

Laundry

Product application guideline

Novozymes Medley®

Medley® is a suite of multi-enzyme solutions that have been carefully composed to meet diverse market needs and to cut through complexity.

The solutions simplify procurement and production for detergent manufacturers by delivering the enzymes you need in just one package. This means you can free up capital, gain higher processing control and get the best solutions for powerful detergents.

The Medley® solutions come with Novozymes' unique Evity® technology, which ensures consistent performance – every time.

Benefits

For your procurement:

- Free up working capital
- Improve inventory management
- Realize more savings

For your production:

- Gain higher processing control
- Reduce complexity
- Lower your investment need

For your product:

- Achieve consistent performance
- Address environmental concerns
- Add more power

Performance

The stain removal effect of Medley® solutions can be demonstrated on a very broad range of commercially available test swatches. The following table only shows a subset of stains that will respond to Medley® solutions.

Company	Swatch number	Swatch content	Medley® Essential	Medley® Pure	Medley® Brilliant	Medley® Flex	Medley® Glow
CFT	C-03/PC-03	Chocolate milk with carbon black – cotton - polyester/cotton	X	X	X		
	C-S-02	Cocoa – cotton	X	X	X		
	C-10	Pigment, oil, high milk content – cotton	X	X	X		
	C-S-37	Full egg with carbon black – cotton	X	X	X		
	C-S-01	Blood (aged) – cotton	X	X	X		
Swissatest	116/117	Blood/milk/ink – cotton - polyester/cotton	X	X	X		
Warwick Equest	WE5DASBWK (A.I.S.E. stain)	Sheep blood – double app – cotton	X	X	X		
	062KC	Grass, scrubbed – cotton	X	X	X		
	030KC	Chilli – cotton	X	X	X		
	113KC	Spaghetti sauce, tinned – cotton	X	X	X		
	025KC	Brown sauce – cotton	X	X	X		
	WE5IABFWKC (A.I.S.E. stain)	Carrot baby food, intense application – cotton	X	X	X		
	WE5TPWKC (A.I.S.E. stain)	Tomato puree – cotton	X	X	X		
CFT	C-S-28	Rice starch, colored – cotton	X	X	X		
Warwick Equest	P01KC	Tangerine – cotton	X	X	X		
CFT	C-H147	Jam, forest fruit – cotton	X	X	X		
	KC-H141	Pectin, not sugar - cotton	X	X	X		
Swissatest	013aKC	Banana – cotton	X	X	X		
Warwick Equest	WE5BBWKC (A.I.S.E. stain)	Cooked beef fat – cotton		X	X	X	
CFT	KC-S-62	Lard, colored – cotton		X	X	X	
	KC-H112	Beef fat + sudan red – cotton		X	X	X	
	KC-H113	Lard + sudan red – cotton		X	X	X	
	KC-H126	Vegetable oil with colorant – cotton		X	X	X	
	C-H009	Chocolate ice-cream – cotton		X	X	X	
	C-S-06	Salad dressing with natural black - cotton		X	X	X	
	C-S-73	Locust bean gum, with pigment – cotton		X	X	X	
Swissatest	165	Pudding – cotton		X	X	X	
Warwick Equest	136KC	Galaxy chocolate milk – cotton		X	X	X	
	M03KC	Vienetta dessert – cotton		X	X	X	

Table 1. Commercially available test swatches.

Company	Swatch number	Swatch content	Medley® Essential	Medley® Pure	Medley® Brilliant	Medley® Flex	Medley® Glow
Swissatest	221	Whiteness tracer – knitted cotton			X		X
WFK	10A	Whiteness tracer – standard woven cotton			X		X
	12AW	Whiteness tracer – cotton terry cloth			X		X
	20A	Whiteness tracer – polyester/cotton			X		X
	80A	Whiteness tracer – cotton knitwear			X		X
Swissatest	252	Cotton pilling monitor, strips with 4 colors			X		X

Table 2. Commercially available test swatches.

Medley® solutions give you all the enzymes you need in one container. Figure 1 is an overview of the five different liquid solutions.

Medley® solutions



Fig. 1. Overview of the five Medley® solutions:

- Medley® Essential targets the most common stains like blood, grass, various sauces and fruit stains
- Medley® Pure gives you the benefits of Medley® Essential and Medley® Flex, as well as the synergistic stain removal effects of mixing the two solutions
- Medley® Brilliant gives you the benefits of Medley® Essential and Medley® Flex, combined with whiteness, color and fabric care benefits
- Medley® Flex targets fatty and greasy stains as well as dressings and desserts
- Medley® Glow gives you improved whiteness, color and fabric care benefits

Figure 2 shows the wash performance of Medley® Essential, Medley® Flex and Medley® Pure. The enzymes in Medley® Pure are a compilation of the enzyme compositions of Medley® Essential and Medley® Flex. The graph shows that with Medley® Pure, you get a synergistic effect between the enzymes and achieve even higher stain removal than the summarized stain removal effects of Medley® Essential and Medley® Flex.

Example of stain removal benefits

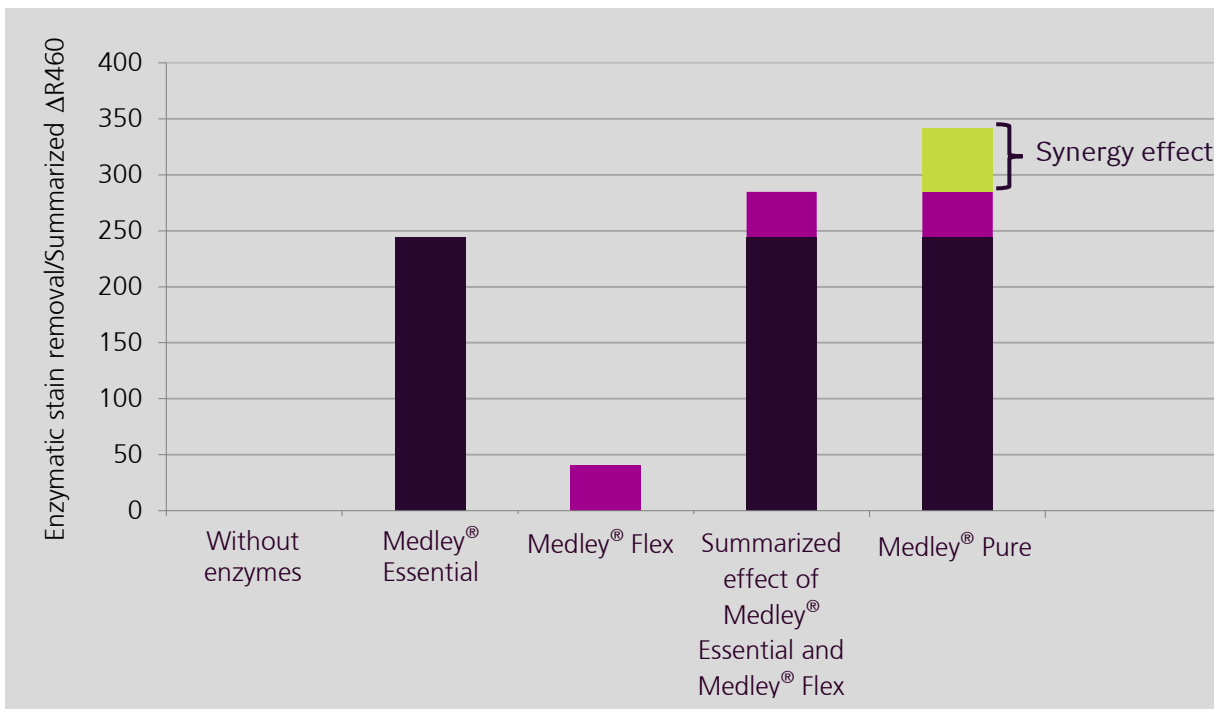


Fig. 2. Wash performance in a liquid European detergent using Medley® Essential, Medley® Flex and Medley® Pure. Wash conditions: 30°C, 15°dH, full scale European front loader. Summarized $\Delta R460$ of 14 A.I.S.E stains + 21 other consumer relevant stains.

Example of whiteness benefits

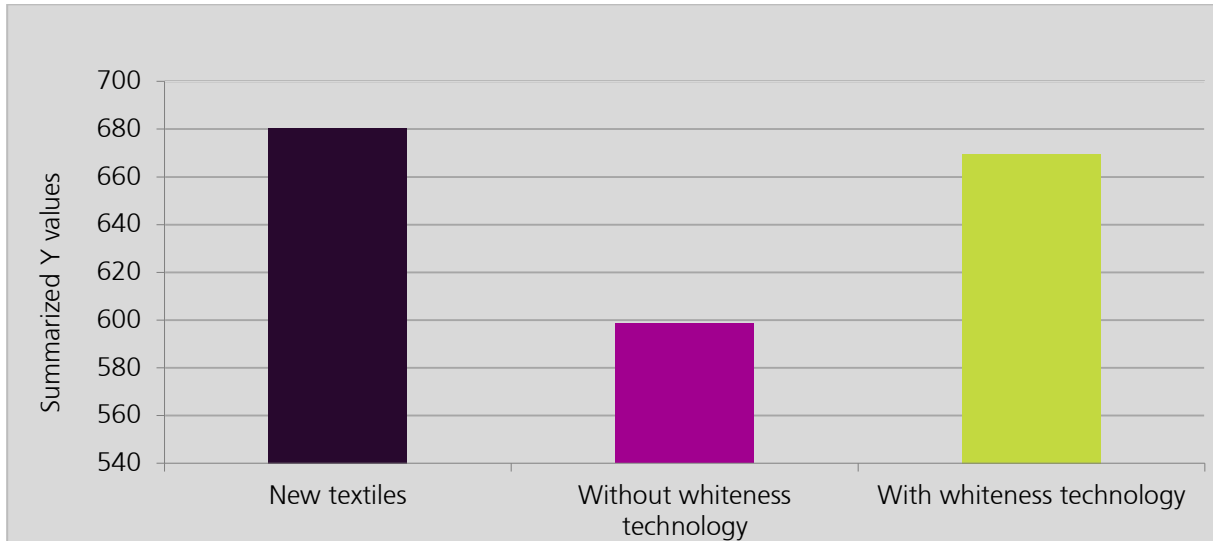


Fig. 3. Whiteness performance in a liquid European detergent using Medley® whiteness technology. Wash conditions: 30°C, 15°dH, WFK graying swatches, five wash cycles. Summarized Y-values of 8 cotton-rich textiles.

Figure 3 illustrates the performance of the two Medley® solutions that offer whiteness benefits: Medley® Glow and Medley® Brilliant. The results show that these solutions can keep the textiles almost as bright as new, even after washing under stressed conditions.

Medley® Glow and Medley® Brilliant also come with color and fabric care technology. Figure 4 and 5 shows that after 20 washes, the solutions that contain this technology achieve significantly better color clarity and significantly less fuzz on the surface of the fabric. This, in turn, makes the fabric softer.

Medley® Pure



Fig. 4. Without color and fabric care technology.

Medley® Brilliant



Fig. 5. With color and fabric care technology.

Usage

Recommended dosages are shown in table 3. However, these will vary from detergent to detergent and depend heavily on the washing conditions. Novozymes' Global Technical Service team is available to help you determine the right dosage for a particular detergent.

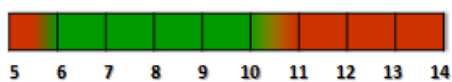
Solution(s)	Recommended dosage (%wt)
Medley® Essential	0.4 - 2.5
Medley® Flex	0.2 - 0.8
Medley® Glow	0.1 - 0.25
Medley® Pure, Medley® Brilliant	0.6 - 3.5

Table 3. Recommended dosage.

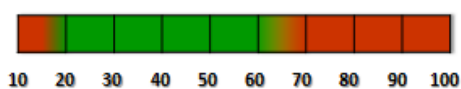
Optimum pH and temperature

Medley® solutions are optimal for detergents with a pH of 6-10 and a wash temperature ranging from 15°C to 60°C. Since the wash performance depends on washing conditions and detergent composition, Novozymes strongly encourages customers to verify the chosen Medley® solution's performance for a particular detergent and washing condition.

Optimum pH range



Optimum temperature range (°C)



Products

The Medley® solutions are available for liquid detergent formulations. You can find more information at the Customer Center (www.mynovozymes.com).

Stability in liquid detergents

All Medley® solutions come with a built-in stabilizer that inhibits the protease during storage so the enzymes stay active over time and consumers experience consistent wash performance. The inhibitor is a boron-free alternative to stabilizing with boric acid or using Novozymes' Ultra products.

Novozymes has tested wash performance with liquid detergent samples containing a Medley® solution by storing the detergent at 30°C for 8 weeks. The residual wash performance of these samples was calculated using the formula below, and the results are shown in figure 7.

$$\% \text{ residual wash performance} = \frac{\{ \sum R \text{ incubated sample}_{enzyme} - \sum R \text{ incubated sample}_{blank} \}}{\{ \sum R \text{ fresh sample}_{enzyme} - \sum R \text{ fresh sample}_{blank} \}} \times 100\%$$

Example of residual wash performance

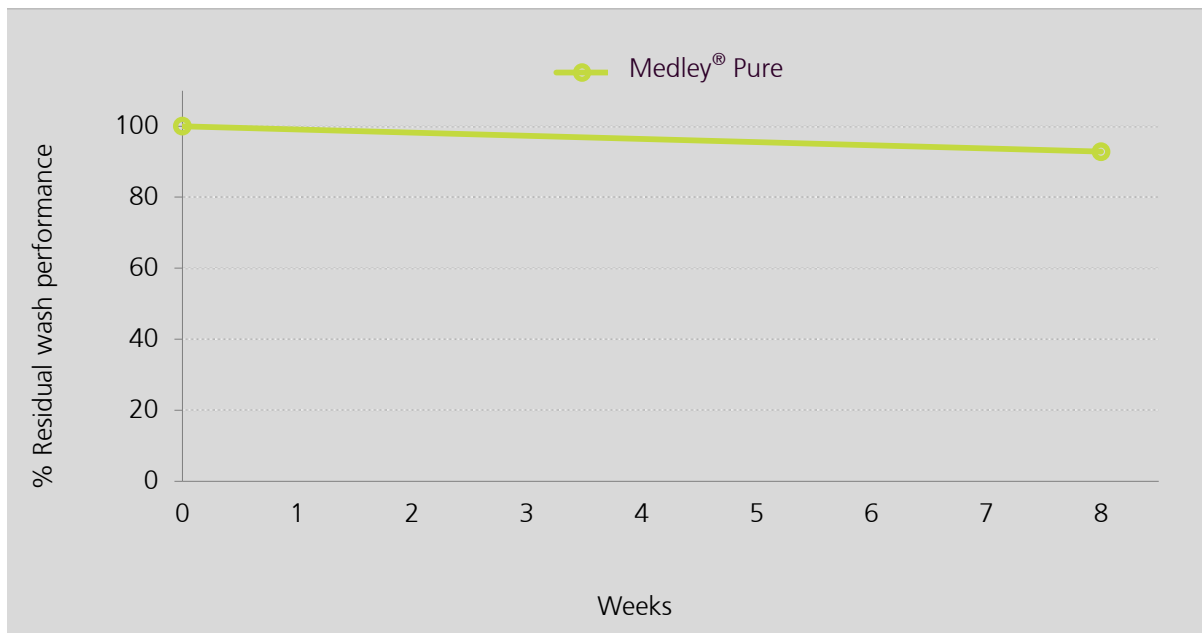


Fig. 7. Residual wash performance of Medley® Pure in a liquid European detergent stored at 30°C for 0 and 8 weeks.

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 different 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.

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