

APIECE CROISSANT formula

NATURALLY-LEAVENED CROISSANTS ARE A BAKING HOLY grail, of sorts, because they are so difficult to get right. First, there's the fermentation aspect. Enriched doughs require greater gassing power, in part due to their overall density and the stresses placed on bacterial and yeast cell walls from the increased hydrostatic pressure. What's more, croissant doughs are continually moved back and forth between hot and cold environments, exacerbating cold- and oxygen-related stresses. With industrially-yeasted doughs, the answer's simple: Increase the starting cell population, usually by adding 2 to 5 times the normal inoculation amounts. There's just not a comparable solution for the sourdough-process. Even using "only" 1% fresh yeast to flour weight starts with unnaturally-high cell numbers never achievable in nature. (To have an equivalent cell population, the sourdough baker would have to preferment 8 kilograms of flour for every 1 kilogram of flour in the final dough, which, if using a liquid starter, would require 1,600% starter!) The other main difficulty in "natural" pastry fermentations is dealing with bacterial metabolites. Lactobacilli significantly out-number yeast in sourdough cultures, which is neither good or bad. They can contribute positive outcomes to breakfast pastries, like carbon-dioxide and glutamic acid (think MSG), but they can also make the product unpleasantly sour (also reducing the overall volume). Noticeably sour croissants taste rank. I consider them to be a defect. Because the cell numbers are much, much lower than found in yeasted viennoiserie, there are two consequences: The croissants take much, much longer to rise (ten people can blow up a really large balloon faster than one person) and will always have considerably less volume. The last difficulty relating to fermentation is having a very active starter. What's very active? One that's refreshed *at least* daily and always kept between 20° and 30°C, ideally closer to 30°C. If your starter falls outside these bounds, consider 4 to 5 successive refreshments of increasing frequency under this regime before proceeding with this (or any naturally-fermented enriched) dough. We feed our high-ratio liquid starter twice a day. Italian bakeries that specialise in similar products will often feed up to 5 times a day. This constant-refreshment ensures the sourdough microbiota are always in an exponential state of growth. If you try this formula and do not at first succeed, chances are your starter's not active enough. Under-fermentation, either at the starter stage or during the final-dough fermentation, is the biggest cause of failure I see in naturally-leavened enriched doughs. The other main difficulty is purely technical, relating to lamination. I will not say much on this subject, because there are countless invaluable resources online and in books to help a baker improve her laminating abilities. But a quick word on butter: I prefer demi-sel (semi-salted), cultured preferably, with a fat content above 82%. To ensure better lamination, make sure your butter block is between 14° to 18°C, the ideal range for butterfat plasticity. The one thing I can say about lamination? Do know that if you struggle to get an open crumb structure with yeasted croissants, then your problems will be amplified when attempting this formula, for the reasons outlined above. This is not to discourage would-be bakers but more as a word of early warning; know that you will likely fail the first half dozen times, maybe more. This is common. Do not give up. Holy grails do not come easily. Like learning any acquired skill, it takes time and repeated effort and continual practice before it becomes second-nature. The results are more than worth it. The flavour is incomparable. Yeasted croissants seem insipid to me now, to the point that it's hard for me to summon the resolve to eat them any more. They just do not taste as good to me, and I think you'll more than agree.

PREFERMENTED FLOUR: 14.89%
HYDRATION OF STARTER: 100.00%
DOUGH YIELD: 25 croissants

OVERALL FORMULA	BAKER'S %	HOME
TOTAL FLOUR	100.00%	1,108.03 g
Flour, Wheat, Roller-Milled (11.5% protein)	100.00%	1,108.03 g
Water	37.02%	410.19 g
Sugar, Castor	15.45%	171.19 g

Egg, Whole	10.00%	110.80 g
Butter, Demi-Sel	5.00%	55.40 g
Sea Salt	1.75%	19.39 g
TOTAL YIELD	169.22%	1,875.00 g

LIQUID STARTER BUILD, HIGH-RATIO (FIRST)

Flour, Wheat, Roller-Milled (11.5% protein)	100.00%	33.00 g
Water	100.00%	33.00 g
Liquid Starter, High-Ratio	50.00%	16.50 g
TOTAL	250.00%	82.49 g

DOUGH STARTER BUILD (SECOND)

Flour, Wheat, Roller-Milled (11.5% protein)	100.00%	164.98 g
Water	100.00%	164.98 g
Liquid Starter, High-Ratio	50.00%	82.49 g
Sugar, Castor	22.50%	37.12 g
TOTAL	272.50%	449.58 g

FINAL DOUGH

TOTAL FLOUR	100.00%	943.04 g
Flour, Wheat, Roller-Milled (11.5% protein)	100.00%	943.04 g
Dough Starter, From Above	38.14%	360.09 g
Water	26.00%	245.28 g
Sugar, Castor	15.00%	141.00 g
Egg, Whole	11.51%	110.80 g
Butter, Demi-Sel	5.87%	55.40 g
Sea Salt	2.06%	19.39 g
TOTAL	198.59%	1,875.00 g

LOCK-IN BUTTER

Total Croissant Dough, From Above	100.00%	1,875.00 g
Butter, Demi-Sel	26.67%	500.06 g
TOTAL	126.67%	2,375.06 g

1. HIGH-RATIO LIQUID STARTER MAINTENANCE.

Mix the high-ratio liquid starter 10 to 14 hours before using again, and leave to ferment in an air-tight, food-grade container. Desired dough temperature is 28°C.

2. DOUGH STARTER BUILD.

Mix the dough starter 10 to 14 hours before the final dough, and leave to ferment in an air-tight, food-grade container. Desired dough temperature is 28°C.

3. MAKE BUTTER BLOCK.

At least one hour and up to a day before mixing the final dough, make your butter block. Place 500g of cold demi-sel butter between two non-stick baking sheets or mats and place atop a hard benchtop. Using the long side of a large rolling pin, beat the butter repeatedly to flatten. The goal of this tempering process is to shape the butter into a continuous, smooth square measuring approximately 25 centimetres on each side and with a consistent thickness of about 5 millimetres. Reserve covered in the refrigerator until 1 hour before the lock-in.

4. MIXING.

If mixing by hand: Add all ingredients to a large mixing bowl and combine by squeezing the ingredients into each other with both hands. Proceed until every particle of flour is hydrated and a shaggy dough is achieved. Using a plastic scraper, remove the dough from the bowl and slap-and-fold on a hard benchtop for 8 to 10 minutes. Stop several times throughout this process to “scissor” through any developing protein strands. (To do so, form the first fingers and thumbs of each hand into an O and pinch the dough from back to front into a chain of smaller balls before continuing to slap-and-fold.) If using a stand-mixer: Combine all the ingredients in first speed until a dry, shaggy dough is achieved, mixing for a total of 4 minutes. Switch to medium-high speed and mix for another 4 minutes. Scrape down the sides of the bowl as necessary to incorporate any dry ingredients. Desired dough temperature is 10°C in summer and 15°C in winter.

5. BULK FERMENTATION.

Wrap the dough in plastic and allow to rest, refrigerated, for at least 1 hour and up to overnight. This dough is best if the lamination process occurs upfront, so most of the fermentative activity occurs during the final shape. If making this dough during cooler months and the ambient temperature is less than 15°C, the dough can be left to rest just after mixing, covered, at room temperature for 30 to 45 minutes, making lamination easier.

6. LAMINATION.

Remove the butter block from the refrigerator and allow to warm to 14° to 18°C before beginning the lamination process. (At this temperature the butter should still offer slight resistance to a fingertip gently pushed down into it.) Once the dough is sufficiently relaxed, roll it out on a lightly-floured surface into a rectangle measuring approximately 25 centimetres tall and 50 centimetres wide, with its longest side parallel to the edge of the work surface nearest you. Brush off any visible flour from atop the dough and then place the butter block atop the dough to either of one side, right or left, so the other half of the dough can fold over atop the butter block like a book closing shut. Stretch the uncovered section of dough up and over the butter block so as to completely encase the dough. Align the edges of the dough so they are square and use the butt of your palm to seal along all its edges, lightly tapping atop the butter as well so as to remove air bubbles. Again using the long side of a rolling pin, beat the top of the dough to soften and slightly flatten, taking care not to puncture the dough with the tip of the rolling pin. Once softened, roll the dough out to a rectangle measuring approximately 25 centimetres tall and 120 centimetres long, with the longest edge running closest to you. Brush away any excess flour from atop the dough. Take the furthest left and right edges and fold the dough inward so they meet, squaring up the sides as you go, and then fold the dough in half along the same east-west direction, like a book. You should have introduced four layers. Rotate the dough 90° and repeat the same process as before: beating with the long edge of a rolling pin; rolling out to a rectangle measuring about 25 cm x 120 cm; and applying a “book” fold, again introducing four layers, brushing away excess flour as you go. Wrap the dough block in plastic and refrigerate for at least 1 hour and up to overnight.

7. FINAL SHEETING AND SHAPING.

Once the dough block has sufficiently relaxed, remove from the refrigerator. Place atop a lightly-floured work surface and rotate the block 90° to its previous orientation. Using the long side of a rolling pin, beat the block to soften and proceed to roll out to a rectangle measuring 25 to 27 cm tall and 120 cm wide and approximately 5 to 7 mm thick, with the longest side nearest you. Using a ruler, mark notches 10 centimetres apart along the lower end of the dough, for a total of 11. Using a knife or a pizza cutter, cut the dough block into 12 rectangles measuring 10 cm wide and 25 to 27 cm long. Use the side of a ruler or straight edge to lightly imprint a line running from one corner to the opposite corner of each rectangle. Cut the rectangles in half along this line, creating a total of 24 triangles. Alternatively, for chocolate croissants, these rectangles can be cut in half width-wise to create two smaller rectangles measuring 10 cm by 12.5 cm. Lightly stretch each triangle so as to elongate along its length and then roll into a croissant shape. At this point, the shaped croissants can be refrigerated, wrapped in plastic, for up to 4 days, only be pulled out as they are needed. If you are planning to bake the same day, tray the croissants, allowing ample space between each. Egg wash twice, once after traying up and a second time just before they enter the oven.

8. FINAL FERMENTATION.

8 to 24 hours, temperature depending. Ideal final proofing temperature is 26° to 28°C in an enclosed, humid environment. This can be accomplished by placing the trayed-croissants along with a bowl of hot water inside an enclosed space, like a turned-off oven.

9. BAKING.

With ample steam, bake at 220° for 15 minutes, before lowering the temperature to 180°C for additional 10 to 20 minutes or until desired doneness is achieved.