

Dishwash

Product application guideline

Novozymes Intensa[®] Core

Intensa[®] Core is a multi-enzyme solution that further boosts the performance of your amylase containing hand dishwash product.

Thanks to the excellent synergy between amylase and protease, Intensa[®] Core further reduces soaking time and scrubbing effort while delivering superior real-life soil removal. It thrives in water-rich detergents and is compatible with strong chelators to provide more formulation flexibility and consistent wash performance.

By providing visible difference in wash results that consumers can see clearly, Intensa[®] Core offers a new level of performance for your detergent.

Intensa[®] Core comes with Novozymes' unique Eivity[®] technology, which ensures consistent performance – every time.

Benefits

- 2nd generation enzyme for hand dishwash
- Boosts the performance of your amylase containing hand dishwash detergent
- Easily degrades complex, baked-on soils like cheese sauce and lasagna
- Removes starch and protein based soils
- Helps reduce soaking time and scrubbing effort
- Enables formulation with water-rich detergent
- Meets the need for in-depth cleaning – even at low temperatures
- Offers formulation flexibility
- Enables new claim categories and brand differentiation

Mode of action

Starch is a long-chained carbohydrate consisting of glucose molecules that are bound together by α -1.4-glycosidic bonds, while proteins are amino acids linked together by peptide bonds. During dish wash, Intensa® Core catalyzes the hydrolysis of these bonds, which leads to the decomposition of starch into soluble dextrans and oligosaccharides and protein into peptide bonds. This leads to solubilization of the peptides – either by simple dissolution or by available surfactants. Intensa® Core has no specificity or requirement for any amino acids on either side of the peptide bond. It is therefore ideally suited for a washing situation where numerous types of protein-containing soils are present. Unlike starch, dextrans and oligosaccharides are soluble in water and are therefore easier to remove from the dishes and cutlery once dissolved.

Test materials and methods

The boosting effect of Intensa® Core can be demonstrated on a very broad range of commercially available melamine tiles. The table below shows a subset homemade soils and commercially available tiles that will show a boosting effect of Intensa® Core.

Company	Tile number	Tile soil
CFT	DM-06	Baked cheese
CFT	DM-07	Spaghetti Bolognese
Knorr	NA	Cheese sauce
Debic	NA	Crème brûlée

Method recommended for measuring the performance of the hand dishwash detergent:

- 1) Soaking step: The tiles are soaked in a water bath with detergent solution to simulate soaking in a sink
- 2) Scrubbing step: Takes place with a TQC Abrasion scrubbing machine after soaking.

This instrument consists of an electrified mechanical device onto which a normal kitchen dishwashing sponge is mounted on a holding arm. During operation, the holding arm – and hence the sponge – is moved back and forth (correlating to one scrub) over a soiled tile in a reproducible uniform way for a given number of times. The sponge exerts a constant pressure on the soiled tile, resembling how a person could be cleaning the surface of a given soiled piece of kitchenware during a manual dishwashing process.

Performance boost

In figure 1, the soil removal effect of adding a protease and an amylase separately is seen on homemade baked cheese sauce. Here the boosting effect of the protease-based Intensa® Core is resulting in a significantly higher soil removal than the amylase or protease alone.

Baked cheese sauce

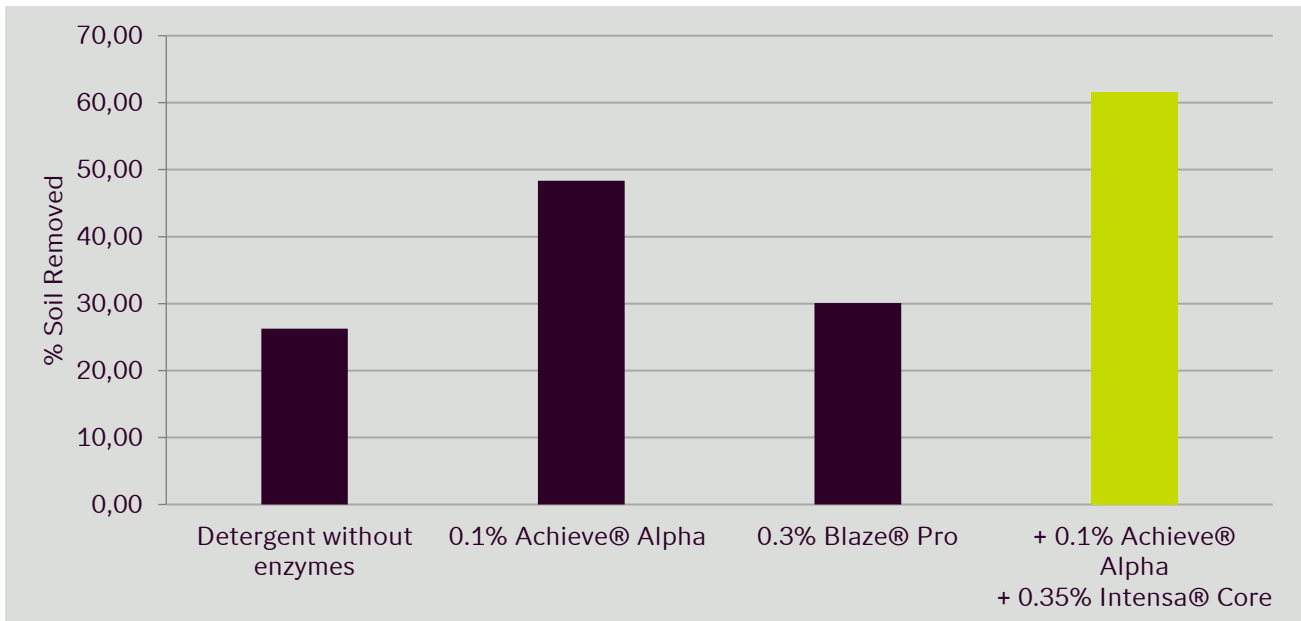


Fig. 1 Homemade cheese sauce from Knorr baked, 5g/L EU detergent, water: 15°dH, T= 45°C, Soak and rinse method. Soaking time 10 minutes.

Save scrubbing effort and time

To show the benefits of Intensa® Core, we've performed trials with different soaking times and number of scrubs.

In figure 2 below we can see Intensa® Core provides the same level of soil removal with significantly less number of scrubs – 24 scrubs vs. 32 scrubs.

Less scrubbing effort on Spaghetti Bolognese – melamine tile

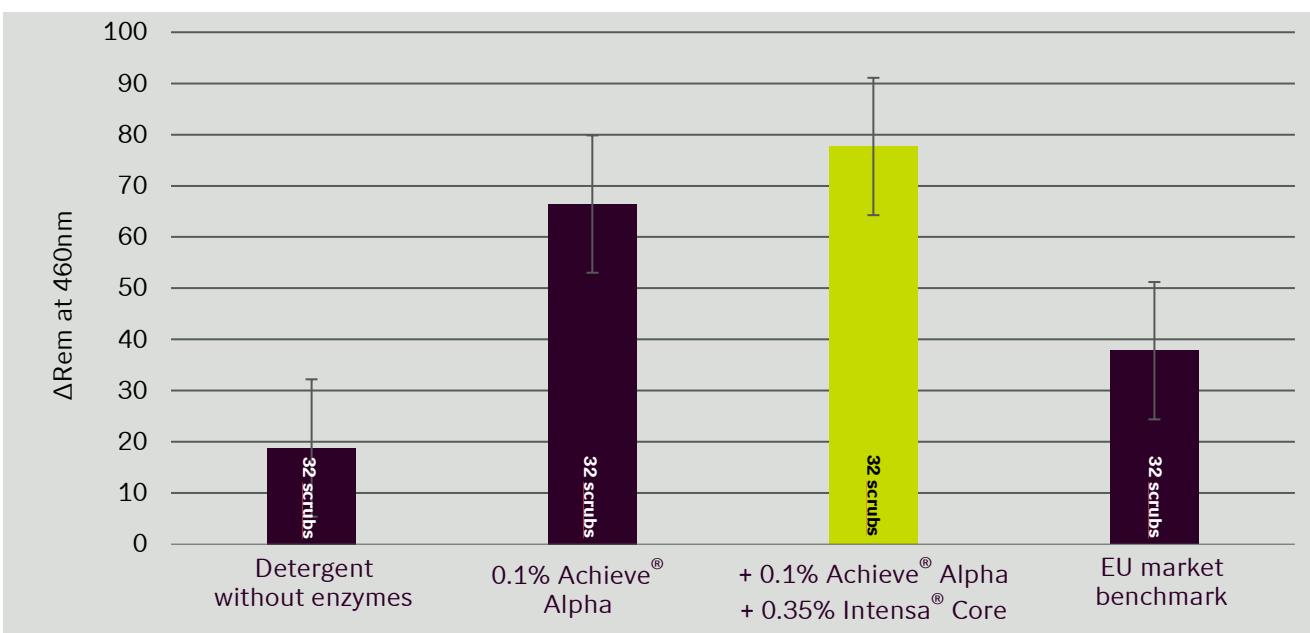


Fig. 2. DM-07 Spaghetti Bolognese EU detergent: 5g/L, 15°dH, 45°C, Soaking: 15 mins

Adding Intensa® Core to your amylase containing hand dishwash detergent significantly improves the performance and reduces the need for soaking. (figure 3).

Protease and amylase together prove a continuous, double powered boost!

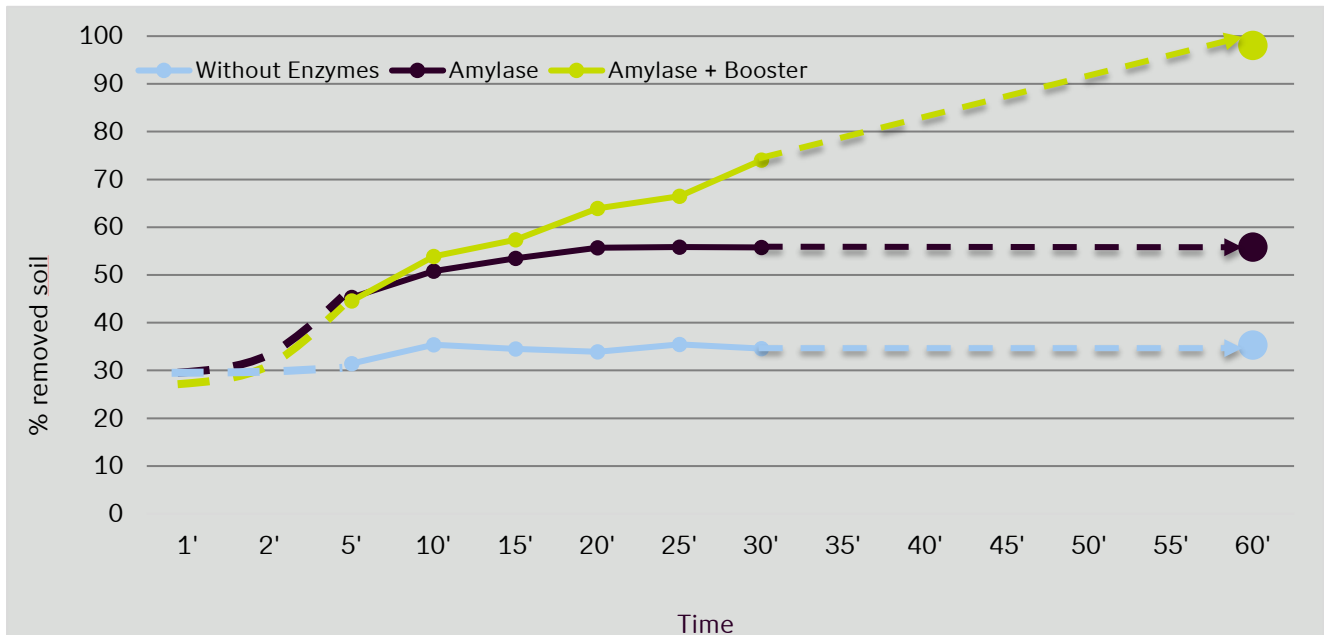
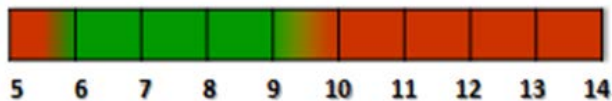


Fig. 3: Cheese sauce, homemade from Buitoni, soak and rinse

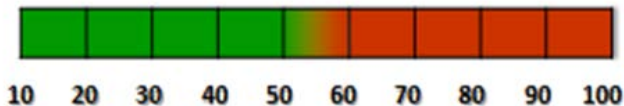
Optimum pH and temperature

Intensa® Core is recommended for use in dishwash solutions with a pH ranging from 6 to 9 and temperatures ranging from 10°C to 50°C. As the wash performance achieved depends on the actual washing conditions and detergent composition, Novozymes strongly encourages customers to verify Intensa® Core performance for a particular detergent and washing condition.

Optimum pH range



Optimum temperature range (°C)



Products

Information about Intensa® Core is available at the Customer Center (www.mynovozymes.com). Intensa® Core is available in a version suitable for all types of hand dish wash detergents both with and without strong chelators. Novozymes uses an automated procedure for measuring the standardized activity of Intensa® Core, which can be found at the Customer Center in the Analytical methods section.

Stability

Intensa® Core is an exceptionally stable amylase-protease booster in water-rich detergents. It is also suitable for formulations containing strong chelator(s).

Novozymes Global Technical Service team will be able to support you in securing the optimal storage stability of enzymes in liquid detergents.

Stability in detergent after 4 weeks at 37°C

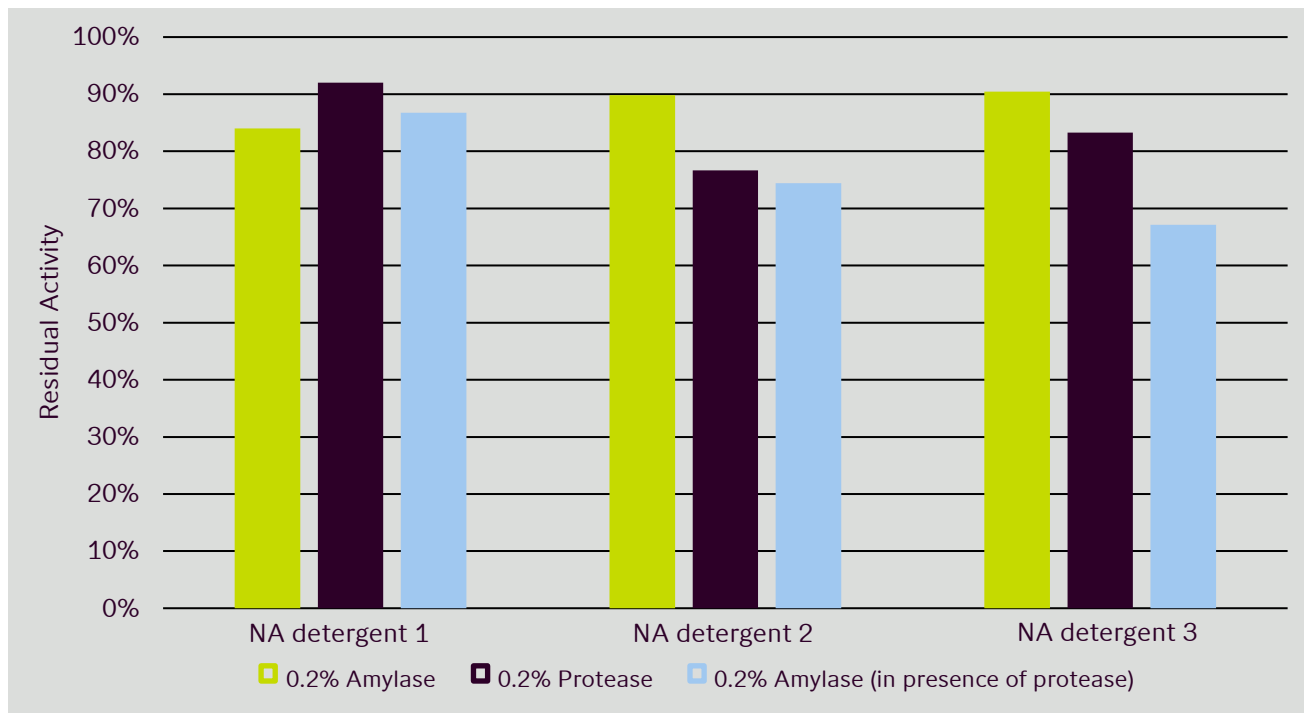


Fig. 4. Storage stability of Intensa® Core in detergent after 4 weeks at 37°C

Safety, handling and storage

Safety, handling and storage guidelines are provided with all products.

Contact our Global Technical Service team

By combining technical expertise with in-depth consumer insight, Novozymes offers customers the possibility of requesting technical assistance prior to, during and after application of any enzyme in detergents.

Our Global Technical Service team is committed to providing you with the highest level of technical service, and we are available in locations around the globe.

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.

Apr 30, 2017 - Luna No. 2017-06379-01

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