasp and helps the yeast get those airplane rides from sugar source to sugar source.

AB Biotek Pinnacle™ Crisp Sour Brewing Yeast

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

- ✓ 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 **flavours** aren't random, they're an **ancient yeast secret**

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from craft beer lovers

 lachancea

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