

What is Amylases (Enzymes)?

Amylases are **enzymes** naturally found in wheat flour that plays a key role in the **bread-making process**. They help break down **starch** into simpler **sugars**, which yeast can use for **fermentation**, leading to a better rise, improved texture, and enhanced flavor in baked goods.

There are two main types of amylase enzymes in wheat flour:

1. Alpha-Amylase

- Breaks down starch into **shorter chains of sugars (dextrins)**.
- Works at higher temperatures, helping during baking by improving crust color and texture.
- Important for yeast activity in dough.

2. Beta-Amylase

- Further breaks down dextrins into **maltose (a simple sugar)**.
- Provides more fermentable sugars for yeast, leading to better **flavor** and **softness** in bread.



Why Are Amylases Important in Baking?

- ✓ **Fermentation Support** – Provide yeast with fermentable sugars, improving the rise and texture of bread.
- ✓ **Crust Browning** – Contribute to the **Maillard reaction**, enhancing crust color and flavor.
- ✓ **Dough Handling** – Improve dough extensibility and softness.
- ✓ **Moisture Retention** – Help create a softer, longer-lasting crumb in baked goods.

How To Measure It?

- Impact On Final Products: **Vision**
- Impact On Dough **Mixolab®** - Area C2-C4
- Impact On Proofing **Rheo F4** - Gas Production

Natural Vs. Added Amylases

- **Natural Amylase:** Wheat flour contains amylases naturally in small amount. However, its activity varies depending on wheat quality.
- **Added Amylases:** In commercial baking, **fungal or bacterial amylases** are often added to standardize dough performance, improve shelf life, and enhance texture.

Amylases are key enzymes in wheat flour that improve **bread fermentation, texture, and flavor** by breaking down starch into sugars. Whether naturally present or added, they play an essential role in producing high-quality baked goods.

Amylases (Enzymes) 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		3	3	3	3	3	3		3	3	3		82%
Size & Shape	2			3	3	3	3	3	3	2	1	2	3	72%
Volume/Rise	3						1	3	3	1	3	3	2	49%
Surface	3			3	3		3			2			3	44%
Scoring							1							3%
Puffing		2										2		10%
Thickness	3	1		2	2	1	1		2					31%
Crispness			1		1		1		1		1	2		18%
Softness	2					2		1					2	18%
Texture	2		2		2	2					2			26%
Elasticity	2													5%
Stickiness	2	2												10%
Flexibility		3												8%
Chewiness		2				2		2	3					23%
Springiness				3			3	3		2			2	33%
Crumb Texture		3		3			2	3	3	2		2	3	54%
Flakiness			2								2	2		15%
Crumbling			2	3	3				2					26%
Slicing				3				2						13%
Moisture		3	2	2	2	2	2	2	2	2	2	2	2	64%
Cooking	2													5%
Water Abso.	2													5%
Staling	2	3	2	2	2	2	2	2	2	2	2	2	2	69%
Sogginess					2	2		2	2		2			26%
Impact Factor	38%	26%	19%	38%	32%	26%	31%	36%	33%	21%	25%	28%	31%	