## Part 1: How to Read a Sourdough Crumb

### Underproofed or Overproofed?

**Companion Guide to the Video:** [https://youtu.be/JzvZ6vMxHcw](https://youtu.be/JzvZ6vMxHcw)

<table>
<thead>
<tr>
<th></th>
<th>Significantly Underproofed</th>
<th>Slightly Underproofed</th>
<th>Nicely Proofed</th>
<th>Slightly Overproofed</th>
<th>Significantly Overproofed</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Loaf Height</strong></td>
<td>Flat</td>
<td>Tall and pyramidal sometimes with a “belly” on bloom</td>
<td>Tall loaf with high shoulders and “bunny” profile</td>
<td>Past peak height, falling shoulders</td>
<td>Flat</td>
</tr>
<tr>
<td><strong>Alveoli / Holes</strong></td>
<td>Dense, gummy, spongy crumb with some tunnels</td>
<td>Dense areas with tunnels or large holes</td>
<td>Even distribution of small, medium and large holes</td>
<td>Mostly medium to small holes</td>
<td>Smaller holes throughout with ragged edges on holes</td>
</tr>
<tr>
<td><strong>Crumb Profile</strong></td>
<td>Dense strip at bottom, tunnels or holes on top</td>
<td>Dense strip at bottom, “fools crumb” or large holes near top</td>
<td>Consistent distribution of holes edge to edge and top to bottom</td>
<td>Consistent distribution of small to medium holes throughout</td>
<td>Small holes throughout with separation of crust from crumb</td>
</tr>
<tr>
<td><strong>Ear / Ovenspring</strong></td>
<td>No ear, no ovenspring</td>
<td>Sometimes a very tall ear and tall ovenspring</td>
<td>Tall, pronounced ear with tall ovenspring</td>
<td>Smaller ear with less ovenspring</td>
<td>No ear and minimal ovenspring</td>
</tr>
<tr>
<td><strong>Bloom (Opening at Scoring Line)</strong></td>
<td>Does not open</td>
<td>A large “belly” bulging under the bloom</td>
<td>Gluten strands across bloom</td>
<td>Less strands and more bubbles visible in bloom</td>
<td>“Bubbles” visible and irregular edged bloom</td>
</tr>
<tr>
<td><strong>Crust Color</strong></td>
<td>Pale, blonde crust</td>
<td>More blonde than brown</td>
<td>Multiples shades of light to dark brown</td>
<td>Multiples shades of light to dark brown</td>
<td>Blonde or dark, mottled crust</td>
</tr>
</tbody>
</table>
| **Significantly Underproofed** | Flat overall shape, low ovenspring  
Dense, gummy, spongy crumb  
Dense clusters of small holes  
Tunneling near top of loaf, penetrating through loaf  
No ear  
Typically, a compact loaf with shiny, blonde crust (not shown here)  
Note: Significant underproofing is typically caused by a weak/immature starter, or bulk fermenting for too short of a time or too low of a temperature. |
|---|---|
| **Slightly Underproofed** | A taller, pyramidal shaped loaf  
Dense crumb at bottom  
Large holes or tunnels, usually near top  
Uneven distribution of holes  
“Fools crumb” ~ irregular large holes on top half of loaf  
A tall ear with gas bubble under the bloom  
Typically, a more blonde than brown crust (not shown here)  
Note: Slight underproofing is a very common result for beginning sourdough bakers. Do not be afraid to push your bulk fermentation time each time you bake. Add 30 minutes to your bulk fermentation each time you bake (all other variables unchanged) until you find the point where your loaf is overproofing. Fully proofed loaves are right on the edge of overproofing. |
| **Nicely Proofed** | Tall, airy loaf with high shoulders and “bunny” profile  
Consistent distribution of small, medium and large holes  
No areas of dense, gummy crumb  
Fully proofed top to bottom and side to side  
A tall, pronounced ear  
Typically, gluten strands visible across bloom (not shown)  
Typically, multiples shades of light to dark brown crust (not shown)  
Note: Everyone has a different opinion of the “perfect crumb.” Some people seek a more open, irregular crumb with larger holes. Other examples are included in the gallery later in this document. |
### Slightly Overproofed

A flattening loaf with falling shoulders  
Past peak height  
Fully proofed top to bottom and side to side  
Higher density of small to medium sized holes, larger holes near crust  
A small or no ear  
Separation of crust from crumb, thinning crust  

Typically, fewer gluten strands and more bubbles visible across the bloom (not shown)  

Note: As loaves begin to overproof they lose their height and shape. The crumb becomes more dense. The holes become more ragged and irregular in shape. The crust begins to thin and separate from the crumb.

### Significantly Overproofed

A flat loaf with minimal ovenspring and no ear  
Tighter crumb with some density at bottom  
Smaller holes throughout the loaf, more ragged-edged holes vs. round holes  
Deterioration of crumb and starting to separate from crust  
Gluten deterioration visible on ear (ragged edge)  

“Bubbles” visible in bloom (not shown)  
Slack, irregular, asymmetrical shaped loaf  

Note: Overproofed loaves commonly occur when beginners attempt overnight bulk fermentation at too warm of a temperature, or with seasonal changes as everything speeds up at warmer temperatures. Many recipes also call for “doubling” of the volume of the dough during bulk fermentation, but many recipes will overproof if allowed to double in volume, especially when bulk fermenting at warmer temperatures.

For many more examples, visit [The Sourdough Journey](https://thesourdoughjourney.com) on YouTube.

Check out the comparison of loaves in the following videos on The Sourdough Journey series “When is Bulk Fermentation Done?”

- **Episode 1:** The 30-Minute Effect  
- **Episode 2:** The Curse of the Weak Starter  
- **Episode 3:** The Bulk-O-Matic System  
- **Episode 4:** Overproofing Problems  
- **Episode 5:** Impact of Leaven Percentage  
- **Episode 6:** Starter Strength and Leaven Percentage  
- **Episode 7:** Some Like it Hot : The Temperature Effect  
- **Episode 8:** Low and Slow at 70F/21C

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<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Badly Underproofed</td>
<td>Dense, gummy crumb</td>
<td>Underproofed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dense crumb, tunneling</td>
</tr>
<tr>
<td>Underproofed</td>
<td>Dense areas and giant holes</td>
<td>Spongy crumb and caverns</td>
</tr>
<tr>
<td></td>
<td>Pyramidal Shape with tunneling</td>
<td></td>
</tr>
<tr>
<td>Nicely Proofed</td>
<td>“Open, Irregular Crumb”</td>
<td>Nicely Proofed</td>
</tr>
<tr>
<td></td>
<td>“Molten Crumb”</td>
<td>“Wild Crumb”</td>
</tr>
<tr>
<td>Fully Proofed</td>
<td>Somewhat Tight Crumb</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Slightly Overproofed</td>
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<tr>
<td></td>
<td></td>
<td>Nice crumb but losing shape</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Significantly Overproofed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dense crumb and flat shape</td>
</tr>
</tbody>
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