

# Protease CLEA Discovery Platform

- Contains 5 protease CLEAs
- Proteases immobilized as Cross-Linked Enzyme Aggregates



Our Protease CLEA Discovery Platform contains is available in two sizes. A standard kit with 1 g of each CLEA and a large kit with 5 g of each. CLEAs of the following enzymes are present in the kit:

Alcalase<sup>®</sup>, *B. licheniformis* protease  
 Savinase<sup>®</sup>, *B. Clausii* protease  
 Esperase<sup>®</sup>, *B. Lentus* protease  
 Papain, *C. Papaya* Protease  
 Bacillus subtilis protease

### CLEA Methodology

Our proprietary methodology to immobilize enzymes as Cross-Linked Enzyme Aggregates (CLEAs) consists of covalent cross linking of precipitated enzymes. This efficient and economically attractive method yields immobilized biocatalysts that do not include support material and therefore have a very high activity per unit volume.

## Product Properties

<b>Product Type:</b>	Immobilized form of Proteases as a Cross-Linked Enzyme Aggregate (CLEA)
<b>Formulation:</b>	Powder or suspension
<b>Enzyme Type:</b>	Protease EC 3.4.21.62
<b>Natural Reaction:</b>	Peptide synthesis and breakdown

CLEA<sup>®</sup> is a registered trademark of CLEA Technologies BV.

Alcalase<sup>®</sup>, Savinase<sup>®</sup>, Esperase<sup>®</sup> are trademarks of Nycozymes A/S

# Specific Product Specification Discovery Platform CLEA

## Applications

Proteases are used in a wide variety of applications in the fine chemistry, laundry and food industry. In organic synthesis they are used in peptide synthesis and for the production of enantiopure alcohols, amines or acids via ester hydrolysis in aqueous media or via direct esterification in organic media.

## Storage and Stability

The protease CLEAs<sup>®</sup> are best stored in a cool and dry environment. Storage at 4 °C is recommended.

## Formulations

Proteases in the kit have the following formulation and typical activity.

**CLEA-ST:** standard formulation  
**CLEA-OM:** optimized for use in organic media or with highly apolar substrates  
**CLEA-UF:** Ultra fine powder, specifically efficient in surface modification (eg. wool)

**Alcalase CLEA-ST: 400-600 U/g<sup>1</sup>**  
**Savinase CLEA-ST: 300-400 U/g<sup>1</sup>**  
**Esperase CLEA-ST: 300-600 U/g<sup>1</sup>**  
**Papain CLEA-ST: 100 units/ml<sup>2</sup>**  
**BS CLEA-ST: 5 U/ml**

<sup>1</sup> 1 unit will catalyse the hydrolysis of 1µmol N-acetylglycine ethyl ester acid from tributyrin at 40°C and pH 7.5 per min.

<sup>2</sup> 1 unit will catalyse the hydrolysis of 1µmol N-benzoylarginine ethyl ester acid from tributyrin at 40°C and pH 7.5 per min.

## Pricing and Availability

The protease CLEA Discovery Platform is available in two sizes. 1 gram of each in the standard kit and 5 g of each in the large kit. Please inquire for availability, lead times and prices.

**FE2DP1: 1 g**  
**FE2DP2: 5 g**

## References

1. Sheldon, Roger A; Sorgedrager, Menno; Janssen, Michiel H. A. **Use of Cross-linked Enzyme aggregates (CLEAs) for performing biotransformations.** Chimica oggi, Chemistry Today 2007, 25(1), 48-52.
2. Sheldon, R. A; Schoevaart, R; Van Langen, L.M. **Cross-linked enzyme aggregates (CLEAs): A novel and versatile method for enzyme immobilization (a review).** Biocatalysis and Biotransformation 2005, 23(3/4), 141-147.
3. Sheldon, Roger A; Schoevaart, R; van Langen, Luuk M. **CLEAs: An effective technique for enzyme immobilization.** Specialty Chem. 2003, July/August, 40-42.
4. Cao, Linqiu; van Langen, Luuk; Sheldon, Roger A. **Immobilised enzymes: carrier-bound or carrier-free?** Curr. Opin. Biotechnol. 2003, 14, 387-394.