

BAKING PRODUCTS: HOW IMPORTANT IS ASH CONTENT AND HOW TO MEASURE IT?

What is Ash Content?

Ash in wheat flour refers to the **mineral** content that remains after burning a sample of flour at high temperatures (typically 550–600°C). It represents the amount of **bran** present in the flour, which directly affects its nutritional value, color, and baking properties.



Ash Content and Flour Types

Flour Type (US Classification*)	Ash Content (%)	Characteristics
Cake Flour	0.35% – 0.45%	Very refined, soft, low mineral content
Pastry Flour	0.40% – 0.50%	Slightly more bran than cake flour
All-Purpose Flour	0.45% – 0.55%	Balanced for general baking
Bread Flour	0.50% – 0.70%	Higher mineral content, stronger dough
Whole Wheat Flour	1.40% – 1.80%	Contains entire bran, and endosperm

* Classification based on the US system (usage-based), for reference only. Ash content ranges vary by country

Higher ash content means the flour contains more **bran**, making it more nutritious but also darker in color. **Lower ash content** indicates more refined flour, which is lighter in color and softer in texture.

Why Is Ash Content Important?

- ✓ **Baking Quality** – High ash flour (whole wheat) absorbs more water, creating firmer dough, while low ash flour (cake flour) produces softer textures.
- ✓ **Nutritional Value** – More minerals = higher fiber and vitamin content.
- ✓ **Color and Texture** – Low ash flours yield lighter-colored, softer baked goods; high ash flours make darker, denser products.
- ✓ **Standardization** – Flour mills use ash content to classify and control flour consistency for commercial baking.

Ash content in wheat flour is a key indicator of refinement, mineral content, and baking performance.

Why Should We Care?

Ash content (Bran) is affecting key baked product characteristics such as Color, Size & Shape but also Staling (Shelf life) between others. It is impacting all baked products, with the most sensitive products being Noodles (color, surface) and Biscuits (size, shape, and more).

How To Measure It?

- Ash Content - **SpectraStar™**
- Impact On Dough Properties **Alveolab®**
- Whole Wheat Protocol & **Mixolab®**
- Impact On Proofing **Rheo F4**
- Gas Production & Retention

Ash Conent Impact On Baked Products Characteristics

The numbers in the table represent the strength of the impact of each **COMPONENT** on the **CHARACTERISTICS** of various baked products:

- **3 = Strong impact** / **2 = Medium impact** / **1 = Low impact**
- The Impact Factor in rows indicates how strongly a COMPONENT affects a specific CHARACTERISTIC.
- The Impact Factor in columns shows how strongly a COMPONENT influences a particular BAKED PRODUCT.

	Noodles	Flat Bread	Cracker	Pan Bread	Wafer	Wheat Tortilla	Baguette	Hamburger Bun	Pizza Crust	Sponge Cake	Biscuit	Croissant	Steamed Buns	Impact Factor
Color	2	1	2	1	1	2	1	1	1	1	2	1	2	46%
Size & Shape	1		2	2	2	1	2	1	1	1	2	1	2	46%
Volume/Rise	1								1	1	2	1	2	23%
Surface	2			2		2			1	1	2	2	2	31%
Scoring											2			0%
Puffing		1										1		5%
Thickness	1	2			2	1	1		2					23%
Crispsness	1		2		2		1		1		1	1		23%
Softness						2							2	10%
Texture	1		1			1					1			10%
Elasticity	1													3%
Stickiness	1	1												5%
Flexiblity		1				1								5%
Chewiness	1	1				1			1					10%
Springiness			1				1	1		1			1	13%
Crumb Texture		1		1			1	1	1	1		1	1	21%
Flakiness			2								2	1		13%
Crumbling				1	2	2					2	2		23%
Slicing					1				1					5%
Moisture		1	1	1	1	1	1	1	1	1	1	1	1	31%
Cooking	1													3%
Water Abso.	1		1	1	1	1	1	1	1	1	1	1	1	3%
Staling	1	1	1	1	1	1	1	1	1	1	1	1	1	33%
Sogginess						1	1		1	1		1		13%
Impact Factor	21%	14%	17%	17%	19%	17%	15%	11%	15%	15%	21%	14%	19%	