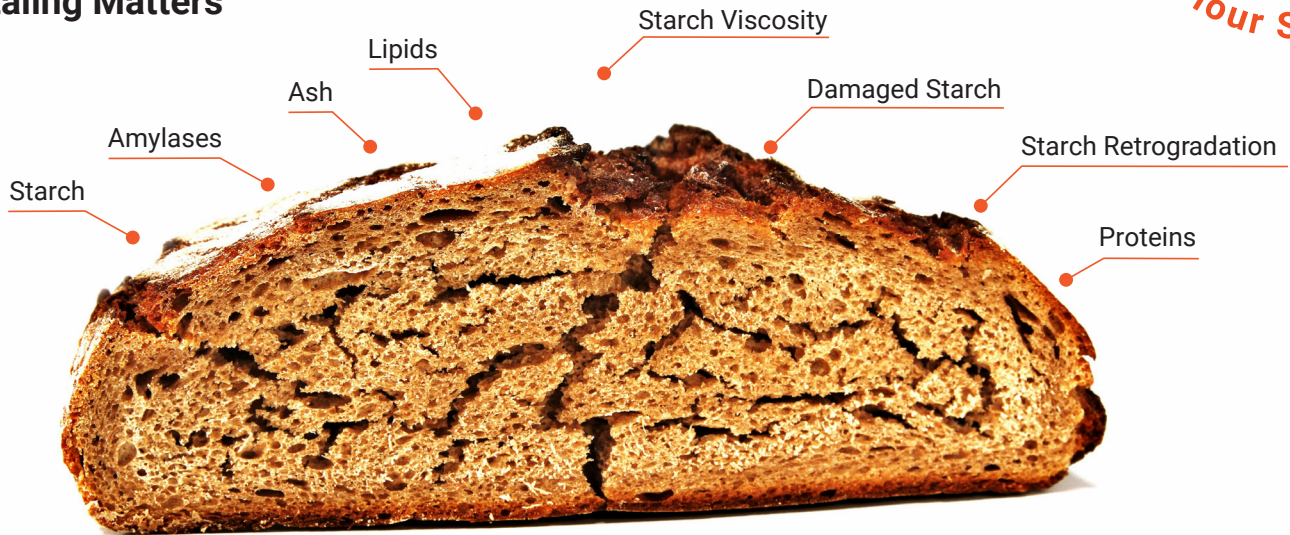


Why Staling Matters



• **Texture and Freshness:** Staling makes baked goods dry, firm, and less appealing.

• **Consumer Satisfaction and Brand Loyalty:** Short freshness disappoints customers and drives them to competitors.

• **Impact on Taste:** Loss of moisture dulls flavors and aromas.

• **Crumb Structure and Appearance:** Fresh, open crumbs collapse into dense, uneven textures.

• **Moisture Redistribution:** Water moves from crumb to crust, accelerating staling.

• **Shelf Life and Product Waste:** Faster staling shortens shelf life, increases waste and cost.

• **Storage and Packaging:** Proper packaging slows staling and preserves freshness.

• **Quality Control and Consistency:** Monitoring staling highlights formulation or process issues.

• **Consumer Expectations and Product Innovation:** Modern consumers expect longer-lasting freshness, driving innovation in recipes, enzymes, and packaging.

Key Flour Components Affecting Staling

Key Flour Components	Contribution to Staling	Mechanisms
Starch Retrogradation	24%	Occurs when gelatinized starch molecules recrystallize during storage, More gelatinization => faster staling. Less gelatinization => slower staling.
Proteins	20%	Strong gluten network maintains softness & moisture.
Damaged Starch	18%	Absorbs more water, increasing initial softness but also accelerates retrogradation that reduces shelf life, and may promote microbial growth.
Amylase (Enzyme Activity)	18%	Breaks starch into sugars, reducing retrogradation and extending shelf life; also boosts flavor & browning.
Ash Content (Minerals)	9%	Moderate levels help shape; excess weakens gluten.
Lipids	9%	Aid gluten lubrication; too little causes tearing & uneven puffing.
Starch Native	2%	Binds moisture; too much leads to microbial growth or softening.

 Consistent Impact Across Most Products

 Impact Varies Significantly by Product Type

How Flour Components impact Staling of Different Products ?

Staling	Starch (Native)	Starch Retrogradation	Damaged Starch	Proteins	Amylase (Enzymatic Activity)	Ash Content (Minerals)	Lipids
Noodles		3	2	2	2	1	2
Flat Bread		3	2	2	3	1	1
Crackers		3	2	2	2	1	1
Pan Bread		3	2	2	2	1	1
Wafer	2	2	2	2	2	1	1
Wheat Tortilla		3	2	3	2	1	1
Baguette		3	2	3	2	1	1
Hamburger Bun		3	2	3	2	1	1
Pizza Crust		3	2	2	2	1	1
Sponge Cake		3	2	3	2	1	1
Biscuit	1	3	2	1	2	1	1
Croissant		3	2	2	2	1	1
Steam Bread		3	2	2	2	1	

3: Strong Impact

2: Average Impact

1: Low Impact

Explore the Back to Flour Series
Connecting Flour Components With Bakery Product Excellence.
- Click here -

KPM Equipment for Monitoring These Key Flour Components



SpectraStar



Alveograph



Mixolab



SDmatic



Rheo F4