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Bread Faults, Causes And Remedy

A thorough knowledge about raw material and its functions, adequate understanding of bread making procedure, control of temperature and humidity at different stages of bread making and above all personal skill and experience of baker goes a long way in avoiding faults in bread. There are a number of factors which are responsible for creating faults in bread.

Major factors which adversely influence the quality of bread are:

- Inadequate gluten in flour
- Misappropriate quantities and inferior quality of raw material
- Poor diastatic activity of flour
- Improper time and temperature of fermentation, proofing and baking
- Wrong methods of manipulation of dough *i.e.* knocking-back, cutting and moulding
- Inadequate cooling of bread
- Improper storage of bread and
- Lack of knowledge about the principles of hygiene.

The following are some of the major faults in bread:

Volume: Volume of the bread is the outcome of adequate conditioning of gluten and sufficient gassing power of the dough at the time of baking.

A small volume of bread may be due to

- Tight dough
- Little yeast and fermentation time
- Low temperature
- Under proofing
- Lack of diastatic activity
- Bran contamination
- Under mixing or over mixing

Excess volume can be due to

- Over fermentation
- Lack of salt in formula
- Excessive yeast and proofing time
- Loose moulding
- Lack of temperature in oven or cool oven
- If yeast is added in excess, it will consume more of sugar and bread will be light and pale brown.

- Very high temperature during baking
- Too long intermediate proof
- Addition of excess of salt
- Use of weak flour
- Use of less amount of shortening

- Insufficient temperature will cause lack of crust colour
- Insufficient humidity during proofing
- Under baking
- Oven temperature is low
- Poor diastatic activity of flour
- Old dough

Crust

Colour: Dark crust colour shall be too dark due to addition of more sugar or milk in the formula, over baking, high oven temperature or excessively fermented and conditioned old dough

Texture: The crust of bread should be crisp and should easily break but if the crust becomes tough and is not easily pulled, it is leathery. It is due to insufficient conditioning of gluten or if crust absorbs lot of moisture.

Blisters under the crust can be due to

- Over proofing
- Excessive steam or humidity in proof box
- Improper handling during baking
- If bread is baked in excessive humidity
- Moulding under pressure or tight moulding

Under above situations, the moisture deposits on the surface of bread. Due to this increase in moisture content, the gluten of the affected spots acquires more stretchability and forms blisters under pressure of expanding gas during baking. Sometimes if moulding is under pressure or it is tight, some air bubbles will be entrapped under thin film of gluten. These air bubbles will expand during proofing and cause blisters during baking.

Very thick crust:

- Too thick crust can be because of:
- Use of less amount of shortening in the formula
- Less sugar in the formula
- Less moisture during proofing
- Low oven temperature
- Over baking

Flinty crust or shell tops

Sometimes crust of bread is hard and breaks like an egg shell called as flinty crust. This is generally with strong wheats where the flour is insufficiently fermented. Other factors for this fault are stiff dough formation, too young dough, inadequate pan proof and excessive top heat in oven.

Wild break

A smooth break shred is desirable. If the gluten is not adequately conditioned during fermentation, the top crust instead of rising gradually will burst open under pressure of expanding gas. Insufficient proofing of bread and excessive heat are likely to give wild break.

Sticky crumb

It may be due to sprout damaged wheat flour if it is proved or baked in excessive humid conditions and under baked. Rope disease also causes sticky crumb.

Crumbliness

When the dough is adequately fermented, it gives elasticity to bread crumb otherwise the bread crumb will break into small fragments while slicing called crumbliness. It may be due to:

- Too slack or tight dough
- Excessive use of fat
- Low salt content
- Excessive use of mineral improvers.

Holes and tunnels in bread

If for any reason gluten strands break during proofing or baking, a chain reaction starts and neighbouring gluten strands will also break. It may be due to:

- Use of weak flour
- High yeast content in formula
- Improper dispersion of ingredients
- Too hot oven base
- Undermixing or overmixing
- Unbalanced formula
- Young (insufficient fermentation and conditioning) or cold dough
- Excessive dusting of flour
- High temperature during proofing
- Over proofing

Bread shape

Irregularity

Loose moulding or moulding with uneven pressure results in large air pockets in the folds and causes irregularity of shape. An even pressure and proper moulding is required.

Deficiency of Bloom

The most important factor for bloom is diastatic activity of flour. Sufficient sugar production and formation of dextrin during baking impart bloom. Malt can be added to improve bloom.

Colour Spots

It is due to carelessness on the part of baker, unclean moulds, handling of bread with unclean hands or baking gloves, unclean cooling racks, falling of soot from chimney into the oven etc. Pressure of un dissolved sugar crystals or dry milk pellets cause colour spots in bread.

Poor flavour and taste

These can be due to:

- Improper storage of raw ingredients used
- Poor quality ingredients
- Off-flavoured ingredients
- Unfermented or overfermented dough
- Use of excess of salt
- Old dough (fermented and conditioned for too long)
- Dirty moulds or pans
- Underbaking or overbaking
- Cooling of bread under unsanitary conditions.

Condensation marks

If the bread is **not** allowed to cool properly before wrapping, some water vapors will deposit in the crumb causing dark patches. The bread should be thoroughly cooled before packing.

Poor Keeping Quality

This may be due to:

- Poor quality ingredients
- Improper storage of ingredients
- Too lean formula
- Stiff dough
- Old dough (fermented and conditioned for too long)
- Over proofing
- Low oven temperature
- Bread cooled too long before wrapping

Ropy Bread

If the dough gets contaminated with *B. mesentericus*, bread ropiness is caused. The spores of these bacteria are not killed by heat during baking. A sticky, gummy material which can be pulled into threads develops in the centre of the loaf 1 to 3 days after baking. The bread also develops an off-flavour. . An analysis of the various causes as mentioned above can help the baker to understand the reason of a particular fault. By the process of elimination, then he can rectify the defect.

Staling Of Bread

If the bread is stored for a number of days, the crust and crumb stale and result in spoilage.

Crust Staling

Initially the crust is relatively dry, crisp and brittle. Upon staling it becomes soft and leathery. It loses its original aroma and flavour. An off-flavour develops. During crust staling, moisture from the crumb is transferred to the crust and due to hygroscopic properties; the crust absorbs moisture and becomes soft and leathery. The use of wax paper in wrapping favours the crust staling as it prevents moisture loss from the crust.

Crumb Staling

Due to loss of moisture, the crumb becomes hard and more crumbly. Flavour gets deteriorated. Staling is associated with the gradual and spontaneous aggregation of the amylopectin giving rise to crystalline structure. This aggregation of amylopectin is less firm than that involved in the retrogradation of amylose and can be reversed by warming the bread to about 50°C. Bread stored at low temperature (0°C) hardens to a greater extent than that stored at higher temperature (40-45°). But the bread stored at high temperature develops an off-flavour and the crumb turns brown.