March 2020

Product Sheet

TAGZyme® DAPase™ Enzyme

Contents

DAPase Enzyme (10 U/ml)	2.5 units (250 µl)
Cysteamine·HCl (20 mM)	1000 µl

Description

DAPase Enzyme is an exoproteolytic dipeptidase which sequentially removes dipeptides from the N-terminus of proteins with high specificity and processibility. It is used as part of the the TAGZyme System for the removal of small His tags from recombinant proteins. The His tags of proteins expressed using TAGZyme pQE vectors are removed either by DAPase Enzyme action alone, or in conjunction with Qcyclase™ Enzyme and pGAPase™ Enzyme, to give a native protein free of vector-encoded amino acids. N-terminal amino acids are cleaved off as dipeptides by DAPase Enzyme until a stop point is reached. Stop points are amino acid motifs that cannot serve as a substrate for DAPase cleavage. Some proteins contain intrinsic stop points at their N-termini. Other proteins can be processed by the TAGZyme System by the introduction of an artificial stop point. In such a strategy, a construct is designed that encodes for a glutamine residue directly behind the His tag (which must contain an even number of amino acids) and directly in front of the first amino acid of the native protein. After removal of His tag dipeptides by DAPase Enzyme, the glutamine residue can serve as a stop point when digestion is carried out in the presence of excess Qcyclase Enzyme. This enzyme catalyzes

the cyclization of glutamine residues to pyroglutamate, a residue which serves as a stop point for DAPase digestion. After digestion, both DAPase Enzyme and Qcyclase Enzyme are removed by Ni-NTA immobilized-metal affinity chromatography (IMAC). The pyroglutamate residue at the N-terminus of the target protein can be removed by the action of pGAPase Enzyme, which can itself be separated from the detagged target protein by a second round of Ni-NTA IMAC.

Specifications

Recombinant dipeptidyl peptidase I, polyhistidine-tagged (DPPI/dipeptidyl aminopeptidase I/DAPI/Cathepsin C; EC 3.4.14.1).

Source	Recombinant baculovirus expression vector system expressing the cloned DPPI gene from rat liver
Form	10 units/ml solution in 3 mM sodium phosphate; 150 mM NaCl; 2 mM cysteamine·HCl; 50% glycerol, pH 6.7–7.0
Purity	>98% (as determined by SDS-PAGE)
Storage	DAPase Enzyme should be stored at –30 to –15°C.
Stability	DAPase Enzyme is stable for 9 months when stored at –30 to –15°C, or for 1 week when stored at 2–8°C, unless otherwise stated on the label.
Assay conditions	DAPase Enzyme is assayed at 37°C in 20 mM citric acid, 150 mM NaCl, 1 mM EDTA, 5 mM cysteamine, pH 4.5, containing 4 mM Gly-Phe-*p*-nitroanilide as substrate.
Unit definition	One unit is defined as the amount of enzyme that converts 1 µmol of substrate per minute under the conditions used.
Specific activity	7–11 unit/mg protein (protein determined by Bradford assay using BSA as standard)

Shipping and Storage

TAGZyme DAPase Enzyme should be stored immediately upon receipt at –30 to –15°C, in a constant-temperature freezer. Under these conditions, the components are stable for 9 months without showing any reduction in performance and quality, unless otherwise indicated in the label.

Quality Control

In accordance with QIAGEN's ISO-certified Quality Management System, each lot of TAGZyme DAPase Enzyme is tested against predetermined specifications to ensure consistent product quality.

Safety Information

When working with chemicals, always wear a suitable lab coat, disposable gloves, and protective goggles. For more information, please consult the appropriate safety data sheets (SDSs). These are available online in convenient and compact PDF format at **www.qiagen.com/safety**, where you can find, view, and print the SDS for each QIAGEN kit and kit component.

Ordering Information

Product	Contents	Cat. no.
TAGZyme Kit	0.5 units DAPase Enzyme, 30 units Qcyclase Enzyme, 10 units pGAPase Enzyme, 20 mM Cysteamine·HCl (1 ml), Ni·NTA Agarose (10 ml), 20 disposable columns	34300
TAGZyme DAPase Enzyme (2.5 U)	For processing up to 50 mg tagged protein: 2.5 units DAPase Enzyme, 20 mM Cysteamine·HCl (1 ml)	34362
TAGZyme DAPase Enzyme (50 U)*	For processing up to 1 g tagged protein: 50 units DAPase Enzyme, 20 mM Cysteamine·HCl (25 ml)	34366

* Delivery of bulk quantities of enzymes may take up to 6 weeks. Please inquire.
Note: A comprehensive manual, the *TAGZyme Handbook*, can be downloaded from **www.qiagen.com/HB-2042**.

TAGZyme DAPase Enzyme is intended for molecular biology applications. This product is not intended for the diagnosis, prevention, or treatment of a disease.

All due care and attention should be exercised in the handling of the products. We recommend all users of QIAGEN® products to adhere to the NIH guidelines that have been developed for recombinant DNA experiments, or to other applicable guidelines.

Document Revision History

Date	Changes
03/2020	Replaced "–20°C" with "–30 to –15°C" in storage information.