BAKING PRODUCTS: HOW IMPORTANT IS DAMAGED STARCH AND HOW TO MEASURE IT?

IMPACT FACTOR: 88%

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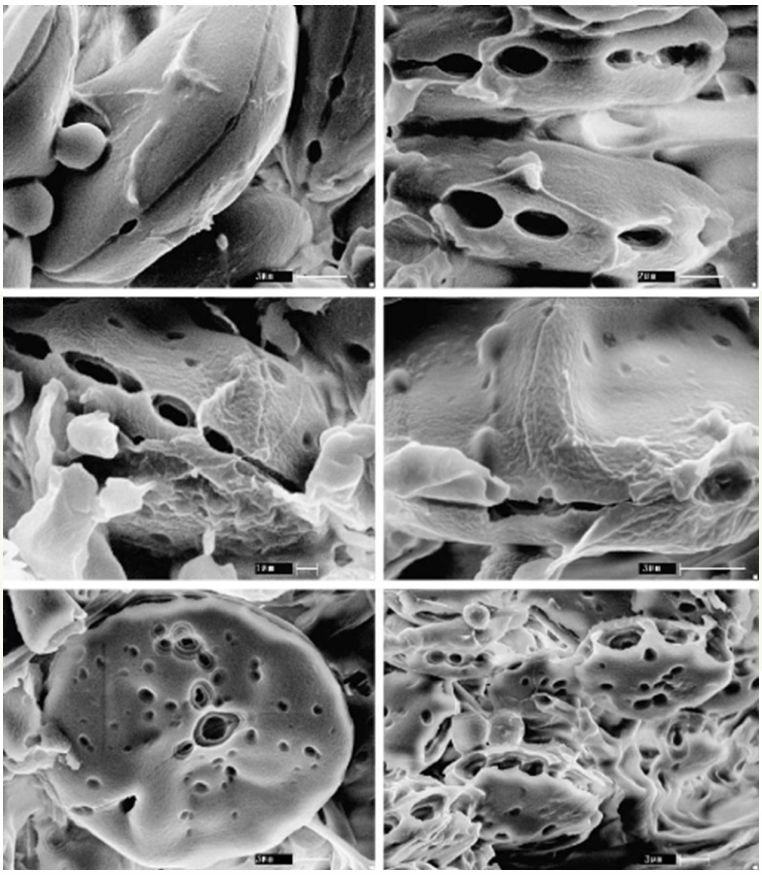
What is Damaged Starch ?

Damaged Starch in wheat flour refers to starch granules that are physically or mechanically broken during the milling process. These broken granules have a higher water absorption capacity and increased susceptibility to enzymatic action, which significantly affects the **dough properties, fermentation, and final baked product quality.**



Wheat flour damaged starch plays a crucial role in **water absorption, enzymatic activity, and baking performance.** While some damage is beneficial for fermentation and texture, excessive damaged starch leads to sticky dough and poor-quality bread. Controlling milling conditions helps maintain **optimal starch functionality.**

Why Should We Care ?

Damaged Starch **strongly** impacts most of the baked good characteristics. It is particularly affecting product appearance (color, volume...) but also more "hidden" characteristics such as texture, chewiness...it also participate to the product shelf life and crumbling.

ALL baked products are impacted by the level of damaged starch.

How To Measure It?

- Final product characteristics: **Vision Inspection**
- Damaged Starch Quantity: **SDmatic**
- Impact on Water Absorption: **Mixolab** or **Consistographe**
- Impact on proofing : **Rheo F4** (Gas production)
- Impact on dough handling properties **Alveolab®**

Damaged Starch 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	Crackers	Pan Bread	Wafer	Wheat Tortilla	Baguette	Hamburger Bun	Pizza Crust	Sponge Cake	Biscuit	Croissant	Streamed Buns	Impact Factor
Color	3	3	3	3	3	3	3	3	3	3	3	3	3	100%
Size & Shape	3		3	3	3	3	3	3	3	2		2	3	79%
Volume/Rise	3						3	3	3	3	3	3	3	62%
Surface	3			2	3	3	3			3			3	51%
Scoring							2							5%
Puffing		2										3		13%
Thickness	3	2		2	2	2	2		2					38%
Crispness	2		2		2		2		3		2	2		38%
Softness	3					3		3					3	31%
Texture	3		3		3	3					3			38%
Elasticity	2													5%
Stickiness	3	3												15%
Flexibility		3				3								15%
Chewiness	3	3				3		3	3					38%
Springiness										2			2	10%
Crumb Texture		3		2			2	3	2	2		2	3	49%
Flakiness			2								2	2		15%
Crumbling			3	3	3					3	3			38%
Slicing				2				2						10%
Moisture		2	3	3	3	3	3	3	2	3	3	2	2	82%
Cooking	2													5%
Water Abso.	2													5%
Staling	2	2	2	2	2	2	2	2	2	2	2	2	2	67%
Sogginess					2	2		2	2		2			26%
Impact Factor	51%	32%	29%	31%	36%	42%	35%	38%	35%	32%	32%	29%	33%	