

# OPTIMASE® PR 40X

## Granular High-Alkaline Protease

### DESCRIPTION

OPTIMASE® PR 40X enzyme is a granular protease product derived from a genetically modified strain of *Bacillus subtilis* which has been engineered to give superior proteolytic performance in the neutral to high-alkaline pH range with enhanced stability in the presence of oxidative bleaching ingredients.

The OPTIMASE® PR 40X protease is highly effective for removal of protein-based soils such as blood, grass, and milk from soiled surfaces. The OPTIMASE® PR 40X protease is effective over a broad pH range and it has good stability in the presence of peroxygen bleaches.

### PRODUCT CHARACTERISTICS

<b>Activity:</b>	53.0 MPU/g* minimum
<b>Appearance:</b>	Tan to white granules
<b>Bulk Density:</b>	0.80 - 1.00 kg/l
<b>Granule size:</b>	0.30-0.85 mm.

(\*The enzyme activity of OPTIMASE® PR 40X protease is expressed in MPU. This method is a modification of the Delft Method and is based on the proteolytic hydrolysis of casein at pH 10. A detailed description of the assay method is available on request.

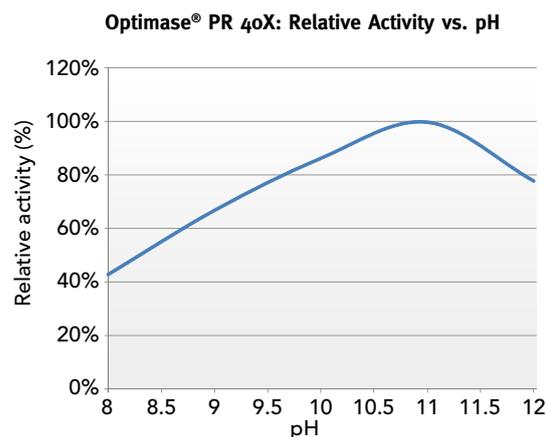
### BIOCHEMICAL PARAMETERS

<b>Enzyme type:</b>	Subtilisin, bacterial serine endopeptidase
<b>EC/IUB#:</b>	3.4.21.62
<b>CAS#:</b>	9014-01-1
<b>Molecular weight:</b>	28 kDa
<b>IEP:</b>	9.4
<b>Activators/cofactors:</b>	Calcium ions

### pH DEPENDENCY

The OPTIMASE® PR 40X protease is active over a range of pH values from 8.0 to 12.0 with an optimum performance at pH 11.0. The exact pH optimum will depend on process variables, including temperature, time, substrate

concentration, and substrate composition.



### TEMPERATURE DEPENDENCY

The OPTIMASE® PR 40X protease is effective in the temperature range of 40°C (104°F) to 70°C (158°F), with an optimum performance at 65°C (149°F). The exact temperature optimum will depend on process variables, including pH, time, substrate concentration, and substrate composition.

### DOSAGE

The determination of the required dosage of OPTIMASE® PR 40X protease should be based upon actual applications conditions including factors such as pH, temperature, reaction time, substrate composition, and substrate concentration. Small-scale tests should be performed to determine the appropriate dosage of OPTIMASE® PR 40X protease.

### PACKAGING AND STORAGE

OPTIMASE® PR 40X enzyme is available in various standard package sizes. Please contact DuPont for detailed information.

OPTIMASE® PR 40X will meet the declared activity of 53 MPU/g upon arrival at the customer's plant. Store OPTIMASE® PR 40X enzyme at 25° C (77° F) or lower to assure extended shelf life. Detailed storage and stability information is available upon request.

## REGULATORY STATUS

OPTIMASE® PR 40X enzyme is an industrial grade enzyme preparation.

## SAFETY & ENZYME HANDLING

Inhalation of enzyme dust and mists should be avoided. In case of 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 and Formulators of Enzyme Products (AMFEP) handbook “Guide to the Safe Handling of Microbial Enzyme Preparations”. All are available from DuPont.

## CONTACT INFORMATION

### NORTH AMERICA

Rochester, New York (USA)

☎ +1 800 847 5311

☎ +1 585 256 5295

### ASIA/PACIFIC

Singapore

☎ +65 6511 5600

☎ +65 6511 5666

### EUROPE, MIDDLE EAST & AFRICA

Leiden, The Netherlands

☎ +31 71 5686 168

☎ +31 71 5686 169

Shanghai, P.R. China

☎ +86 21 2307 9588

☎ +86 21 2307 9599

Mumbai, India

☎ +91 22 3008 7131

☎ +91 22 3008 7150

### LATIN AMERICA

Buenos Aires, Argentina

☎ +54 11 4021 4700

☎ +54 11 4021 4800

São Paulo, Brazil

☎ +55 11 4613 3800

☎ +55 11 4612 1101

For more information, speak to a member of the Home & Personal Care team at DuPont Industrial Biosciences.

Website: [biosciences.dupont.com](http://biosciences.dupont.com)

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