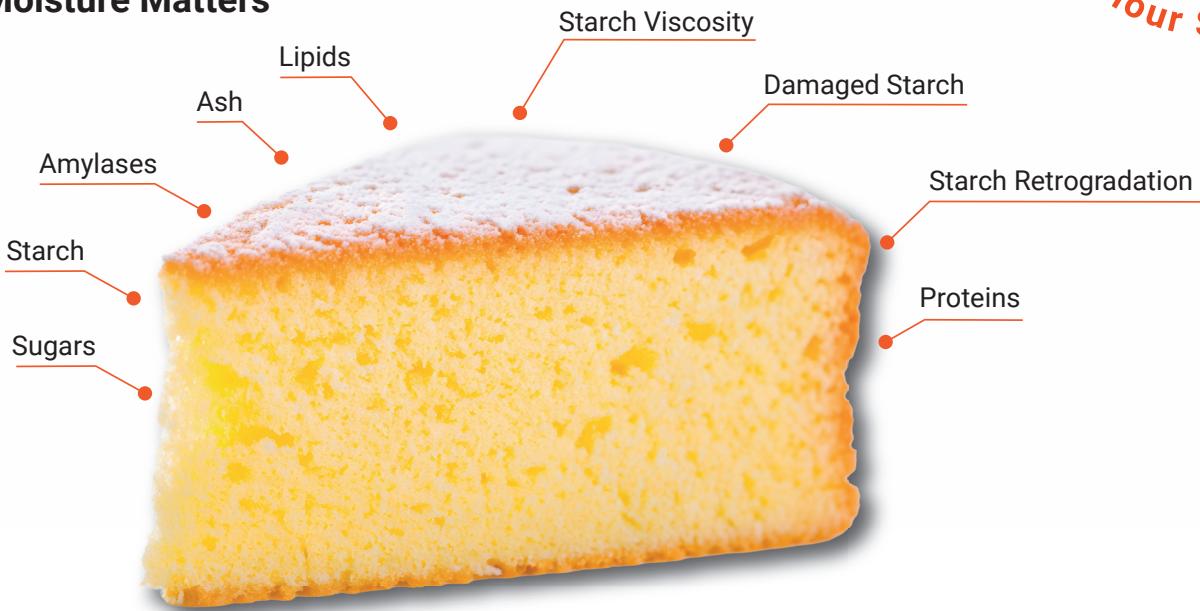


## Why Inner Moisture Matters



- Texture and Tenderness:** Moisture defines softness and crumb quality. Too little makes products dry and crumbly.
- Freshness and Appeal:** Proper moisture slows staling and maintains appeal in bakery products.
- Shelf Life and Storage:** Balanced moisture prevents drying and spoilage, helping preserve flavor and extend shelf life.

- Crumb Structure and Mouthfeel:** Inner moisture shapes the crumb structure and creates a melt-in-your-mouth sensation.
- Flavor and Richness:** Inner moisture enhances buttery, sweet, or savory notes; dryness dulls taste.
- Bakeability and Dough/Batter Behavior:** Ensures proper dough handling and stretching; too dry = stiff, too wet = sticky

- Gluten Development and Structure:** Activates proteins for elasticity and light texture; too little moisture = dense results.
- Preventing Overbaking:** Moisture helps control baking, reducing the risk of dryness.
- Baking Technique and Ingredient Balance:** Reflects the harmony of wet and dry ingredients in the recipe, ensuring proper interaction and consistent texture in the final product.

## Key Flour Components Affecting Inner Moisture

| Key Flour Components      | Contribution to Inner Moisture | Mechanisms   |
|---------------------------|--------------------------------|--|
| Damaged Starch            | 19%                            | Absorbs more water, increasing dough's water-holding capacity and a moister crust.       |
| Proteins                  | 17%                            | Gluten network influences moisture retention; choice depends on desired product texture. |
| Starch Viscosity          | 16%                            | Starch gelatinizes during baking, trapping moisture and supporting crumb structure.      |
| Amylase (Enzyme Activity) | 15%                            | Breaks down starch into sugars, releasing water and promoting balanced hydration.        |
| Starch (Native)           | 8%                             | Absorbs 40–50% of its weight in water, supporting moisture retention.                    |
| Lipids                    | 8%                             | Form a barrier, helping maintain softness and moisture.                                  |
| Ash Content (Minerals)    | 7%                             | Binds moisture; too much leads to microbial growth or softening.                         |
| Starch Retrogradation     | 6%                             | Recrystallizes during cooling/storage, leading to moisture loss and staling.             |
| Sugars                    | 4%                             | Bind water, softening crumb and delaying staling.  |

Consistent Impact Across Most Products

Impact Varies Significantly by Product Type

## How Flour Components impact Inner Moisture of Different Products ?

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

3: Strong Impact

2: Average Impact

1: Low Impact

Explore the Back to Flour Series  
Connecting Flour Components With Bakery Product Excellence.  
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## KPM Equipment for Monitoring These Key Flour Components



SpectraStar



Alveograph



Mixolab



SDmatic



Rheo F4