

## PREFER S 210

Amylase for use in liquid laundry products

### Introduction

PREFER S 210 is a premium liquid amylase for use in regular, concentrated and unit-dose laundry detergents. PREFERENZ S 210 is a highly efficient amylase that is very suitable to deliver the highest level of cleaning performance in a wide variety of markets that each are characterized by different washing temperatures, cycles, water hardness etc. This liquid amylase is designed to boost cleaning performance on tough starch based soils. Starches are present in many natural and processed foods, such as puddings, baby food, soups, sauces, gravies, and salad dressings. PREFERENZ S 210 hydrolyzes the insoluble starch found in these tough food stains into smaller oligosaccharides which can then be removed more easily from the fabric.

### Typical product characteristics/ properties

Product	PREFER S210
Min, activity [GSU/l]	297
Product form	Liquid
Appearance	clearBrown liquid
PH	7.5-8.5
Target specific gravity	1.05

### Storage and stability

Recommend to store refrigerated, not exceeding 10°C. Packaging must be kept intact, dry, and away from sunlight. This product is formulated for maximum storage stability. Specific product storage stability data is available upon request.

### Packaging

PREFER S 210 is available in different types of packaging. Please contact your sales representative for details.

### Composition

The liquid contains enzyme concentrate, excipient stabilizers and preservatives. Detailed composition data may be made available, please contact your sales representative for more information.

### Usage recommendations

### Application

PREFER S 210 is suitable for washing conditions ranging from cool (15°C) to hot (60°C). The optimal performance can be expected between pH 7 and pH 10. Results may vary dependent upon detergent composition.

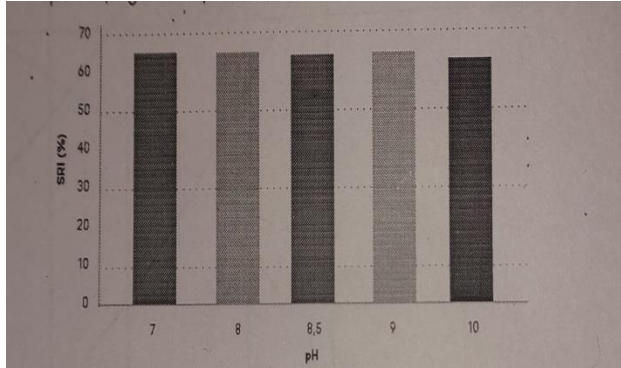


Figure 1: 56 Stain Removal as function of pH. Wash machine: LOM, Wash temperature: 20°C. Water hardness: 25FH. Wash time ramping-15 mins. Detergent dosage: 56 g/1 EU liquid detergent. Enzyme dosage: 925% w/w. Stain: EMPA 142 Starch polyester/cotton.

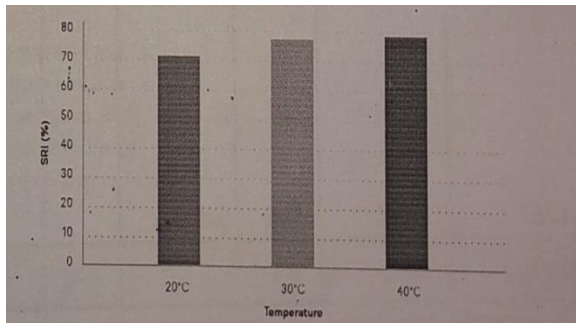


Figure 2: Stan Hameval as function of temperature. Wash machine: LOM, Water hardness: 25 FH, Wash time ramping 15 minutes. Detergent dosage: 5.4 g EU liquid detergent, pH detergent: 8.6. Enzyme dosage: 0.25% w/w. Stain: EMPA 162 Starch polyester/cotton.

## Dosage

Typical dosage range of PREFER S 210 is 0.1-0.3 % w/w in detergent for European formulations, 0.2-0.4% w/w in detergent for Northern American formulations, 0.05-0.2% w/w in detergent for Asian/Pacific formulations and 0.05-0.2% w/w for Latin American formulations. Exact dosage should be based upon wash conditions, detergent formulation, detergent dosing and the desired level of performance.

## Formulation recommendation

Use of sodium formate, tri-methyl glycine, polyols and non-ionic surfactants generally has a positive effect on enzyme stability. Use of hydrotropes like sodium cumene sulfonate as well as formaldehyde generating anti-microbial agents should be avoided. Amylases generally have some calcium dependency resulting in instability in the presence of strong chelators. PREFER S 210 has been engineered for enhanced stability in the presence of chelators and does not require the addition of calcium to the detergent formulation.

## Product and manufacturing

This product does not contain genetically engineered organisms. The enzyme product is manufactured by fermentation of microorganisms that are not present in the final product. The production organisms and the enzyme effectiveness are improved by means of modern biotechnology.

## **Safety and enzyme handling**

Inhalation of dust from granulated enzymes should be avoided. In case of accidental spillage or contact with the skin or eyes, promptly rinse with water for at least 15 minutes. For detailed handling information, please refer to the appropriate Material Safety Data Sheet, the Enzyme Technical Association (ETA) handbook Working Safely With Enzymes, and the Association of Manufacturers of Fermentation Enzyme Products (Amfep) handbook Guide to the Safe Handling of Microbial Enzyme Preparations, and the Soap and Detergent Association (SDA) handbook Work Practices for Handling Enzymes in the Detergent Industry.

## **Contact information**

For more information, please contact your sales representative, a member of the E Home- and Personal Care team.

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