

Delicious rye bread that stands out

Did you know that new product launches of breads made with rye flour have more than doubled since 2011?*



Healthy. Delicious. Consistent. Part of the global trend towards healthier foods and new interest in ancient grains, rye bread has never been more popular. Consumer studies** show a clear preference for rye bread that is softer, more elastic and of consistent quality.

The value-focused consumer wants it all – but meeting these expectations isn't easy. Bakeries must produce rye breads that consistently have the same soft, elastic, moist texture and aerated crumb structure that consumers have come to expect.

Fortunately, Novozymes solutions make it easier to meet consumer expectations and achieve a competitive edge.

Softer and more elastic bread during storage

Novozymes' fresh-keeping enzymes ensure excellent crumb softness and melting properties in rye bread, with better softness, moistness and eating properties throughout storage. A unique feature of Novozymes' solutions is the ability to perform in low pH rye bread made with sour dough.

Improved dough stability and volume

Novozymes' dough conditioning enzymes increase bread volumes, and provide a finer, more regular crumb structure. This helps counter the lower volume and higher density typical of rye breads.

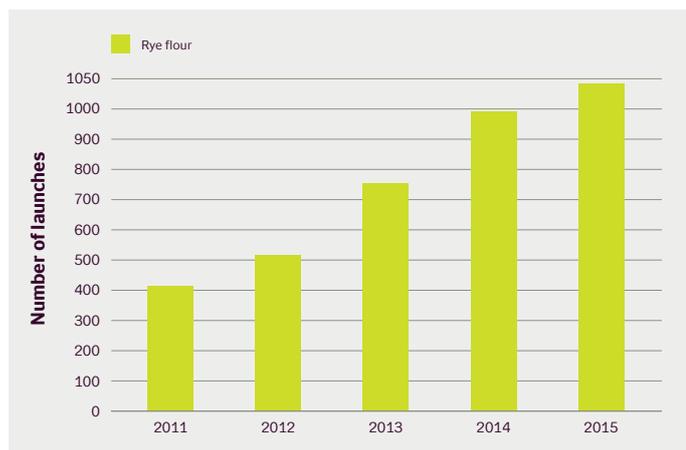
Better machinability

Novozymes' gluten-strengthening enzymes improve dough stability and provide dry dough conditions for better handling. With enzymes, you can achieve better machinability and oven spring, even when using high ratios of rye flours in the recipe.

*Source: Mintel Global New Product Database 2016

** Source: Novozymes Consumer Insight Studies 2010 & 2011, perceptions of rye bread by over 6000 consumers in eight countries

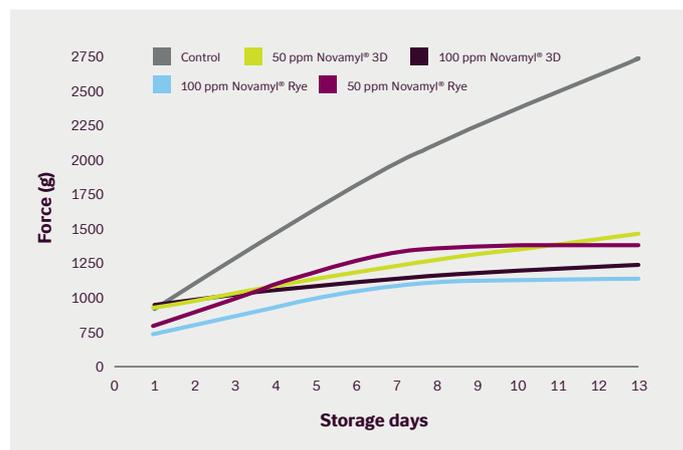
Interest in rye bread is rising globally



The number of launches of new packaged bread products containing rye flour has risen consistently for five years.

*Source: Mintel Global New Product Database 2016

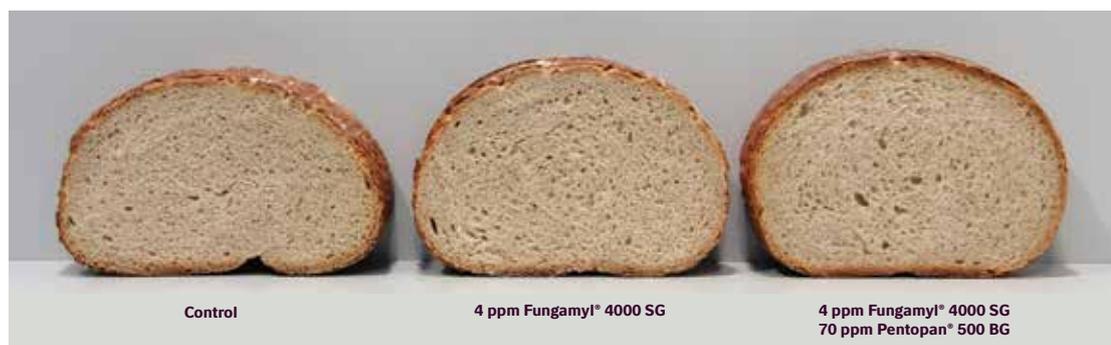
Softer rye bread with enzymes, compared to control, during storage



Crumb softness profile with 50 ppm and 100 ppm Novamyl® Rye or Novamyl® 3D vs. a control during 13 days shelf life. The test bread was made with 50/50 rye/wheat flours including sour dough and a pH of 4.8 in the final bread.

The chart above shows crumb softness over time. Breads with enzymes are softer than the control, and this effect increases over time and with higher dosages.

Better volume and crumb structure with enzymes



Dough-conditioning enzymes result in improved dough stability, bread shape and crumb structure. The bread is made with 50/50 rye/wheat flour blend.

Adding enzymes clearly improves volume and crumb structure in a 50/50 rye/wheat bread. In addition to improved stability, the bread shows a less dense, more fluffy crumb structure that gives the bread more pleasant eating properties.

Overview of Novozymes' solutions for rye bread

The Novozymes products on the right are recommended for application in rye bread. They are available in concentrated or standardized granulate form. It is recommended to add enzymes based on total flour used in the recipe.

Benefit	Product	Enzyme	Dosage
Softness Freshness Moistness	Novamyl® Rye BG Novamyl® 3D BG	Maltogenic amylase	50 - 100 ppm
Volume increase Crumb structure	Fungamyl® 4000 SG	Fungal amylase	2 - 12 ppm
Volume increase Crumb structure	Pentopan® 500 BG Panzea® BG	Hemicellulase / Xylanase	50 - 100 ppm 20 - 40 ppm
Dough stability Dough dryness	Gluzyme® 10000 BG Gluzyme® Mono 10000 BG	Glucose Oxidase	5 - 20 ppm

Overview of benefits, products and dosages for Novozymes enzymes to improve rye bread quality

Get ahead

Staying ahead of the dynamic food and beverage market requires the best technology and expertise to become even more flexible, efficient and profitable. With our solutions and know-how, Novozymes can support you on that journey. Let's transform the quality and sustainability of your business together.

It's the quality that counts

Staying Novozymes provides safe production strains, assessed and approved raw materials – under strict, controlled processes that have full traceability. We are your expert when it comes to monitoring, understanding and complying with local and global food legislation, and we continue to pursue key international food safety and quality certifications – so you and your customers can feel confident.



About Novozymes

Novozymes is the world leader in biological solutions. Together with customers, partners and the global community, we improve industrial performance while preserving the planet's resources and helping build better lives. As the world's largest provider of enzyme and microbial technologies, our bioinnovation enables higher agricultural yields, low-temperature washing, energy-efficient production, renewable fuel and many other benefits that we rely on today and in the future. We call it Rethink Tomorrow.

©Novozymes A/S. October 2016 · No. 2016-14555-01

Novozymes Switzerland AG

Neumattweg 16
4243 Dittingen
Switzerland

Tel. +41 61 765 6111
Fax +41 61 765 6333

Novozymes A/S

Krogshøjvej 36
DK-2880 Bagsvaerd
Denmark

Tel. +45 4446 0000